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Additively Manufactured Antero(R) 840CN03 and Stratasys Inc. Fortus 900TM Machine Material Qualification Material Property Data Report

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1. Introduction

1.1 Scope

The test methods and results described in this document are intended to provide basic additively manufactured material properties essential to most methods of analysis. This report contains material property data of common usefulness to a wide range of projects. The material property data have been generated with NCAMP oversight in accordance with NCAMP Standard Operating Procedures NSP 100; the test specimens have been inspected by NCAMP Authorized Inspection Representatives (AIR) and the testing has been witnessed by NCAMP Authorized Engineering Representatives (AER). However, the data may not fulfill all the needs of any specific company's program; specific properties, environments, build orientation, and loading situations may require additional testing.

The use of NCAMP material and process specifications does not guarantee material or structural performance. Material users should be actively involved in evaluating material performance and quality including, but not limited to, performing regular purchaser quality control tests, performing periodic equivalency or additional testing, participating in material change management activities, conducting statistical process control, and conducting regular supplier audits.

The applicability of NCAMP material property data, material allowables, and specifications must be evaluated on a case-by-case basis by aircraft companies and certifying agencies. NCAMP assumes no liability whatsoever, expressed or implied, related to the use of the material property data, material allowables, and specifications.

This report contains material property data only. Statistical analysis of the data including the calculations of b-basis values is given in a separate report, Additively Manufactured Antero 840CN03 and Stratasys Inc. Fortus 900™ Machine Qualification Statistical Analysis Report NCP-RP-2025-018 Rev -. The qualification material was procured to NCAMP Material Specification NMS 840/1 Rev-. The qualification test coupons were printed in accordance with NCAMP Process Specification NPS 88400 dated April 24, 2024. The NCAMP Test Plan NTP AM-8400Q1 was used for this qualification program. Newer revisions of the material and process specification may contain more current information and process parameters but any variation from the qualification program should be carefully considered.

Part fabricators that wish to utilize the material property data, allowables, and specifications may be able to do so by demonstrating the capability to reproduce the original material properties; a process known as equivalency. More information about this equivalency process including the test statistics and its limitations can be found in CMH-17 Handbook and the published ULTEM 9085 report that is available publicly. The applicability of the equivalency process must be evaluated on a program-by-program basis by the applicant and certifying agency. The applicant and certifying agency must agree that the equivalency test plan along with the equivalency process described in CMH-17 handbook and the published ULTEM 9085 report that is available publicly.. The equivalency process is borrowed from PMC industry's process.

Aircraft companies should not use the data published in this report without specifying NCAMP Material Specification NMS 840/1. NMS 840/1 may have additional requirements that are listed in its material process control document (PCD) and other raw material specifications and PCDs which impose essential quality controls on the raw materials and raw material manufacturing equipment and processes. *Aircraft companies and certifying agencies should assume that the material property data published in this report is not applicable when the material is not procured to NMS 840/1.* NMS 840/1 is a free, publicly available, non-proprietary aerospace industry material specification.

The data in this report is intended for general distribution to the public, either freely or at a price that does not exceed the cost of reproduction (e.g., printing) and distribution (e.g., postage).

1.2 Symbols Used

Superscripts

c	compression
cu	compression ultimate
s	shear
su	shear ultimate
t	tension
tu	tension ultimate

Subscripts

1	axis; longitudinal / warp direction (parallel to warp direction of reinforcement)
2	axis; transverse / fill direction (parallel to fill direction of reinforcement)
12	in-plane

Acronyms and Definitions

AER	Authorized Engineering Representative
AIR	Authorized Inspection Representative
AM	Additively Manufactured
AMS	Aerospace Material Specification
ANOVA	Analysis of Variance
ASAP	Agate Statistical Analysis Program
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
CMH-17	Composite Materials Handbook 17 (formerly MIL-HDBK-17)
CTA	Cold Temperature Ambient
CTE	Coefficient of Thermal Expansion
CV	Coefficient of Variation
DMA	Dynamic Mechanical Analysis
DSC	Differential Scanning Calorimetry
ETA	Elevated Temperature Ambient
ETW	Elevated Temperature Wet
FAA	Federal Aviation Administration
FFF	Fused Filament Fabrication
FTIR	Fourier Transform Infrared Spectroscopy
HPLC	High Performance Liquid Chromatography
IAB	Industry Advisory Board (an NCAMP Board)
IR	Infrared Spectroscopy
MAB	Manufacturers Advisory Board (an NCAMP Board)
NASA	National Aeronautics and Space Administration
NCAMP	National Center for Advanced Materials Performance
NDI	Non-Destructive Inspection
NIAR	National Institute for Aviation Research
NIST	National Institute of Standards and Technology
NMS	NCAMP Material Specification
NPS	NCAMP Process Specification

OEM	Original Equipment Manufacturer
PCD	Process Control Document
QA	Quality Assurance
QC	Quality Control
RH	Relative Humidity
RTA	Room Temperature Ambient
RTW	Room Temperature Wet
SACMA	Suppliers of Advanced Composite Materials Association
SAE	Society of Automotive Engineers
Tg	Glass Transition Temperature
TGA	Thermogravimetric Analyzer
TMA	Thermomechanical Analysis
WSU	Wichita State University

1.3 References

ASTM Standards

All testing was in accordance with nationally recognized standards, methods and procedures. Specific mechanical property test methods applicable to the test program in this document include:

- ASTM D638-22 – Standard Test Method for Tensile Properties of Plastics
- ASTM D695-23 – Standard Test Method for Compressive Properties of Rigid Plastics
- ASTM D790-17 – Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- ASTM D5766/D5766M-23 – Standard Test Method for Open Hole Tensile Strength of Polymer Matrix Composite Laminates
- ASTM D5961/D5961M-23 – Standard Test Method for Bearing Response of Polymer Matrix Composite Laminates
- ASTM D6742/D6742M-23 – Standard Practice for Filled-Hole Tension and Compression Testing of Polymer Matrix Composite Laminates
- ASTM D7078/7078M-20e1 – Standard Test Method for Shear Properties of Composite Materials by V-Notched Rail Shear Method
- ASTM D257-14(2021)e1 – Standard Test Methods for DC Resistance or Conductance of Insulating Materials
- ASTM D792-20 – Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
- ASTM D1238-10 – Standard Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
- ASTM D3171-22 – Standard Test Methods for Constituent Content of Composite Materials
- ASTM D7028-07(2015) – Standard Test Method for Glass Transition Temperature (DMA T_g) of Polymer Matrix Composites by Dynamic Mechanical Analysis (DMA)
- ASTM E228-17 – Standard Test Method for Linear Thermal Expansion of Solid Materials With a Push-Rod Dilatometer
- ASTM E831-19 – Standard Test Method for Linear Thermal Expansion of Solid Materials by Thermomechanical Analysis
- ASTM E1269-11(2018) – Standard Test Method for Determining Specific Heat Capacity by Differential Scanning Calorimetry
- ASTM E1530-19 – Standard Test Method for Evaluating the resistance to Thermal Transmission of Materials by the Guarded Heat Flow Meter Technique

1.4 Methodology

1.4.1 Process Definition

Figure 1-1 shows the matrix build layout and the build platform locations for the specimen build locations.

For each combination of test method, batch/lot, and condition, the specimens were selected from a minimum of two separate runs (whether or not it is independent of machines) as shown in Figure 1-1 unless otherwise specified. The term "machine" means a single AM machine running a designed and specific process with a selected AM raw material through which mechanical test specimens were built, with a +/-45 raster pattern.

The specimen selection methodology in Figure 1-1 were presented in "Number of Batches/Lots x Number of Machines x Number of Specimens" format throughout this document. Specifically, Figure 1-1 depicts a 4x2x4 specimen selection methodology. If more than 2 machines are required to obtain the minimum specimens, the additional machine(s) shall be labeled accordingly (see section 3 of NTP) and approximately an equal number of specimens should be tested from each machine.

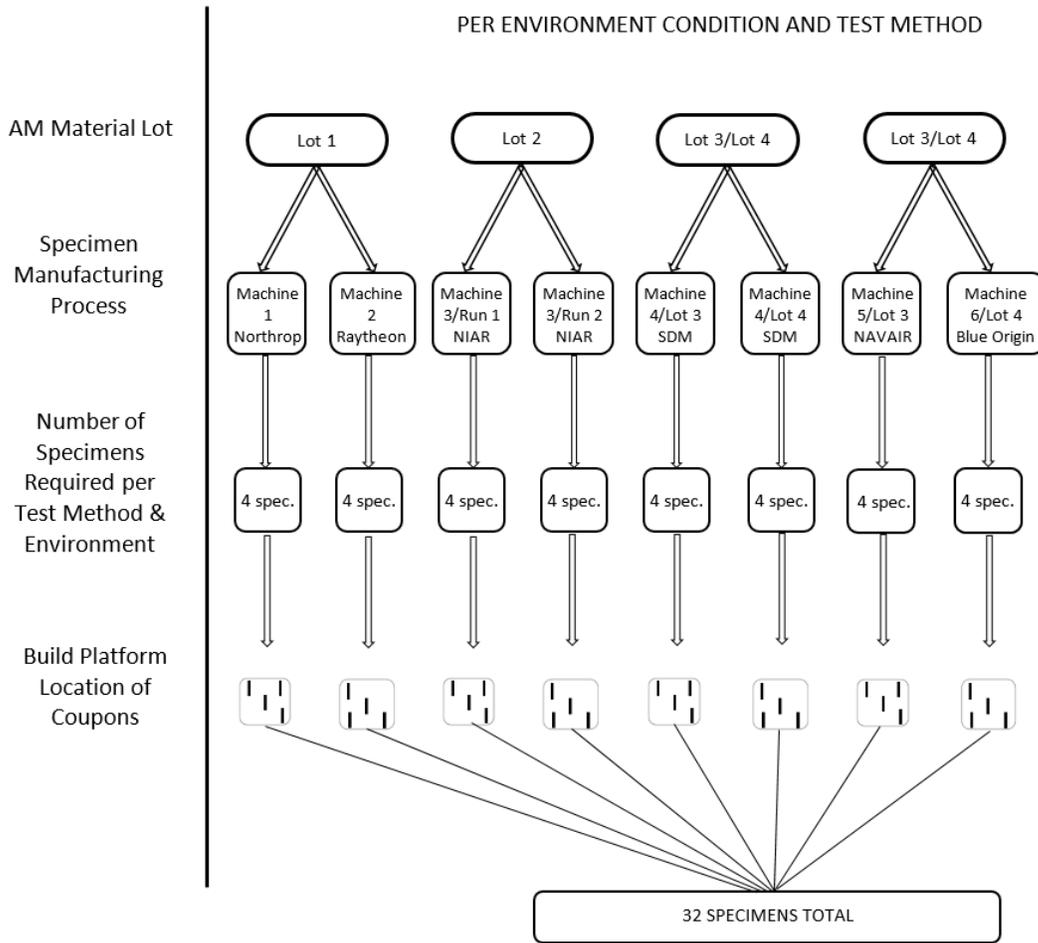


Figure 1-1: Specimen Selection Methodology

All specimens were printed in accordance with NCAMP Process Specification NPS 88400. The combinations of material lot, machine serial, run sequence and build location were recorded to provide complete traceability.

In order to facilitate individual specimen traceability, each individual specimen carries a unique specimen identifier as described in section 3 of the NTP. Figure 1-2 shows the print orientation of the test specimen. To help verify the build platform location of specimen, Figure 1-3 shows the printing zones of the chamber where 11- Top Left Corner, 12-Top Right Corner, 13-Bottom Right Corner, 14-Bottom Left Corner, and 15-Middle.

NIAR-Specimen Naming Format

All specimens are uniquely identified by a 11 code reference system, cross referenced with descriptive identification information as follows:

NTP Document Number – AM Material Manufacturer ID – Material Code – Fabricator ID – Batch ID – Machine ID – Build Orientation – Actual Test Types ID – Test Specimen Build Location ID – Test Condition – Specimen Number.

For example, [NTPAM8400Q1-STR-840CN-NIA-A-M1(R1, R2)-XY-OHT-12-RTA-3] denotes NTP Document Number: NTPAM8400Q1, AM Material Manufacturer ID: STR, Material code: 840CN, Fabricator ID: NIA, Batch ID: A, Machine ID: M1 (R1,R2), Build Orientation: XY, Actual Test Types ID: OHT, Test Specimen Build Location ID: 12, Test Condition: RTA, and Specimen Number: 3. The testing lab may assign a separate identification code but must reference the system and uniquely identify the specimens.

Test Directions, as illustrated in Figure 1-2, are the various axes of the coupons.

Orientation were determined by build chamber. The X-Z plane represents the front of the build chamber. Material is extruded on the X-Y plane, and the platen moves on the Z-axis to deposit subsequent layers. Typical naming conventions for printed specimens are as follows:

Build Orientation Label in Picture	Build Orientation Label to be used on Specimens	Reference
X	XY	Flat
Y	XZ	On-Edge
Z	ZX	Upright
Z45	Z45	Z45

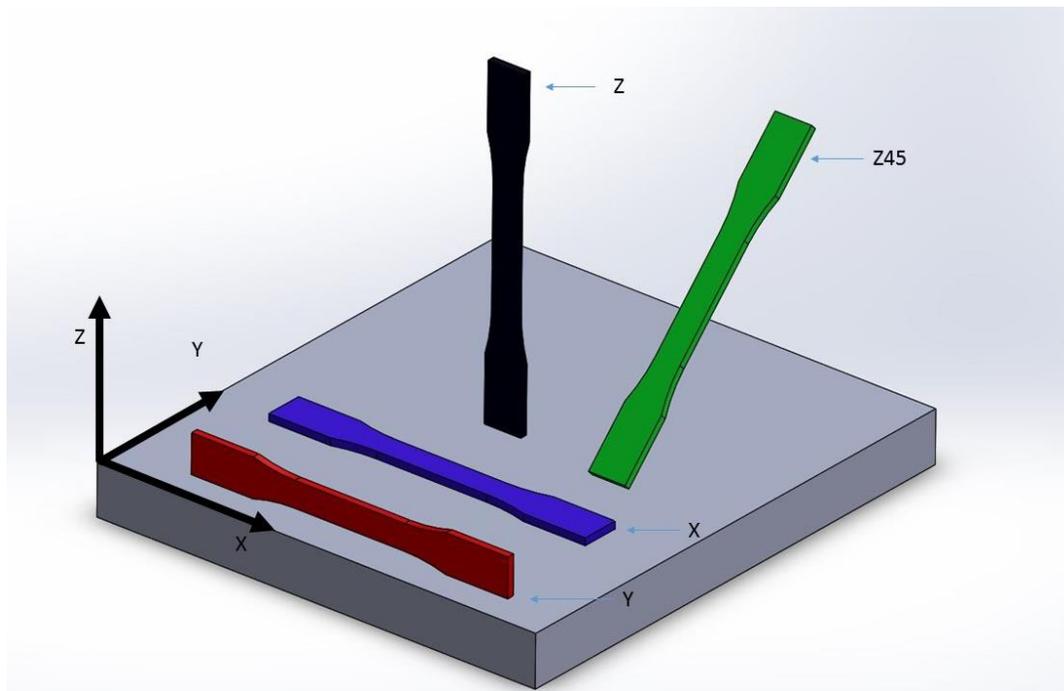


Figure 1-2: Specimen Build Orientation Diagram

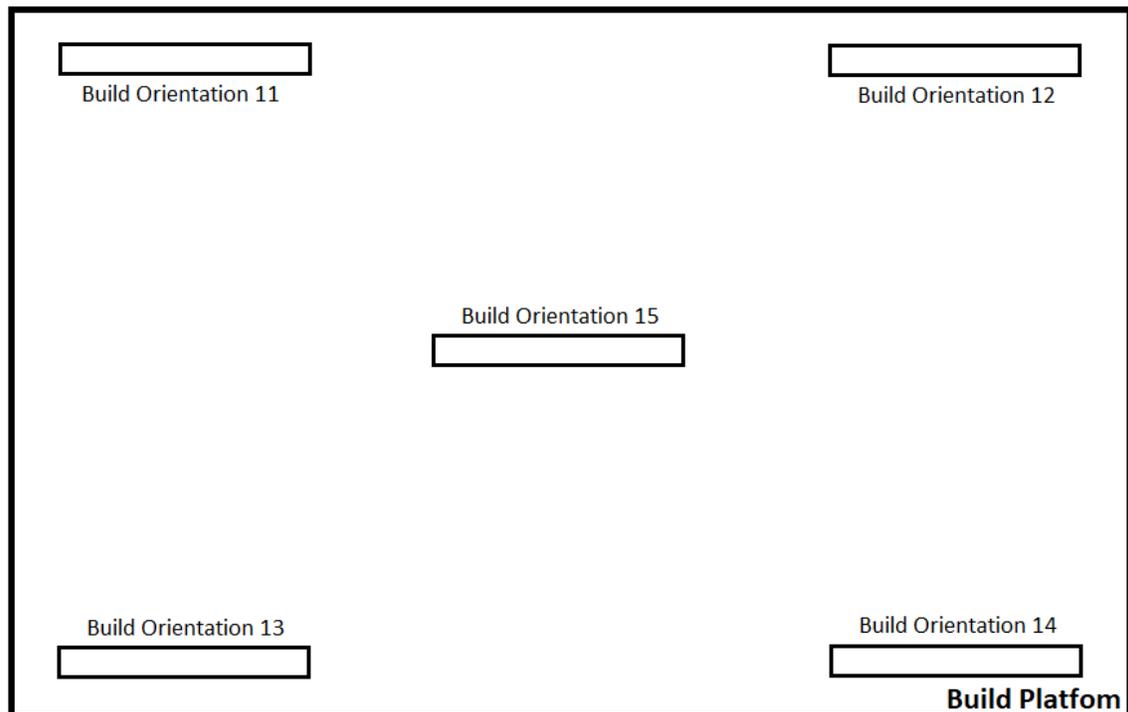


Figure 1-3: Specimen Build Platform Location (Top-down view)

1.4.2 Specimen & Testing Details

1.4.2.1 Tabbings

No tabs were used for this program.

Specimen Strain Device Used

Corresponding Gage ID can be obtained from Appendix 1 of NTP-AM-8400Q1.

Uniaxial gages were used on:

Compression Prism (CTA)

Biaxial gages were used on:

Rail Shear (CTA, RTA, RTW, ETA, ETW)

Uniaxial Extensometers were used on:

Single Shear Bearing (RTA, ETW);

Dogbone Tension (CTA, RTA, RTW, ETA, ETW);

Compression Prism (RTA, RTW, ETA, ETW);

Deflectometers were used on:

Flex (RTA, CTA, ETA, ETW)

1.4.2.2 Specimen Dimensions & Test Configuration

For filled-hole tension (FHT) tests, the fasteners were installed to 85 ± 5 in-lb above the prevailing torque. During installation, some coupons started breaking when the torque of 85 in-lb was applied, The remaining coupons were torqued at 80 in-lb, which is the lower end of the provided tolerance. For single-shear bearing (SSB) tests, the fasteners were installed to 30 ± 5 in-lb above the prevailing torque. Fasteners were installed after moisture conditioning. Unless otherwise specified, a tolerance of $\pm 5^\circ\text{F}$ applied to all temperature conditions specified in this document. For filled-hole and bearing tests, the hole diameter was 0.25 in -0.000 $+0.003$ in. The following fasteners were used:

NASM 21297-04004 bolts with MS 21084 nuts and MS 21206 washers for FHT.

NASM 21297-04016 bolts with MS 21084 nuts and MS 21206 washers for SSB.

Open and Filled-Hole Tension specimens were printed and machined to 8.0" in length instead of the regular 12.0".

1.4.3 Test Matrix

The tables below show the test matrices for each combination of test type and build orientation.

Build Orientation label on specimens	Test Type and Direction	Property	Number of Batches x Number of Machines x Number of Specimens				
			Test Temperature / Moisture Condition				
			CTA (-95°F)	RTA (70°F)	ETA (250°F)	RTW (70°F)	ETW (180°F)
XY	Tension XY ASTM D638 (Type I) ⁽²⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
XZ	Tension XZ ASTM D638 (Type I) ⁽²⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
ZX	Tension ZX ASTM D638 (Type I) ⁽²⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
Z45	Tension Z45 ASTM D638 (Type I) ⁽²⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
XY	Compression XY ASTM D695 prism 1" ⁽¹⁾⁽²⁾⁽³⁾⁽⁷⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
XZ	Compression ZX ASTM D695 prism 1" ⁽¹⁾⁽²⁾⁽³⁾⁽⁷⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
ZX	Compression ZX ASTM D695 prism 1" ⁽¹⁾⁽²⁾⁽³⁾⁽⁷⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
Z45	Compression Z45 ASTM D695 prism 1" ⁽¹⁾⁽²⁾⁽³⁾⁽⁷⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
XY	Flex XY ASTM D790 Procedure B ⁽²⁾⁽⁶⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4		4x2x4
XZ	Flex XZ ASTM D790 Procedure B	Strength and Modulus	4x2x4	4x2x4	4x2x4		4x2x4
ZX	Flex ZX ASTM D790 Procedure B ⁽²⁾⁽⁶⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4		4x2x4
Z45	Flex Z45 ASTM D790 Procedure B ⁽²⁾⁽⁶⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4		4x2x4
XY	Rail Shear In-Plane Shear XY ASTM D7078 ⁽²⁾⁽⁴⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
XZ	Rail Shear In-Plane Shear XZ ASTM D7078 ⁽²⁾⁽⁴⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
ZX	Rail Shear In-Plane Shear ZX ASTM D7078 ⁽²⁾⁽⁴⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4
Z45	Rail Shear In-Plane Shear Z45 ASTM D7078 ⁽²⁾⁽⁴⁾	Strength and Modulus	4x2x4	4x2x4	4x2x4	1x2x4 ⁽⁵⁾	4x2x4

Table 1-1: Mechanical Test Matrix

Notes:

- (1) Back-back strain gauges were used on the first two specimens. When no buckling was observed, the remaining modulus specimens were required to only have strain gauge on one side of the specimens only. An appropriate extensometer was used in place of the strain gauges.
 - (2) The build orientations tested were X, Y, Z and Z45. This represents the four build orientations seen in the matrix.
 - (3) Specimens were gently surface ground to achieve the parallelism and perpendicularity called out per ASTM guidance
 - (4) Strain range of 2000µε-6000µε were used.
 - (5) Specimens were produced from material lot 1.
 - (6) 0.2% offset strength were reported. For CTA, RTA and ETW, strain range of 5000µε-20000µε was used.
 - (7) For the compression data, max load, ultimate strength, 0.2% offset strength, 1% offset strength and 2% offset strength were reported
- Applicable to all specimens:
- All specimens were uniquely identified when printed and may be individually bagged with labels.
 - All specimens were marked/labeled prior to machining.

Table 1-2 below summarizes the laminate level testing. The four build orientations are XY, XZ, ZX, and

ZX45. The build orientations in this program are not specific to any design. Therefore, careful consideration should be given to the validity of properties derived from this program based on the design specific orientations in a structure to be certified.

Table 1-2 also emphasizes properties and test condition combinations believed to constitute the worst case, which in general is hot wet for polymer matrix material properties.

For the single shear bearing tests, the ASTM D5961 One-Piece Single-Shear Test Set-Up (Procedure C) was used.

Fatigue specimens were split, 20 coupons were printed on each run or at each site when the batch was split into a multi-site print job. This allowed for the 15 required coupons to build the S/N curves and leave coupons for spares. Fatigue stress levels/load levels were determined from the ultimate strength derived during tension testing. Frequency = 10Hz, R-ratio = 0.01, load control, initial load levels were 35%, 45%, 55%, 65%, and 75% of ultimate tensile strength. 3 coupons was used at each load level. 2 million cycle runout was used.

Build Orientation label on specimens	Test Type ID	Test Type and Direction (4)	Property	Number of Batches x Number of Machines x Number of Specimens		
				Test Temperature / Moisture Condition		
				CTA (-95°F)	RTA (70°F)	ETW (180°F)
XY	OHT	Open-Hole Tension X ASTM D5766 ⁽¹⁾	Strength	4x2x4	4x2x4	4x2x4
XZ	OHT	Open-Hole Tension Y ASTM D5766 ⁽¹⁾	Strength	4x2x4	4x2x4	4x2x4
ZX	OHT	Open-Hole Tension Z ASTM D5766 ⁽¹⁾	Strength	4x2x4	4x2x4	4x2x4
Z45	OHT	Open-Hole Tension Z45 ASTM D5766 ⁽¹⁾	Strength	4x2x4	4x2x4	4x2x4
XY	FHT	Filled-Hole Tension X ASTM D6742 ⁽²⁾	Strength	4x2x4	4x2x4	4x2x4
XZ	FHT	Filled-Hole Tension Y ASTM D6742 ⁽²⁾	Strength	4x2x4	4x2x4	4x2x4
ZX	FHT	Filled-Hole Tension Z ASTM D6742 ⁽²⁾	Strength	4x2x4	4x2x4	4x2x4
Z45	FHT	Filled-Hole Tension Z45 ASTM D6742 ⁽²⁾	Strength	4x2x4	4x2x4	4x2x4
XY	Fatigue	Fatigue Testing D638 type I, X, E466 load control ⁽⁵⁾	5 Stress Levels		15	15
XZ	Fatigue	Fatigue Testing D638 type I, Y, E466 load control ⁽⁵⁾	5 Stress Levels		15	15
ZX	Fatigue	Fatigue Testing D638 type I, Z, E466 load control ⁽⁵⁾	5 Stress Levels		15	15
Z45	Fatigue	Fatigue Testing D638 type I, Z45, E466 load control ⁽⁵⁾	5 Stress Levels		15	15
XY	SSB	Single Shear Bearing ASTM D5961 Procedure C ⁽³⁾	Strength & Deformation		4x2x4	4x2x4
XZ	SSB	Single Shear Bearing ASTM D5961 Procedure C ⁽³⁾	Strength & Deformation		4x2x4	4x2x4
ZX	SSB	Single Shear Bearing ASTM D5961 Procedure C ⁽³⁾	Strength & Deformation		4x2x4	4x2x4
Z45	SSB	Single Shear Bearing ASTM D5961 Procedure C ⁽³⁾	Strength & Deformation		4x2x4	4x2x4

Table 1-2: Mechanical Test Matrix (Design Guidance Properties)

Notes:

- (1) Open-hole test configuration: 0.25 inch hole diameter, 1.5 inch width.
- (2) Filled-hole test configuration: 0.25 inch hole diameter, 1.5 inch width, see section 1.4.2.3 for fastener callout.
- (3) Single shear bearing test configuration: 0.2 inch thick, 0.25 inch hole diameter, 1.5 inch width, e/D = 3, ASTM D5961 Procedure C, see section 1.4.2.3 for fastener callout.
- (4) Specimen with holes were drilled/reamed/ by machine. However, the holes were not be fully machined, they were touched up just enough to ensure compliance with test standard and/or for fastener fit.
- (5) 3 specimens per stress level, 2 million cycle runout. Frequency = 10Hz, R-ratio = 0.01, load control, initial load levels will be 35%, 45%, 55%, 65%, and 75% of ultimate tensile strength.

Applicable to all specimens:

- All specimens were uniquely identified when printed and may be individually bagged with labels.
- All specimens were marked/labeled prior to machining

1.4.4 Physical Testing

The properties in Table 1-3 were determined for each test type and build orientation. The tests were performed by the National Institute for Aviation Research (NIAR) Composites Laboratory or an approved laboratory under the supervision of NCAMP, except for Surface Resistivity, which was conducted by Stratasyss and data provided in the CoC. For results, please refer to section 8 of this document.

Property	Condition/Method (Note 1)	Min Replicates per Test Type and Build Orientation
Thickness	ASTM D3171/or applicable mechanical test method.	All data from mechanical test specimens
Density	ASTM D792-13	Per Note 3
Photomicrograph	CP6101 and CP6102	Per Note 3
CTE by TMA	ASTM E228/E831	Per Note 4
Glass Transition Temperature, Tg by DMA flexural loading	Dry and Wet ASTM D7028	1 Dry, 1 Wet (Note 2 & 3)
Thermal Conductivity	ASTM E1530	Per Note 4
Specific Heat	ASTM E1269	Per Note 4
Surface Resistivity	ASTM D257	Per Note 6
Flammability (Heat Release) Heat Release Peak	FAR 25.853 (D) Appendix F, Part IV	Per Note 5
Flammability (Heat Release) Drip Time	FAR 25.853 (D) Appendix F, Part IV	Per Note 5
Flammability (Vertical Burn) Extinguishing Time	FAR 25.853 (A), Appendix F, Part I, (a), 1, (i): 60 sec	Per Note 5
Flammability (Vertical Burn) Burn Length	FAR 25.853 (A), Appendix F, Part I, (a), 1, (i): 60 sec	Per Note 5
NBS Smoke Density	FAR 25.853 (D), Appendix F, PART V	Per Note 5

Table 1-3: Physical Testing Matrix

Notes:

- (1) Where the applicable standard allowed variations in specimen form or test method, the specific parameters to are specified in the test work instructions and reported in the final test report.
- (2) Minimum total of 24 dry and 24 wet for each material system.
- (3) Test first specimen of each batch, machine, and build orientation. Example: Test first specimens of the XY orientation for Batch A, Machine 1. Then test the first specimen of the XY orientation for Batch A, Machine 2. Continue in this manner through all orientation, machine, and batch combinations.
- (4) Minimum of one specimen per batch and build orientation. Only one build location is required.
- (5) Minimum of 3 specimens per build orientation. Only one build location is required.
- (6) Data provided with each lot of material per Stratasyss CoC.

1.4.5 Environmental Conditioning

The following tests were performed by the NIAR Composites Laboratory under the supervision of NCAMP.

Specimen dimensions were taken before moisture conditioning.

Test environments are defined as:

CTA	= -95°F±5°F, Cold Temperature Ambient
RTA	= 70°F±10°F, Room Temperature Ambient
RTW	= 70°F±10°F, Room Temperature Wet
ETA	= 250°F±5°F, Elevated Temperature Ambient
ETW	= 180°F±5°F, Elevated Temperature Wet

Within each test method and test environment, the failure mode was evaluated immediately after each test by an NCAMP staff engineer or NCAMP AER. In cases where excessive deformation occurred (such as compression), an appropriate failure mode may not have been obtained. All tested specimens were digitally photographed after each test in order to pictorially document failure modes.

No drying was necessary for Cold, Elevated, or Room Temperature ambient testing. Ambient laboratory condition is defined as 70°F±10°F with less than 60% relative humidity. If temperature and humidity conditions were exceeding the limits, an NCAMP representative was responsible to record and document them.

For wet conditioning, specimens were conditioned to equilibrium at 160°F±5°F and 85% ± 5%. Effective moisture equilibrium was achieved when the average moisture content of the traveler specimen changed by less than 0.02% for two consecutive readings which are 7 ± 0.5 days apart and may be expressed by:

$$\frac{W_i - W_{i-1}}{W_b} < 0.0002$$

Where:

W_i	= weight at current time
W_{i-1}	= weight at previous time
W_b	= baseline weight prior to conditioning

When representative specimens could not be measured to determine the moisture content (due to size), traveler coupons of at least 1" by 1" by specimen thickness and weighing at least 15 grams were used to establish weight gain measurements. If the specimens or traveler coupons pass the criteria for two consecutive readings which are 7 ± 0.5 days apart, the specimens were kept in the environmental chamber for up to an additional 60 days. Alternatively, the specimens may have been removed from the environmental chamber and placed in a sealed plastic bag along with a moist cotton towel for a maximum of 14 days until mechanical testing. Strain-gaged specimens were removed from the controlled environment for a maximum of 2 hours for application of gages in ambient laboratory conditions.

1.4.6 Non-ambient Testing

The chamber was of adequate size so that all test fixtures and load frame grips were contained within the chamber. For elevated temperature testing, the temperature chamber, test fixture, and grips were preheated to the specified temperature. Each specimen was heated to the required test temperature as verified by a thermocouple in direct contact with and taped to the specimen gage section. The heat-up time of the specimen did not exceed 5_{-0}^{+1} minutes, unless otherwise specified in individual test summary sheets. During the test, the temperature, as measured on the specimen, was within $\pm 5^{\circ}\text{F}$ of the required test temperature.

For subzero temperature testing, each specimen was cooled to the required test temperature as verified by a thermocouple in direct contact with and taped to the specimen gage section. The test started 5_{-0}^{+1} minutes after the specimen reached the test temperature. During the test, the temperature, as measured on the specimen, was within $\pm 5^{\circ}\text{F}$ of the required test temperature.

For wet specimens, the moisture loss was determined by subjecting representative specimens to the same amount of time required to heat-up and fail the specimens. For filled-hole or bearing specimens, fasteners were removed prior to conducting moisture loss measurements. A minimum of one specimen or representative coupon was used to measure the moisture loss for every combination of test temperature and print orientation.

1.4.7 Fluid Sensitivity Screening

Table 1-4 lists the requirements for fluid sensitivity screening. ASTM D638 Type 1 tension testing were dried prior to testing the specimens at $250^{\circ}\text{F}\pm 5^{\circ}\text{F}$ for 24 hours minimum before being subjected to the conditions indicated. Five replicates per fluid from one AM material batch and only one machine was subjected to this test. All specimens were printed in the XY orientation with one specimen from each of the five build locations (specimen 1 corresponds with build location 1, specimen 2 corresponds with build location 2, specimen 3 corresponds with build location 3, specimen 4 corresponds with build location 4, and specimen 5 corresponds with build location 5).

Specimens were cleaned with a dry towel prior to the tests. In addition to tension strength, load versus displacement curves were plotted to aid in the identification of polymer softening. Since load versus displacement curves are influenced by test machine and fixture compliance, all the tests were performed with the identical machine and fixture, through a single setup. Experience suggests that each AM material may have different fluids that are detrimental to its mechanical property capability. Should screening tests for fluid sensitivity indicate this to be the case, further testing of a particular solution may or may not be needed to confirm the detrimental effect. For results, please refer to table 2-2.

Extended Contact:	Exposure	Test Condition	Code
100 Low Lead Aviation Fuel (ASTM D910)	90 days min. @ 70°F±10°F	70°F	TFS11RT
	90 days min. @ 70°F±10°F	180°F	TFS11ET
ASTM D1655 Jet A Fuel (other jet fuel may be used but its type must be reported)	90 days min. @ 70°F±10°F	70°F	TFS12RT
	90 days min. @ 70°F±10°F	180°F	TFS12ET
MIL-PRF-5606 Hydraulic Oil	90 days min. @ 70°F±10°F	70°F	TFS13RT
	90 days min. @ 70°F±10°F	180°F	TFS13ET
MIL-PRF-83282 Hydraulic Oil	90 days min. @ 70°F±10°F	70°F	TFS14RT
	90 days min. @ 70°F±10°F	180°F	TFS14ET
MIL-PRF-7808 Engine Oil	90 days min. @ 70°F±10°F	70°F	TFS15RT
	90 days min. @ 70°F±10°F	180°F	TFS15ET
MIL-PRF-23699, Class STD Engine Oil	90 days min. @ 70°F±10°F	70°F	TFS16RT
	90 days min. @ 70°F±10°F	180°F	TFS16ET
Sea Water (ASTM D1141 or equiv.)	90 days min. @ 70°F±10°F	70°F	TFS17RT
	90 days min. @ 70°F±10°F	180°F	TFS17ET
Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	90 days min. @ 70°F±10°F	70°F	TFS18RT
	90 days min. @ 70°F±10°F	180°F	TFS18ET
50% Water with 50% Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	90 days min. @ 70°F±10°F	70°F	TFS19RT
	90 days min. @ 70°F±10°F	180°F	TFS19ET
Short Duration Contact:			
MEK washing fluid. ASTM D740	90 minutes min. @ 70°F±10°F	70°F	TFS21RT
	90 minutes min. @ 70°F±10°F	180°F	TFS21ET
Polypropylene Glycol Deicer (Type I) SAE AMS 1424	90 minutes min. @ 70°F±10°F	70°F	TFS22RT
	90 minutes min. @ 70°F±10°F	180°F	TFS22ET
Isopropyl Alcohol Deicing Agent (TT-I-735)	48±4 hours @70°F±10°F	70°F	TFS23RT
	48±4 hours @70°F±10°F	180°F	TFS23ET
Control Tests:			
Distilled Water	90 days min. at 70°F±10°F	70°F	TFS31RT
	90 days min. at 70°F±10°F	180°F	TFS31ET
Dry	Dry per section 6.1 of NTP	70°F	TFS32RT
	Dry per section 6.1 of NTP	180°F	TFS32ET
85% Relative Humidity	Per section 6.1 of NTP	70°F	TFS33RT
	Per section 6.1 of NTP	180°F	TFS33ET

Table 1-4: Fluid Sensitivity Matrix

1.4.8 Inspection Verification

The qualification specimens have been fabricated according to the requirements of the test plan and conformed by an NCAMP AIR. The test specimens and test setup have also been conformed by an NCAMP AIR.

Testing was witnessed by NCAMP. Test setup and witnessing was delegated to an NCAMP AER. Mechanical testing was carried out at the National Institute for Aviation Research, Wichita State University. The inspection documentation, with required approval signatures, are stored in hard copy as well as electronically.

1.4.9 Material Pedigree Information

The AM Data Collection Template includes the material pedigree information required, such as material and batch/lot information, as well as specimen fabrication record, environmental conditioning, test equipment, and test procedures. This template is in Microsoft Excel file format.

2. Test Results

2.1 Lamina and Laminate Test Summary

Additively Manufactured Material: Stratasys Antero 840 Material Specification: NMS 840/1 Process Specification: NPS 88400 Tg(dry): 307.0 °F Tg(wet): 291.4 °F Tg Method: ASTM D7028 Resin: PEKK Filler: 3% by Weight												Stratasys Antero 840 Properties Summary								
Date of testing November 2024 - October 2025 Date of data submittal October 1, 2025 Date of coupon manufacture September 2024 - April 2025		Mean Values of Mechanical Property Summary Data Data was not normalized and reported as-measured only																		
	XY Direction					XZ Direction					ZX Direction					ZX45 Direction				
	CTA	RTA	RTW	ETA	ETW	CTA	RTA	RTW	ETA	ETW	CTA	RTA	RTW	ETA	ETW	CTA	RTA	RTW	ETA	ETW
Tension 0.2% Offset Yield Strength [ksi]	8.885	7.754	7.175	5.305	6.019	10.28	9.295	9.011	6.788	7.613	8.523	7.861	7.844	5.289	6.263	8.772	7.975	7.884	5.500	6.345
Tension Strength [ksi]	14.76	11.03	10.61	5.918	7.411	17.24	13.48	13.34	7.413	9.386	8.274	7.807	9.537	5.859	7.303	10.73	11.16	11.48	5.972	7.590
Tension Modulus [Msi]	0.4979	0.4416	0.4404	0.4221	0.4263	0.544	0.4850	0.49	0.45	0.4649	0.4868	0.4356	0.4487	0.4027	0.4128	0.4925	0.4385	0.4475	0.4077	0.4146
Compression 0.2% Offset Strength [ksi]	12.91	11.64	10.36	7.318	8.965	13.27	11.63	11.16	7.353	8.911	13.50	11.66	11.44	7.168	8.955	13.23	11.66	11.05	6.897	8.712
Compression 1% Offset Strength [ksi]	19.79	13.94	13.69	7.776	9.931	20.20	14.04	13.99	7.840	9.829	20.32	13.94	14.23	--	10.07	19.84	13.68	13.59	7.265	9.615
Compression 2% Offset Strength [ksi]	22.89	14.08	13.95	7.718	--	23.11	14.17	14.07	7.788	--	23.04	14.49	14.23	--	--	22.78	14.12	13.41	7.399	9.669
Compression Strength [ksi]	23.55	14.52	14.44	7.977	10.21	23.48	14.62	14.38	8.026	10.16	23.89	14.61	14.69	7.890	10.24	23.19	14.40	14.18	7.320	9.772
Compression Modulus [Msi]	0.5850	0.4918	0.5037	0.4667	0.4981	0.5757	0.5075	0.4887	0.4637	0.5018	0.5619	0.4679	0.4992	0.4262	0.4756	0.5590	0.4848	0.4789	0.4364	0.4737
Flex 0.2% Offset Yield Strength [ksi]	17.36	14.21	--	9.919	11.65	22.24	17.95	--	11.80	14.72	17.78	14.79	--	9.279	11.51	15.98	14.32	--	8.901	10.91
Flexural Strength [ksi]	24.86	18.70	--	11.40	14.13	30.88	22.38	--	12.42	16.10	12.65	13.58	--	10.11	12.84	13.57	15.58	--	9.837	12.61
Flex Modulus [Msi]	0.4982	0.4615	--	0.3817	0.4055	0.6076	0.5448	--	0.4771	0.5022	0.5111	0.4604	--	0.3779	0.4099	0.4786	0.4359	--	0.3494	0.3799
Rail Shear 0.2% Strength [ksi]	5.429	4.493	4.415	3.538	4.027	5.480	4.649	4.617	3.277	3.905	5.229	4.535	4.489	3.109	3.731	5.400	4.713	4.704	3.335	3.926
Rail Shear 5% Strength [ksi]	8.496	7.552	7.206	3.883	5.393	8.712	7.152	7.313	3.535	4.988	8.576	6.999	7.149	3.410	4.820	8.795	7.405	7.545	3.551	5.252
Rail Shear Max Strength [ksi]	8.406	7.857	7.806	4.303	5.628	8.456	7.517	7.698	3.881	5.176	8.715	7.458	7.445	3.636	4.894	10.03	8.060	7.984	4.042	5.391
Rail Shear Modulus [ksi]	0.2135	0.1913	0.1891	0.1988	0.1885	0.2142	0.1913	0.1964	0.1916	0.1882	0.2089	0.1869	0.1934	0.1842	0.1832	0.2138	0.1945	0.2003	0.1950	0.1921
OHT Strength [ksi]	7.505	8.398	--	--	5.619	6.188	9.797	--	--	7.418	4.364	4.834	--	--	5.079	5.827	7.835	--	--	6.280
FHT Strength [ksi]	11.30	8.661	--	--	6.008	12.58	11.11	--	--	7.890	6.336	6.456	--	--	5.936	9.086	9.210	--	--	6.888
SSB 2% Offset Strength [ksi]	--	23.29	--	--	19.90	--	26.89	--	--	22.36	--	25.44	--	--	21.24	--	26.55	--	--	21.57
SSB Ultimate Strength [ksi]	--	33.02	--	--	24.15	--	31.60	--	--	24.66	--	26.98	--	--	23.89	--	34.87	--	--	24.74
SSB Stiffness [Msi]	--	0.1419	--	--	0.1551	--	0.1659	--	--	0.1740	--	0.1528	--	--	0.1469	--	0.1579	--	--	0.1406

*All data was not normalized and reported as average measured only

Table 2-1: Mechanical Testing Summary Data

2.2 Fluid Sensitivity Test Summary

2.2.1 Tension Fluid Sensitivity Test (TFS)

Fluid Sensitivity Screening
Tension Strength Properties (TFS)--RT (70°F) Strength
 Stratasys Additively Manufactured Antero(R) 840 CN03

Exposure	Type of Fluid	Fluid Code	Average Strength (ksi)
90 days min @ 70°F ± 10F	100 Low Lead Aviation Fuel (ASTM D910)	FS11RT	9.581
	ASTM D1655 Jet A Fuel	FS12RT	8.328
	MIL-PRF-5606 Hydraulic Oil	FS13RT	10.67
	MIL-PRF-83282 Hydraulic Oil	FS14RT	10.67
	MIL-PRF-7808 Engine Oil	FS15RT	10.73
	MIL-PRF-23699 Class STD Engine Oil	FS16RT	10.85
	Sea Water ASTM D1141	FS17RT	10.17
	Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	FS18RT	8.951
	50% Water with 50% Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	FS19RT	8.476
	Distilled Water	FS31RT	10.22
	90 mins @ 70°F ± 10F	MEK washing fluid. ASTM D740	FS21RT
Polypropylene Glycol Deicer (Type I) SAE AMS 1424		FS22RT	10.47
48±4 hours @70°F±10°F	Isopropyl Alcohol Deicing Agent (TT-I-735)	FS23RT	9.120
Per section 6.1 Test Plan	Dry	FS32RT	11.09
	85% Relative Humidity	FS33RT	10.38

Table 2-2: Tension Fluid Sensitivity Summary Data – RT (70°F)

**Fluid Sensitivity Screening
Tension Strength Properties (TFS)--ET (180°F) Strength**

Stratasys Additively Manufactured Antero(R) 840 CN03

Exposure	Type of Fluid	Fluid Code	Average Strength (ksi)
90 days min @ 70°F ± 10F	100 Low Lead Aviation Fuel (ASTM D910)	FS11ET	7.628
	ASTM D1655 Jet A Fuel	FS12ET	5.539
	MIL-PRF-5606 Hydraulic Oil	FS13ET	5.950
	MIL-PRF-83282 Hydraulic Oil	FS14ET	6.106
	MIL-PRF-7808 Engine Oil	FS15ET	5.468
	MIL-PRF-23699 Class STD Engine Oil	FS16ET	6.410
	Sea Water ASTM D1141	FS17ET	6.983
	Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	FS18ET	4.421
	50% Water with 50% Skydrol LD-4 (SAE AS1241, Type IV,	FS19ET	4.215
	Distilled Water	FS31ET	7.001
90 mins @ 70°F ± 10F	MEK washing fluid. ASTM D740	FS21ET	8.065
	Polypropylene Glycol Deicer (Type I) SAE AMS 1424	FS22ET	6.588
48±4 hours @70°F±10°F	Isopropyl Alcohol Deicing Agent (TT-I-735)	FS23ET	8.026
Per section 6.1 Test Plan	Dry	FS32ET	8.124
	85% Relative Humidity	FS33ET	7.238

Table 2-3: Tension Fluid Sensitivity Summary Data – ET (180°F)

2.3 Physical Test Summary

2.3.1 DMA

DMA Results Summary				
Additively Manufactured Antero(R) 840CN03				
Qualification				

Test Temperature	Mean			
	Onset Storage Modulus		Peak of Tangent Delta	
	T _g [°C]	T _g [°F]	T _g [°C]	T _g [°F]
DMA Tg (Dry)	152.8	307.0	160.0	319.9
DMA Tg (Wet)	144.1	291.4	157.2	315.0

Table 2-4: DMA Summary Data

2.3.2 TMA

TMA Results Summary		
Additively Manufactured Antero(R)		
840CN03 Qualification		
Test Method	Coefficient of Thermal	
	α [$\mu\text{m}/(\text{m}\cdot^\circ\text{C})$]	α [$\mu\text{in}/(\text{in}\cdot^\circ\text{F})$]
	T _g [°C]	T _g [°F]
TMA	53.14	29.52

Table 2-5: TMA Summary Data

2.4 Individual Test Summaries

2.4.1 XY Tension Properties (XY-T)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 638-22 Modulus calculation: 1000-3000 microstrain Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D638, Dogbone Tension Additively Manufactured Antero(R) 840CN03 Build Orientation: XY				
	CTA	RTA	RTW	ETA	ETW	
Test Temperature [°F]	-95	70	70	250	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F,85%		160 °F,85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-XY-T-XX-CTA-1	XXX-X-MX-XY-T-XX-RTA-1	XXX-X-MX-XY-T-XX-RTW-1	XXX-X-MX-XY-T-XX-ETA-1	XXX-X-MX-XY-T-XX-ETW-1	
	Measured	Measured	Measured	Measured	Measured	
XYT 0.2% Offset Yield Strength [ksi]	Mean	8.885	7.754	7.175	5.305	6.019
	Minimum	7.595	6.686	6.890	4.799	5.272
	Maximum	9.982	8.710	7.406	6.034	6.787
	C.V.(%)	7.187	6.804	2.455	6.067	6.904
	No. Specimens	31	32	8	32	32
No. AM Batch	4	4	1	4	4	
XYT Strength [ksi]	Mean	14.76	11.03	10.61	5.918	7.411
	Minimum	11.11	8.998	10.25	5.517	6.821
	Maximum	17.32	12.00	11.01	6.616	8.161
	C.V.(%)	10.60	6.272	3.005	4.380	5.063
	No. Specimens	32	32	8	32	32
No. AM Batch	4	4	1	4	4	
XYT Modulus [Msi]	Mean	0.4979	0.4416	0.4404	0.4221	0.4263
	Minimum	0.4591	0.4091	0.4270	0.4035	0.3717
	Maximum	0.5336	0.4663	0.4493	0.4487	0.4530
	C.V.(%)	3.234	3.514	1.964	2.592	3.646
	No. Specimens	32	32	8	32	32
No. AM Batch	4	4	1	4	4	

2.4.2 XZ Tension Properties (XZ-T)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 638-22 Modulus calculation: 1000-3000 microstrain Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D638, Dogbone Tension Additively Manufactured Antero(R) 840CN03 Build Orientation: XZ				
	CTA	RTA	RTW	ETA	ETW	
Test Temperature [°F]	-95	70	70	250	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%		160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-XZ-T-XX-CTA-1	XXX-X-MX-XZ-T-XX-RTA-1	XXX-X-MX-XZ-T-XX-RTW-1	XXX-X-MX-XZ-T-XX-ETA-1	XXX-X-MX-XZ-T-XX-ETW-1	
	Measured	Measured	Measured	Measured	Measured	
XZT 0.2% Offset Yield Strength [ksi]	Mean	10.28	9.295	9.011	6.788	7.613
	Minimum	8.727	11.21	8.815	6.451	6.908
	Maximum	11.56	14.25	9.199	7.426	7.971
	C.V.(%)	7.866	3.331	1.436	3.750	3.072
	No. Specimens	31	32	8	32	32
No. AM Batch	4	4	1	4	4	
XZT Strength [ksi]	Mean	17.24	13.48	13.34	7.413	9.386
	Minimum	12.60	11.21	13.13	7.025	8.223
	Maximum	19.33	14.25	13.68	8.115	9.917
	C.V.(%)	10.57	3.331	1.405	3.750	5.341
	No. Specimens	32	32	8	32	32
No. AM Batch	4	4	1	4	4	
XZT Modulus [Msi]	Mean	0.5437	0.4850	0.4892	0.4547	0.4649
	Minimum	0.5108	0.4566	0.4804	0.4397	0.4211
	Maximum	0.5685	0.5006	0.4990	0.4706	0.4831
	C.V.(%)	2.599	2.290	1.389	1.675	3.234
	No. Specimens	32	32	8	32	32
No. AM Batch	4	4	1	4	4	

2.4.3 ZX Tension Properties (ZX-T)

Material: Additively Manufactured Antero(R) 840CN03		ASTM D638, Dogbone Tension Additively Manufactured Antero(R) 840CN03 Build Orientation: ZX			
Test method: ASTM D 638-22					
Modulus calculation: 1000-3000 microstrain					
Raster: +/-45					
Machine Model: Stratasys Inc. Fortus 900™ Machine					
	CTA	RTA	RTW	ETA	ETW
Test Temperature [°F]	-95	70	70	250	180
Moisture Conditioning	Ambient	Ambient	Equilibrium	Ambient	Equilibrium
Equilibrium at T, RH			160 °F,85%		160 °F,85%
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-ZX-T-XX-CTA-1	XXX-X-MX-ZX-T-XX-RTA-1	XXX-X-MX-ZX-T-XX-RTW-1	XXX-X-MX-ZX-T-XX-ETA-1	XXX-X-MX-ZX-T-XX-ETW-1
	Measured	Measured	Measured	Measured	Measured
ZXT 0.2% Offset Yield Strength [ksi]	8.523	7.861	7.844	5.289	6.263
Minimum	7.530	7.204	7.502	4.947	5.899
Maximum	9.290	8.303	8.122	5.784	6.764
C.V.(%)	7.099	3.461	2.513	4.309	4.157
No. Specimens	14	15	8	32	29
No. AM Batch	4	4	1	4	4
ZXT Strength [ksi]	8.274	7.807	9.537	5.859	7.303
Minimum	5.948	6.092	8.003	5.367	5.622
Maximum	10.19	10.04	10.88	6.412	8.360
C.V.(%)	13.33	11.29	9.806	4.979	9.051
No. Specimens	32	32	8	32	32
No. AM Batch	4	4	1	4	4
ZXT Modulus [Msi]	0.4868	0.4356	0.4487	0.4027	0.4128
Minimum	0.4515	0.4005	0.4299	0.3785	0.3777
Maximum	0.5220	0.4536	0.4808	0.4398	0.4295
C.V.(%)	3.838	3.191	3.609	2.819	3.131
No. Specimens	32	32	8	32	32
No. AM Batch	4	4	1	4	4

2.4.4 Z45 Tension Properties (Z45-T)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 638-22 Modulus calculation: 1000-3000 microstrain Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D638, Dogbone Tension Additively Manufactured Antero(R) 840CN03 Build Orientation: Z45				
	CTA	RTA	RTW	ETA	ETW	
Test Temperature [°F]	-95	70	70	250	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%		160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-Z45-T-XX-CTA-1	XXX-X-MX-Z45-T-XX-RTA-1	XXX-X-MX-Z45-T-XX-RTW-1	XXX-X-MX-Z45-T-XX-ETA-1	XXX-X-MX-Z45-T-XX-ETW-1	
	Measured	Measured	Measured	Measured	Measured	
Z45T 0.2% Offset Yield Strength [ksi]	8.772	7.975	7.884	5.500	6.345	
Minimum	7.726	7.330	7.601	5.060	5.856	
Maximum	10.29	8.750	8.067	6.105	6.921	
C.V.(%)	7.134	4.434	2.221	5.157	4.642	
No. Specimens	29	32	8	32	32	
No. AM Batch	4	4	1	4	4	
Z45T Strength [ksi]	10.73	11.16	11.48	5.972	7.590	
Minimum	8.246	8.377	11.10	5.564	6.916	
Maximum	14.22	12.07	11.72	6.518	8.404	
C.V.(%)	15.74	6.769	2.086	5.070	5.168	
No. Specimens	32	32	8	32	32	
No. AM Batch	4	4	1	4	4	
Z45T Modulus [Msi]	0.4925	0.4385	0.4475	0.4077	0.4146	
Minimum	0.4530	0.4025	0.4303	0.3879	0.3845	
Maximum	0.5351	0.4523	0.4574	0.4366	0.4311	
C.V.(%)	3.469	2.915	1.934	2.442	2.907	
No. Specimens	31	32	8	32	32	
No. AM Batch	4	4	1	4	4	

2.4.5 XY Compression Prism Properties (XY-C)

Material:		Additively Manufactured Antero(R) 840CN03				ASTM D695, Compression Prism Additively Manufactured Antero(R) 840CN03 Build Orientation: XY
Test method:		ASTM D 695-23				
Modulus calculation:		2000-6000 microstrain				
Raster:		+/-45				
Machine Model:		Stratasys Inc. Fortus 900™ Machine				
		CTA	RTA	RTW	ETA	ETW
Test Temperature [°F]		-95	70	70	250	180
Moisture Conditioning		Ambient	Ambient	Equilibrium	Ambient	Equilibrium
Equilibrium at T, RH				160 °F, 85%		160 °F, 85%
Source code: NTPAM8400Q1-STR-840CN-		XXX-X-MX-XY-C-XX-CTA-1	XXX-X-MX-XY-C-XX-RTA-1	XXX-X-MX-XY-C-XX-RTW-1	XXX-X-MX-XY-C-XX-ETA-1	XXX-X-MX-XY-C-XX-ETW-1
		Measured	Measured	Measured	Measured	Measured
XYC 0.2% Offset Strength [ksi]	Mean	12.91	11.64	10.36	7.318	8.965
	Minimum	9.816	9.259	7.791	6.563	7.895
	Maximum	16.18	14.42	12.20	8.047	9.818
	C.V.(%)	10.29	14.07	13.16	5.249	6.010
	No. Specimens	32	32	8	32	32
	No. AM Batch	4	4	1	4	4
XYC 1% Offset Strength [ksi]	Mean	19.79	13.94	13.69	7.776	9.931
	Minimum	17.90	12.84	12.80	7.640	9.330
	Maximum	22.00	15.09	14.81	7.911	10.24
	C.V.(%)	4.846	4.482	5.621	1.742	3.025
	No. Specimens	31	32	7	3	8
	No. AM Batch	4	4	1	4	4
XYC 2% Offset Strength [ksi]	Mean	22.89	14.08	13.95	7.718	
	Minimum	21.27	13.63	13.69	7.549	
	Maximum	24.15	14.42	14.25	7.862	
	C.V.(%)	3.878	1.897	1.680	2.046	
	No. Specimens	19	14	4	3	
	No. AM Batch	4	4	1	4	
XYC Ultimate Compressive Strength [ksi]	Mean	23.55	14.52	14.44	7.977	10.21
	Minimum	22.18	13.72	13.74	7.479	9.064
	Maximum	25.03	15.49	15.07	8.755	10.99
	C.V.(%)	3.258	3.785	3.386	4.023	4.865
	No. Specimens	32	32	8	32	32
	No. AM Batch	4	4	1	4	4
XYC Modulus [Msi]	Mean	0.5850	0.4918	0.5037	0.4667	0.4981
	Minimum	0.5280	0.4633	0.4347	0.4346	0.4517
	Maximum	0.6718	0.5368	0.6100	0.5117	0.5800
	C.V.(%)	5.612	3.728	11.50	4.393	6.45
	No. Specimens	32	32	8	32	31
	No. AM Batch	4	4	1	4	4

2.4.6 XZ Compression Prism Properties (XZ-C)

Material:		ASTM D695, Compression Prism				
Test method:		Additively Manufactured Antero(R) 840CN03				
Modulus calculation:		Build Orientation: XZ				
Raster:						
Machine Model:		Stratasys Inc. Fortus 900™ Machine				
	CTA	RTA	RTW	ETA	ETW	
Test Temperature [°F]	-95	70	70	250	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%		160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-XZ-C-XX-CTA-1	XXX-X-MX-XZ-C-XX-RTA-1	XXX-X-MX-XZ-C-XX-RTW-1	XXX-X-MX-XZ-C-XX-ETA-1	XXX-X-MX-XZ-C-XX-ETW-1	
	Measured	Measured	Measured	Measured	Measured	
XZC 0.2% Offset Strength [ksi]	Mean	13.27	11.63	11.16	7.353	8.911
	Minimum	11.41	8.867	9.910	6.458	7.003
	Maximum	15.53	14.67	12.00	8.086	10.88
	C.V.(%)	7.217	15.71	6.192	4.988	8.826
	No. Specimens	31	32	8	32	32
	No. AM Batch	4	4	1	4	4
XZC 1% Offset Strength [ksi]	Mean	20.20	14.04	13.99	7.840	9.829
	Minimum	18.44	12.84	13.19	7.772	8.679
	Maximum	22.32	15.51	14.83	7.907	10.51
	C.V.(%)	4.946	4.63	4.703	1.222	6.412
	No. Specimens	28	32	8	2	9
	No. AM Batch	4	4	1	4	4
XZC 2% Offset Strength [ksi]	Mean	23.11	14.17	14.07	7.788	
	Minimum	22.19	13.69	13.72	7.742	
	Maximum	24.45	14.71	14.91	7.835	
	C.V.(%)	2.828	2.772	3.971	0.8452	
	No. Specimens	14	10	4	2	
	No. AM Batch	4	4	1	4	
XZC Ultimate Compressive Strength [ksi]	Mean	23.48	14.62	14.38	8.026	10.16
	Minimum	22.30	13.88	13.73	7.339	9.136
	Maximum	25.25	15.88	15.31	8.747	10.91
	C.V.(%)	3.341	3.636	4.011	3.947	5.195
	No. Specimens	32	32	8	32	32
	No. AM Batch	4	4	1	4	4
XZC Modulus [Msi]	Mean	0.5757	0.5075	0.4887	0.4637	0.5018
	Minimum	0.5256	0.4741	0.4482	0.4389	0.4328
	Maximum	0.6387	0.5757	0.5271	0.4953	0.6377
	C.V.(%)	5.238	5.027	5.268	3.207	9.104
	No. Specimens	32	32	8	32	32
	No. AM Batch	4	4	1	4	4

2.4.7 ZX Compression Prism Properties (ZX-C)

Material:		Additively Manufactured Antero(R) 840CN03				ASTM D695, Compression Prism Additively Manufactured Antero(R) 840CN03 Build Orientation: ZX
Test method:		ASTM D 695-23				
Modulus calculation:		2000-6000 microstrain				
Raster:		+/-45				
Machine Model:		Stratasys Inc. Fortus 900™ Machine				
		CTA	RTA	RTW	ETA	ETW
Test Temperature [°F]		-95	70	70	250	180
Moisture Conditioning		Ambient	Ambient	Equilibrium	Ambient	Equilibrium
Equilibrium at T, RH				160 °F, 85%		160 °F, 85%
Source code:	NTPAM8400Q1-STR-840CN-	XXX-X-MX-ZX-C-XX-CTA-1	XXX-X-MX-ZX-C-XX-RTA-1	XXX-X-MX-ZX-C-XX-RTW-1	XXX-X-MX-ZX-C-XX-ETA-1	XXX-X-MX-ZX-C-XX-ETW-1
		Measured	Measured	Measured	Measured	Measured
ZXC 0.2% Offset Strength [ksi]	Mean	13.50	11.66	11.44	7.168	8.955
	Minimum	12.11	9.013	10.25	6.465	6.912
	Maximum	14.80	15.11	13.36	8.024	9.988
	C.V.(%)	5.935	15.84	10.59	6.588	6.543
	No. Specimens	32	32	8	32	32
	No. AM Batch	4	4	1	4	4
ZXC 1% Offset Strength [ksi]	Mean	20.32	13.94	14.23		10.07
	Minimum	19.31	13.00	13.44		8.824
	Maximum	21.64	15.32	15.08		10.63
	C.V.(%)	3.600	4.085	4.791		5.558
	No. Specimens	32	32	8		8
	No. AM Batch	4	4	1		4
ZXC 2% Offset Strength [ksi]	Mean	23.04	14.49	14.23		
	Minimum	21.91	14.01	14.18		
	Maximum	24.16	15.65	14.31		
	C.V.(%)	3.255	2.969	0.4664		
	No. Specimens	16	25	3		
	No. AM Batch	4	4	1		
ZXC Ultimate Compressive Strength [ksi]	Mean	23.89	14.61	14.69	7.890	10.24
	Minimum	22.84	14.02	14.22	7.318	8.996
	Maximum	25.63	15.87	15.43	8.659	10.83
	C.V.(%)	2.612	3.318	3.407	4.757	4.808
	No. Specimens	32	32	8	32	32
	No. AM Batch	4	4	1	4	4
ZXC Modulus [Msi]	Mean	0.5619	0.4679	0.4992	0.4262	0.4756
	Minimum	0.5255	0.4225	0.4780	0.3793	0.4179
	Maximum	0.6033	0.5211	0.5207	0.4624	0.5696
	C.V.(%)	3.423	4.328	3.323	5.217	7.633
	No. Specimens	32	32	8	32	32
	No. AM Batch	4	4	1	4	4

2.4.8 Z45 Compression Prism Properties (Z45-C)

Material:		Additively Manufactured Antero(R) 840CN03				ASTM D695, Compression Prism Additively Manufactured Antero(R) 840CN03 Build Orientation: Z45
Test method:		ASTM D 695-23				
Modulus calculation:		2000-6000 microstrain				
Raster:		+/-45				
Machine Model:		Stratasys Inc. Fortus 900™ Machine				
		CTA	RTA	RTW	ETA	ETW
Test Temperature [°F]		-95	70	70	250	180
Moisture Conditioning		Ambient	Ambient	Equilibrium	Ambient	Equilibrium
Equilibrium at T, RH				160 °F, 85%		160 °F, 85%
Source code: NTPAM8400Q1-STR-840CN-		XXX-X-MX-Z45-C-XX-CTA-1	XXX-X-MX-Z45-C-XX-RTA-1	XXX-X-MX-Z45-C-XX-RTW-1	XXX-X-MX-Z45-C-XX-ETA-1	XXX-X-MX-Z45-C-XX-ETW-1
		Measured	Measured	Measured	Measured	Measured
Z45C 0.2% Offset Strength [ksi]	Mean	13.23	11.66	11.05	6.897	8.712
	Minimum	11.31	9.507	9.566	5.918	7.146
	Maximum	17.95	14.45	11.79	7.871	9.982
	C.V.(%)	10.22	13.62	6.616	7.071	7.301
	No. Specimens	31	32	8	32	32
	No. AM Batch	4	4	1	4	4
Z45C 1% Offset Strength [ksi]	Mean	19.84	13.68	13.59	7.265	9.615
	Minimum	18.10	12.58	12.49	6.746	8.922
	Maximum	22.96	15.29	14.51	7.817	10.13
	C.V.(%)	6.639	5.570	5.708	4.195	3.621
	No. Specimens	26	32	8	10	22
	No. AM Batch	4	4	1	4	4
Z45C 2% Offset Strength [ksi]	Mean	22.78	14.12	13.41	7.399	9.669
	Minimum	21.11	13.27	13.13	7.043	9.057
	Maximum	24.43	15.18	13.65	7.896	10.14
	C.V.(%)	4.778	3.996	1.604	3.822	3.115
	No. Specimens	15	30	4	8	16
	No. AM Batch	4	4	1	4	4
Z45C Ultimate Compressive Strength [ksi]	Mean	23.19	14.40	14.18	7.320	9.772
	Minimum	21.08	13.71	13.68	6.549	8.550
	Maximum	24.70	15.60	14.86	7.940	10.44
	C.V.(%)	4.711	3.711	3.389	5.127	4.678
	No. Specimens	32	32	8	29	32
	No. AM Batch	4	4	1	4	4
Z45C Modulus [Msi]	Mean	0.5590	0.4848	0.4789	0.4364	0.4737
	Minimum	0.5079	0.4526	0.4277	0.4030	0.4074
	Maximum	0.5981	0.5390	0.5258	0.4659	0.5716
	C.V.(%)	4.3406	4.524	7.583	3.850	8.250
	No. Specimens	32	32	8	32	32
	No. AM Batch	4	4	1	4	4

2.4.9 XY Flex Proc B. Properties (XY-F)

Material: Additively Manufactured Antero(R) 840CN03		ASTM D790 Proc B, Flex Additively Manufactured Antero(R) 840CN03 Build Orientation: XY			
Modulus calculation: 5000-20000 microstrain					
Test method: ASTM D 790-17					
Raster: +/-45					
Machine Model: Stratasys Inc. Fortus 900™ Machine					
		CTA	RTA	ETA	ETW
Test Temperature [°F]		-95	70	250	180
Moisture Conditioning		Ambient	Ambient	Ambient	Equilibrium
Equilibrium at T, RH					160 °F,85%
Source code: NTPAM8400Q1-STR-840CN-		XXX-X-MX-XY-F-XX-CTA-1	XXX-X-MX-XY-F-XX-RTA-1	XXX-X-MX-XY-F-XX-ETA-1	XXX-X-MX-XY-F-XX-ETW-1
		Measured	Measured	Measured	Measured
XYF 0.2% Offset Yield Strength [ksi]	Mean	17.36	14.21	9.919	11.65
	Minimum	15.41	12.89	7.995	10.05
	Maximum	19.47	16.07	10.89	12.43
	C.V.(%)	5.590	5.957	7.973	4.376
	No. Specimens	32	32	32	32
	No. AM Batch	4	4	4	4
XYF Flexural Strength [ksi]	Mean	24.86	18.70	11.40	14.13
	Minimum	17.66	17.00	8.907	12.78
	Maximum	26.23	20.27	12.41	15.33
	C.V.(%)	6.596	5.050	8.289	4.192
	No. Specimens	32	32	32	32
	No. AM Batch	4	4	4	4
XYF Modulus [Msi]	Mean	0.4982	0.4615	0.3817	0.4055
	Minimum	0.4450	0.3988	0.3111	0.3572
	Maximum	0.5509	0.5229	0.4310	0.4568
	C.V.(%)	5.940	6.341	7.343	4.839
	No. Specimens	32	32	32	32
	No. AM Batch	4	4	4	4

2.4.10 XZ Flex Proc B. Properties (XZ-F)

Material: Additively Manufactured Antero(R) 840CN03		ASTM D790 Proc B, Flex Additively Manufactured Antero(R) 840CN03 Build Orientation: XZ			
Modulus calculation: 5000-20000 microstrain					
Test method: ASTM D 790-17					
Raster: +/-45					
Machine Model: Stratasys Inc. Fortus 900™ Machine					
	CTA	RTA	ETA	ETW	
Test Temperature [°F]	-95	70	250	180	
Moisture Conditioning	Ambient	Ambient	Ambient	Equilibrium	
Equilibrium at T, RH				160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-XZ-F-XX-CTA-1	XXX-X-MX-XZ-F-XX-RTA-1	XXX-X-MX-XZ-F-XX-ETA-1	XXX-X-MX-XZ-F-XX-ETW-1	
	Measured	Measured	Measured	Measured	
XZF 0.2% Offset Yield Strength [ksi]	Mean	22.24	17.95	11.80	14.72
	Minimum	20.85	16.44	9.644	11.28
	Maximum	24.84	19.76	12.57	15.93
	C.V.(%)	4.568	3.727	6.399	5.427
	No. Specimens	32	32	32	32
	No. AM Batch	4	4	4	4
XZF Flexural Strength [ksi]	Mean	30.88	22.38	12.42	16.10
	Minimum	29.21	20.76	10.35	12.75
	Maximum	33.88	24.08	13.42	16.88
	C.V.(%)	3.613	2.936	5.820	4.811
	No. Specimens	32	32	32	32
	No. AM Batch	4	4	4	4
XZF Modulus [Msi]	Mean	0.6076	0.5448	0.4771	0.5022
	Minimum	0.5789	0.5020	0.4055	0.3993
	Maximum	0.6429	0.5776	0.5039	0.5259
	C.V.(%)	2.830	2.946	5.312	4.759
	No. Specimens	32	32	32	32
	No. AM Batch	4	4	4	4

2.4.11 ZX Flex Proc. B Properties (ZX-F)

Material: Additively Manufactured Antero(R) 840CN03 Modulus calculation: 5000-20000 microstrain Test method: ASTM D 790-17 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D790 Proc B, Flex Additively Manufactured Antero(R) 840CN03 Build Orientation: ZX			
		CTA	RTA	ETA	ETW
Test Temperature [°F]		-95	70	250	180
Moisture Conditioning Equilibrium at T, RH		Ambient	Ambient	Ambient	Equilibrium 160 °F,85%
Source code: NTPAM8400Q1-STR-840CN-		XXX-X-MX-ZX-F-XX-CTA-1	XXX-X-MX-ZX-F-XX-RTA-1	XXX-X-MX-ZX-F-XX-ETA-1	XXX-X-MX-ZX-F-XX-ETW-1
		Measured	Measured	Measured	Measured
ZXF 0.2% Offset Yield Strength [ksi]	Mean	17.78	14.79	9.279	11.51
	Minimum	17.60	13.80	7.623	10.63
	Maximum	17.95	15.99	10.44	14.56
	C.V.(%)	1.405	3.729	7.065	5.863
	No. Specimens	2	14	32	32
	No. AM Batch	4	4	4	4
ZXF Flexural Strength [ksi]	Mean	12.65	13.58	10.11	12.84
	Minimum	7.556	8.402	8.180	11.67
	Maximum	19.34	17.59	11.47	15.95
	C.V.(%)	22.39	17.46	7.374	5.571
	No. Specimens	32	32	32	32
	No. AM Batch	4	4	4	4
ZXF Modulus [Msi]	Mean	0.5111	0.4604	0.3779	0.4099
	Minimum	0.4575	0.4194	0.3166	0.3729
	Maximum	0.5503	0.5044	0.4163	0.4901
	C.V.(%)	4.880	3.957	7.383	4.865
	No. Specimens	2	32	32	32
	No. AM Batch	4	4	4	4

2.4.12 Z45 Flex Proc. B Properties (Z45-F)

Material: Additively Manufactured Antero(R) 840CN03 Modulus calculation: 5000-20000 microstrain Test method: ASTM D 790-17 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D790 Proc B, Flex Additively Manufactured Antero(R) 840CN03 Build Orientation: Z45			
		CTA	RTA	ETA	ETW
Test Temperature [°F]		-95	70	250	180
Moisture Conditioning Equilibrium at T, RH		Ambient	Ambient	Ambient	Equilibrium 160 °F, 85%
Source code: NTPAM8400Q1-STR-840CN-		XXX-X-MX-Z45-F-XX-CTA-1	XXX-X-MX-Z45-F-XX-RTA-1	XXX-X-MX-Z45-F-XX-ETA-1	XXX-X-MX-Z45-F-XX-ETW-1
		Measured	Measured	Measured	Measured
Z45F 0.2% Offset Yield Strength [ksi]	Mean	15.98	14.32	8.901	10.91
	Minimum	14.40	11.87	7.292	9.951
	Maximum	17.04	15.67	10.08	12.27
	C.V.(%)	7.105	5.899	7.827	5.059
	No. Specimens	4	26	32	32
	No. AM Batch	4	4	4	4
Z45F Flexural Strength [ksi]	Mean	13.57	15.58	9.837	12.61
	Minimum	7.555	9.657	8.012	11.62
	Maximum	17.76	18.50	10.85	13.73
	C.V.(%)	18.48	13.86	7.559	4.213
	No. Specimens	32	32	32	32
	No. AM Batch	4	4	4	4
Z45F Modulus [Msi]	Mean	0.4786	0.4359	0.3494	0.3799
	Minimum	0.4321	0.3979	0.2880	0.3520
	Maximum	0.5309	0.4679	0.4113	0.4256
	C.V.(%)	5.478	3.990	8.564	4.516
	No. Specimens	32	32	32	32
	No. AM Batch	4	4	4	4

2.4.13 XY Rail Shear In-Plane Shear Properties (XY-RS)

Material:		Additively Manufactured Antero(R) 840CN03				ASTM D7078, Rail Shear Additively Manufactured Antero(R) 840CN03 Build Orientation: XY
Test method:		ASTM D 7078-20e1				
Modulus calculation:		2000-6000 microstrain				
Raster:		+/-45				
Machine Model:		Stratasys Inc. Fortus 900™ Machine				
		CTA	RTA	RTW	ETA	ETW
Test Temperature [°F]		-95	70	70	250	180
Moisture Conditioning Equilibrium at T, RH		Ambient	Ambient	Equilibrium 160 °F, 85%	Ambient	Equilibrium 160 °F, 85%
Source code: NTPAM8400Q1-STR-840CN-		XXX-X-MX-XY-RS-XX-CTA-1	XXX-X-MX-XY-RS-XX-RTA-1	XXX-X-MX-XY-RS-XX-RTW-1	XXX-X-MX-XY-RS-XX-ETA-1	XXX-X-MX-XY-RS-XX-ETW-1
		Measured	Measured	Measured	Measured	Measured
XYRS Shear Strength at 0.2% Offset [ksi]	Mean	5.429	4.493	4.415	3.538	4.027
	Minimum	4.599	3.281	4.319	3.191	3.785
	Maximum	6.075	4.915	4.550	3.860	4.278
	C.V.(%)	5.679	10.06	1.579	5.363	3.645
	No. Specimens	31	32	8	32	32
	No. AM Batch	4	4	1	4	4
XYRS Shear Strength at 5% Strain [ksi]	Mean	8.496	7.552	7.206	3.883	5.393
	Minimum	8.209	6.948	6.995	3.601	5.357
	Maximum	8.797	7.971	7.375	4.015	5.441
	C.V.(%)	2.491	4.630	1.814	4.254	0.6622
	No. Specimens	9	16	8	5	4
	No. AM Batch	4	4	1	4	4
XYRS Maximum Shear Strength [ksi]	Mean	8.406	7.857	7.806	4.303	5.628
	Minimum	5.640	6.031	7.601	3.841	5.344
	Maximum	11.77	8.501	8.042	4.691	5.975
	C.V.(%)	17.59	9.409	2.531	5.598	3.113
	No. Specimens	31	31	8	32	32
	No. AM Batch	4	4	1	4	4
XYRS Shear Modulus [Msi]	Mean	0.2135	0.1913	0.1891	0.1988	0.1885
	Minimum	0.1984	0.1462	0.1858	0.1767	0.1797
	Maximum	0.2357	0.2095	0.1928	0.2176	0.1992
	C.V.(%)	4.923	9.243	1.318	5.452	3.091
	No. Specimens	31	32	8	32	32
	No. AM Batch	4	4	1	4	4

2.4.14 XZ Rail Shear In-Plane Shear Properties (XZ-RS)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 7078-20e1 Modulus calculation: 2000-6000 microstrain Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D7078, Rail Shear Additively Manufactured Antero(R) 840CN03 Build Orientation: XZ				
	CTA	RTA	RTW	ETA	ETW	
Test Temperature [°F]	-95	70	70	250	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%		160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-XZ-RS-XX-CTA-1	XXX-X-MX-XZ-RS-XX-RTA-1	XXX-X-MX-XZ-RS-XX-RTW-1	XXX-X-MX-XZ-RS-XX-ETA-1	XXX-X-MX-XZ-RS-XX-ETW-1	
	Measured	Measured	Measured	Measured	Measured	
XZRS Shear Strength at 0.2% Offset [ksi]	5.480	4.649	4.617	3.277	3.905	
Mean	5.098	4.211	4.513	2.718	3.659	
Minimum	5.935	4.870	4.769	3.652	4.116	
Maximum	4.227	3.690	2.008	7.382	3.010	
C.V.(%)						
No. Specimens	28	32	8	32	32	
No. AM Batch	4	4	1	4	4	
XZRS Shear Strength at 5% Strain [ksi]	8.712	7.152	7.313	3.535	4.988	
Mean	8.478	6.871	7.050	3.309	4.814	
Minimum	8.902	7.349	7.574	3.812	5.059	
Maximum	1.559	2.410	2.674	4.789	1.611	
C.V.(%)						
No. Specimens	12	15	8	15	8	
No. AM Batch	4	4	1	4	4	
XZRS Maximum Shear Strength [ksi]	8.456	7.517	7.698	3.881	5.176	
Mean	6.279	6.148	7.336	3.417	4.893	
Minimum	9.925	7.900	8.026	4.226	5.474	
Maximum	12.80	5.750	2.937	6.596	2.983	
C.V.(%)						
No. Specimens	28	16	8	32	32	
No. AM Batch	4	4	1	4	4	
XZRS Shear Modulus [Msi]	0.2142	0.1913	0.1964	0.1916	0.1882	
Mean	0.2033	0.1800	0.1924	0.1763	0.1833	
Minimum	0.2300	0.2000	0.2009	0.2047	0.1956	
Maximum	3.070	3.164	1.844	4.413	1.570	
C.V.(%)						
No. Specimens	32	32	8	32	32	
No. AM Batch	4	4	1	4	4	

2.4.15 ZX Rail Shear In-Plane Shear Properties (ZX-RS)

Material:		ASTM D7078, Rail Shear				
Test method:		Additively Manufactured Antero(R) 840CN03				
Modulus calculation:		Build Orientation: ZX				
Raster:						
Machine Model:						
		CTA	RTA	RTW	ETA	ETW
Test Temperature [°F]		-95	70	70	250	180
Moisture Conditioning		Ambient	Ambient	Equilibrium	Ambient	Equilibrium
Equilibrium at T, RH				160 °F, 85%		160 °F, 85%
Source code: NTPAM8400Q1-STR-840CN-		XXX-X-MX-ZX-RS-XX-CTA-1	XXX-X-MX-ZX-RS-XX-RTA-1	XXX-X-MX-ZX-RS-XX-RTW-1	XXX-X-MX-ZX-RS-XX-ETA-1	XXX-X-MX-ZX-RS-XX-ETW-1
		Measured	Measured	Measured	Measured	Measured
ZXRS Shear Strength at 0.2% Offset [ksi]	Mean	5.229	4.535	4.489	3.109	3.731
	Minimum	4.815	4.145	4.298	2.601	3.450
	Maximum	5.887	5.624	4.618	3.521	4.001
	C.V.(%)	4.506	5.950	2.679	8.096	3.393
	No. Specimens	31	32	8	32	32
	No. AM Batch	4	4	1	4	4
ZXRS Shear Strength at 5% Strain [ksi]	Mean	8.576	6.999	7.149	3.410	4.820
	Minimum	8.058	6.660	6.941	3.191	4.769
	Maximum	8.955	7.180	7.367	3.538	4.875
	C.V.(%)	2.912	2.669	2.583	4.181	0.6774
	No. Specimens	20	16	8	7	7
	No. AM Batch	4	4	1	4	4
ZXRS Maximum Shear Strength [ksi]	Mean	8.715	7.458	7.445	3.636	4.894
	Minimum	6.350	6.976	7.193	3.191	4.605
	Maximum	10.14	7.959	7.732	4.148	5.256
	C.V.(%)	9.804	3.467	3.205	7.928	3.363
	No. Specimens	28	28	8	32	32
	No. AM Batch	4	4	1	4	4
ZXRS Shear Modulus [Msi]	Mean	0.2089	0.1869	0.1934	0.1842	0.1832
	Minimum	0.1998	0.1711	0.1883	0.1678	0.1738
	Maximum	0.2183	0.1954	0.1968	0.2004	0.1910
	C.V.(%)	2.566	3.028	1.532	5.156	2.144
	No. Specimens	32	32	8	32	32
	No. AM Batch	4	4	1	4	4

2.4.16 Z45 Rail Shear In-Plane Shear Properties (Z45-RS)

Material:		Additively Manufactured Antero(R) 840CN03		ASTM D7078, Rail Shear Additively Manufactured Antero(R) 840CN03 Build Orientation: Z45			
Test method:		ASTM D 7078-20e1					
Modulus calculation:		2000-6000 microstrain					
Raster:		+/-45					
Machine Model:		Stratasys Inc. Fortus 900 TM Machine					
		CTA	RTA	RTW	ETA	ETW	
Test Temperature [°F]		-95	70	70	250	180	
Moisture Conditioning Equilibrium at T, RH		Ambient	Ambient	Equilibrium 160 °F, 85%	Ambient	Equilibrium 160 °F, 85%	
Source code:		NTPAM8400Q1-STR-840CN-	XXX-X-MX-Z45-RS-XX-CTA-1	XXX-X-MX-Z45-RS-XX-RTA-1	XXX-X-MX-Z45-RS-XX-RTW-1	XXX-X-MX-Z45-RS-XX-ETA-1	XXX-X-MX-Z45-RS-XX-ETW-1
		Measured	Measured	Measured	Measured	Measured	
Z45RS Shear Strength at 0.2% Offset [ksi]	Mean	5.400	4.713	4.704	3.335	3.926	
	Minimum	4.958	4.186	4.524	2.803	3.587	
	Maximum	5.840	5.025	4.912	3.756	4.215	
	C.V.(%)	3.813	4.612	2.766	6.951	3.718	
	No. Specimens	32	32	8	32	32	
	No. AM Batch	4	4	1	4	4	
Z45RS Shear Strength at 5% Strain [ksi]	Mean	8.795	7.405	7.545	3.551	5.252	
	Minimum	8.336	6.971	7.240	3.469	5.233	
	Maximum	9.144	7.706	7.807	3.643	5.276	
	C.V.(%)	2.350	3.009	3.210	2.390	0.3433	
	No. Specimens	28	16	8	4	4	
	No. AM Batch	4	4	1	4	4	
Z45RS Maximum Shear Strength [ksi]	Mean	10.03	8.060	7.984	4.042	5.391	
	Minimum	6.708	7.484	7.643	3.468	4.816	
	Maximum	11.83	8.460	8.276	4.441	5.735	
	C.V.(%)	13.85	3.054	3.356	6.260	3.991	
	No. Specimens	32	32	8	32	32	
	No. AM Batch	4	4	1	4	4	
Z45RS Shear Modulus [Msi]	Mean	0.2138	0.1945	0.2003	0.1950	0.1921	
	Minimum	0.2038	0.1856	0.1938	0.1755	0.1816	
	Maximum	0.2233	0.2026	0.2059	0.2079	0.2012	
	C.V.(%)	2.450	2.524	2.745	4.231	2.168	
	No. Specimens	32	32	8	32	32	
	No. AM Batch	4	4	1	4	4	

2.4.17 XY Open-Hole Tension Properties (XY-OHT)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 5766-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D5766, OHT Additively Manufactured Antero(R) 840CN03 Build Orientation: XY		
	CTA	RTA	ETW	
Test Temperature [°F]	-95	70	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-XY-OHT-XX-CTA-1	XXX-X-MX-XY-OHT-XX-RTA-1	XXX-X-MX-XY-OHT-XX-ETW-1	
	Measured	Measured	Measured	
Mean	7.505	8.398	5.619	
Minimum	4.943	7.450	4.896	
Maximum	10.64	9.606	6.108	
XYOHT Strength [ksi] C.V.(%)	21.37	7.335	5.266	
No. Specimens	32	32	32	
No. AM Batch	4	4	4	

2.4.18 XZ Open-Hole Tension Properties (XZ-OHT)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 5766-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900 TM Machine		ASTM D5766, OHT Additively Manufactured Antero(R) 840CN03 Build Orientation: XZ		
	CTA	RTA	ETW	
Test Temperature [°F]	-95	70	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F,85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-XZ-OHT-XX-CTA-1	XXX-X-MX-XZ-OHT-XX-RTA-1	XXX-X-MX-XZ-OHT-XX-ETW-1	
	Measured	Measured	Measured	
Mean	6.188	9.797	7.418	
Minimum	4.247	4.362	6.541	
Maximum	10.26	11.26	7.772	
XZOHT Strength [ksi] C.V.(%)	23.46	19.25	3.898	
No. Specimens	32	32	32	
No. AM Batch	4	4	4	

2.4.19 ZX Open-Hole Tension Properties (ZX-OHT)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 5766-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D5766, OHT Additively Manufactured Antero(R) 840CN03 Build Orientation: ZX		
	CTA	RTA	ETW	
Test Temperature [°F]	-95	70	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-ZX-OHT-XX-CTA-1	XXX-X-MX-ZX-OHT-XX-RTA-1	XXX-X-MX-ZX-OHT-XX-ETW-1	
	Measured	Measured	Measured	
ZXOHT Strength [ksi]				
Mean	4.364	4.834	5.079	
Minimum	2.369	3.693	3.610	
Maximum	5.735	5.657	6.019	
C.V.(%)	15.69	10.59	10.67	
No. Specimens	32	32	31	
No. AM Batch	4	4	4	

2.4.20 Z45 Open-Hole Tension Properties (Z45-OHT)

Material: Additively Manufactured Antero(R) 840CN03		ASTM D5766, OHT Additively Manufactured Antero(R) 840CN03 Build Orientation: Z45		
Test method: ASTM D 5766-23				
Raster: +/-45				
Machine Model: Stratasys Inc. Fortus 900 TM Machine				
	CTA	RTA	ETW	
Test Temperature [°F]	-95	70	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-Z45-OHT-XX-CTA-1	XXX-X-MX-Z45-OHT-XX-RTA-1	XXX-X-MX-Z45-OHT-XX-ETW-1	
	Measured	Measured	Measured	
Z45OHT Strength [ksi]	5.827	7.835	6.280	
Mean	3.092	4.514	5.684	
Minimum	8.610	9.207	6.908	
Maximum	23.96	12.13	5.326	
C.V.(%)	31	31	31	
No. Specimens	4	4	4	
No. AM Batch				

2.4.21 XY Filled-Hole Tension Properties (XY-FHT)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 6742-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900 TM Machine		ASTM D6742, Filled-Hole Tension Additively Manufactured Antero(R) 840CN03 Build Orientation: XY		
	CTA	RTA	ETW	
Test Temperature [°F]	-95	70	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-XY-FHT-XX-CTA-1	XXX-X-MX-XY-FHT-XX-RTA-1	XXX-X-MX-XY-FHT-XX-ETW-1	
	Measured	Measured	Measured	
Mean	11.30	8.661	6.008	
Minimum	9.970	7.342	5.531	
Maximum	13.72	9.771	6.326	
XYFHT Strength [ksi] C.V.(%)	7.558	5.988	2.844	
No. Specimens	32	32	32	
No. AM Batch	4	4	4	

2.4.22 XZ Filled-Hole Tension Properties (XZ-FHT)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 6742-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D6742, Filled-Hole Tension Additively Manufactured Antero(R) 840CN03 Build Orientation: XZ		
	CTA	RTA	ETW	
Test Temperature [°F]	-95	70	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-A-M1-XZ-FHT-XX-CTA-1	XXX-A-M1-XZ-FHT-XX-RTA-1	XXX-A-M1-XZ-FHT-XX-ETW-1	
	Measured	Measured	Measured	
XZFHT Strength [ksi]	12.58	11.11	7.890	
Mean	10.66	10.58	7.349	
Minimum	15.57	11.61	8.257	
Maximum	12.35	2.041	2.474	
C.V.(%)				
No. Specimens	32	32	32	
No. AM Batch	4	4	4	

2.4.23 ZX Filled-Hole Tension Properties (ZX-FHT)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 6742-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900 TM Machine		ASTM D6742, Filled-Hole Tension Additively Manufactured Antero(R) 840CN03 Build Orientation: ZX		
	CTA	RTA	ETW	
Test Temperature [°F]	-95	70	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-ZX-FHT-XX-CTA-1	XXX-X-MX-ZX-FHT-XX-RTA-1	XXX-X-MX-ZX-FHT-XX-ETW-1	
	Measured	Measured	Measured	
Mean	6.336	6.456	5.936	
Minimum	3.967	3.186	2.493	
Maximum	8.958	8.695	6.599	
ZXFHT Strength [ksi] C.V.(%)	20.39	18.20	13.19	
No. Specimens	31	30	31	
No. AM Batch	4	4	4	

2.4.24 Z45 Filled-Hole Tension Properties (Z45-FHT)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 6742-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D6742, Filled-Hole Tension Additively Manufactured Antero(R) 840CN03 Build Orientation: Z45		
Test Temperature [°F]	-95	70	180	
Moisture Conditioning	Ambient	Ambient	Equilibrium	
Equilibrium at T, RH			160 °F, 85%	
Source code: NTPAM8400Q1-STR-840CN-	XXX-X-MX-Z45-FHT-XX-CTA-1	XXX-X-MX-Z45-FHT-XX-RTA-1	XXX-X-MX-Z45-FHT-XX-ETW-1	
	Measured	Measured	Measured	
Mean	9.086	9.210	6.888	
Minimum	7.080	6.815	6.499	
Maximum	12.17	10.08	7.227	
Z45FHT Strength [ksi] C.V.(%)	12.81	8.305	2.966	
No. Specimens	32	29	23	
No. AM Batch	4	4	4	

2.4.25 XY Single-Shear Bearing Properties (XY-SSB)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 5961-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D5961, SSB Proc C Additively Manufactured Antero(R) 840CN03 Build Orientation: XY	
		RTA	ETW
Test Temperature [°F] Moisture Conditioning Equilibrium at T, RH Source code: NTPAM8400Q1-STR-840CN-		70 Ambient XXX-X-MX-XY-SSB-XX-RTA-1	180 Equilibrium 160 °F,85% XXX-X-MX-XY-SSB-XX-ETW-1
		Measured	Measured
XYSSB 2% Offset Strength [ksi]	Mean	23.29	19.90
	Minimum	21.18	16.86
	Maximum	25.46	22.40
	C.V.(%)	5.035	7.414
	No. Specimens	32	32
	No. AM Batch	4	4
XYSSB Ultimate Strength [ksi]	Mean	33.02	24.15
	Minimum	31.90	22.50
	Maximum	34.90	26.55
	C.V.(%)	2.523	4.482
	No. Specimens	32	32
	No. AM Batch	4	4
XYSSB Bearing Stiffness [Msi]	Mean	0.1419	0.1551
	Minimum	0.1297	0.1158
	Maximum	0.1552	0.2605
	C.V.(%)	4.718	29.77
	No. Specimens	32	32
	No. AM Batch	4	4

2.4.26 XZ Single-Shear Bearing Properties (XZ-SSB)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 5961-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900 TM Machine		ASTM D5961, SSB Proc C Additively Manufactured Antero(R) 840CN03 Build Orientation: XZ	
		RTA	ETW
Test Temperature [°F]		70	180
Moisture Conditioning		Ambient	Equilibrium
Equilibrium at T, RH			160 °F,85%
Source code: NTPAM8400Q1-STR-840CN-		XXX-X-MX-XZ-SSB-XX-RTA-1	XXX-X-MX-XZ-SSB-XX-ETW-1
		Measured	Measured
XZSSB 2% Offset Strength [ksi]	Mean	26.89	22.36
	Minimum	25.61	20.07
	Maximum	28.57	25.10
	C.V.(%)	2.886	4.944
	No. Specimens	31	32
	No. AM Batch	4	4
XZSSB Ultimate Strength [ksi]	Mean	31.60	24.66
	Minimum	25.62	23.18
	Maximum	33.87	26.88
	C.V.(%)	5.690	3.322
	No. Specimens	32	32
	No. AM Batch	4	4
XZSSB Bearing Stiffness [Msi]	Mean	0.1659	0.1740
	Minimum	0.1573	0.1381
	Maximum	0.1809	0.3075
	C.V.(%)	3.112	31.45
	No. Specimens	32	32
	No. AM Batch	4	4

2.4.27 ZX Single-Shear Bearing Properties (ZX-SSB)

Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 5961-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D5961, SSB Proc C Additively Manufactured Antero(R) 840CN03 Build Orientation: ZX	
		RTA	ETW
Test Temperature [°F]		70	180
Moisture Conditioning		Ambient	Equilibrium
Equilibrium at T, RH			160 °F,85%
Source code: NTPAM8400Q1-STR-840CN-		XXX-X-MX-ZX-SSB-XX-RTA-1	XXX-X-MX-ZX-SSB-XX-ETW-1
		Measured	Measured
ZXSSB 2% Offset Strength [ksi]	Mean	25.44	21.24
	Minimum	20.26	19.33
	Maximum	27.64	24.72
	C.V.(%)	7.510	5.150
	No. Specimens	20	32
	No. AM Batch	4	4
ZXSSB Ultimate Strength [ksi]	Mean	26.98	23.89
	Minimum	12.02	19.37
	Maximum	33.72	28.63
	C.V.(%)	21.05	5.485
	No. Specimens	32	32
	No. AM Batch	4	4
ZXSSB Bearing Stiffness [Msi]	Mean	0.1528	0.1469
	Minimum	0.1451	0.1139
	Maximum	0.1640	0.2856
	C.V.(%)	2.979	27.39
	No. Specimens	32	32
	No. AM Batch	4	4

2.4.28 Z45 Single-Shear Bearing Properties (Z45-SSB)

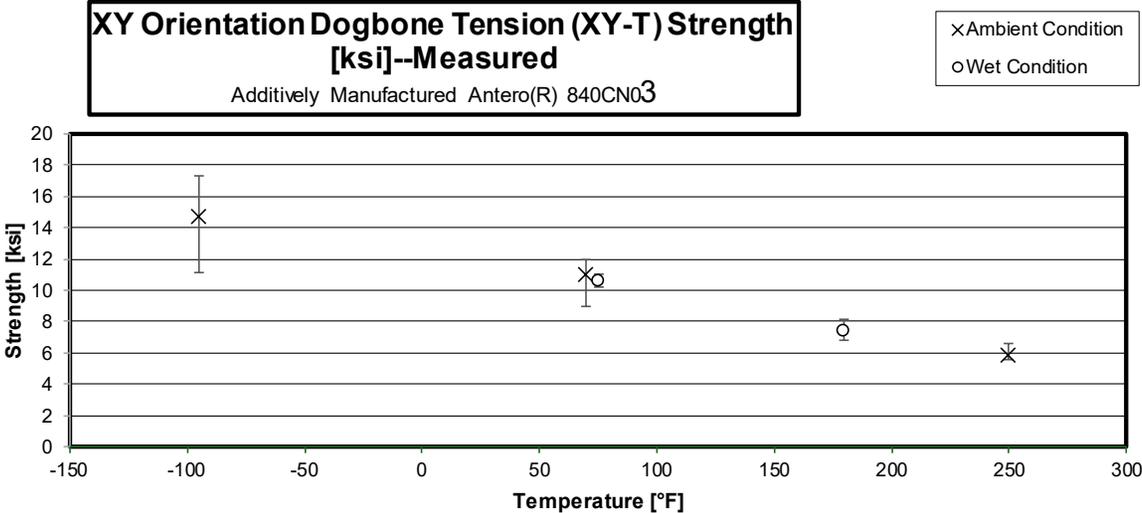
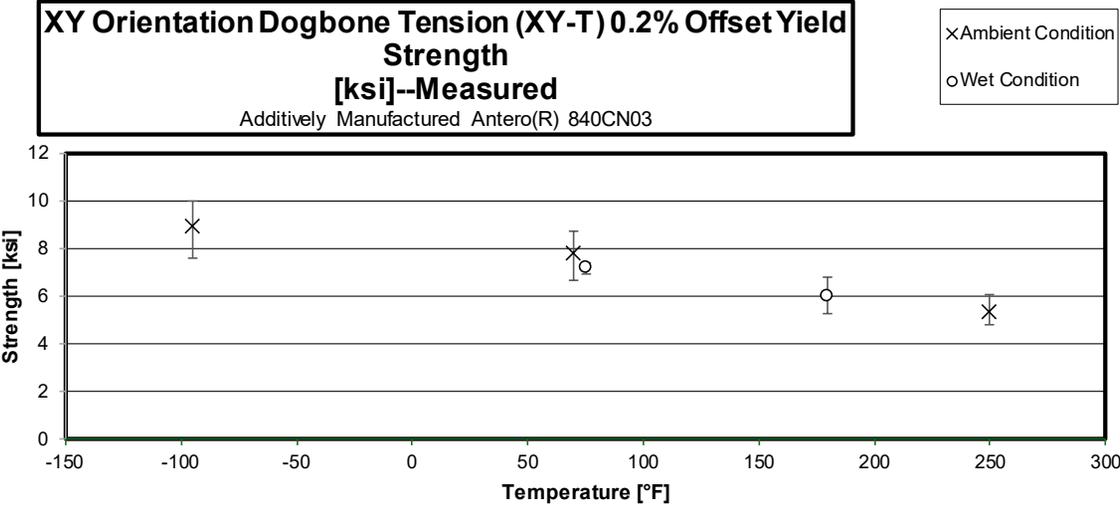
Material: Additively Manufactured Antero(R) 840CN03 Test method: ASTM D 5961-23 Raster: +/-45 Machine Model: Stratasys Inc. Fortus 900™ Machine		ASTM D5961, SSB Proc C Additively Manufactured Antero(R) 840CN03 Build Orientation: Z45	
		RTA	ETW
Test Temperature [°F]		70	180
Moisture Conditioning		Ambient	Equilibrium
Equilibrium at T, RH			160 °F,85%
Source code: NTPAM8400Q1-STR-840CN-		XXX-X-MX-Z45-SSB-XX-RTA-1	XXX-X-MX-Z45-SSB-XX-ETW-1
		Measured	Measured
Z45SSB 2% Offset Strength [ksi]	Mean	26.55	21.57
	Minimum	23.95	17.99
	Maximum	28.69	23.88
	C.V.(%)	4.932	5.841
	No. Specimens	32	32
	No. AM Batch	4	4
Z45SSB Ultimate Strength [ksi]	Mean	34.87	24.74
	Minimum	31.70	23.55
	Maximum	35.73	26.09
	C.V.(%)	2.886	2.566
	No. Specimens	32	32
	No. AM Batch	4	4
Z45SSB Bearing Stiffness [Msi]	Mean	0.1579	0.1406
	Minimum	0.1481	0.1208
	Maximum	0.1688	0.2696
	C.V.(%)	3.325	17.19
	No. Specimens	32	
	No. AM Batch	4	4

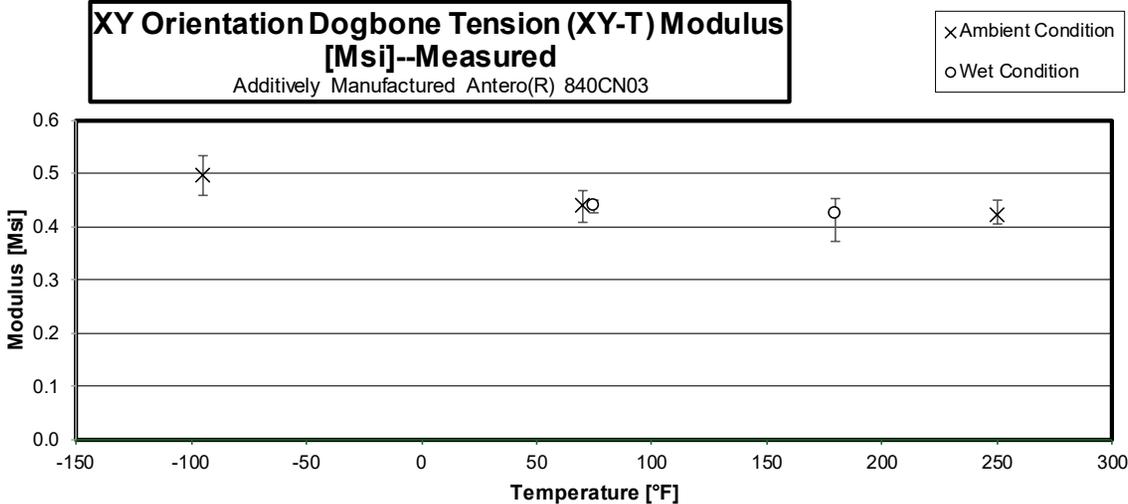
3. Individual Test Charts

These charts combine all four batches of data and plot the minimum and maximum modulus and strength range based on the test temperature.

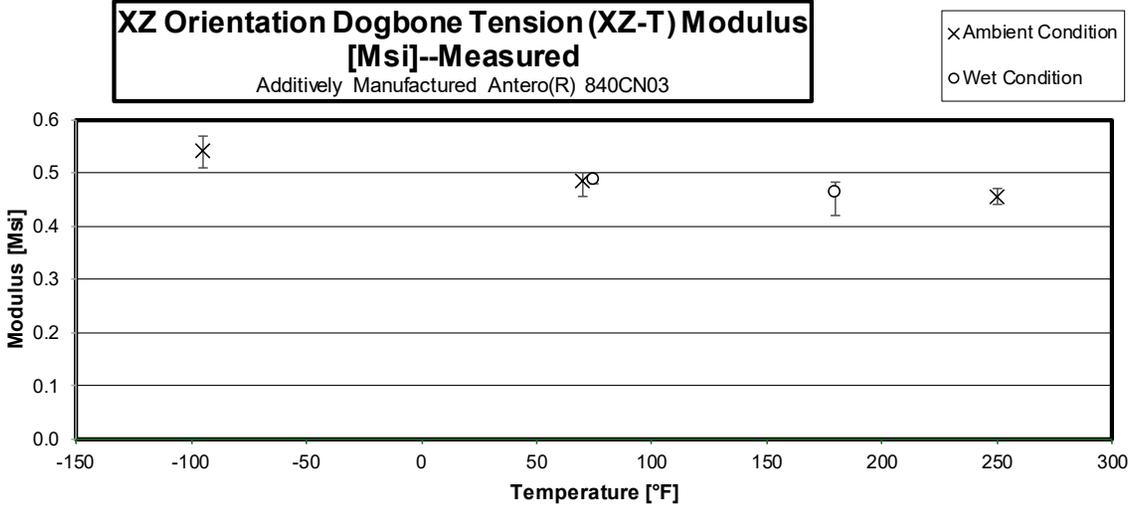
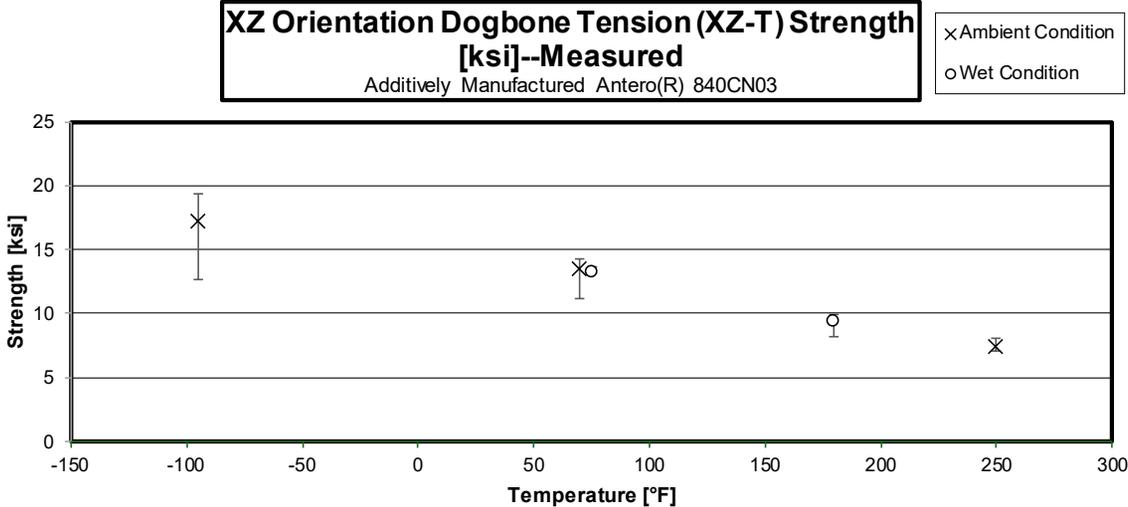
Test temperature for RTW has been offset by 5°F from RTA to allow clarity when reviewing plots.

3.1 XY Tension Properties (XY-T)

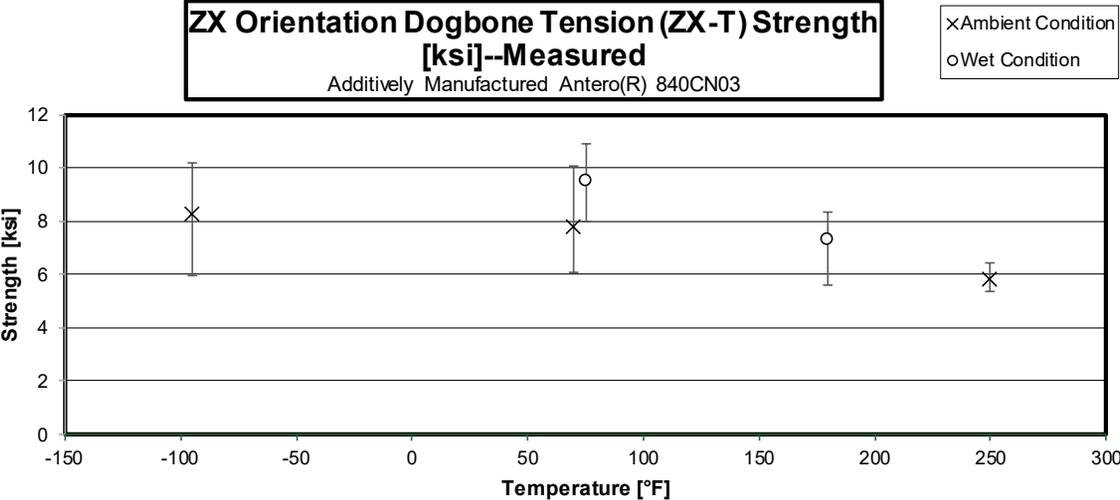
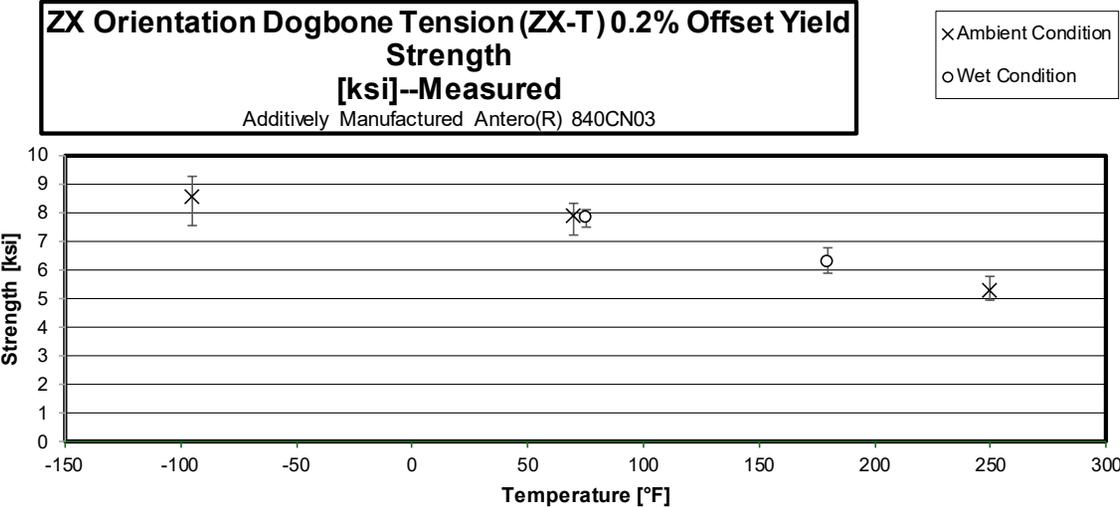


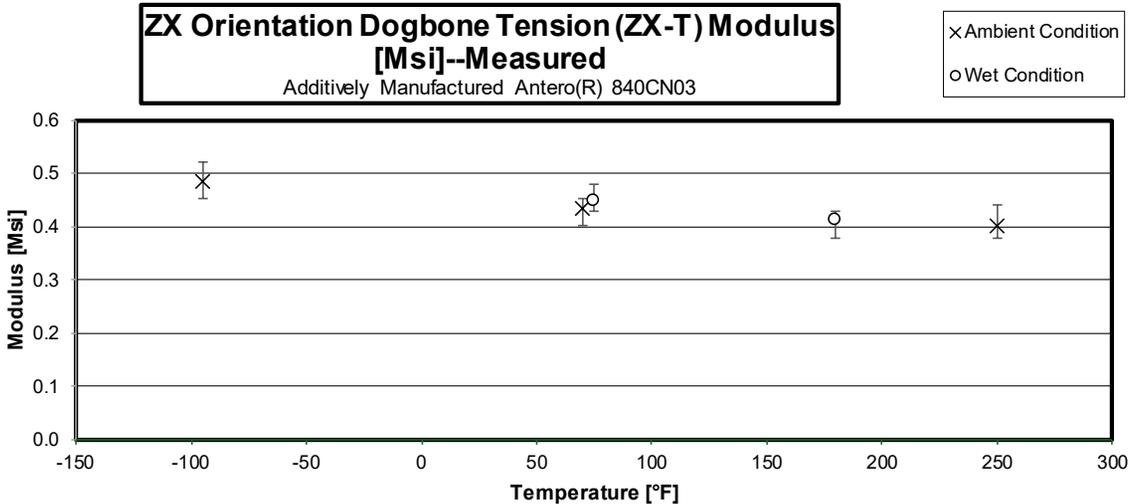


3.2 XZ Tension Properties (XZ-T)

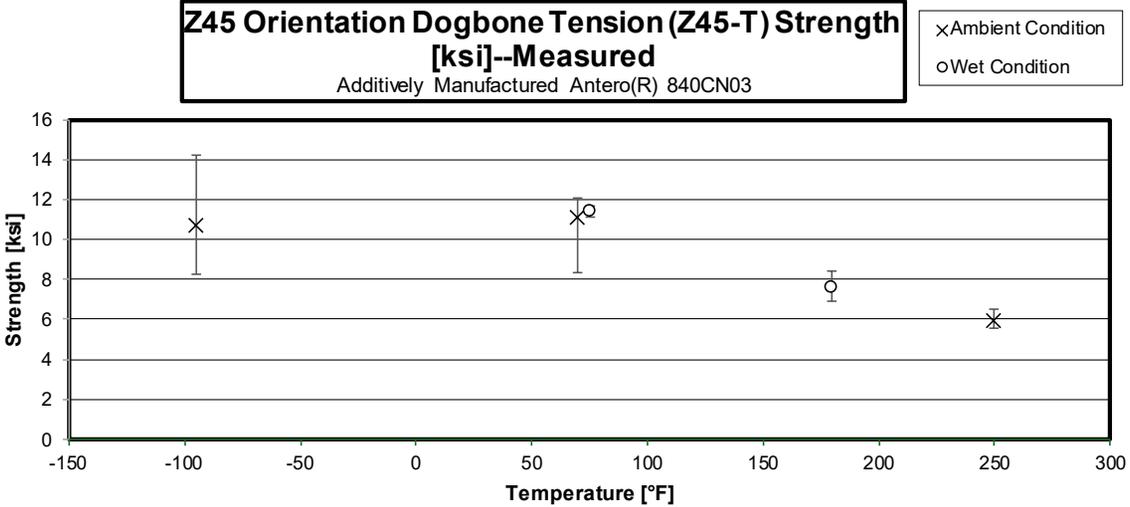
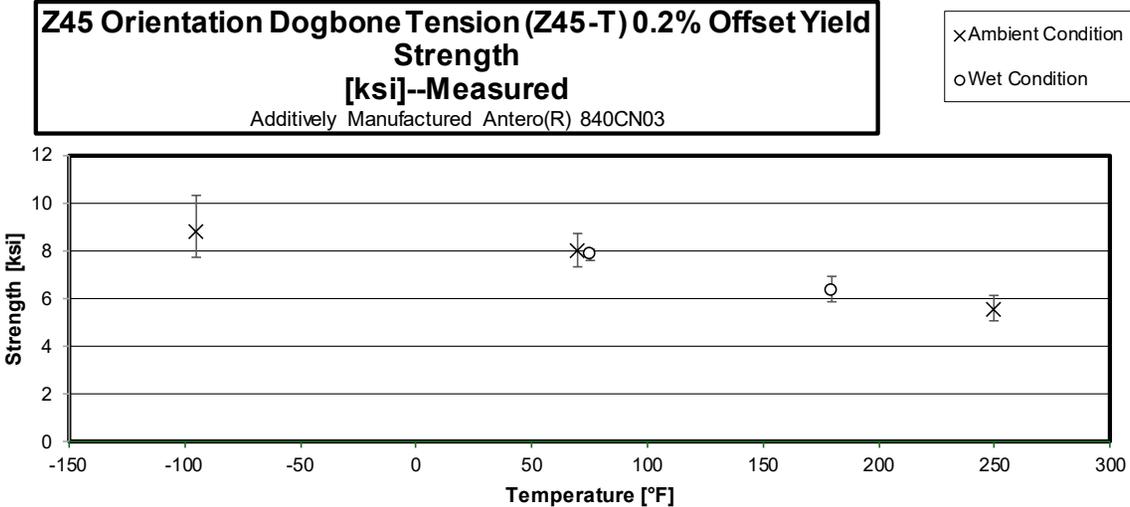


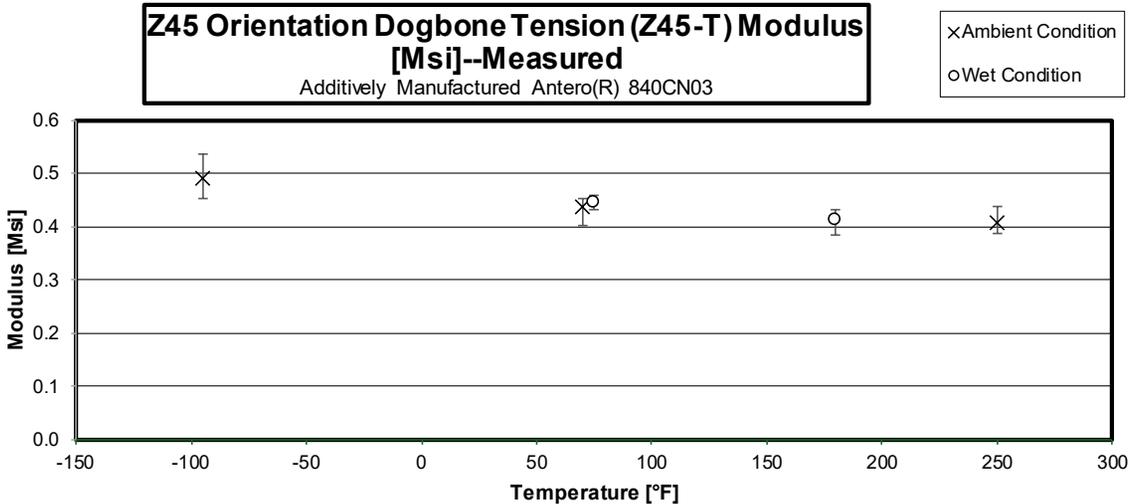
3.3 ZX Tension Properties (ZX-T)



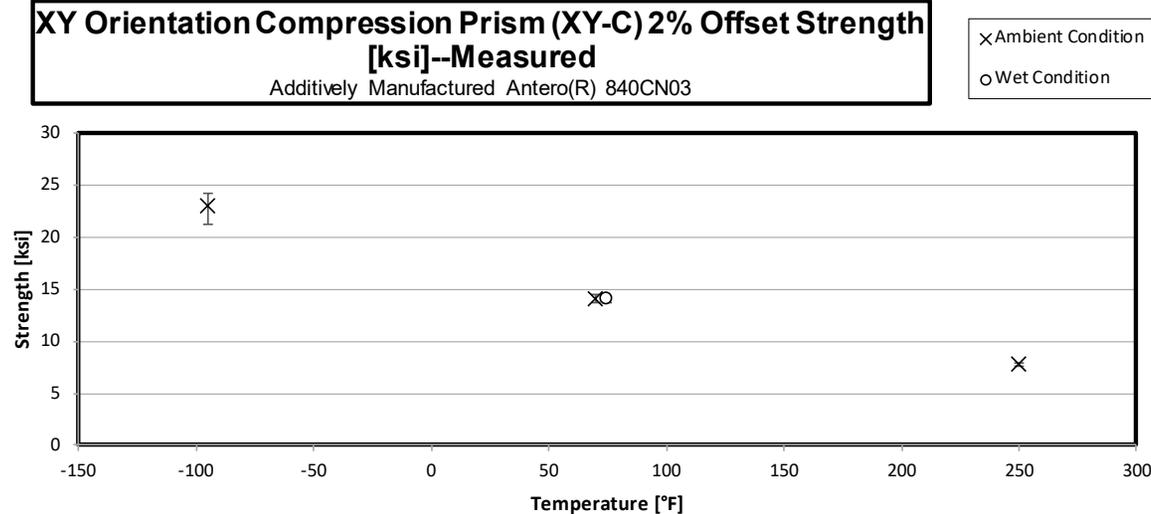
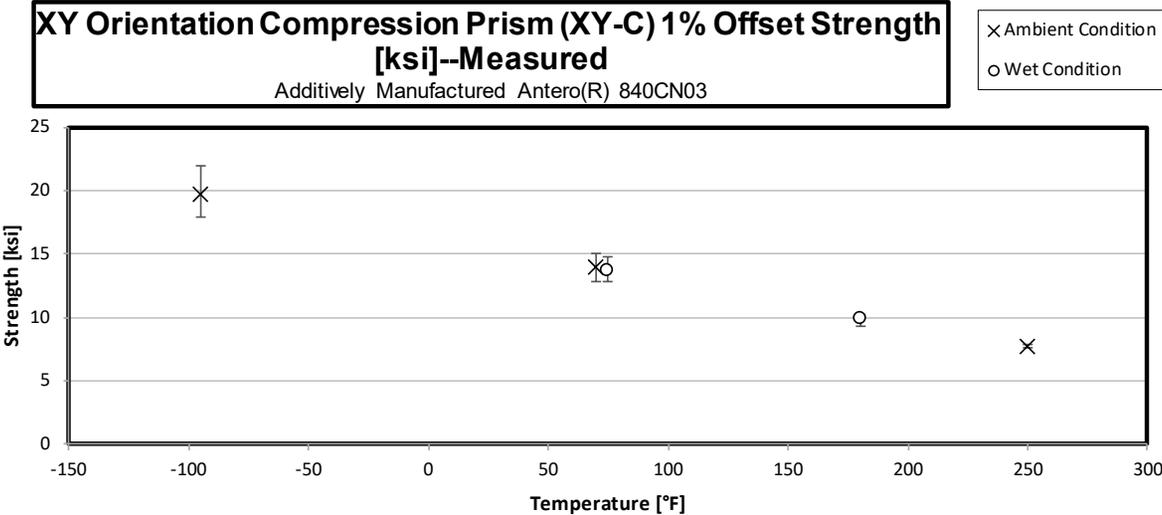


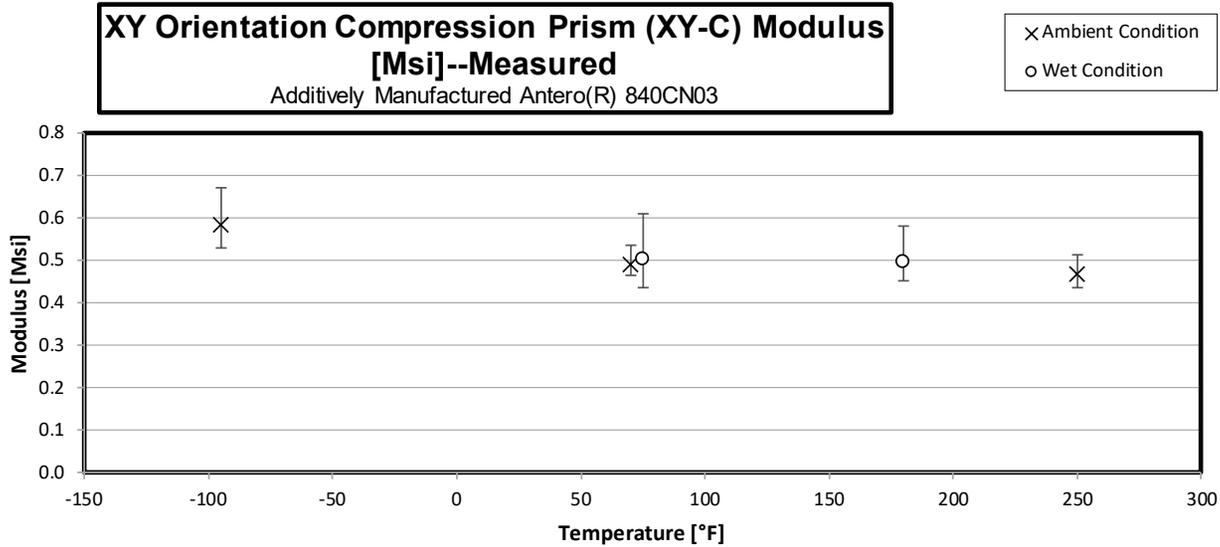
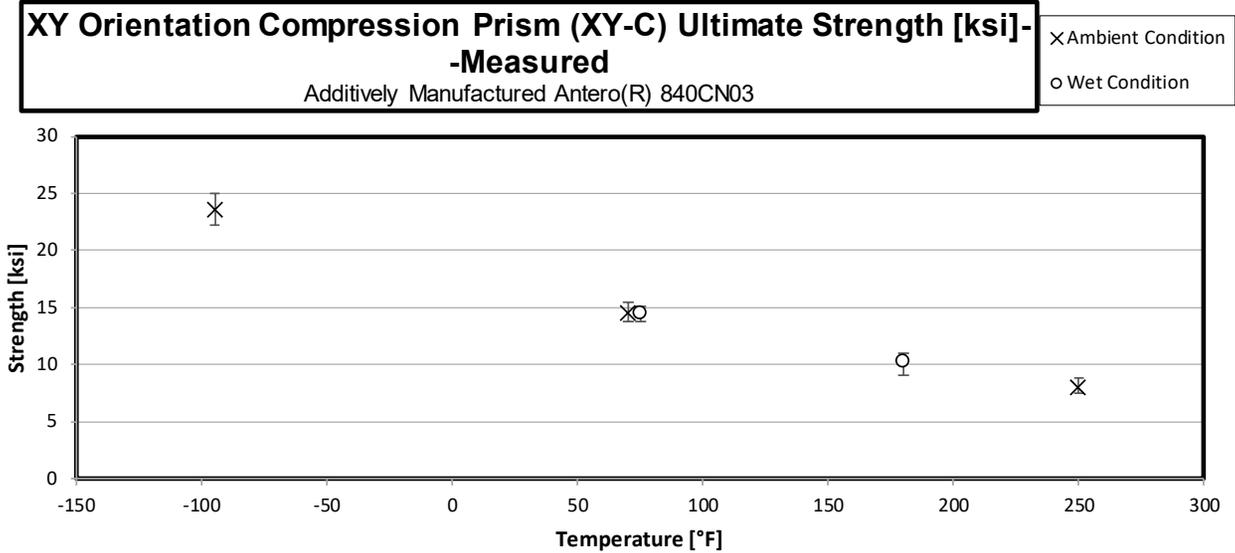
3.4 Z45 Tension Properties (Z45-T)



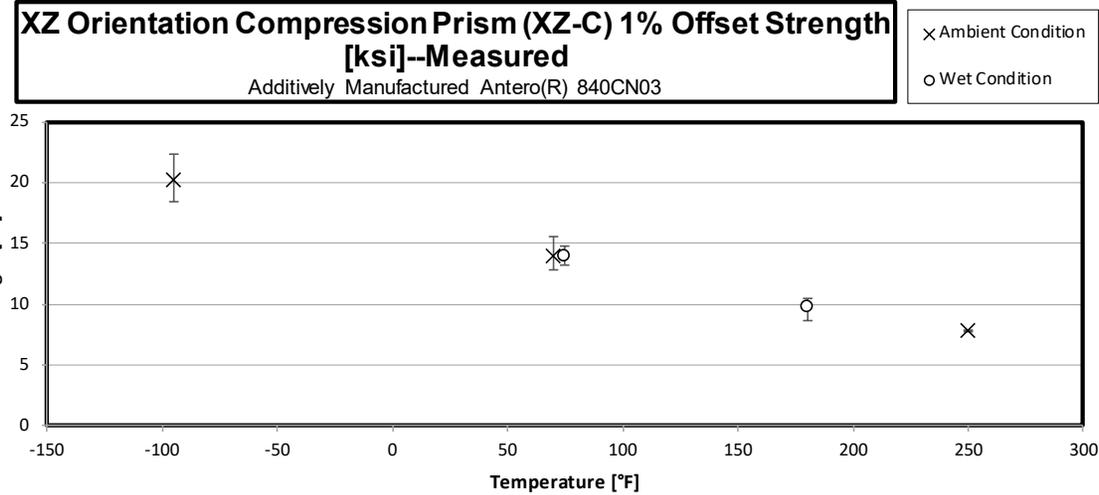
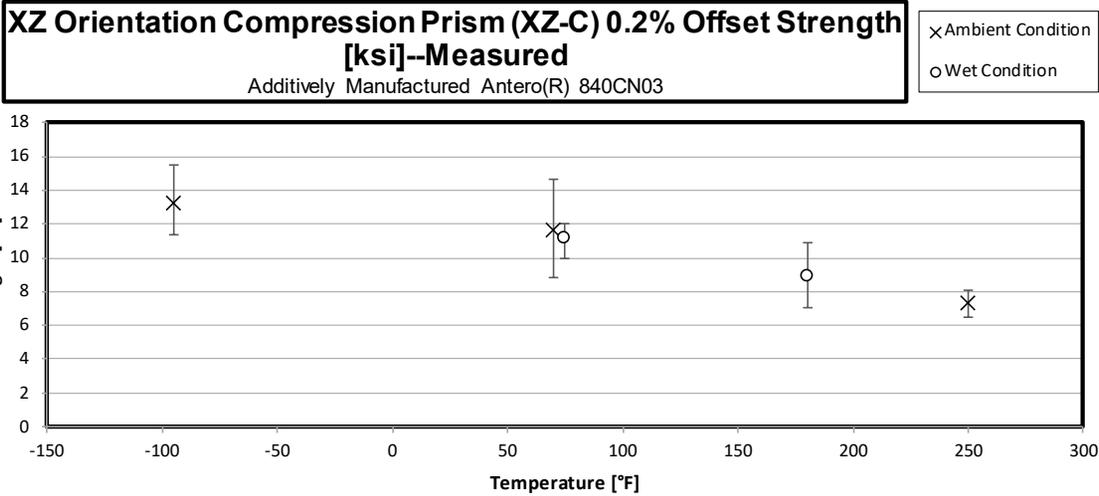


3.5 XY Compression Properties (XY-C)



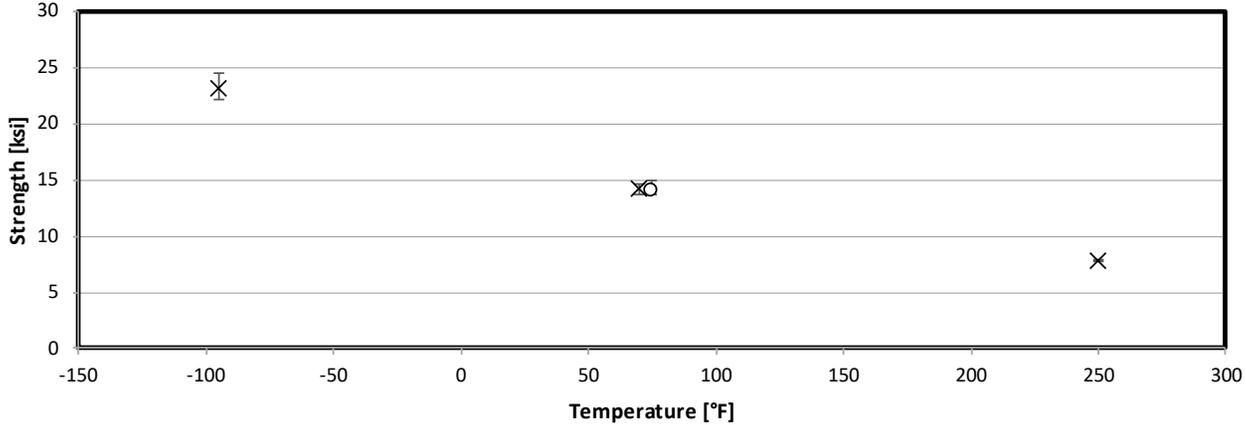


3.6 XZ Compression Properties (XZ-C)



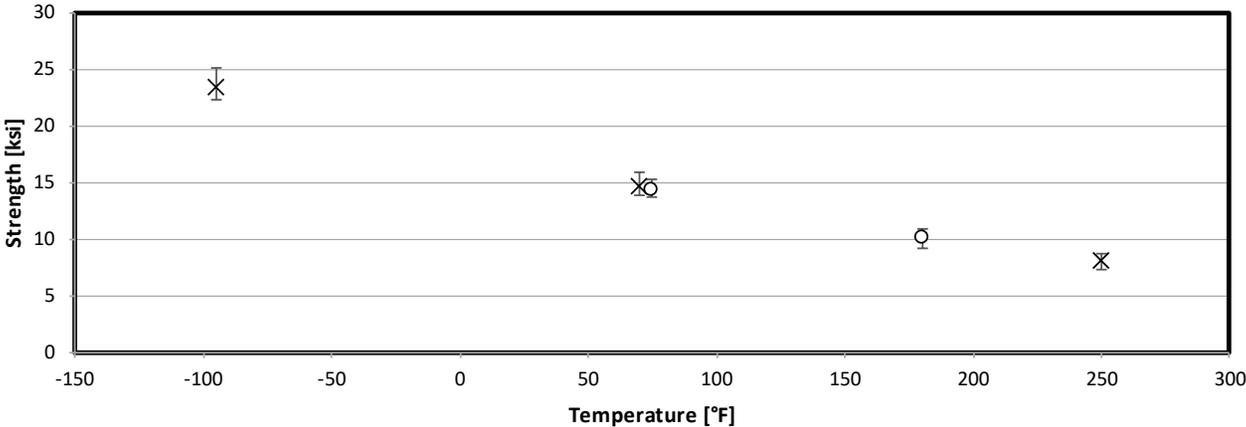
XZ Orientation Compression Prism (XZ-C) 2% Offset Strength
[ksi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition



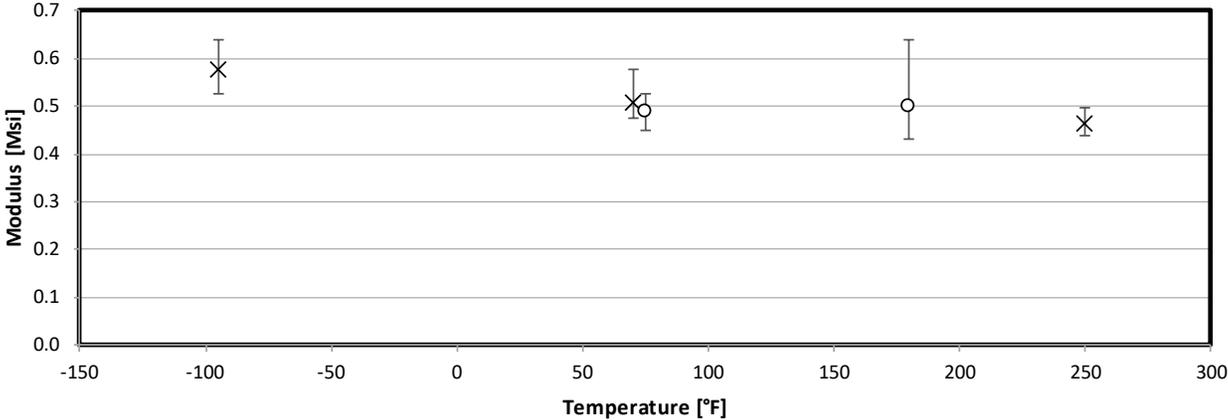
XZ Orientation Compression Prism (XZ-C) Ultimate Strength
[ksi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

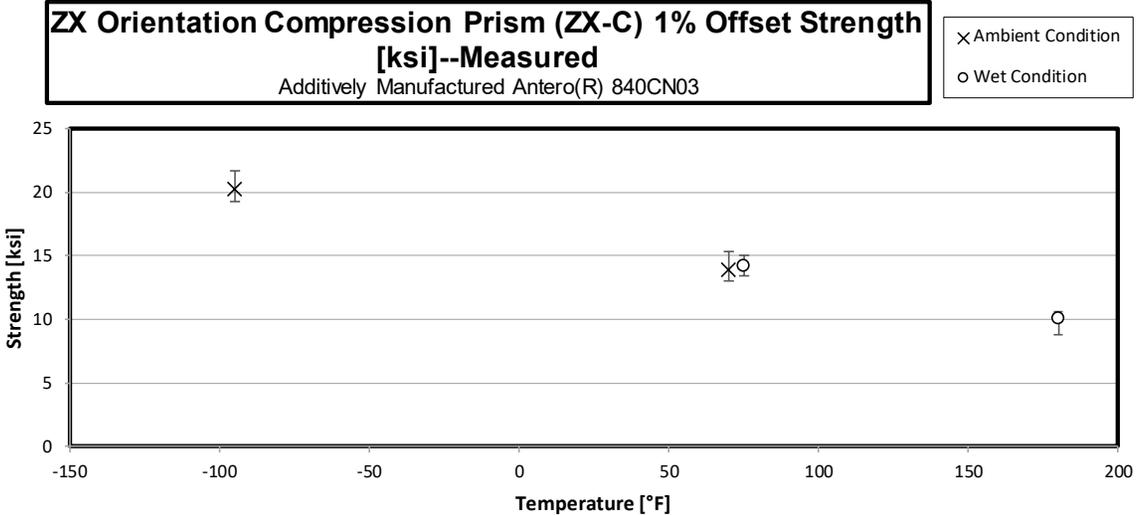
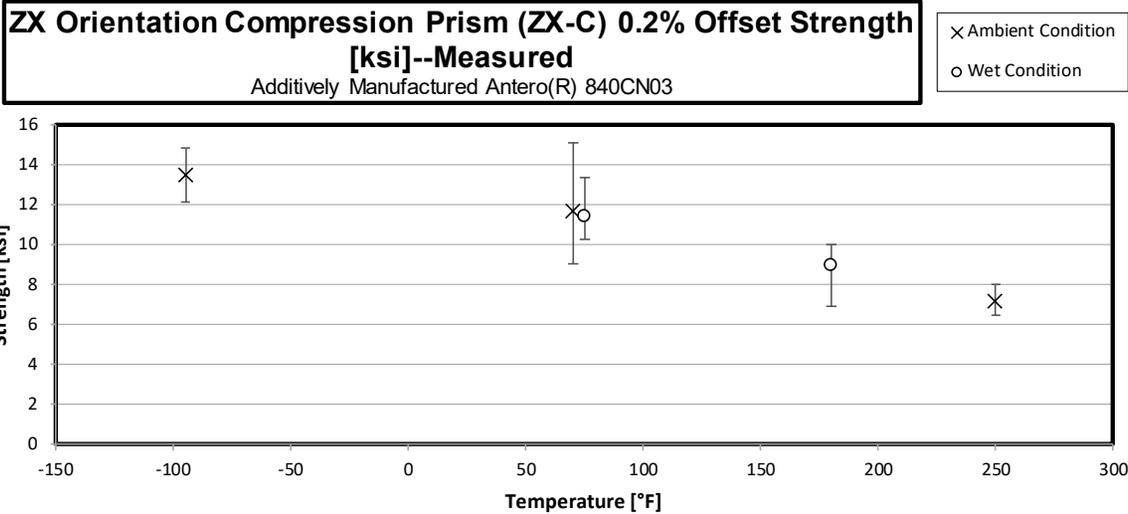


XZ Orientation Compression Prism (XZ-C) Modulus
[Msi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

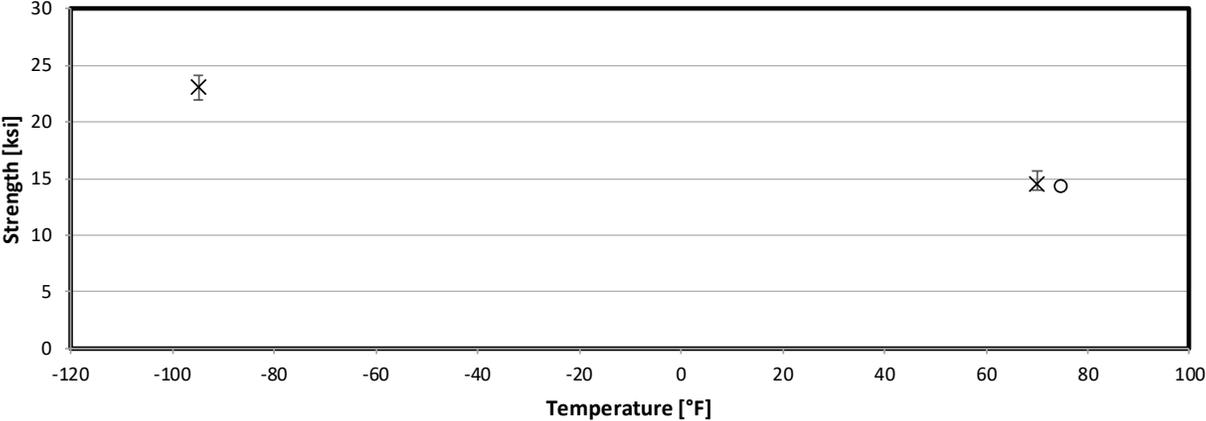


3.7 ZX Compression Properties (ZX-C)



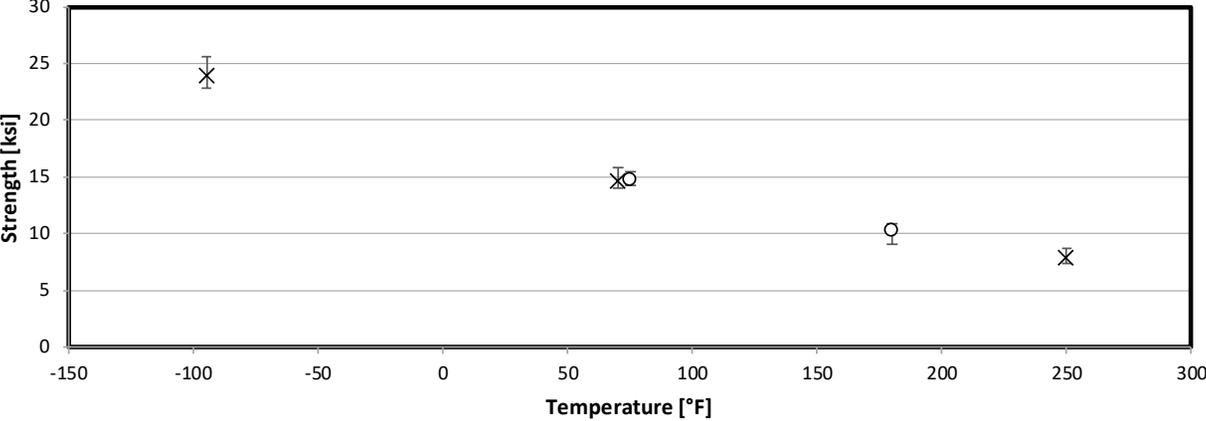
ZX Orientation Compression Prism (ZX-C) 2% Offset Strength [ksi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition



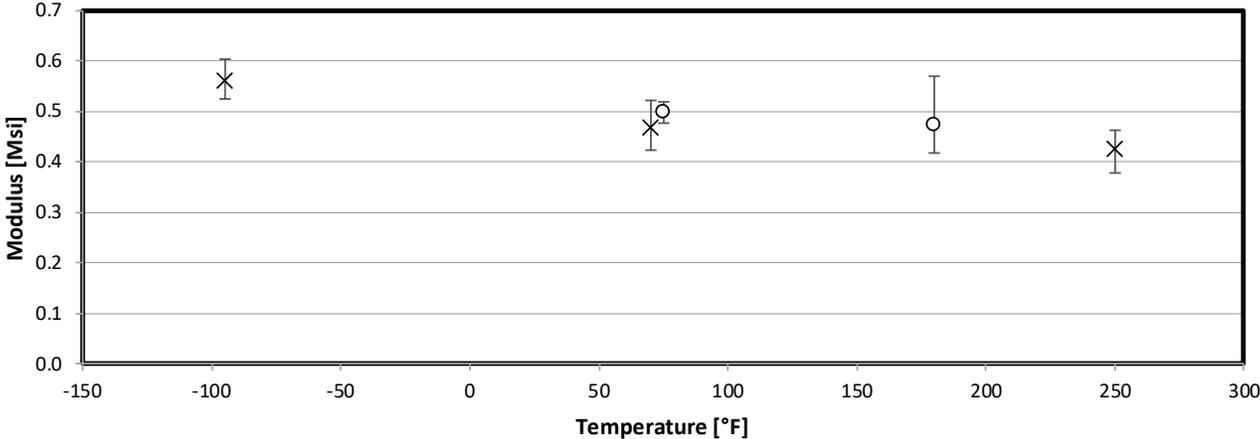
ZX Orientation Compression Prism (ZX-C) Ultimate Strength [ksi]-Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

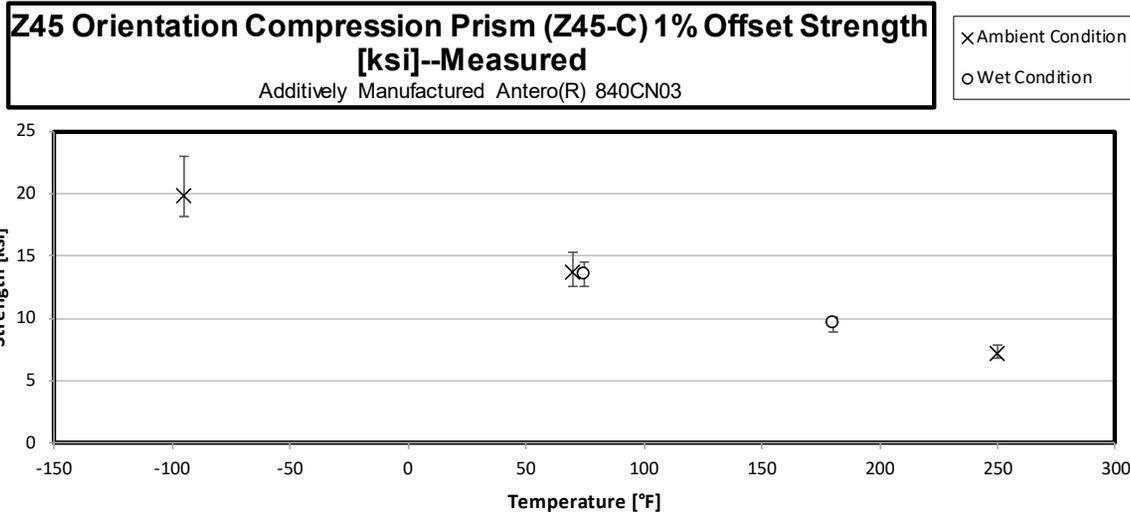
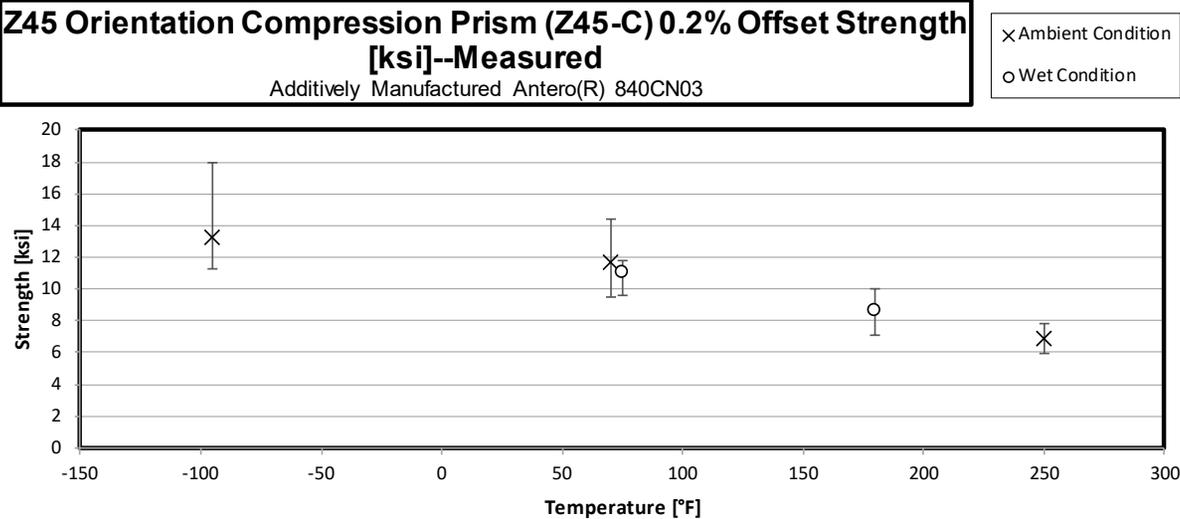


ZX Orientation Compression Prism (ZX-C) Modulus
[Msi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

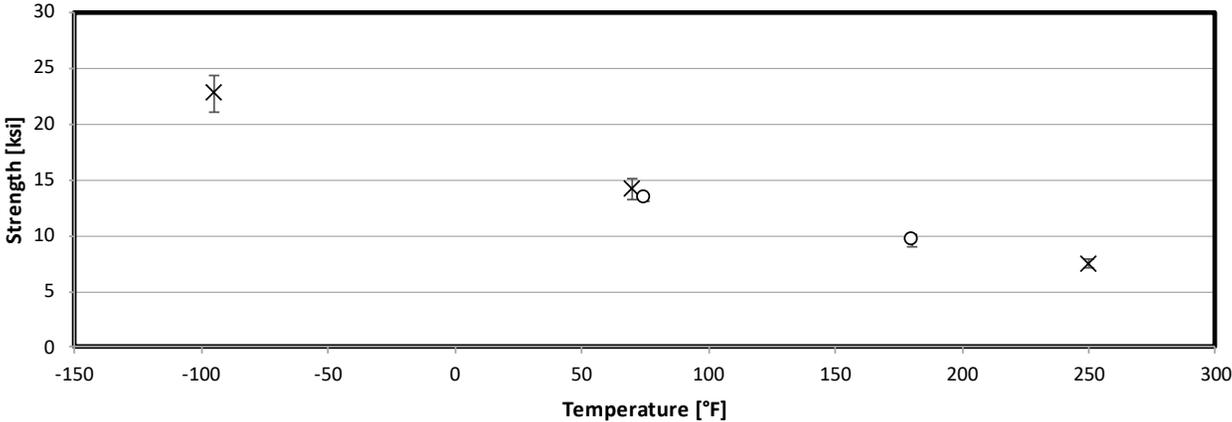


3.8 Z45 Compression Properties (Z45-C)



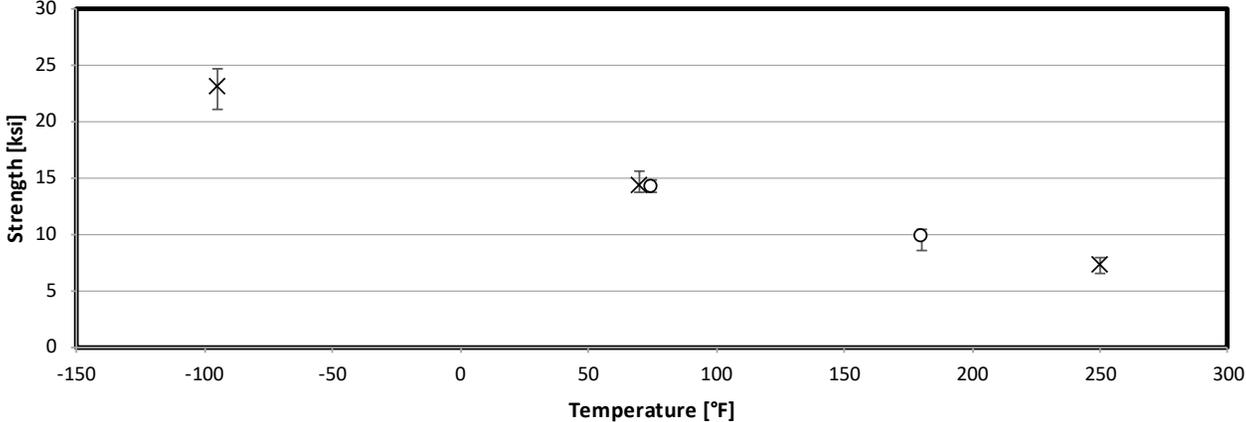
Z45 Orientation Compression Prism (Z45-C) 2% Offset Strength
[ksi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition



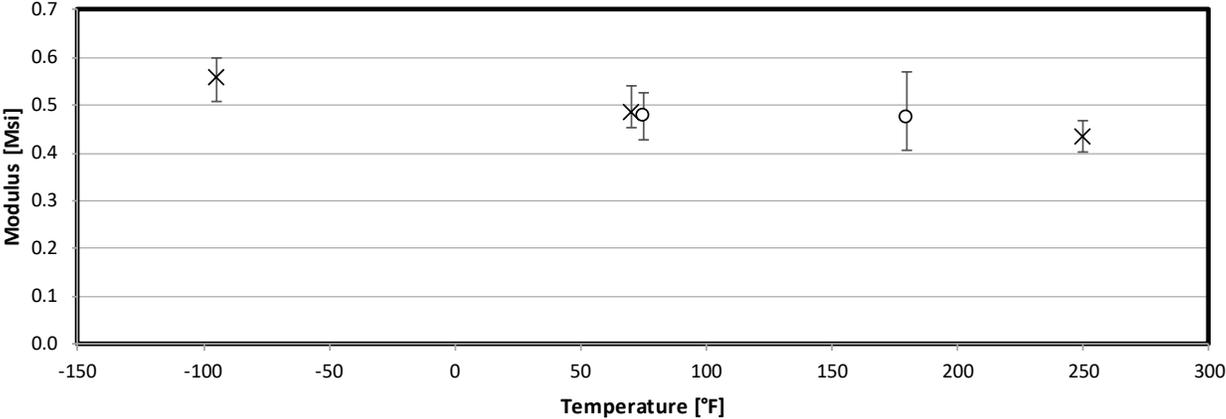
Z45 Orientation Compression Prism (Z45-C) Ultimate Strength
[ksi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

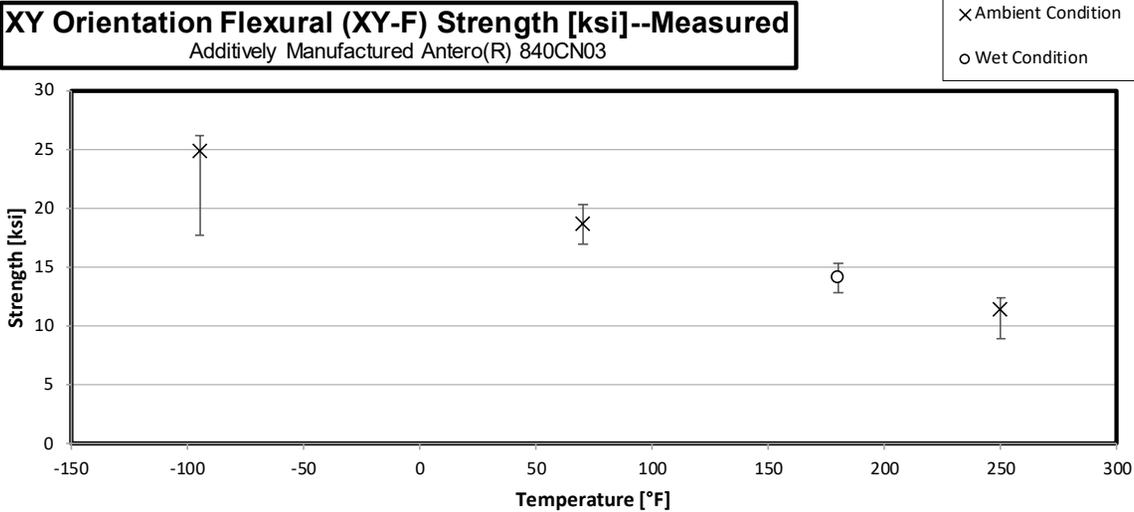
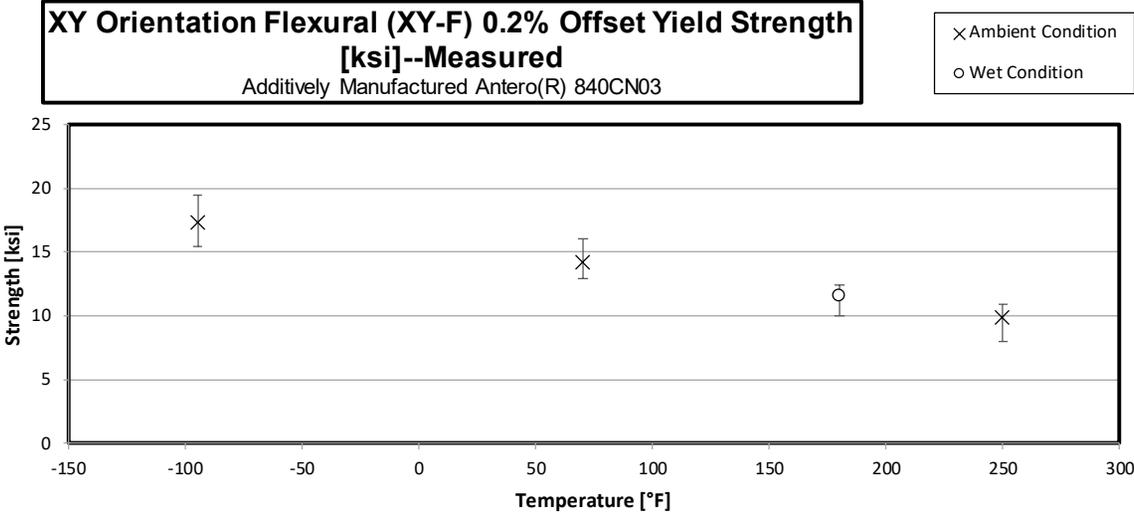


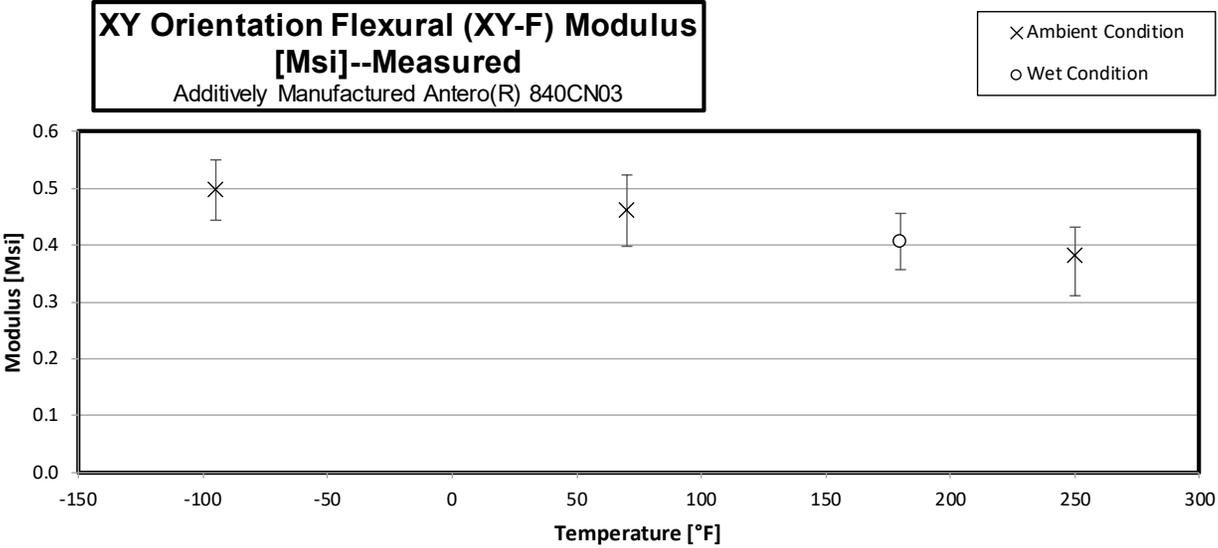
Z45 Orientation Compression Prism (Z45-C) Modulus [Msi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

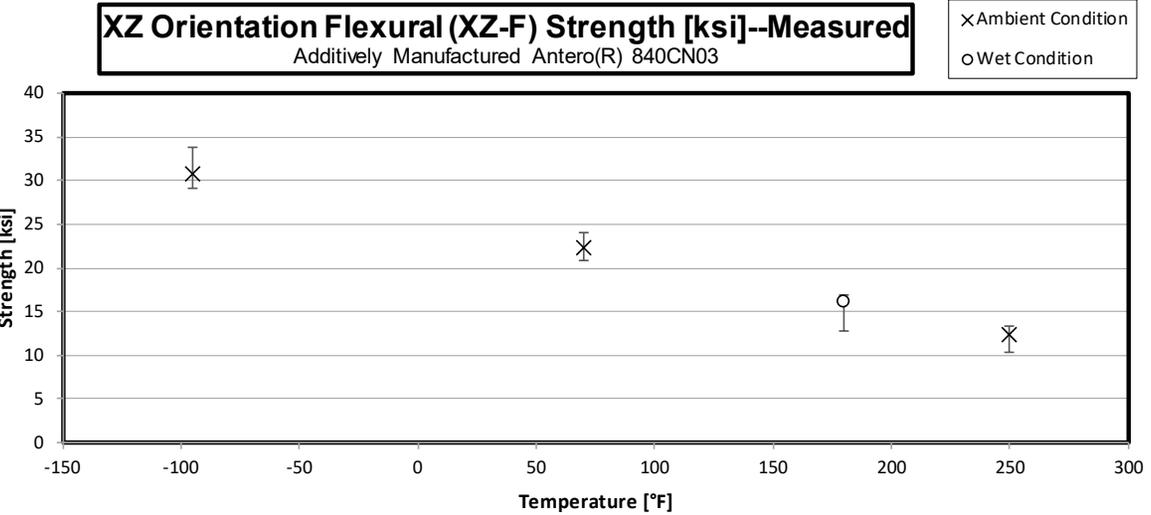
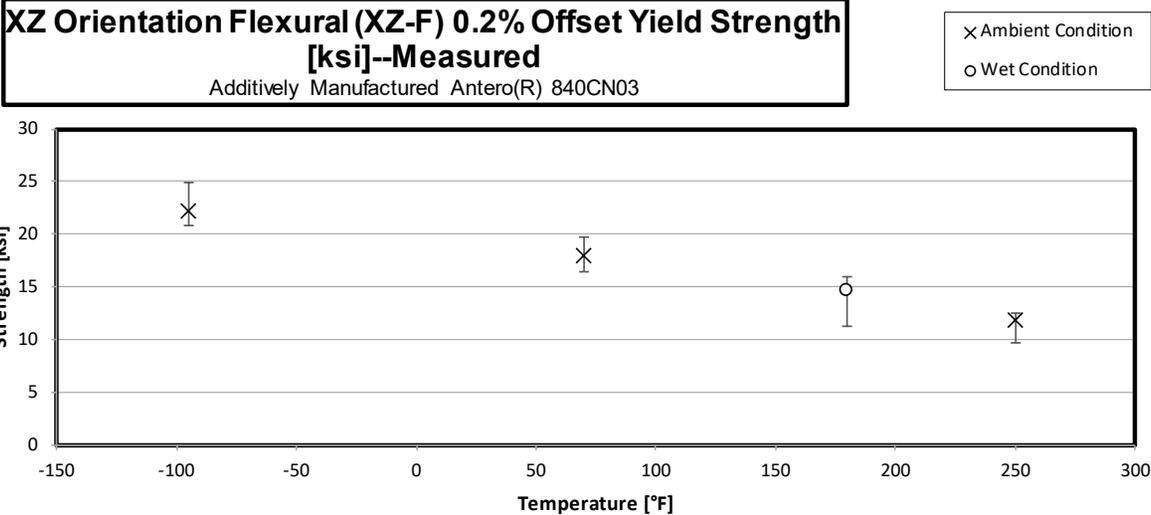


3.9 XY Flex Proc. B Properties (XY-F)



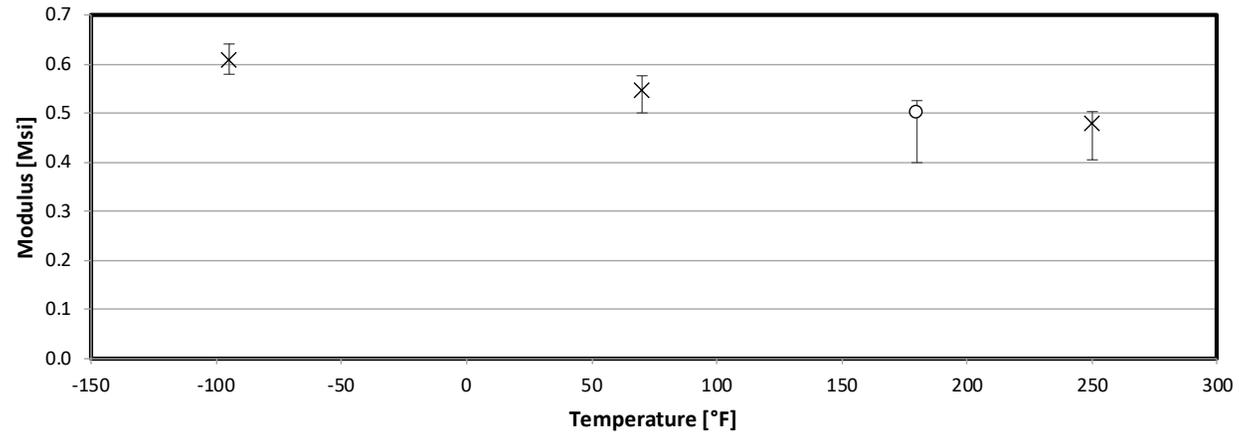


3.10 XZ Flex Proc. B Properties (XZ-F)

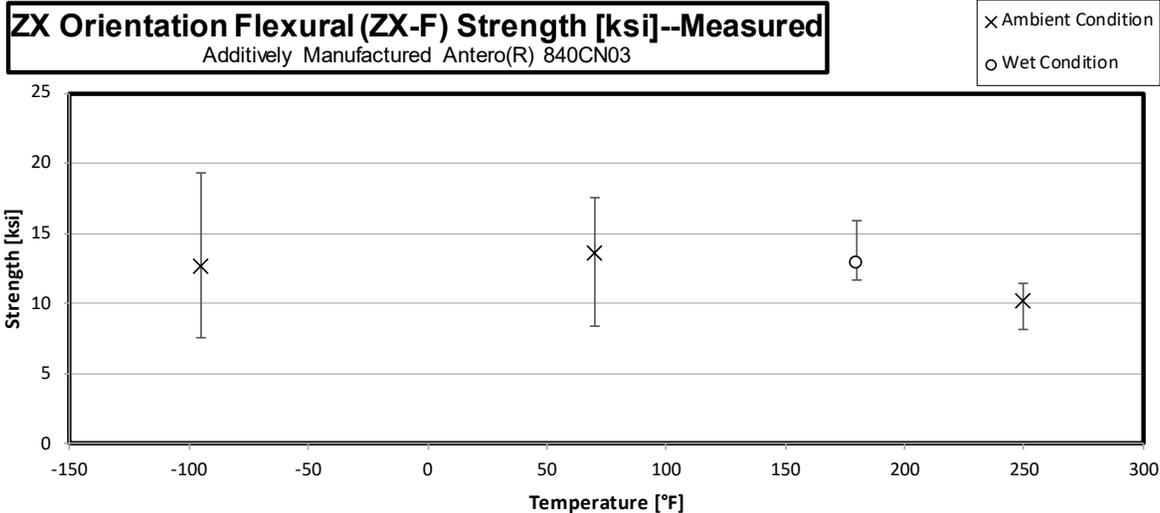
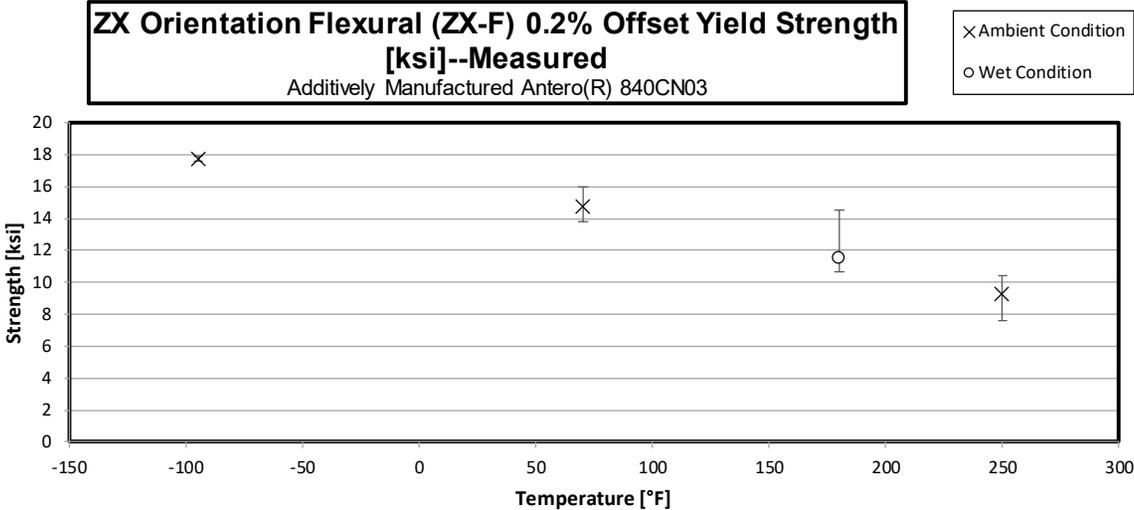


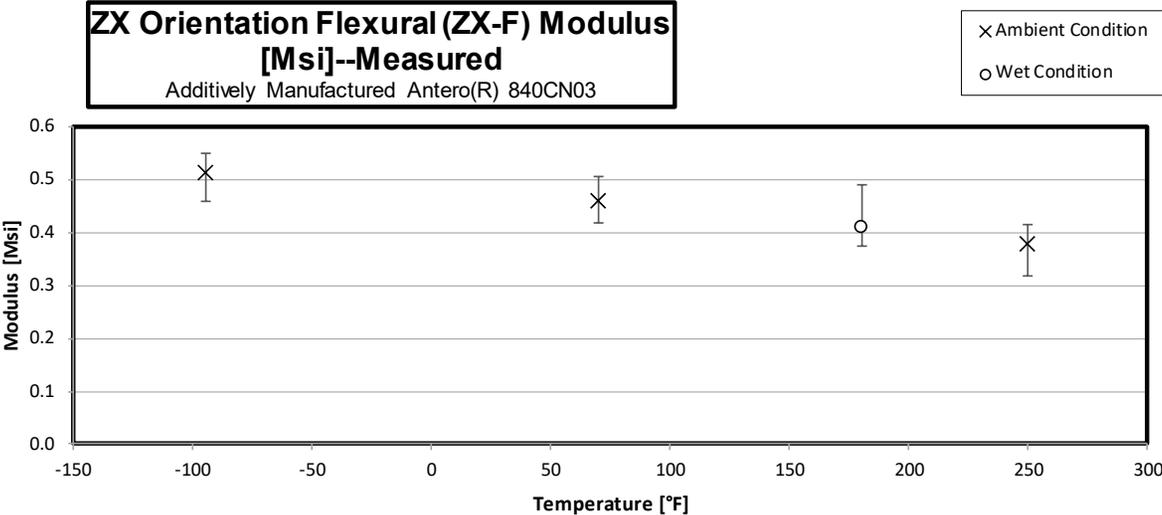
XZ Orientation Flexural (XZ-F) Modulus
[Msi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

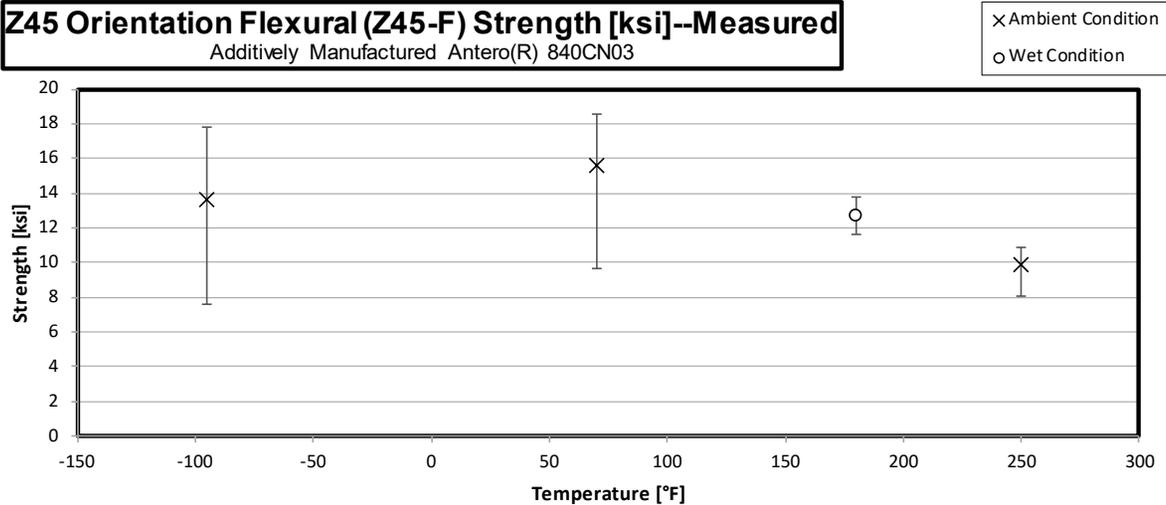
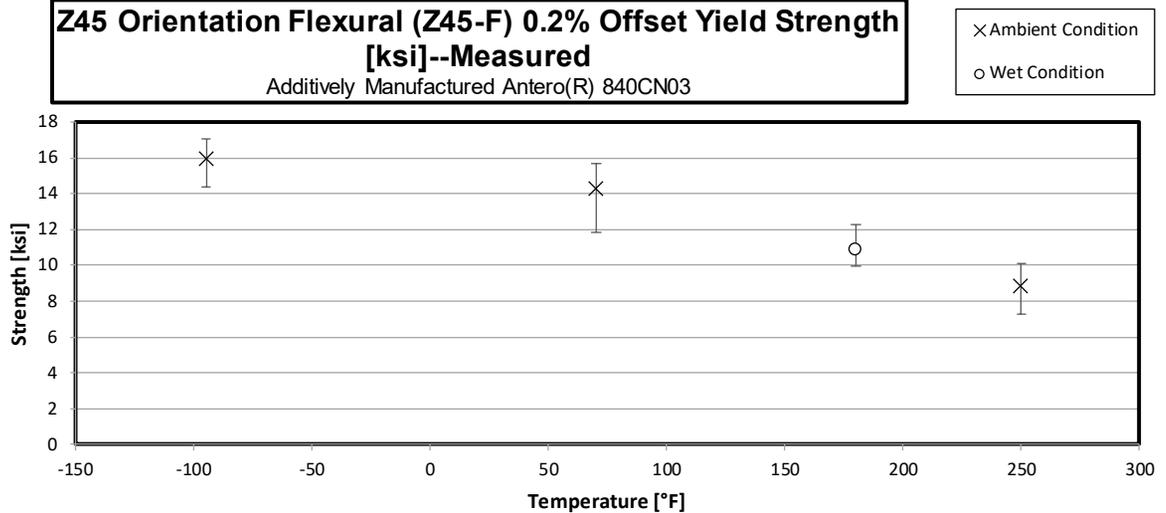


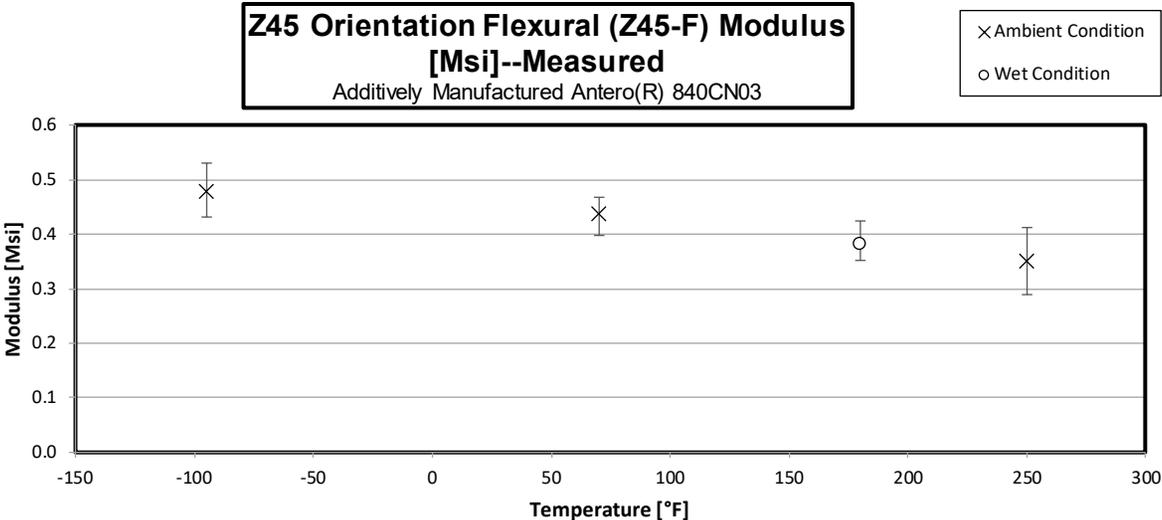
3.11 ZX Flex Proc. B Properties (ZX-F)



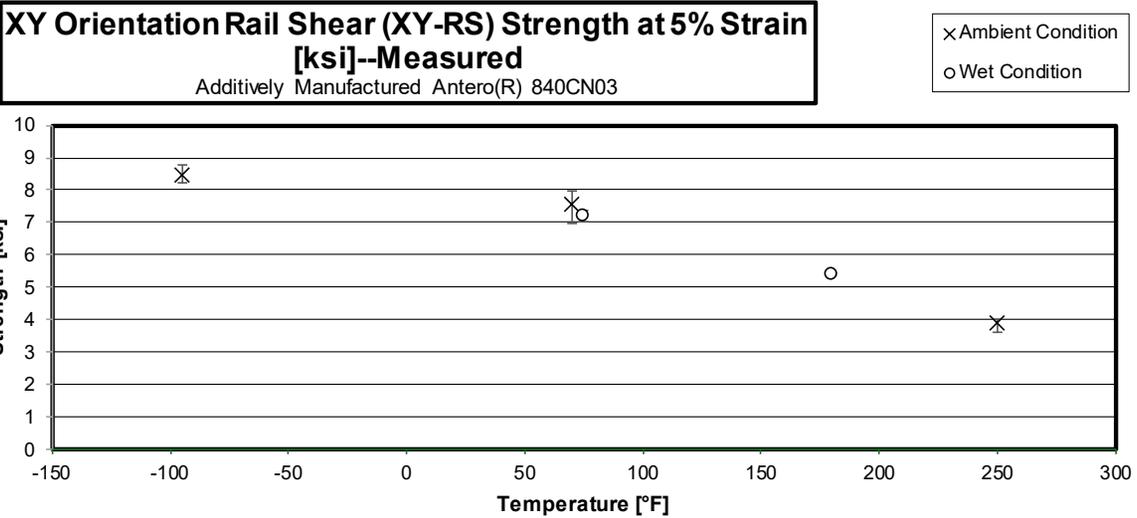
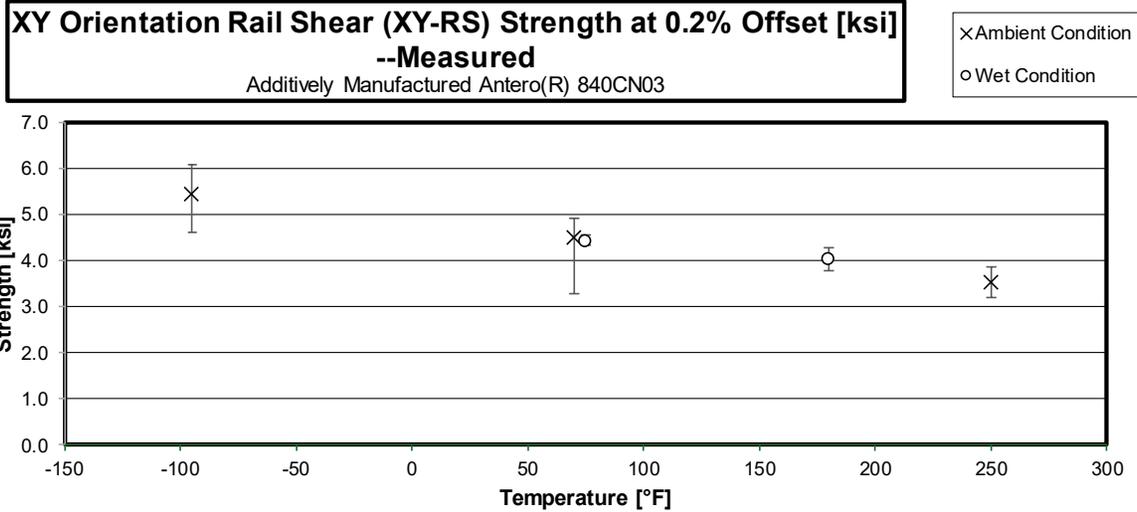


3.12 Z45 Flex Proc. B Properties (Z45-F)



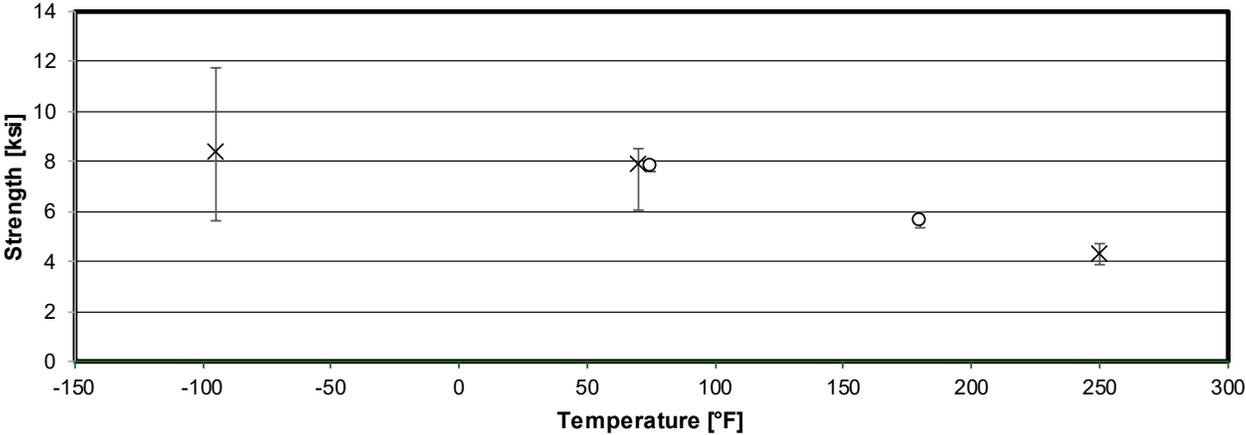


3.13 XY Rail Shear In-Plane Shear Properties (XY-RS)



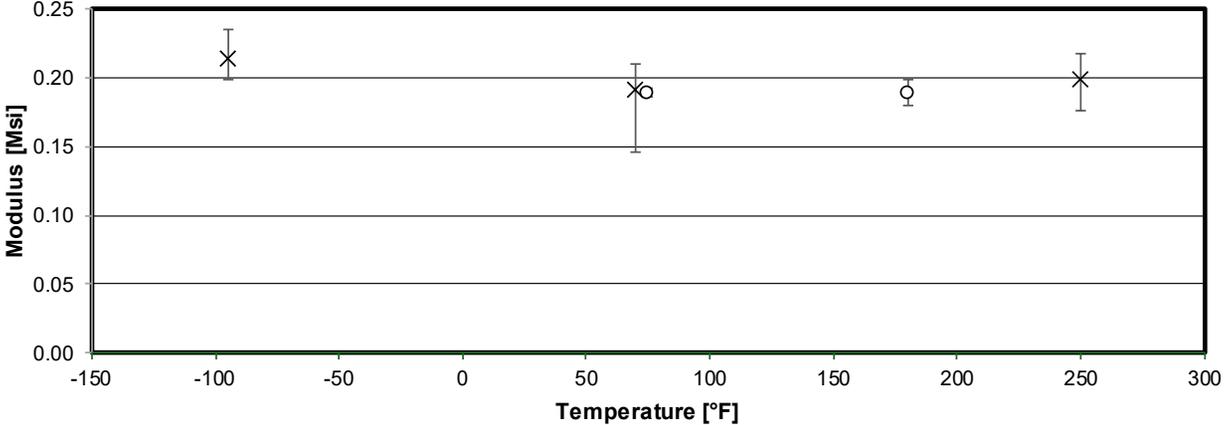
**XY Orientation Rail Shear (XY-RS) Maximum Strength [ksi]--
Measured**
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

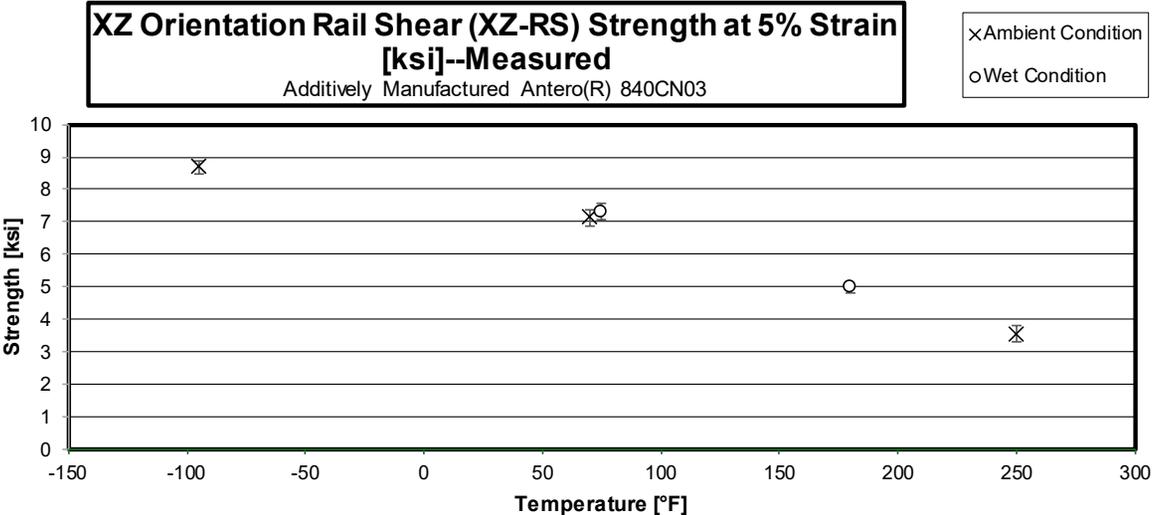
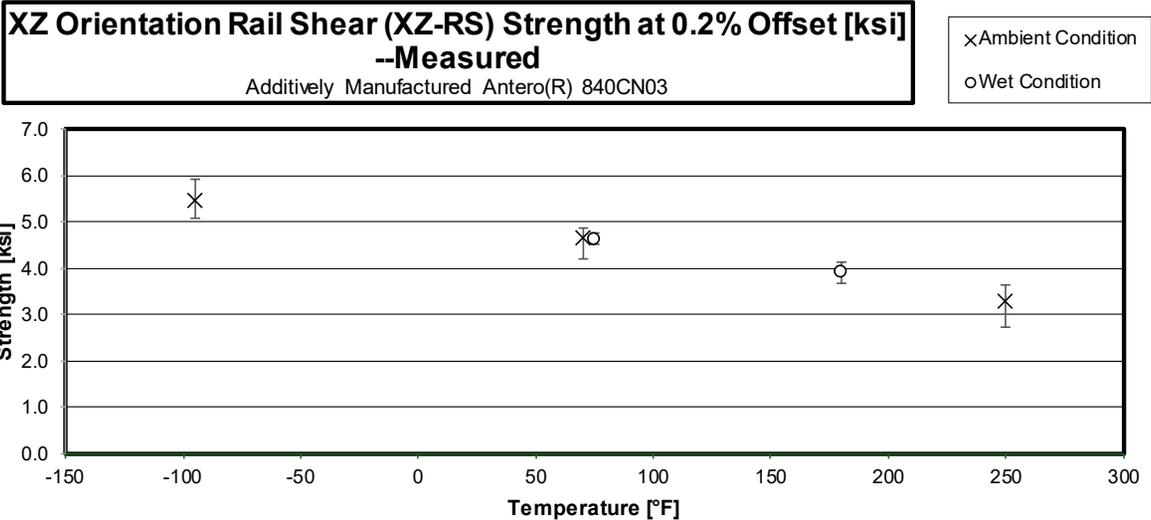


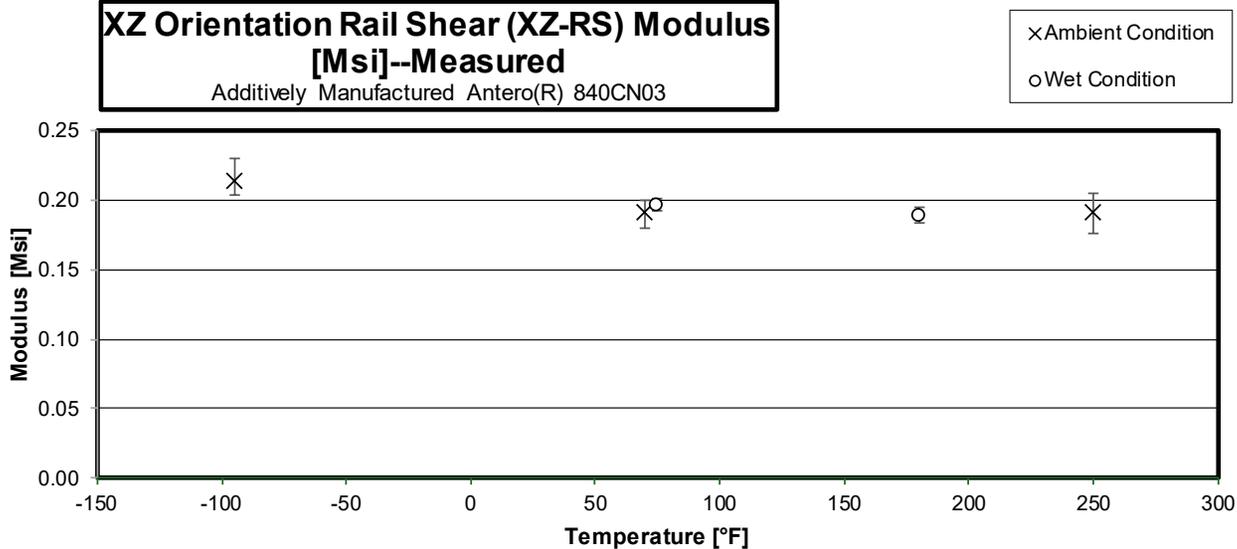
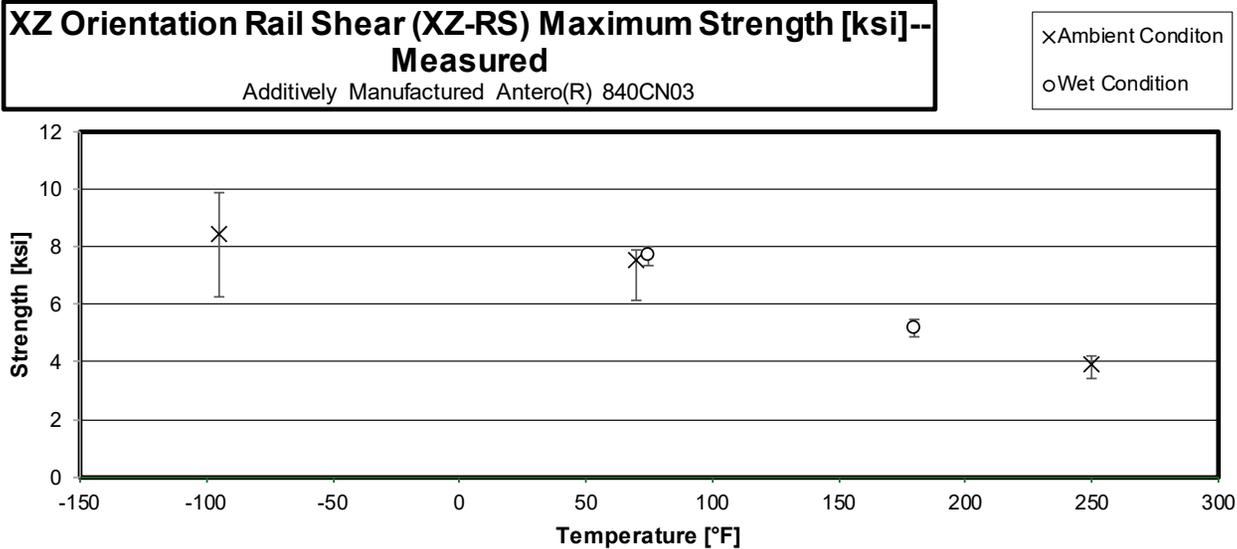
XY Orientation Rail Shear (XY-RS) Modulus [Msi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition



3.14 XZ Rail Shear In-Plane Shear Properties (XZ-RS)

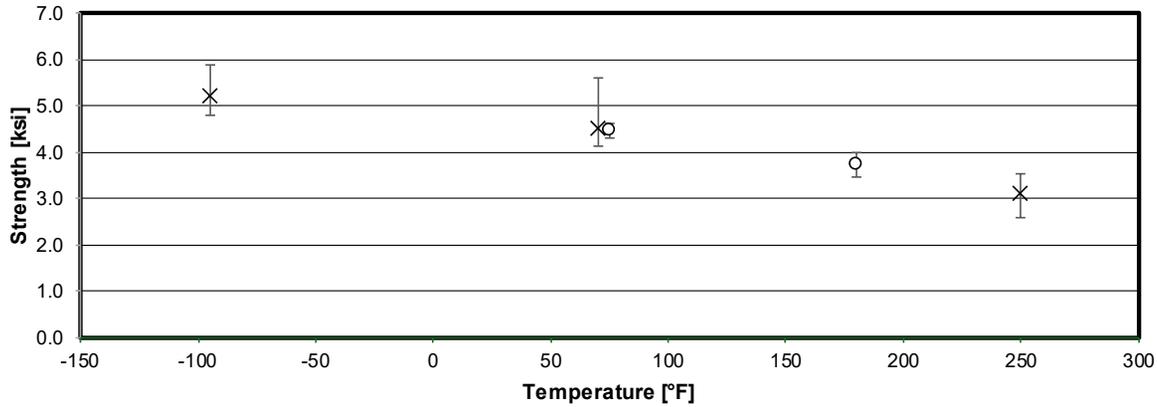




3.15 ZX Rail Shear In-Plane Shear Properties (ZX-RS)

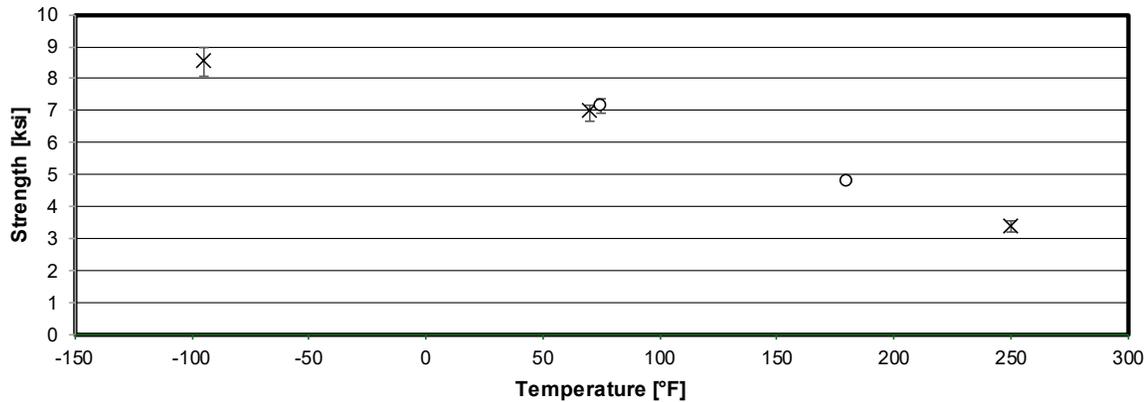
ZX Orientation Rail Shear (ZX-RS) Strength at 0.2% Offset [ksi]
--Measured
Additively Manufactured Antero(R) 840CN03

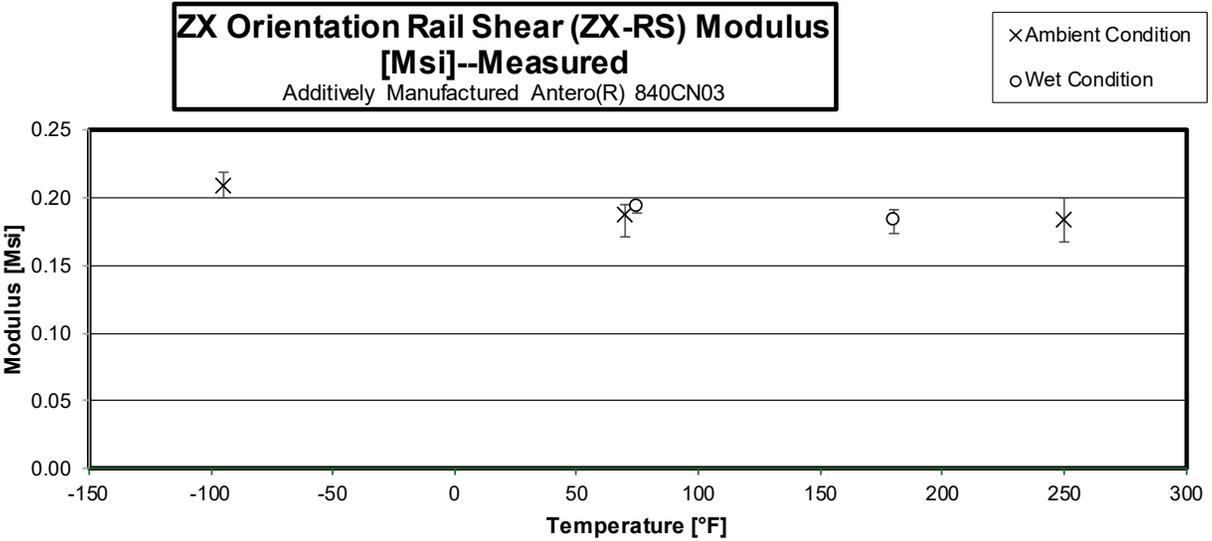
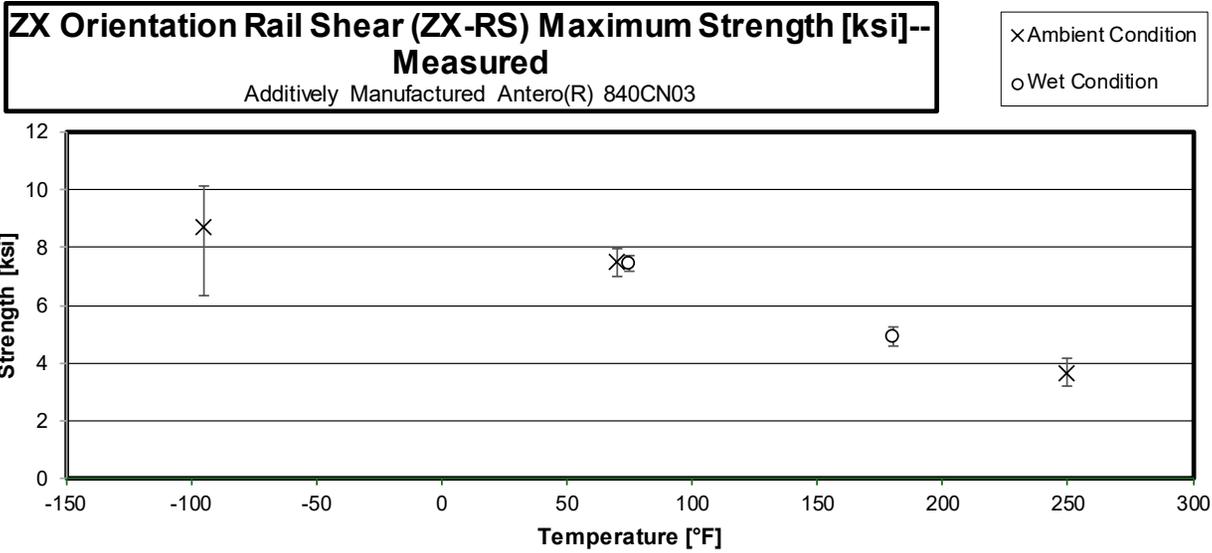
× Ambient Condition
○ Wet Condition



ZX Orientation Rail Shear (ZX-RS) Strength at 5% Strain [ksi]--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

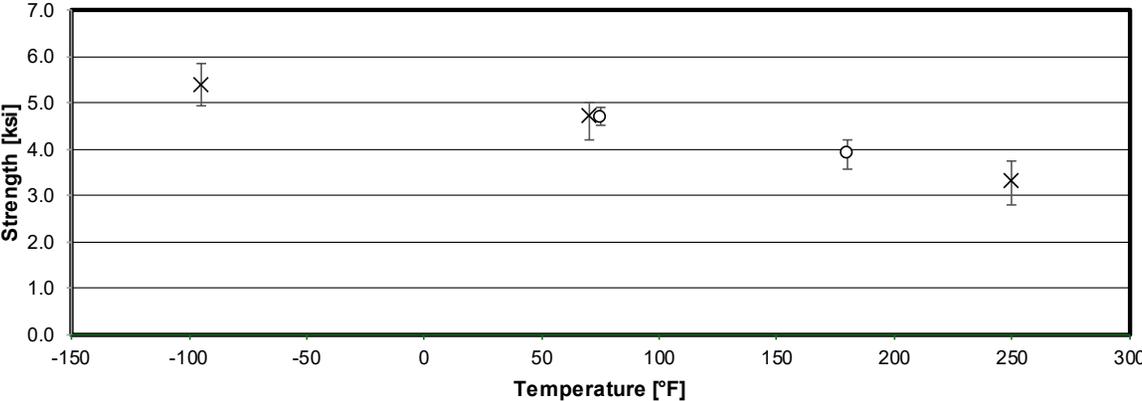




3.16 Z45 Rail Shear In-Plane Shear Properties (Z45-RS)

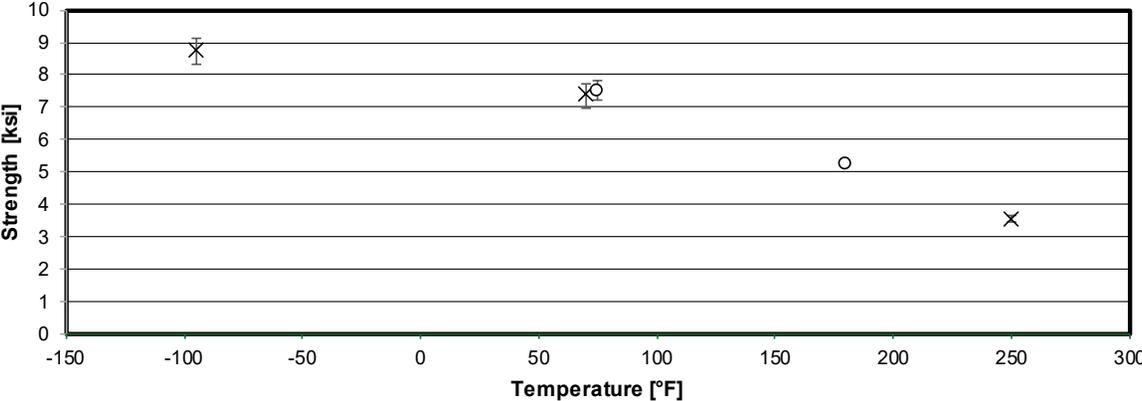
Z45 Orientation Rail Shear (Z45-RS) Strength at 0.2% Offset [ksi]
--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition



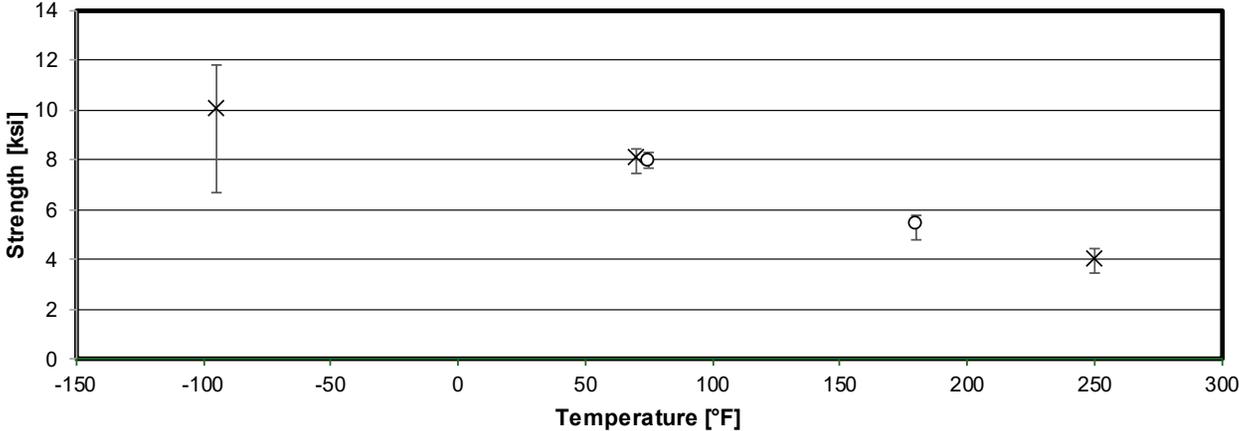
Z45 Orientation Rail Shear (Z45-RS) Strength at 5% Strain [ksi]
--Measured
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition



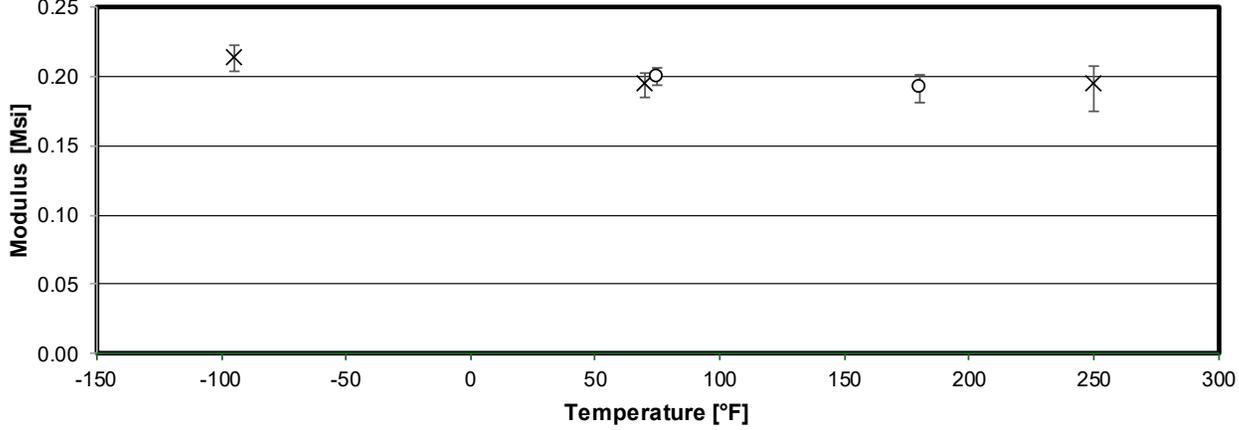
**Z45 Orientation Rail Shear (Z45-RS) Maximum Strength [ksi]--
Measured**
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

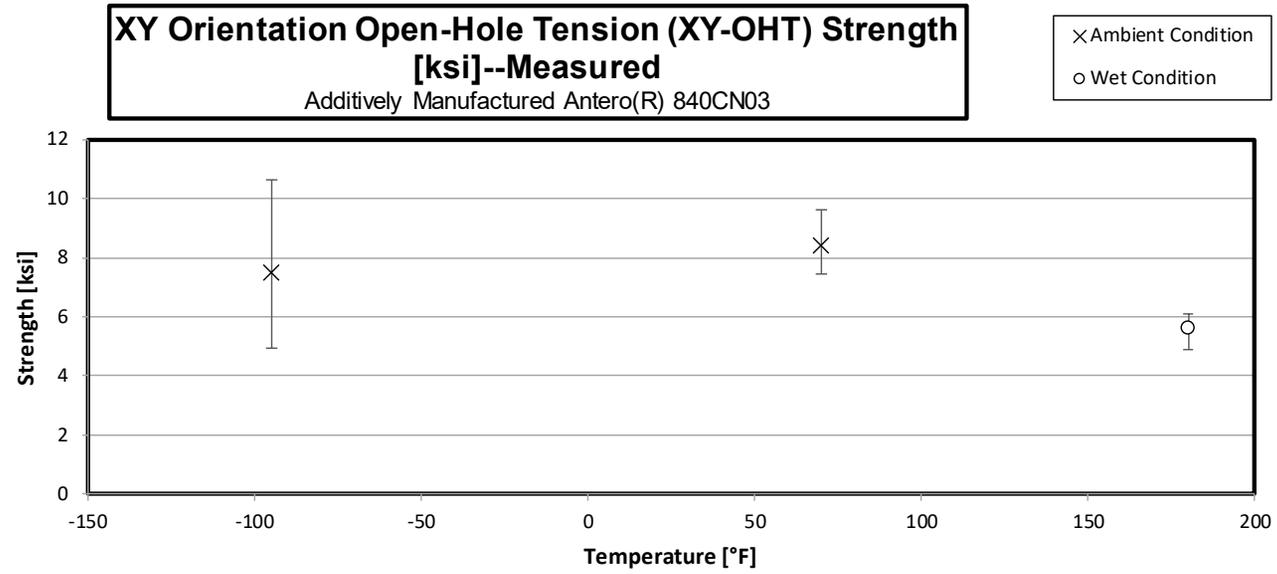


**Z45 Orientation Rail Shear (Z45-RS) Modulus
[Msi]--Measured**
Additively Manufactured Antero(R) 840CN03

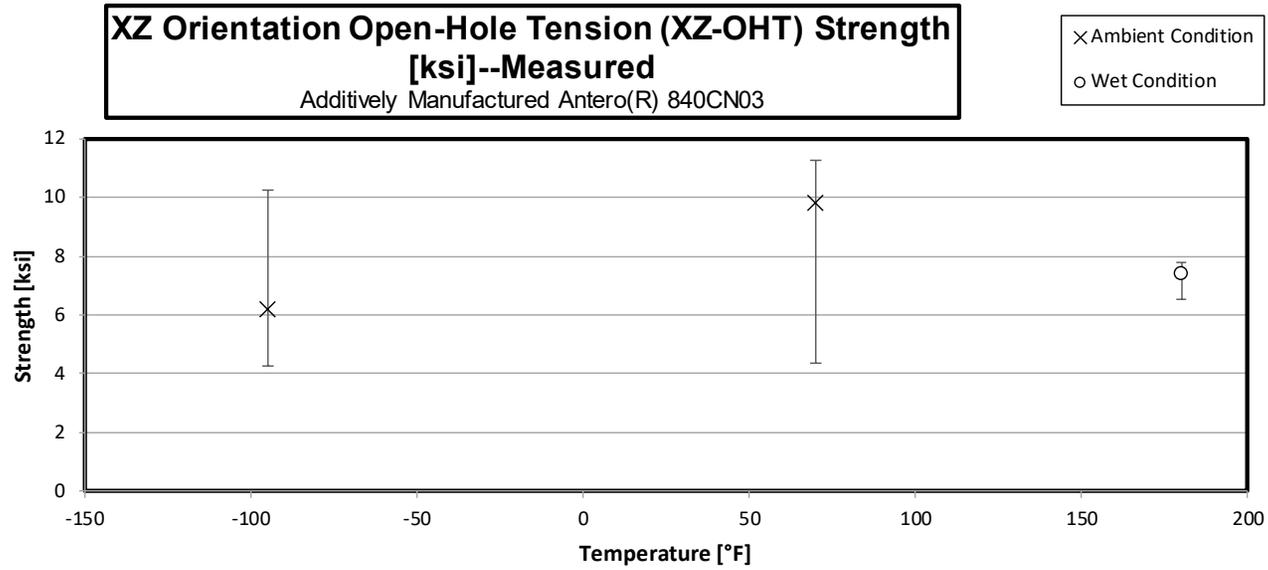
× Ambient Condition
○ Wet Condition



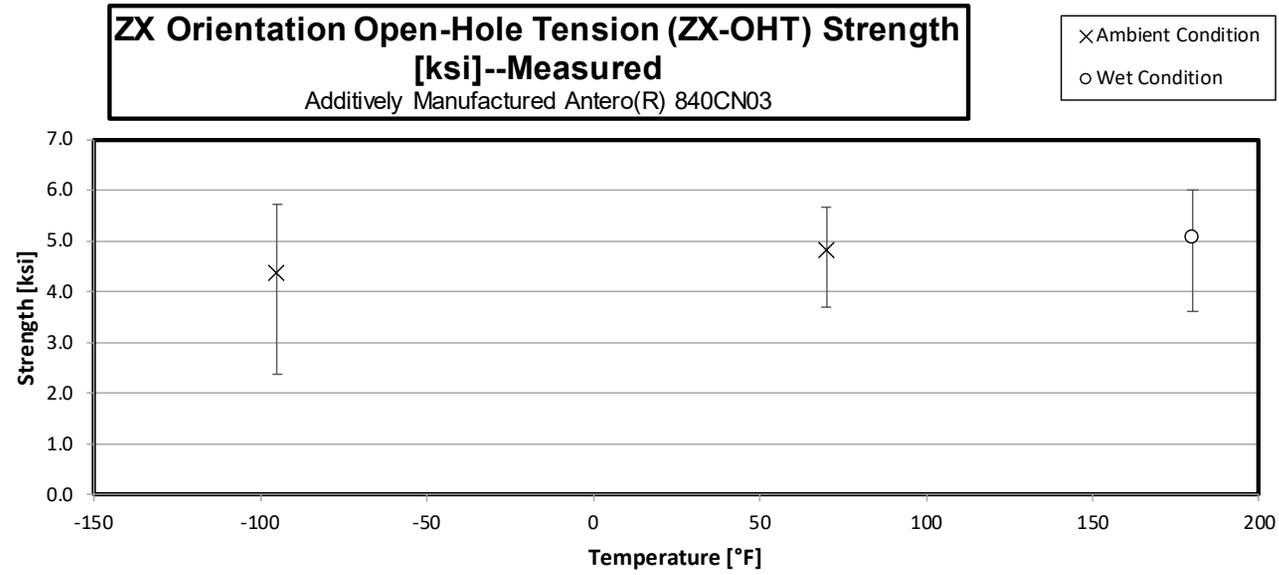
3.17 XY Open-Hole Tension Properties (XY-OHT)



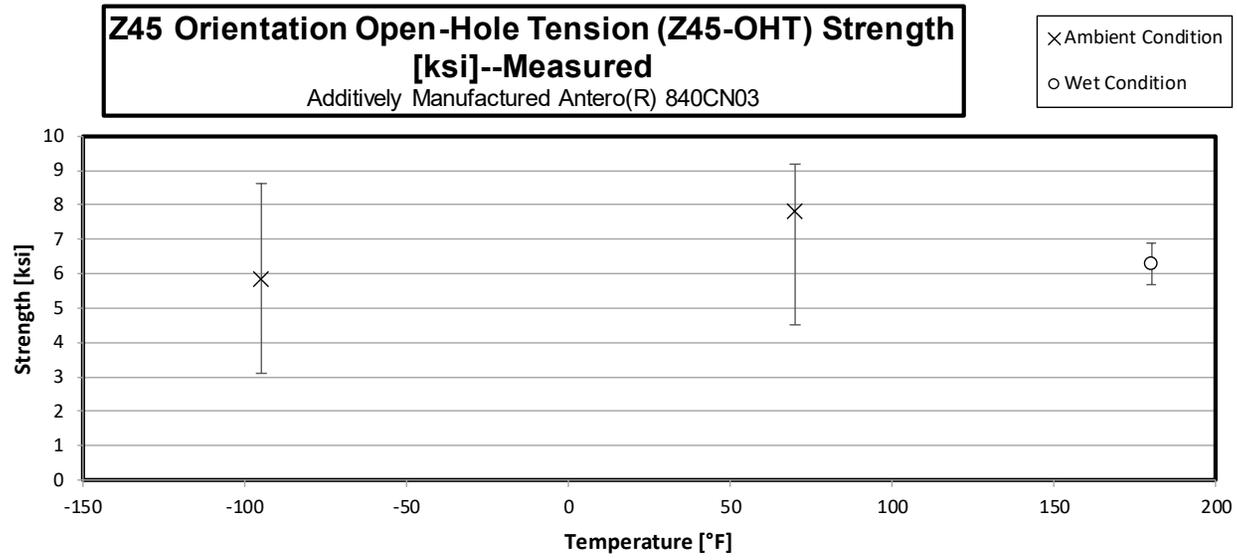
3.18 XZ Open-Hole Tension Properties (XZ-OHT)



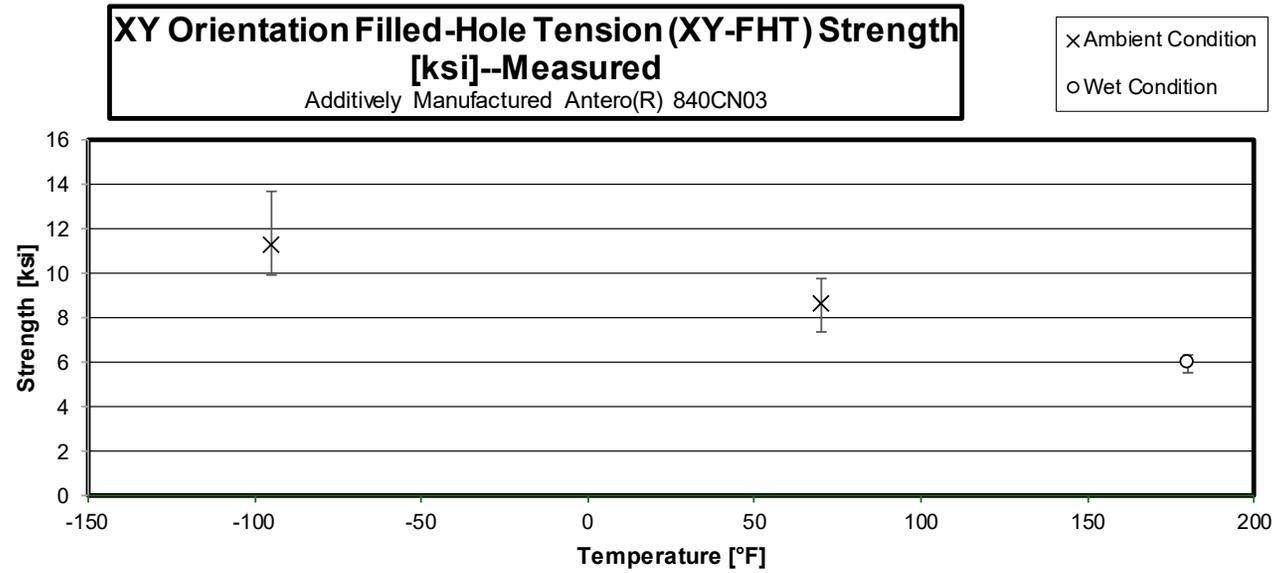
3.19 ZX Open-Hole Tension Properties (ZX-OHT)



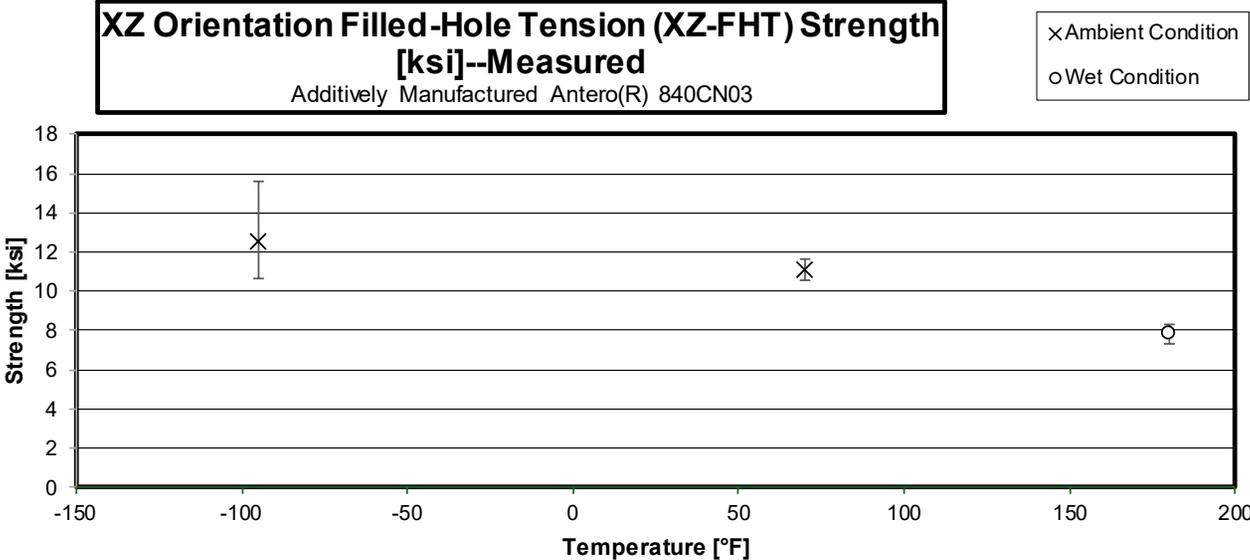
3.20 Z45 Open-Hole Tension Properties (Z45-OHT)



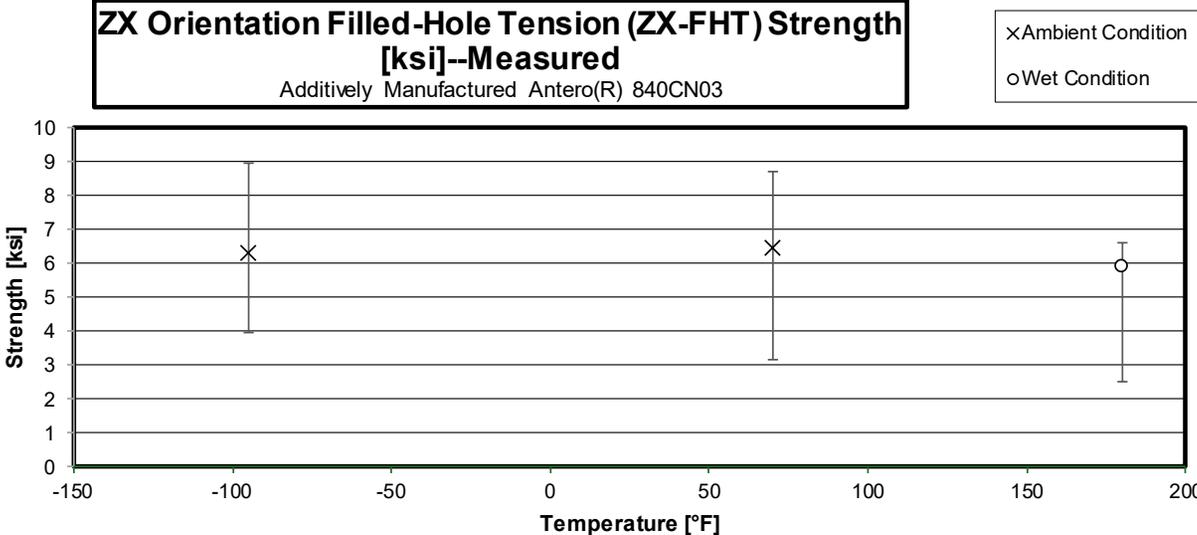
3.21 XY Filled-Hole Tension Properties (XY-FHT)



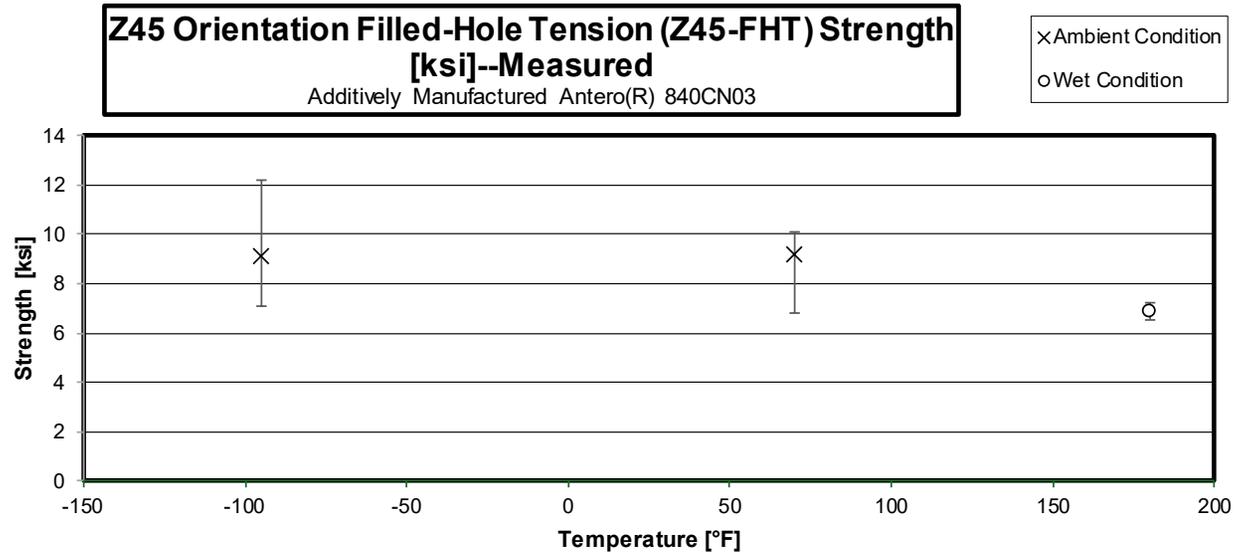
3.22 XZ Filled-Hole Tension Properties (XZ-FHT)



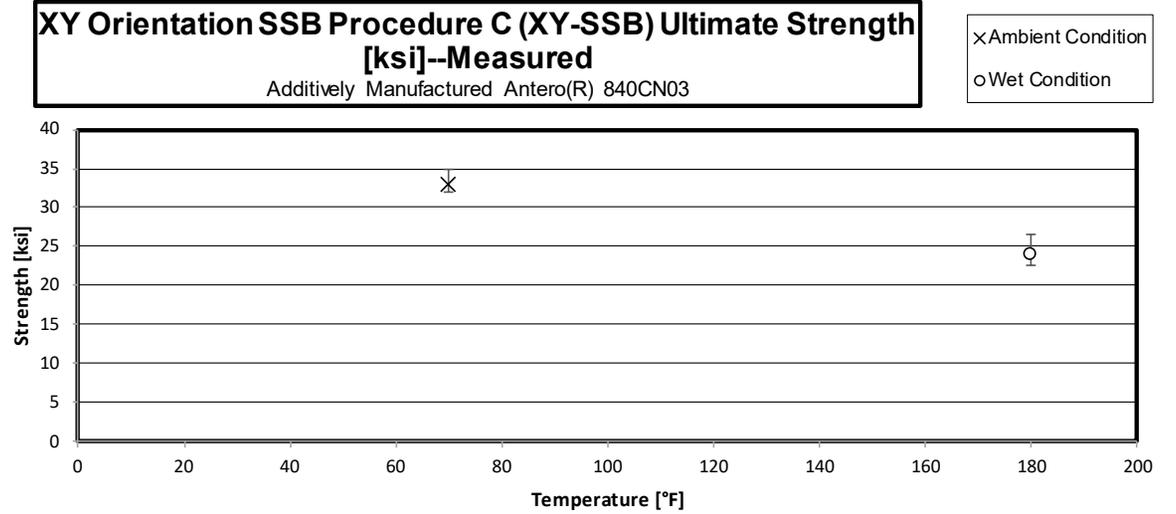
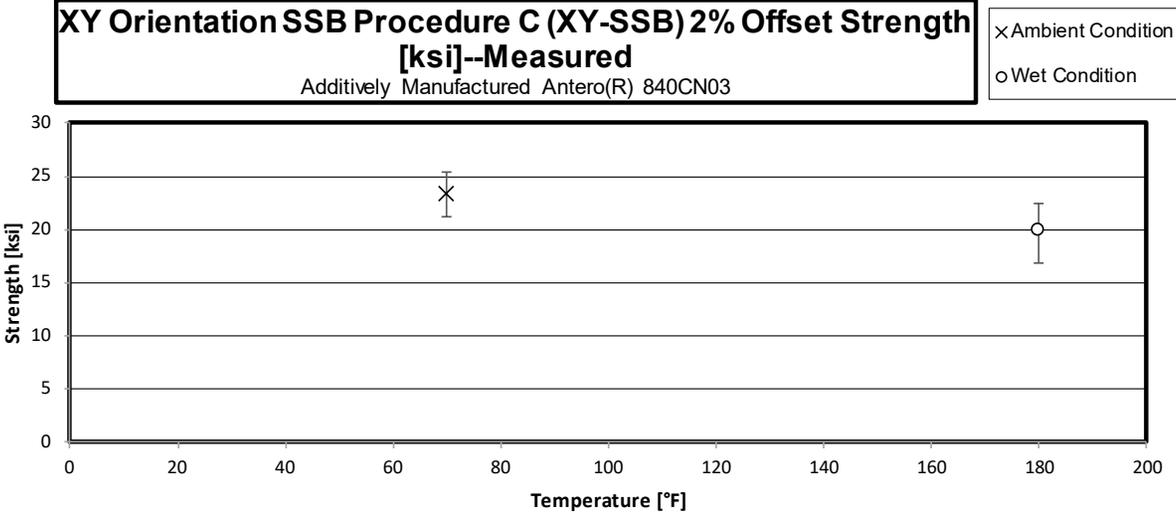
3.23 ZX Filled-Hole Tension Properties (ZX-FHT)



3.24 Z45 Filled-Hole Tension Properties (Z45-FHT)

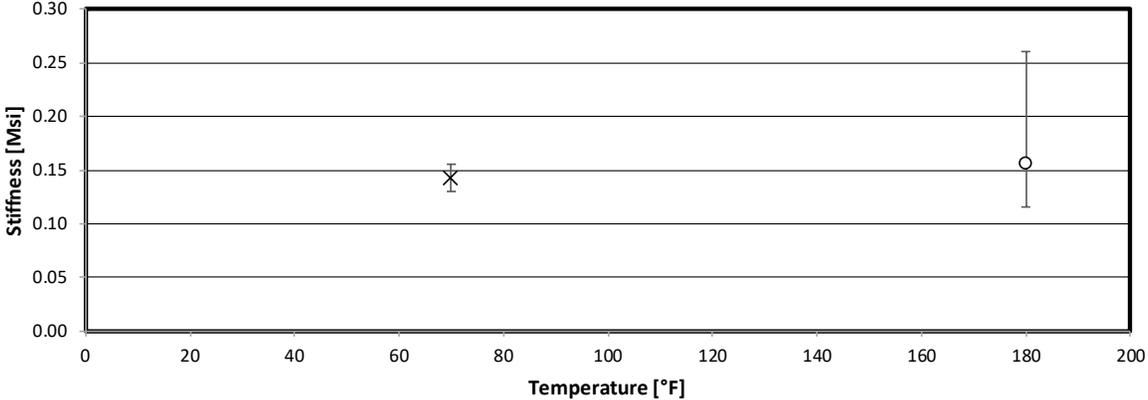


3.25XY Single-Shear Bearing Properties (XY-SSB)

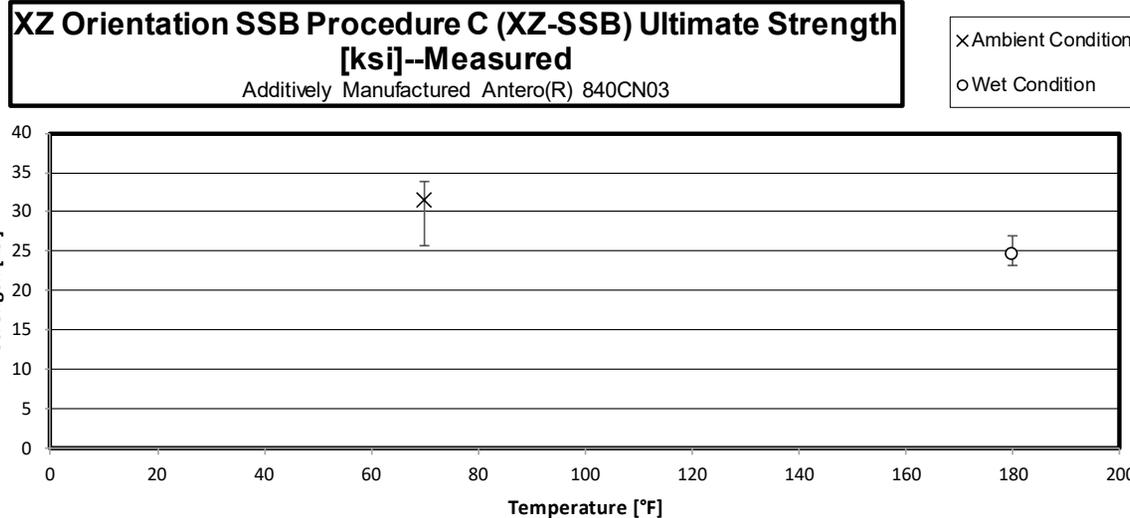
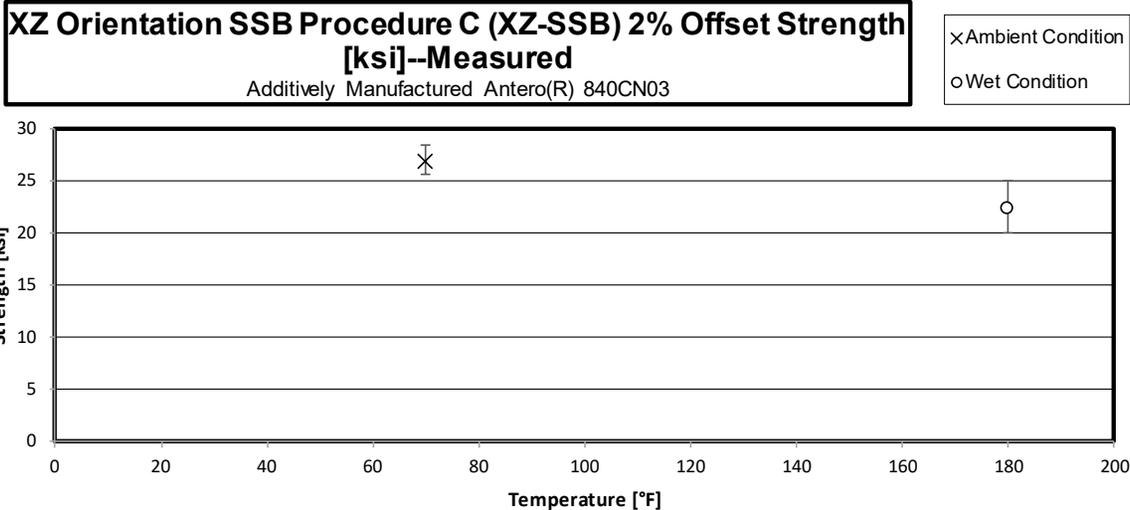


**XY Orientation SSB Procedure C (XY-SSB) Stiffness [Msi]--
Measured**
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

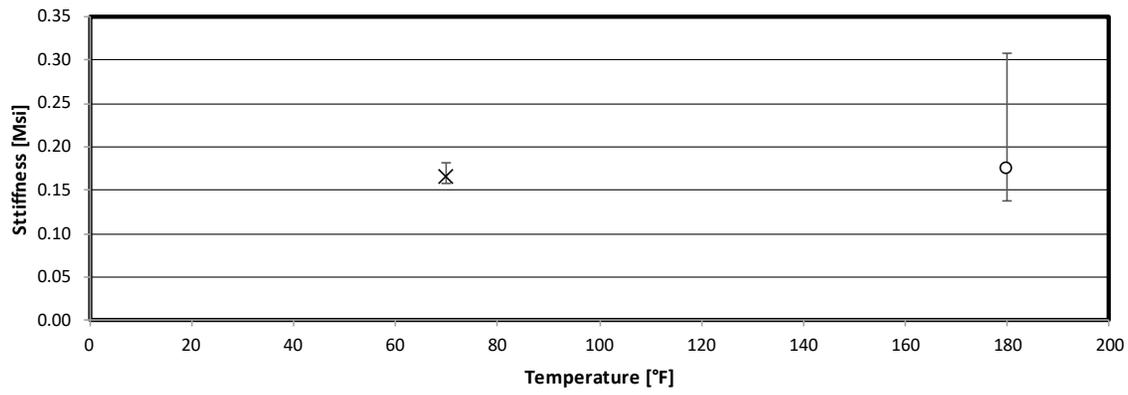


3.26 XZ Single-Shear Bearing Properties (XZ-SSB)

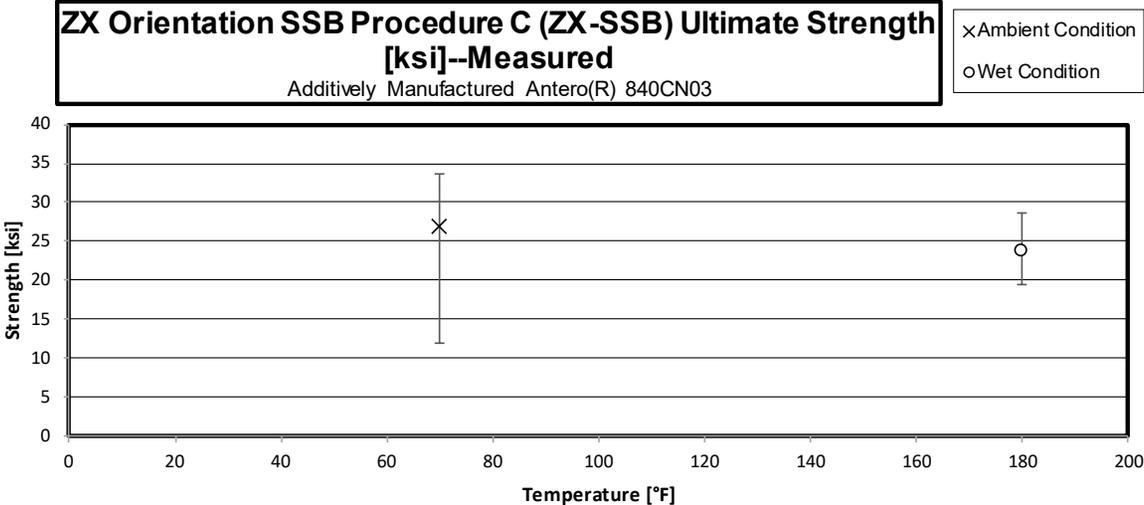
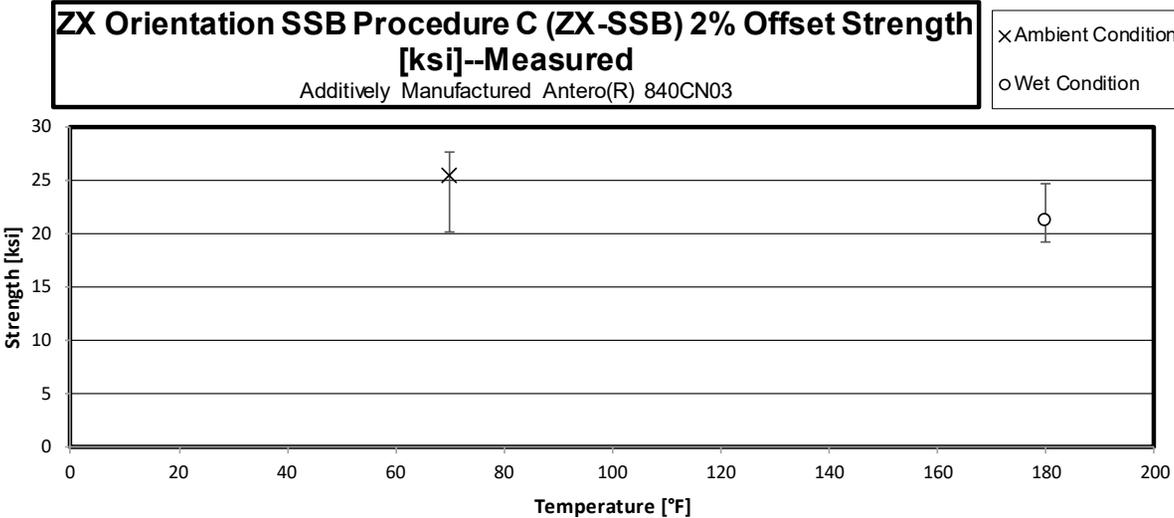


**XZ Orientation SSB Procedure C (XZ-SSB) Stiffness [Msi]--
Measured**
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

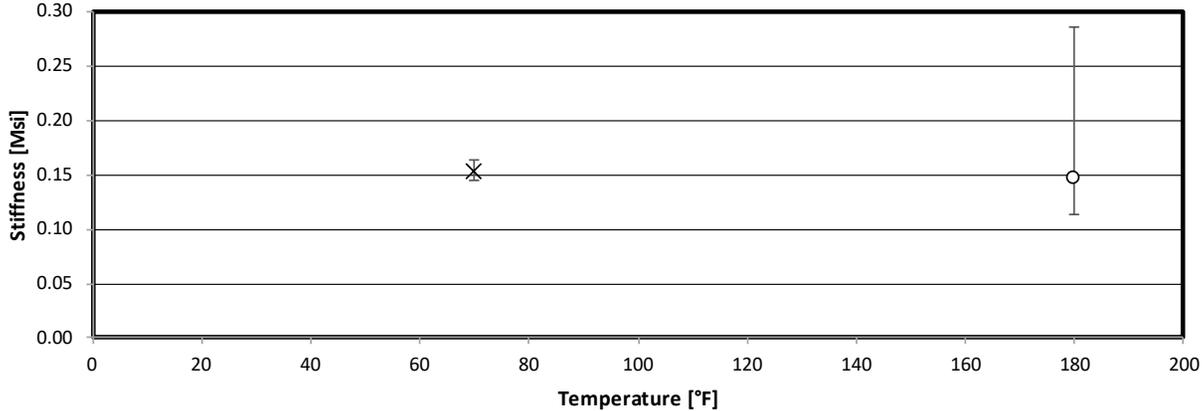


3.27 ZX Single-Shear Bearing Properties (ZX-SSB)

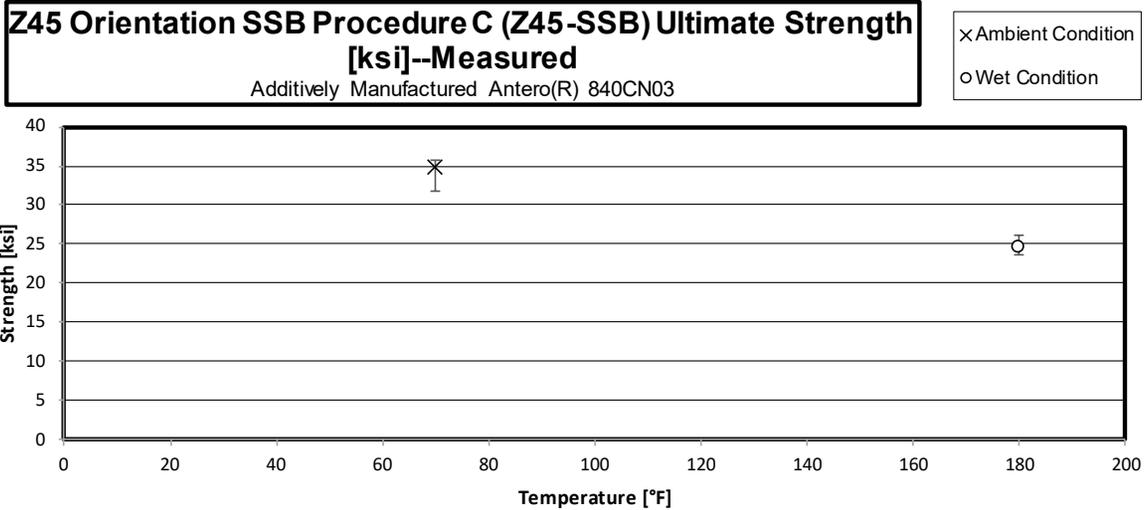
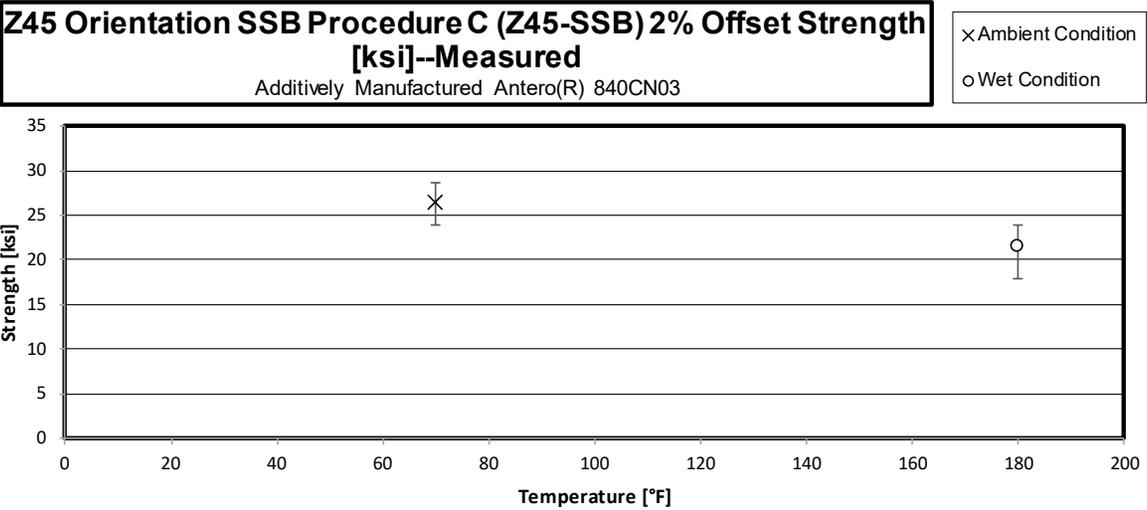


**ZX Orientation SSB Procedure C (ZX-SSB) Stiffness [Msi]--
Measured**
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition

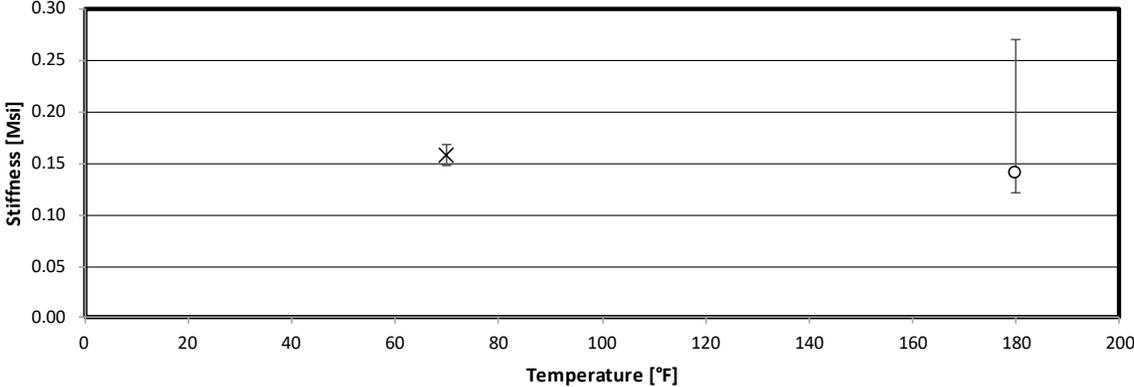


3.28 Z45 Single-Shear Bearing Properties (Z45-SSB)



**Z45 Orientation SSB Procedure C (Z45-SSB) Stiffness [Msi]--
Measured**
Additively Manufactured Antero(R) 840CN03

× Ambient Condition
○ Wet Condition



4. Raw Data

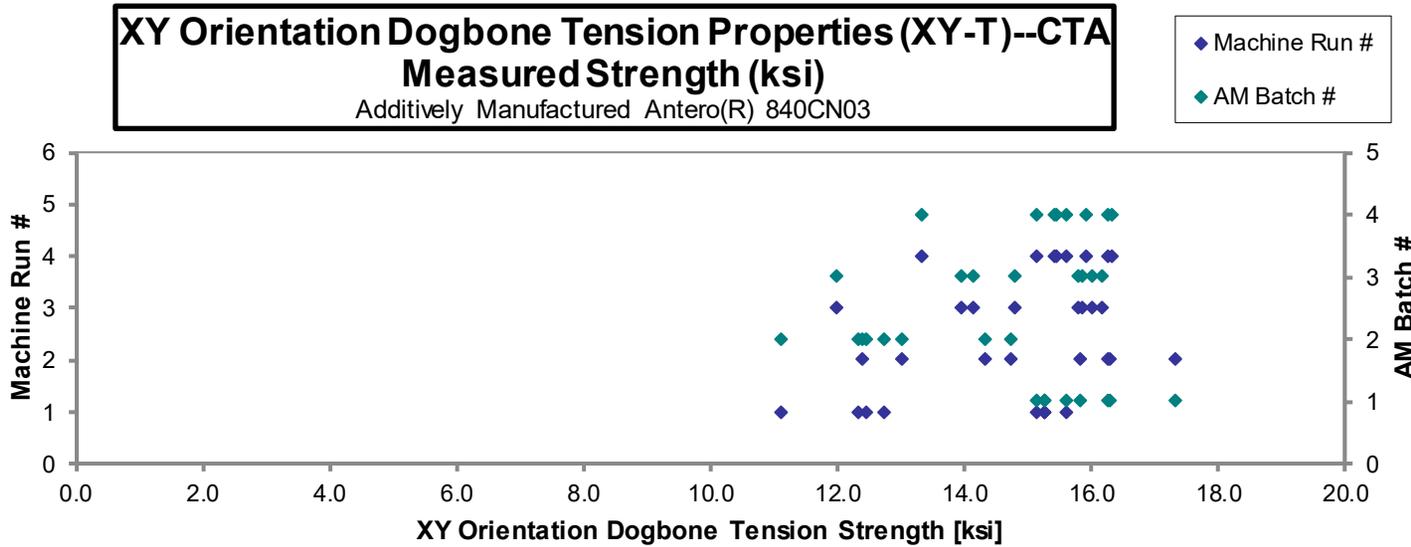
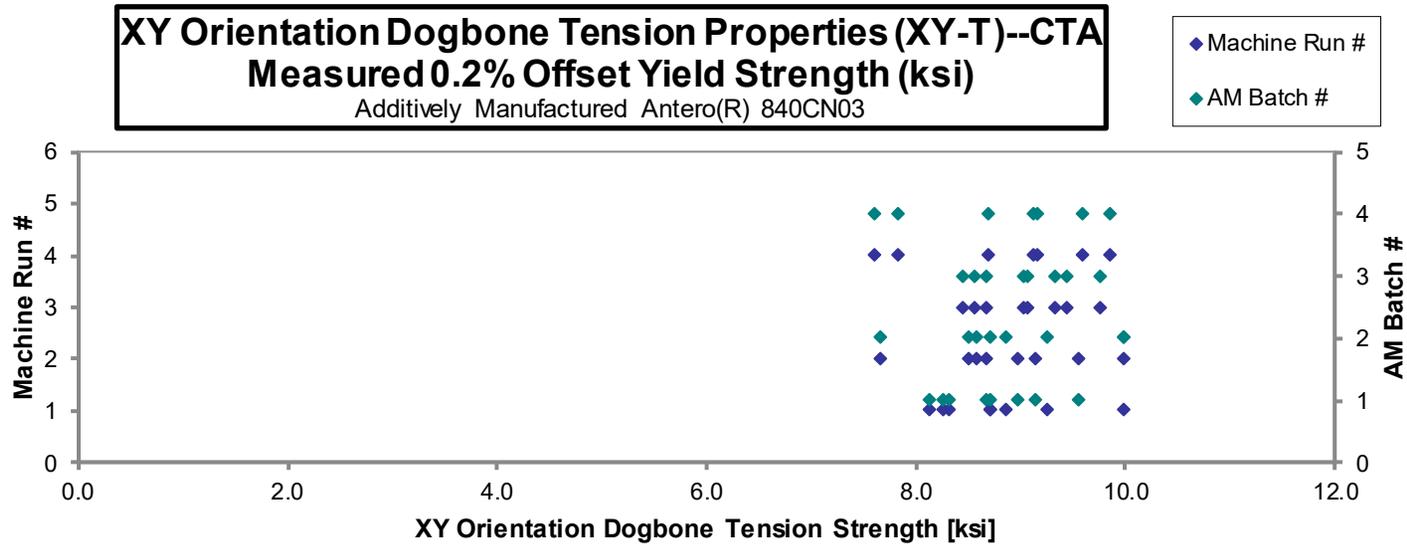
4.1 XY Tension Properties (XY-T)

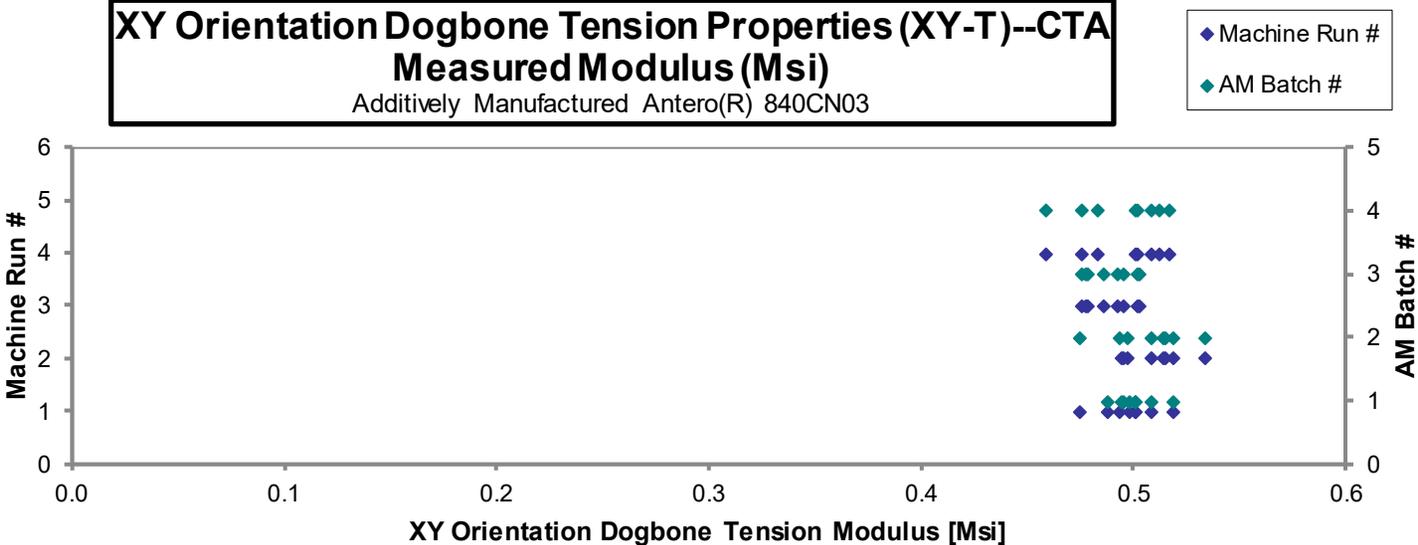
**XY Orientation Dogbone Tension Properties (XY-T)--CTA
Strength & Modulus**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-11-CTA-1	1	1	8.714	15.12	0.4882	0.1329	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-12-CTA-2	1	1	8.322	15.62	0.5008	0.1321	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-14-CTA-3	1	1	8.126	15.25	0.4982	0.1322	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-15-CTA-4	1	1	8.266	15.27	0.5010	0.1325	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-11-CTA-1	1	2	9.549	16.26	0.4949	0.1322	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-13-CTA-2	1	2	8.679	15.81	0.5090	0.1321	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-14-CTA-3	1	2	9.135	17.32	0.5191	0.1319	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-15-CTA-4	1	2	8.964	16.31	0.4954	0.1320	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-11-CTA-1 (RE-DO)	2	1	8.851	12.45	0.5081	0.1326	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-12-CTA-2 (RE-DO)	2	1	9.244	11.11	0.4937	0.1313	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-14-CTA-3 (RE-DO)	2	1	9.982	12.72	0.4748	0.1317	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-15-CTA-4 (RE-DO)	2	1	8.717	12.32	0.5184	0.1311	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-11-CTA-1	2	2	7.653	12.39	0.5336	0.1322	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-13-CTA-2	2	2	8.511	14.33	0.5153	0.1316	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-14-CTA-3	2	2	9.982	14.72	0.4972	0.1315	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-15-CTA-4	2	2	8.586	13.02	0.5140	0.1303	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-11-CTA-1	3	3	9.433	13.96	0.4774	0.1309	FAILURE AT GAGE & FILLET SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-12-CTA-2	3	3	8.455	11.98	0.5023	0.1304	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-14-CTA-3	3	3	9.018	14.15	0.4956	0.1308	FAILURE AT GAGE, FILLET & GRIP SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-15-CTA-4	3	3	9.070	14.80	0.4863	0.1312	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-11-CTA-1	3	3	8.675	15.85	0.4930	0.1329	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-12-CTA-2	3	3	9.330	15.81	0.4785	0.1333	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-14-CTA-3	3	3	8.564	16.03	0.5031	0.1333	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-15-CTA-4	3	3	9.760	16.16	0.4759	0.1327	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-11-CTA-1	4	4	9.126	15.15	0.5017	0.1314	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-12-CTA-2	4	4	9.851	16.28	0.4829	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-14-CTA-3	4	4	8.687	16.32	0.5087	0.1306	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-15-CTA-4	4	4	9.167	15.43	0.5009	0.1302	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-11-CTA-1	4	4	7.595	13.33	0.5121	0.1343	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-13-CTA-2	4	4	7.820	15.91	0.5171	0.1338	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-14-CTA-3	4	4	9.598	15.61	0.4758	0.1341	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-15-CTA-4*	4	4		15.47	0.4591	0.1344	FAILURE AT GAGE AND FILLET SECTION

*Extra coupons were re-tested to replace initial data as defects were noticed on the prints, hence knocking down the data

Average	8.885	14.76	0.4979	0.1320
Standard Dev.	0.6385	1.564	0.01610	0.001184
Coeff. of Var. [%]	7.187	10.60	3.23	0.8965
Min.	7.595	11.11	0.4591	0.1302
Max.	9.982	17.32	0.5336	0.1344
Number of Spec.	31	32	32	32





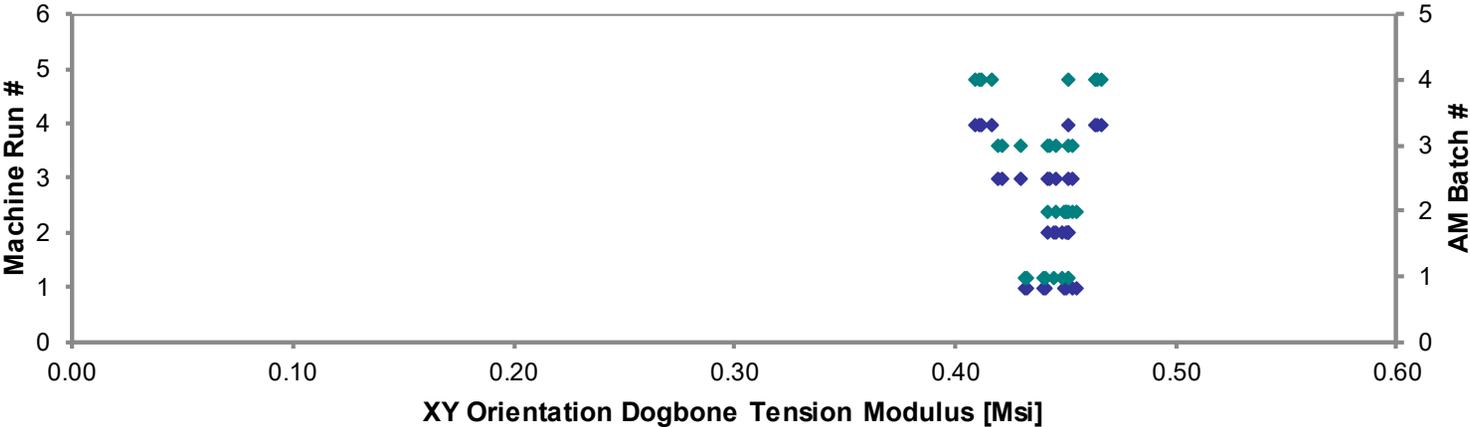
XY Orientation Dogbone Tension Properties (XY-T)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-11-RTA-1	1	1	7.286	10.51	0.4327	0.1329	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-12-RTA-2	1	1	7.179	10.56	0.4405	0.1328	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-14-RTA-3	1	1	7.334	10.53	0.4316	0.1329	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-15-RTA-4	1	1	7.195	10.59	0.4402	0.1330	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-11-RTA-1	1	2	8.417	11.77	0.4508	0.1328	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-13-RTA-2	1	2	8.323	11.73	0.4449	0.1331	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-14-RTA-3	1	2	8.254	11.82	0.4513	0.1330	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-15-RTA-4	1	2	8.246	11.52	0.4479	0.1321	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-11-RTA-1	2	1	7.572	11.32	0.4498	0.1312	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-12-RTA-2	2	1	7.813	11.28	0.4489	0.1300	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-14-RTA-3	2	1	7.929	8.998	0.4529	0.1293	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-15-RTA-4	2	1	7.885	11.55	0.4550	0.1291	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-11-RTA-1	2	2	7.454	10.50	0.4459	0.1307	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-13-RTA-2	2	2	7.312	11.18	0.4509	0.1295	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-14-RTA-3	2	2	7.564	11.37	0.4499	0.1297	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-15-RTA-4	2	2	7.522	11.17	0.4421	0.1302	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-11-RTA-1	3	3	7.852	11.14	0.4533	0.1315	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-12-RTA-2	3	3	7.745	11.04	0.4453	0.1317	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-14-RTA-3	3	3	7.930	11.13	0.4426	0.1317	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-15-RTA-4	3	3	7.923	11.15	0.4510	0.1313	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-11-RTA-1	3	3	7.770	11.27	0.4417	0.1349	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-12-RTA-2	3	3	8.226	11.02	0.4215	0.1333	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-14-RTA-3	3	3	7.952	10.98	0.4191	0.1334	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-15-RTA-4	3	3	7.669	10.96	0.4299	0.1337	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-11-RTA-1	4	4	8.416	12.00	0.4629	0.1302	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-12-RTA-2	4	4	8.378	11.95	0.4663	0.1296	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-14-RTA-3	4	4	8.651	11.83	0.4510	0.1298	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-15-RTA-4	4	4	8.710	11.93	0.4640	0.1302	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-11-RTA-1	4	4	6.686	9.914	0.4118	0.1371	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-13-RTA-2	4	4	7.032	10.10	0.4091	0.1375	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-14-RTA-3	4	4	7.057	10.27	0.4167	0.1367	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-15-RTA-4	4	4	6.837	10.02	0.4109	0.1376	FAILURE AT GAGE SECTION

Average	7.754	11.03	0.4416	0.1323
Standard Dev.	0.5275	0.6920	0.01552	0.002430
Coeff. of Var. [%]	6.804	6.272	3.514	1.838
Min.	6.686	8.998	0.4091	0.1291
Max.	8.710	12.00	0.4663	0.1376
Number of Spec.	32	32	32	32

XY Orientation Dogbone Tension Properties (XY-T)--RTA
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

- ◆ Machine Run #
- ◆ AM Batch #

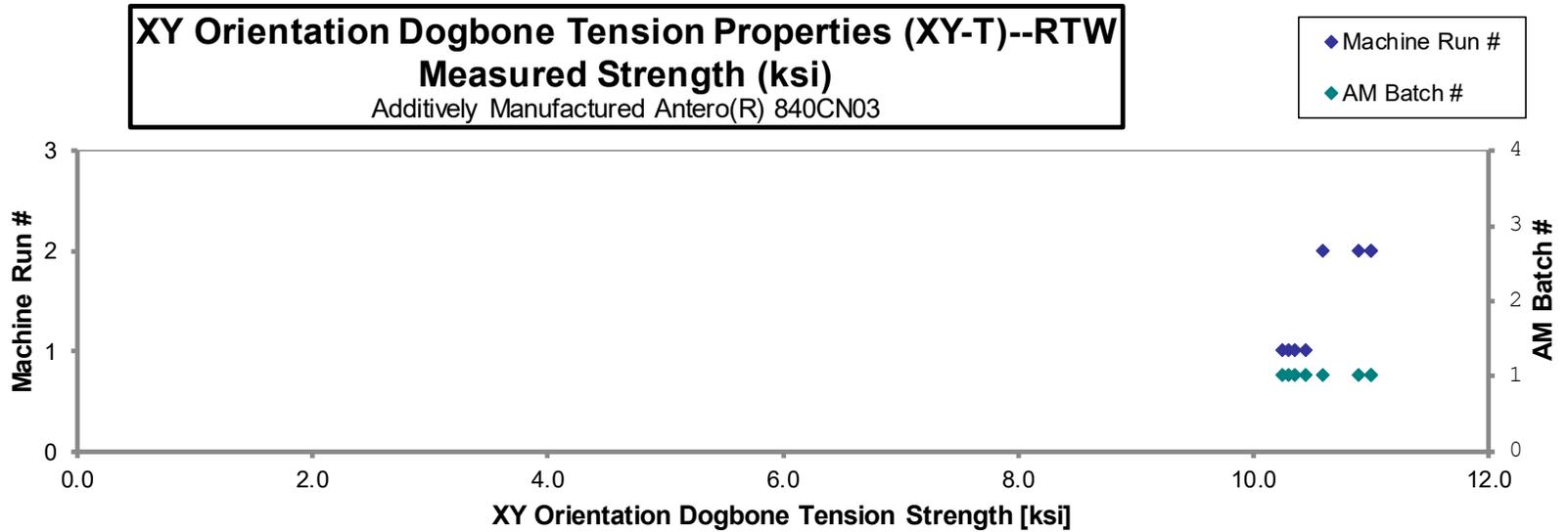
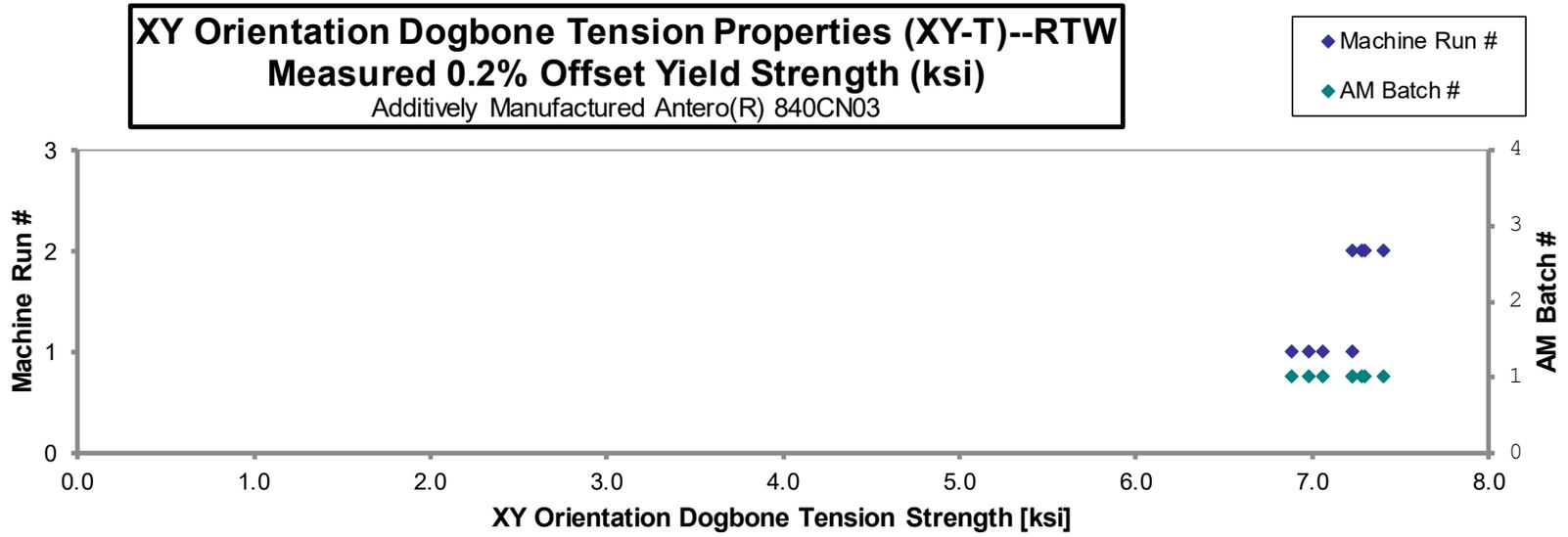


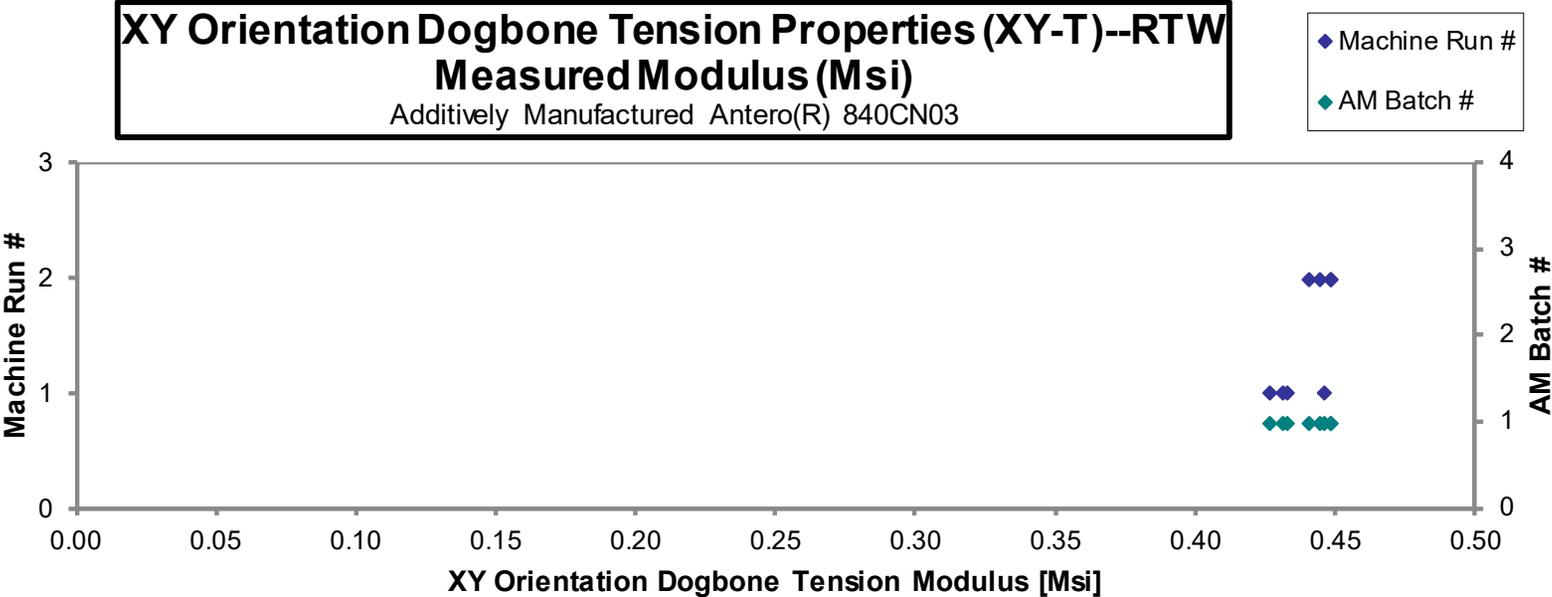
**XY Orientation Dogbone Tension Properties (XY-T)--RTW
Strength & Modulus**

Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-11-RTW-1	1	1	6.890	10.45	0.4464	0.1315	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-12-RTW-2	1	1	7.236	10.36	0.4315	0.1318	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-14-RTW-3	1	1	7.064	10.25	0.4270	0.1315	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-15-RTW-4	1	1	6.988	10.30	0.4335	0.1324	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-11-RTW-1	1	2	7.287	11.01	0.4493	0.1326	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-12-RTW-2	1	2	7.300	10.90	0.4454	0.1329	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-13-RTW-3	1	2	7.406	11.01	0.4493	0.1323	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-15-RTW-4	1	2	7.234	10.60	0.4410	0.1322	FAILURE AT GAGE SECTION

Average	7.175	10.61	0.4404	0.1322
Standard Dev.	0.1762	0.3189	0.008650	0.0005170
Coeff. of Var. [%]	2.455	3.005	1.964	0.3912
Min.	6.890	10.25	0.4270	0.1315
Max.	7.406	11.01	0.4493	0.1329
Number of Spec.	8	8	8	8

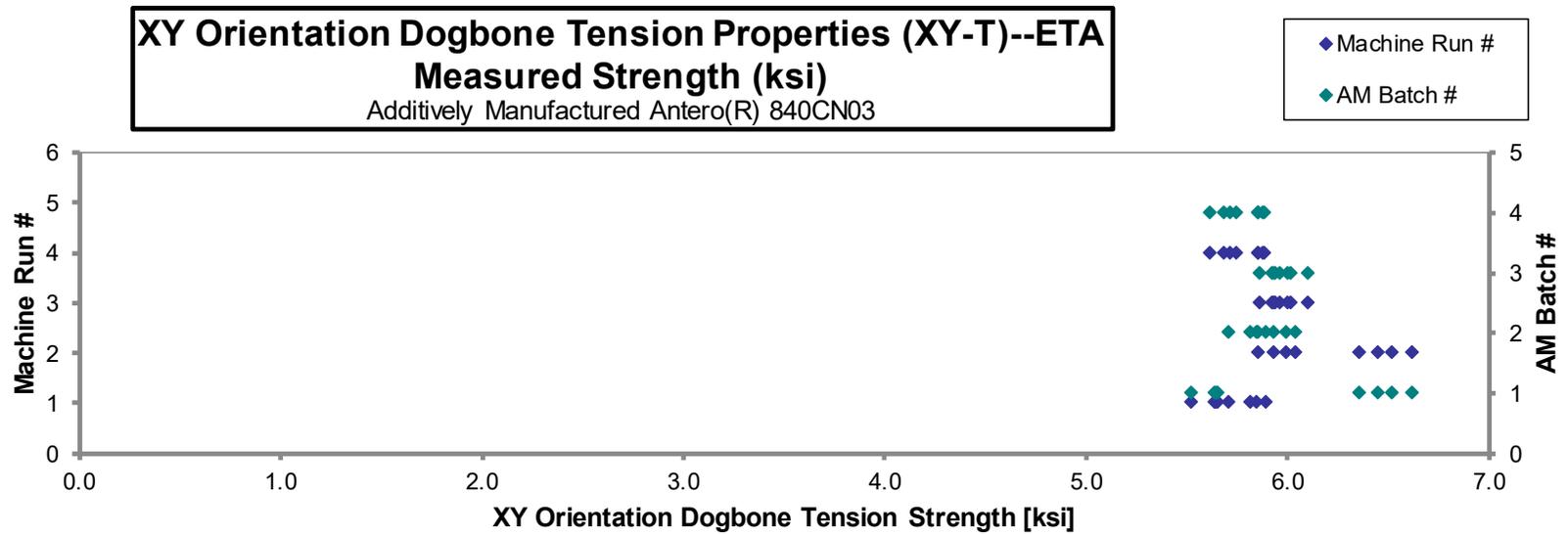
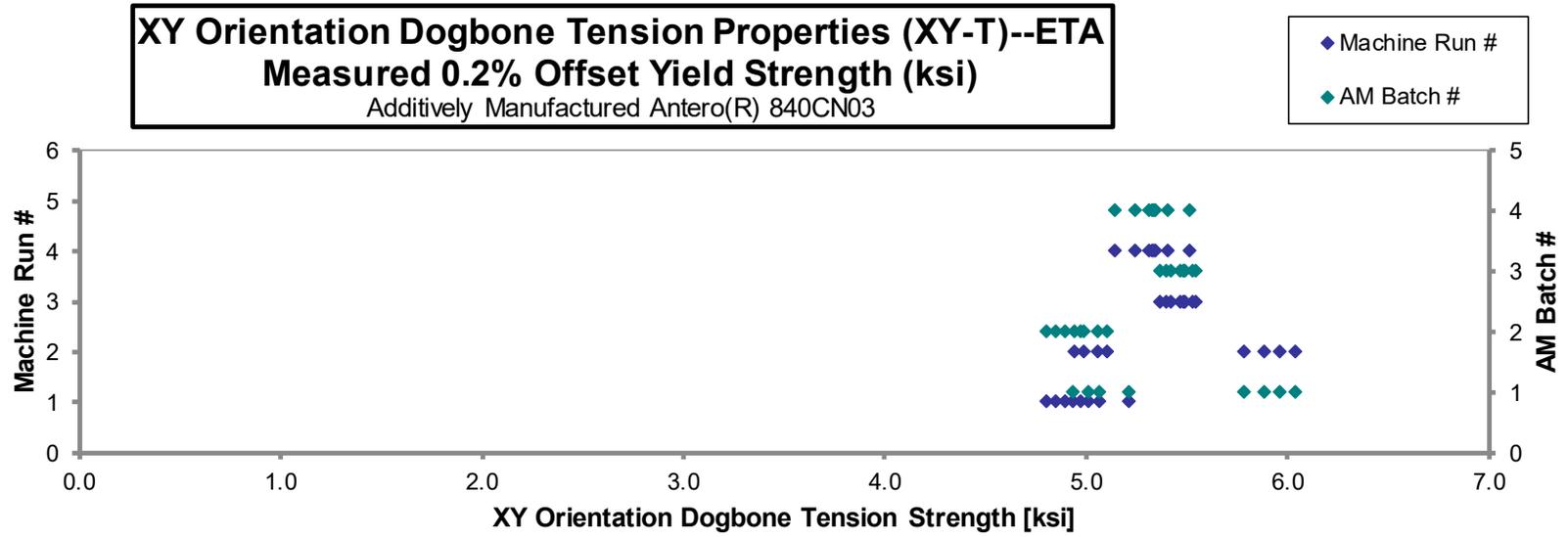




XY Orientation Dogbone Tension Properties (XY-T)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

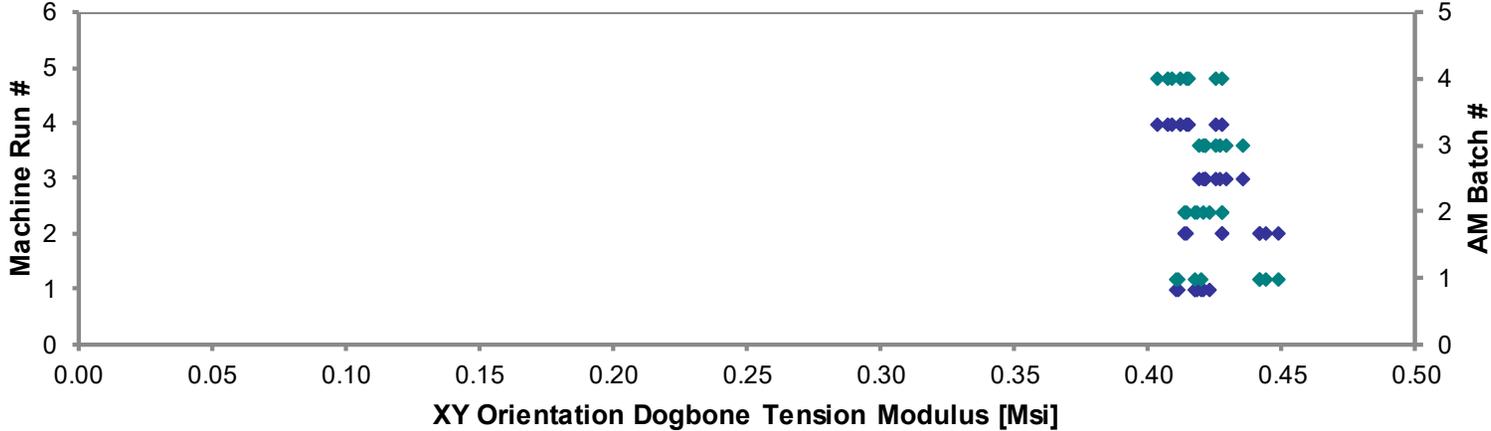
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-11-ETA-1	1	1	5.060	5.646	0.4194	0.1321	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-12-ETA-2	1	1	5.005	5.632	0.4173	0.1324	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-14-ETA-3	1	1	4.929	5.517	0.4100	0.1327	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-15-ETA-4	1	1	5.207	5.653	0.4114	0.1321	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-11-ETA-1	1	2	5.880	6.447	0.4436	0.1322	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-13-ETA-2	1	2	5.957	6.518	0.4414	0.1321	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-14-ETA-3	1	2	6.034	6.616	0.4487	0.1314	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-15-ETA-4	1	2	5.781	6.354	0.4417	0.1316	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-11-ETA-1	2	1	4.850	5.813	0.4175	0.1318	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-12-ETA-2	2	1	4.799	5.704	0.4180	0.1341	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-14-ETA-3	2	1	4.967	5.887	0.4231	0.1334	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-15-ETA-4	2	1	4.897	5.845	0.4205	0.1322	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-11-ETA-1	2	2	4.937	5.853	0.4145	0.1325	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-13-ETA-2	2	2	5.103	6.036	0.4272	0.1312	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-14-ETA-3	2	2	4.983	5.989	0.4276	0.1331	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-15-ETA-4	2	2	5.056	5.932	0.4135	0.1334	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-11-ETA-1	3	3	5.529	5.999	0.4211	0.1303	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-12-ETA-2	3	3	5.396	5.862	0.4213	0.1309	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-14-ETA-3	3	3	5.419	5.963	0.4271	0.1306	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-15-ETA-4	3	3	5.483	5.928	0.4205	0.1309	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-11-ETA-1	3	3	5.489	6.015	0.4255	0.1307	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-12-ETA-2	3	3	5.541	6.102	0.4350	0.1303	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-14-ETA-3	3	3	5.469	5.922	0.4186	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-15-ETA-4	3	3	5.365	5.934	0.4293	0.1301	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-11-ETA-1	4	4	5.327	5.850	0.4276	0.1307	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-12-ETA-2	4	4	5.514	5.883	0.4146	0.1304	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-14-ETA-3	4	4	5.336	5.848	0.4152	0.1304	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-15-ETA-4	4	4	5.406	5.873	0.4251	0.1312	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-11-ETA-1	4	4	5.240	5.711	0.4115	0.1326	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-13-ETA-2	4	4	5.307	5.682	0.4035	0.1334	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-14-ETA-3	4	4	5.344	5.744	0.4075	0.1326	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-15-ETA-4	4	4	5.140	5.611	0.4089	0.1331	FAILURE AT GAGE SECTION

Average	5.305	5.918	0.4221	0.1318
Standard Dev.	0.3219	0.2592	0.01094	0.001128
Coeff. of Var. [%]	6.067	4.380	2.592	0.8560
Min.	4.799	5.517	0.4035	0.1301
Max.	6.034	6.616	0.4487	0.1341
Number of Spec.	32	32	32	32



XY Orientation Dogbone Tension Properties (XY-T)--ETA
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

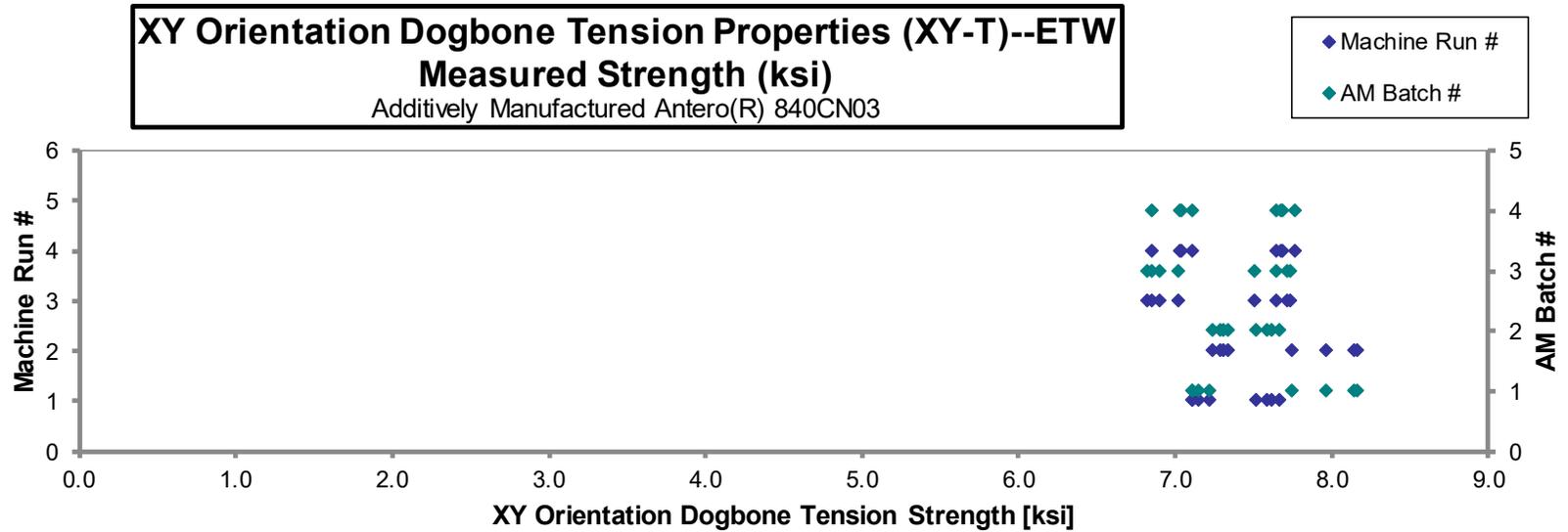
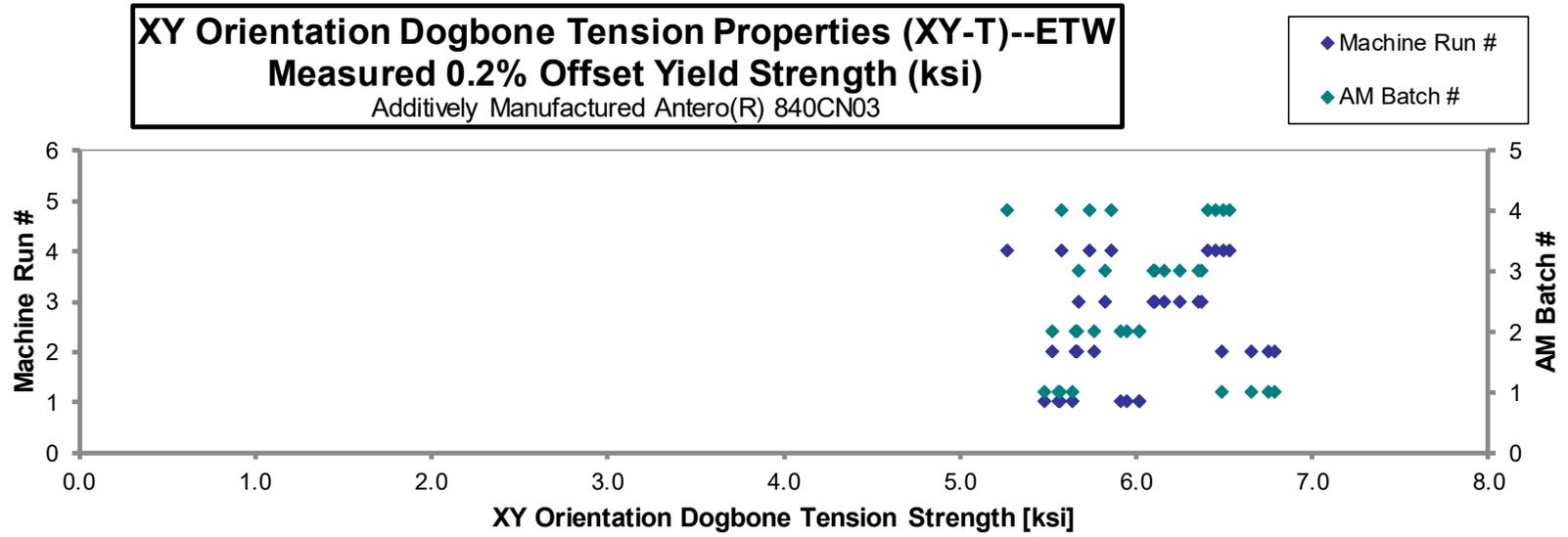
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- ◆ AM Batch #



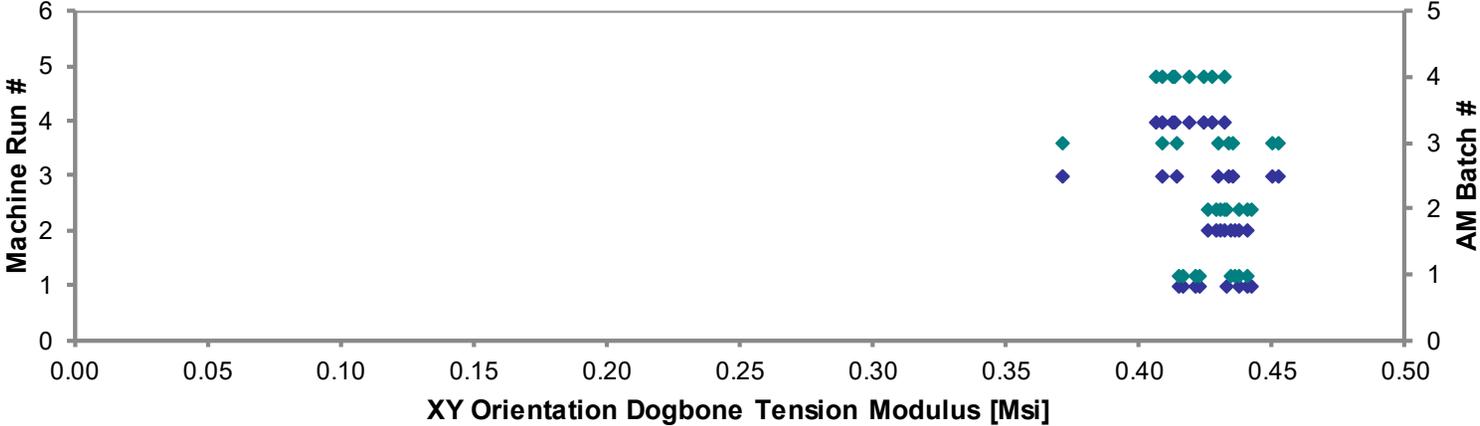
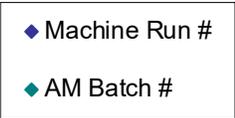
XY Orientation Dogbone Tension Properties (XY-T)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-11-ETW-1	1	1	5.482	7.216	0.4232	0.1319	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-12-ETW-2	1	1	5.635	7.106	0.4155	0.1327	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-14-ETW-3	1	1	5.571	7.110	0.4164	0.1326	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-T-15-ETW-4	1	1	5.559	7.150	0.4211	0.1325	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-11-ETW-1	1	2	6.655	7.961	0.4408	0.1304	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-12-ETW-2	1	2	6.787	8.144	0.4360	0.1308	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-13-ETW-3	1	2	6.750	8.161	0.4375	0.1309	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-T-15-ETW-4	1	2	6.489	7.742	0.4349	0.1294	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-11-ETW-1	2	1	6.017	7.668	0.4427	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-12-ETW-2	2	1	6.018	7.581	0.4376	0.1301	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-14-ETW-3	2	1	5.916	7.615	0.4410	0.1313	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-T-15-ETW-4	2	1	5.946	7.518	0.4330	0.1312	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-11-ETW-1	2	2	5.657	7.289	0.4324	0.1323	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-13-ETW-2	2	2	5.526	7.242	0.4305	0.1323	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-14-ETW-3	2	2	5.668	7.306	0.4295	0.1323	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-T-15-ETW-4	2	2	5.766	7.334	0.4259	0.1322	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-11-ETW-1	3	3	5.672	6.901	0.4336	0.1314	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-12-ETW-2	3	3	5.823	6.853	0.4141	0.1320	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-14-ETW-3	3	3	6.158	7.022	0.4086	0.1312	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-T-15-ETW-4	3	3	6.349	6.821	0.3717	0.1314	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-11-ETW-1	3	3	6.248	7.716	0.4530	0.1311	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-12-ETW-2	3	3	6.370	7.738	0.4353	0.1311	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-14-ETW-3	3	3	6.108	7.509	0.4304	0.1318	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-T-15-ETW-4	3	3	6.098	7.648	0.4502	0.1316	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-11-ETW-1	4	4	6.410	7.676	0.4278	0.1311	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-12-ETW-2	4	4	6.453	7.650	0.4192	0.1315	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-14-ETW-3	4	4	6.534	7.684	0.4243	0.1309	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-T-15-ETW-4	4	4	6.496	7.760	0.4327	0.1311	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-11-ETW-1	4	4	5.272	6.850	0.4127	0.1340	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-13-ETW-2	4	4	5.732	7.025	0.4136	0.1335	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-14-ETW-3	4	4	5.573	7.042	0.4090	0.1335	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-T-15-ETW-4	4	4	5.856	7.105	0.4066	0.1342	FAILURE AT GAGE SECTION

Average	6.019	7.411	0.4263	0.1317
Standard Dev.	0.4155	0.3752	0.01554	0.001101
Coeff. of Var. [%]	6.904	5.063	3.646	0.8357
Min.	5.272	6.821	0.3717	0.1294
Max.	6.787	8.161	0.4530	0.1342
Number of Spec.	32	32	32	32



XY Orientation Dogbone Tension Properties (XY-T)--ETW
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03



4.2 XZ Tension Properties (XZ-T)

XZ Orientation Dogbone Tension Properties (XZ-T)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

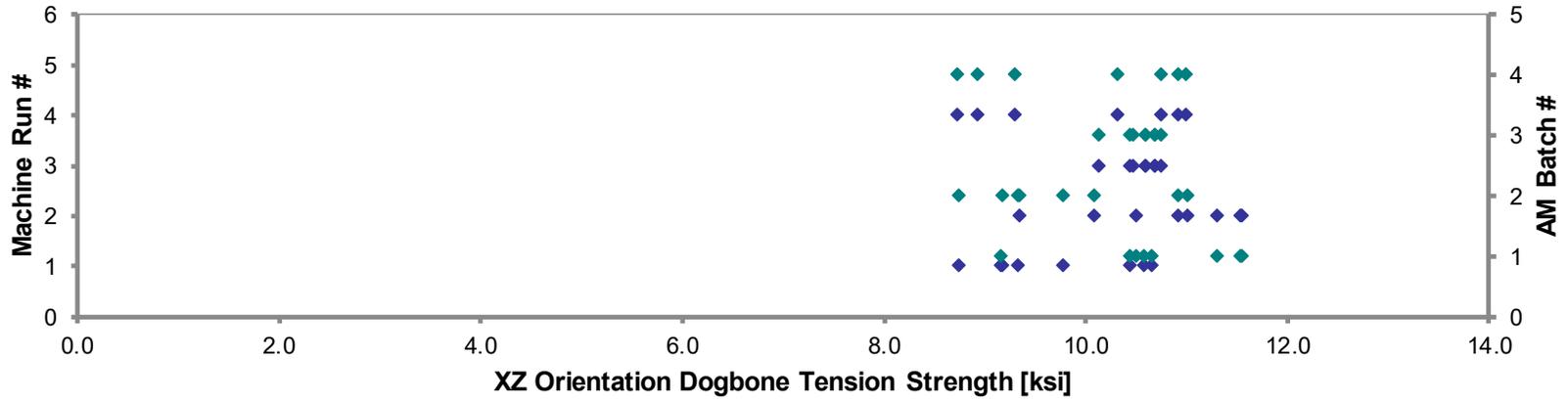
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-11-CTA-1	1	1	10.45	18.60	0.5298	0.1292	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-12-CTA-2	1	1	10.66	15.96	0.5424	0.1291	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-14-CTA-3	1	1	10.59	18.42	0.5301	0.1291	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-15-CTA-4	1	1	9.159	18.37	0.5591	0.1290	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-11-CTA-1	1	2	11.56	18.51	0.5314	0.1299	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-13-CTA-2	1	2	10.51	18.47	0.5398	0.1302	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-14-CTA-3	1	2	11.30	19.33	0.5401	0.1295	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-15-CTA-4	1	2	11.54	19.18	0.5336	0.1292	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-11-CTA-1	2	1	9.184	17.42	0.5597	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-12-CTA-2	2	1	9.327	15.87	0.5468	0.1285	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-14-CTA-3	2	1	8.753	15.70	0.5685	0.1298	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-15-CTA-4	2	1	9.778	12.60	0.5683	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-11-CTA-1	2	2	9.345	13.27	0.5578	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-13-CTA-2	2	2	10.92	14.23	0.5249	0.1287	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-14-CTA-3	2	2	11.01	16.88	0.5239	0.1290	FAILURE AT GAGE & FILLET SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-15-CTA-4	2	2	10.09	17.71	0.5487	0.1278	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-11-CTA-1	3	3	10.70	18.60	0.5541	0.1266	FAILURE AT GAGE & FILLET SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-12-CTA-2	3	3	10.69	17.60	0.5503	0.1272	FAILURE AT GAGE, FILLET & GRIP SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-14-CTA-3	3	3	10.75	17.79	0.5492	0.1272	FAILURE AT GAGE & FILLET SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-15-CTA-4	3	3	10.61	18.12	0.5594	0.1270	FAILURE AT GAGE & FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-11-CTA-1	3	3	10.48	18.78	0.5347	0.1291	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-12-CTA-2	3	3	10.14	19.22	0.5512	0.1281	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-14-CTA-3	3	3	10.45	19.14	0.5455	0.1280	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-15-CTA-4	3	3	10.60	18.99	0.5355	0.1285	FAILURE AT FILLET AND GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-11-CTA-1	4	4	11.00	18.01	0.5356	0.1296	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-12-CTA-2	4	4	10.92	18.50	0.5402	0.1280	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-14-CTA-3	4	4	10.75	16.08	0.5444	0.1280	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-15-CTA-4	4	4	9.296	16.77	0.5671	0.1276	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-11-CTA-1	4	4	8.935	15.82	0.5384	0.1324	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-13-CTA-2	4	4	10.32	14.94	0.5108	0.1320	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-14-CTA-3*	4	4		14.63	0.5246	0.1311	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-15-CTA-4	4	4	8.727	18.01	0.5535	0.1318	FAILURE AT FILLET SECTION

*0.2% Offset Strength is not reported as ultimate strength is achieved prior to that

Average	10.28	17.24	0.5437	0.1289
Standard Dev.	0.8083	1.822	0.01413	0.001441
Coeff. of Var. [%]	7.866	10.57	2.599	1.118
Min.	8.727	12.60	0.5108	0.1266
Max.	11.56	19.33	0.5685	0.1324
Number of Spec.	31	32	32	32

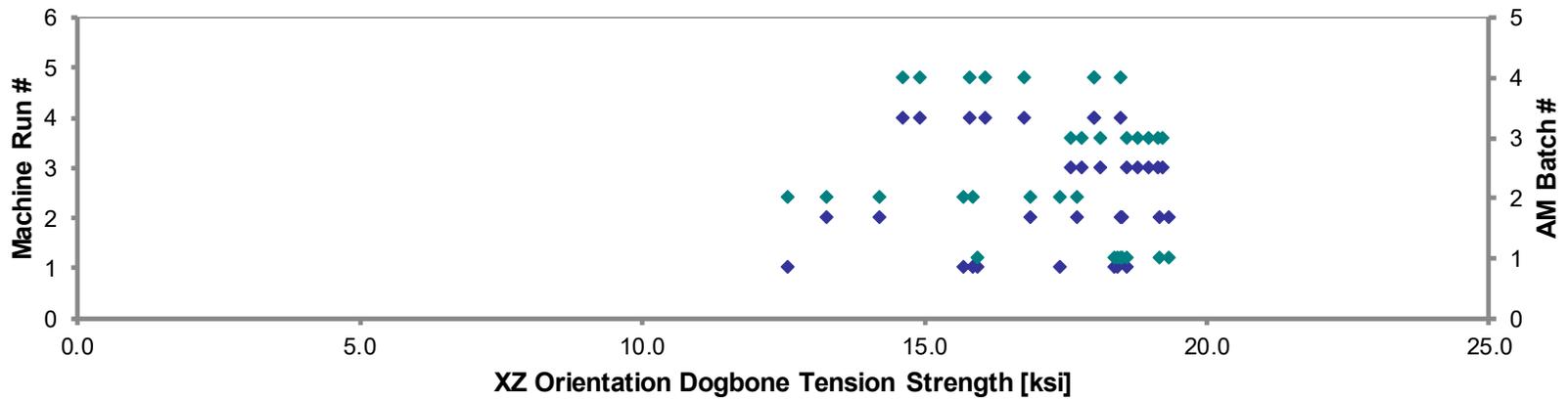
XZ Orientation Dogbone Tension Properties (XZ-T)--CTA
Measured 0.2% Offset Yield Strength (ksi)
Additively Manufactured Antero(R) 840CN03

◆ Machine Run #
◆ AM Batch #



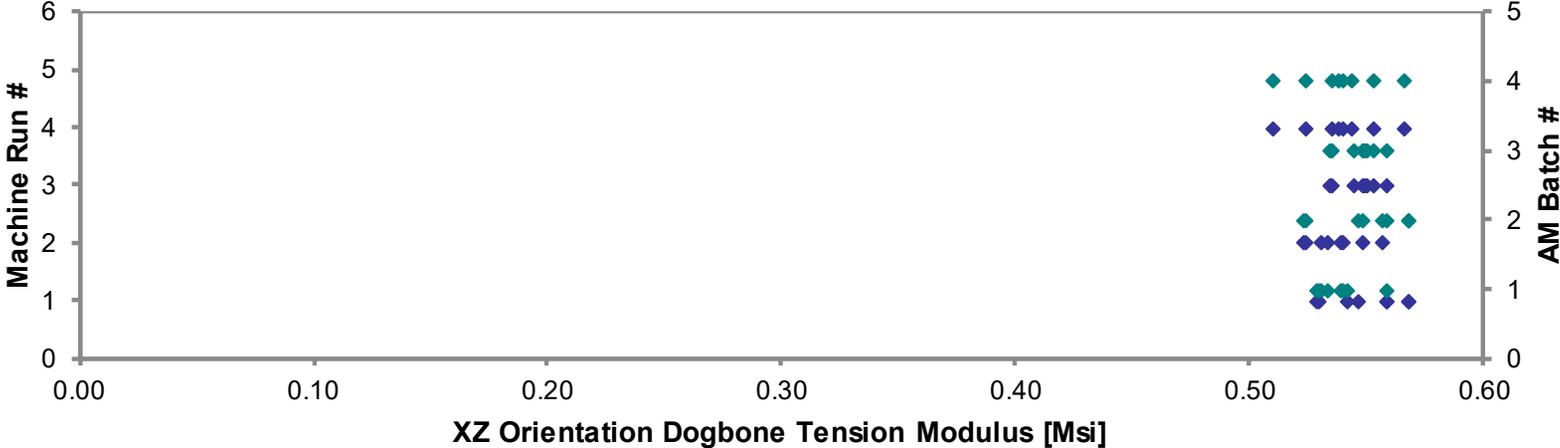
XZ Orientation Dogbone Tension Properties (XZ-T)--CTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03

◆ Machine Run #
◆ AM Batch #



XZ Orientation Dogbone Tension Properties (XZ-T)--CTA
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

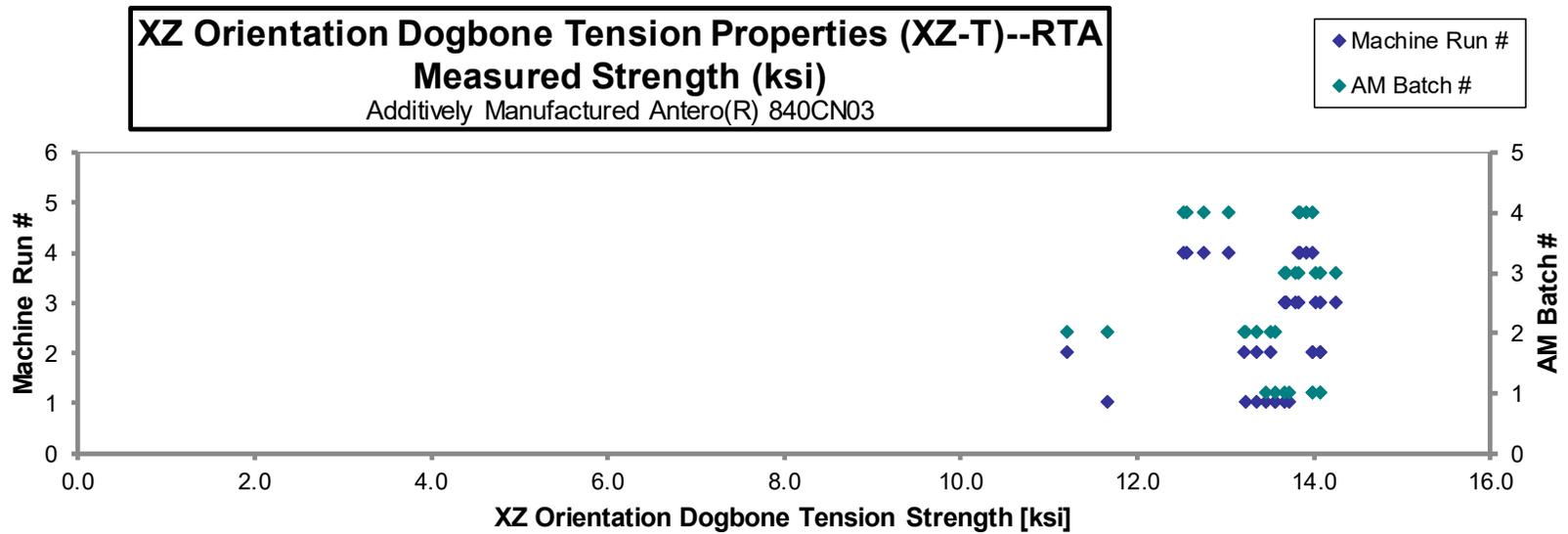
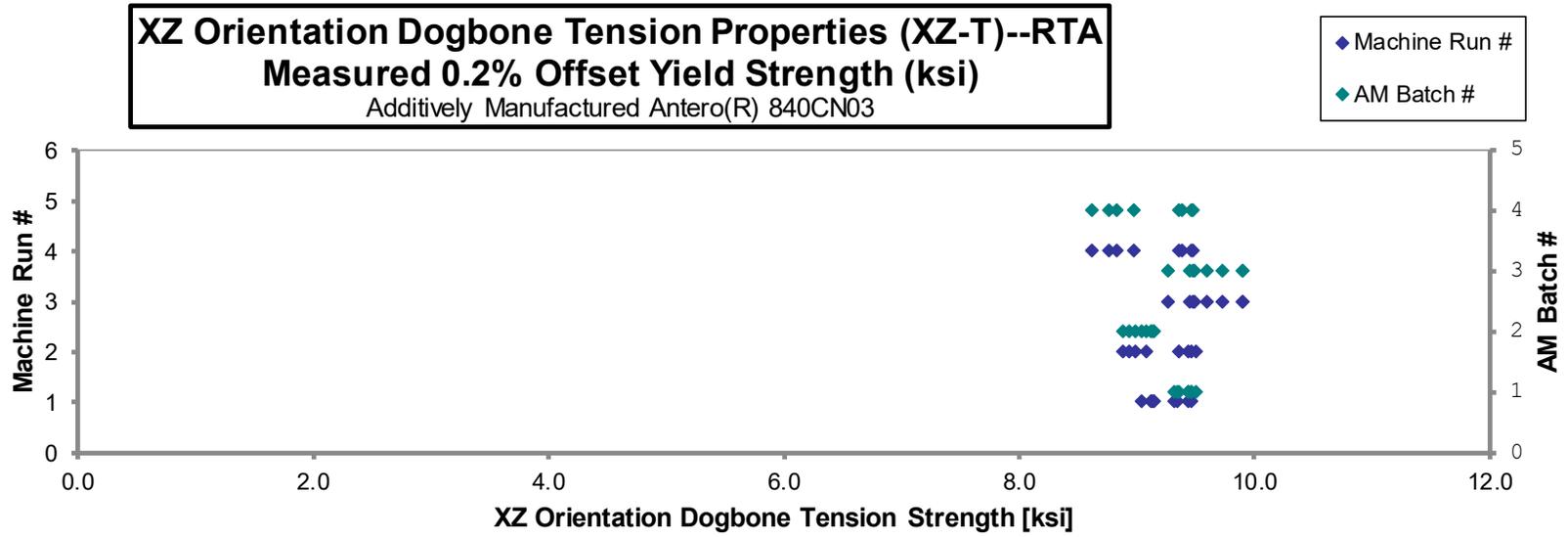
- ◆ Machine Run #
- ◆ AM Batch #



XZ Orientation Dogbone Tension Properties (XZ-T)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

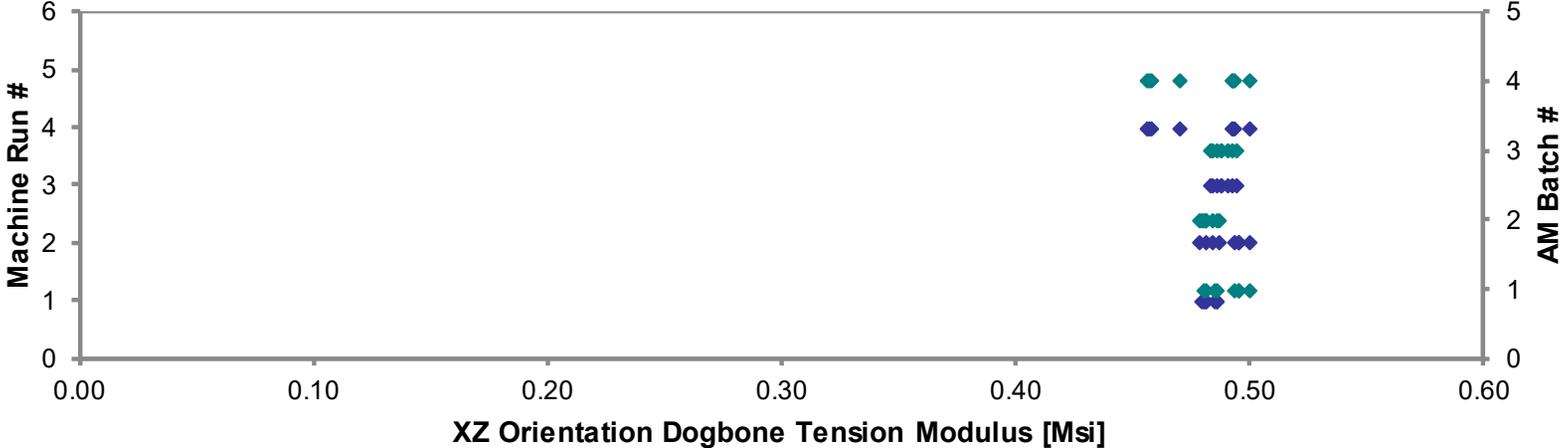
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-11-RTA-1	1	1	9.464	13.68	0.4821	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-12-RTA-2	1	1	9.346	13.57	0.4858	0.1293	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-14-RTA-3	1	1	9.443	13.47	0.4811	0.1291	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-15-RTA-4	1	1	9.317	13.72	0.4867	0.1286	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-11-RTA-1	1	2	9.502	14.07	0.4936	0.1307	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-13-RTA-2	1	2	9.361	13.99	0.4956	0.1308	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-14-RTA-3	1	2	9.442	13.99	0.4958	0.1307	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-15-RTA-4	1	2	9.472	14.07	0.5006	0.1300	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-11-RTA-1	2	1	9.143	13.36	0.4822	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-12-RTA-2	2	1	9.128	11.67	0.4804	0.1278	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-14-RTA-3	2	1	9.041	13.22	0.4808	0.1279	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-15-RTA-4	2	1	9.150	13.57	0.4863	0.1269	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-11-RTA-1	2	2	8.944	13.36	0.4848	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-13-RTA-2	2	2	8.986	13.22	0.4823	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-14-RTA-3	2	2	8.886	11.21	0.4793	0.1275	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-15-RTA-4	2	2	9.079	13.51	0.4872	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-11-RTA-1	3	3	9.909	14.03	0.4912	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-12-RTA-2	3	3	9.726	14.08	0.4951	0.1286	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-14-RTA-3	3	3	9.605	13.80	0.4885	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-15-RTA-4	3	3	9.900	14.25	0.4933	0.1278	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-11-RTA-1	3	3	9.454	13.69	0.4870	0.1279	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-12-RTA-2	3	3	9.492	13.83	0.4845	0.1291	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-14-RTA-3	3	3	9.273	13.68	0.4881	0.1280	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-15-RTA-4	3	3	9.485	13.70	0.4842	0.1289	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-11-RTA-1	4	4	9.465	13.83	0.4930	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-12-RTA-2	4	4	9.484	13.92	0.4940	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-14-RTA-3	4	4	9.367	14.00	0.5002	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-15-RTA-4	4	4	9.384	13.85	0.4931	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-11-RTA-1	4	4	8.624	12.52	0.4581	0.1337	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-13-RTA-2	4	4	8.832	12.57	0.4566	0.1328	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-14-RTA-3	4	4	8.761	13.04	0.4711	0.1321	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-15-RTA-4	4	4	8.985	12.76	0.4575	0.1324	FAILURE AT GAGE SECTION

Average	9.295	13.48	0.4850	0.1289
Standard Dev.	0.3096	0.6897	0.01111	0.001836
Coeff. of Var. [%]	3.331	5.118	2.290	1.424
Min.	8.624	11.21	0.4566	0.1267
Max.	9.909	14.25	0.5006	0.1337
Number of Spec.	32	32	32	32



XZ Orientation Dogbone Tension Properties (XZ-T)--RTA
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

- ◆ Machine Run #
- ◆ AM Batch #

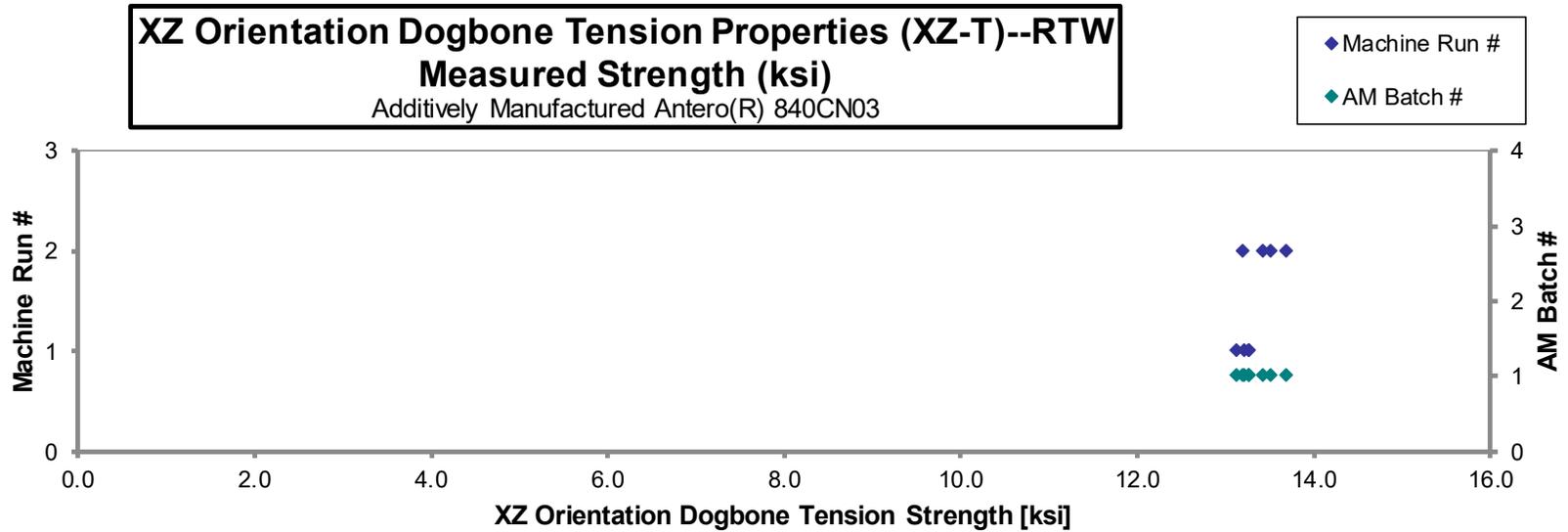
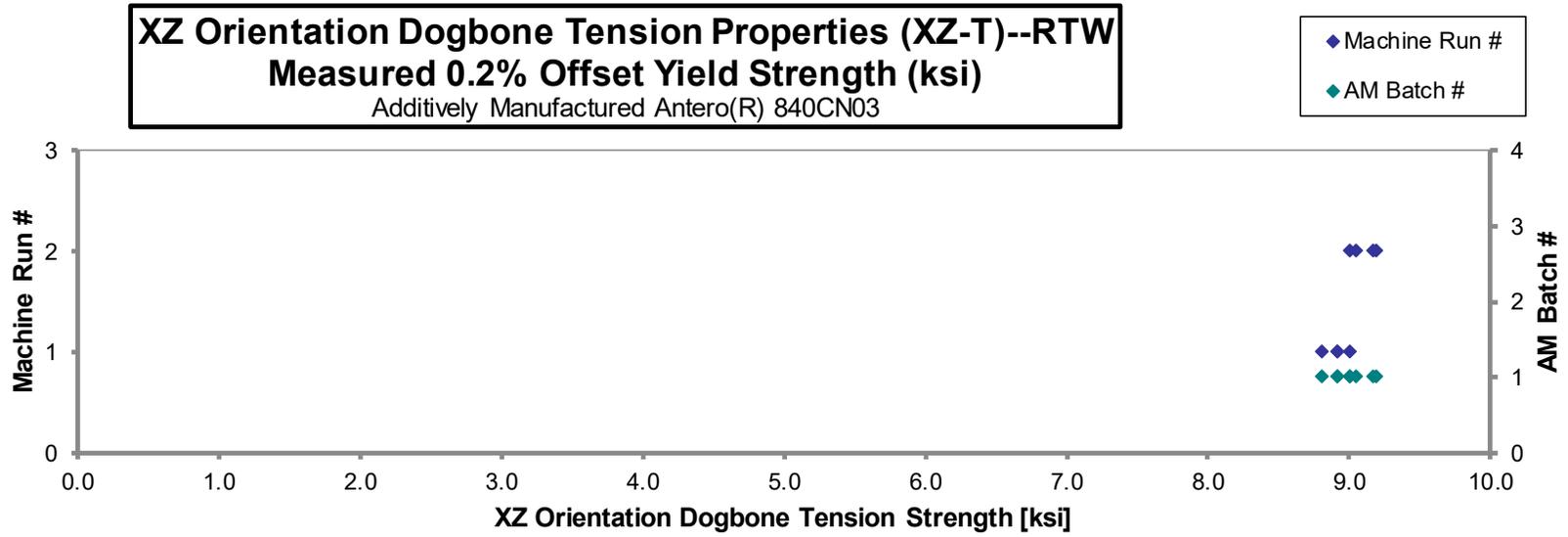


**XZ Orientation Dogbone Tension Properties (XZ-T)--RTW
Strength & Modulus**

Additively Manufactured Antero(R) 840CN03

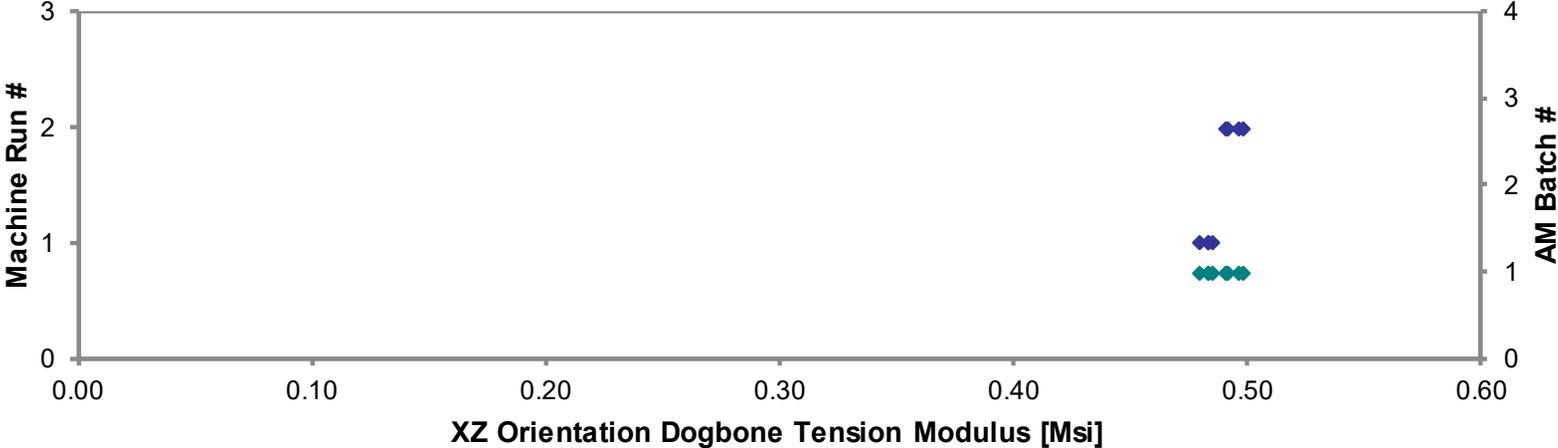
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-11-RTW-1	1	1	8.917	13.26	0.4855	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-12-RTW-2	1	1	9.003	13.22	0.4804	0.1277	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-14-RTW-3	1	1	8.815	13.13	0.4842	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-15-RTW-4	1	1	8.923	13.26	0.4836	0.1274	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-11-RTW-1	1	2	9.199	13.43	0.4915	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-12-RTW-2	1	2	9.007	13.20	0.4925	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-13-RTW-3	1	2	9.055	13.52	0.4972	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-15-RTW-4	1	2	9.169	13.68	0.4990	0.1282	FAILURE AT GAGE SECTION

Average	9.011	13.34	0.4892	0.1281
Standard Dev.	0.1294	0.1875	0.006795	0.0003885
Coeff. of Var. [%]	1.436	1.405	1.389	0.3033
Min.	8.815	13.13	0.4804	0.1274
Max.	9.199	13.68	0.4990	0.1285
Number of Spec.	8	8	8	8



XZ Orientation Dogbone Tension Properties (XZ-T)--RTW
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

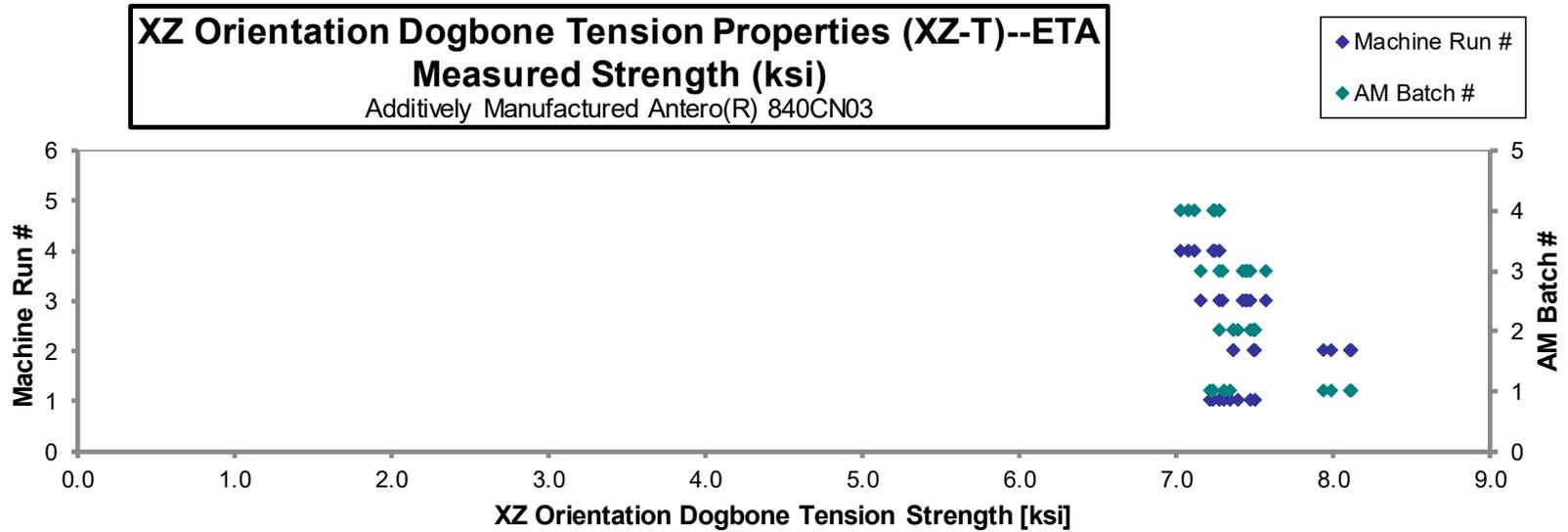
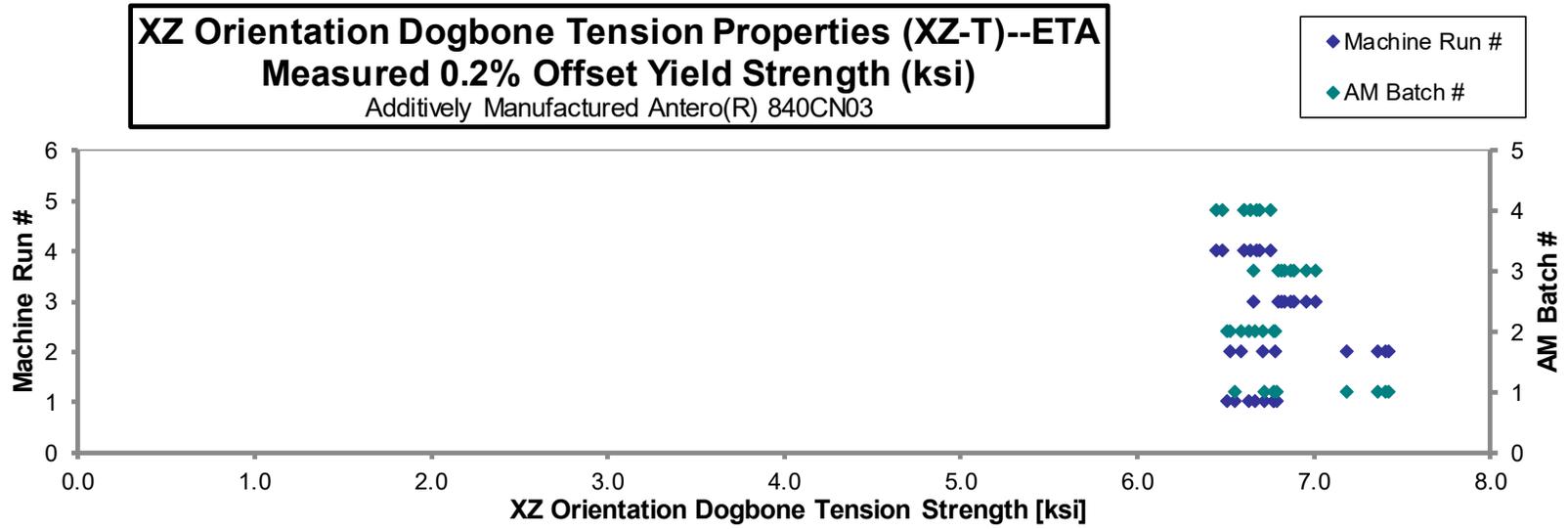
- ◆ Machine Run #
- ◆ AM Batch #



XZ Orientation Dogbone Tension Properties (XZ-T)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

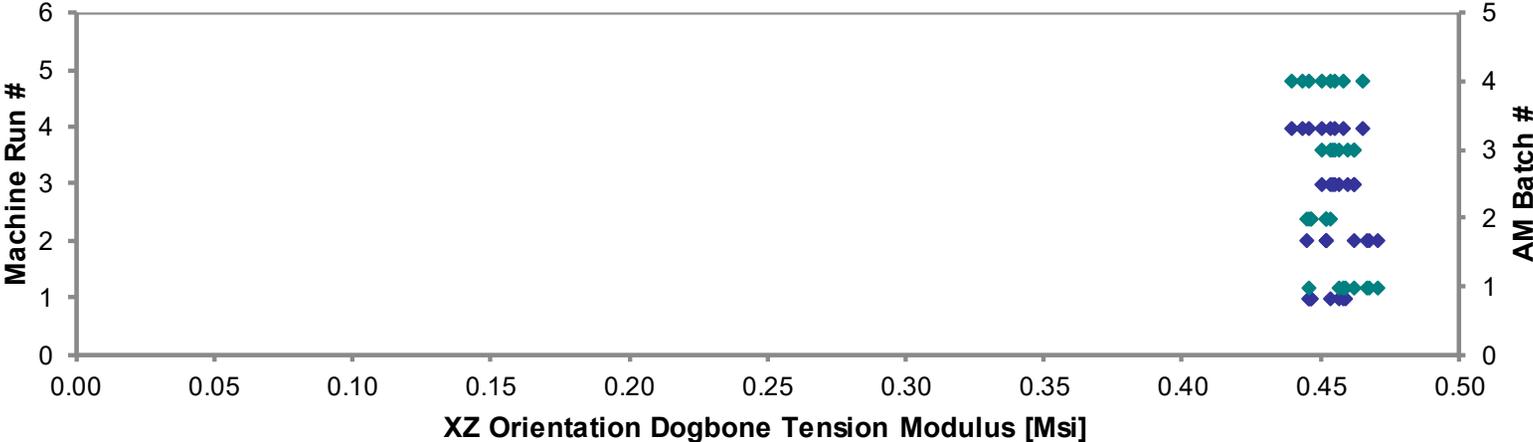
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-11-ETA-1	1	1	6.559	7.217	0.4590	0.1286	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-12-ETA-2	1	1	6.720	7.309	0.4588	0.1284	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-14-ETA-3	1	1	6.789	7.239	0.4457	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-15-ETA-4	1	1	6.775	7.349	0.4572	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-11-ETA-1	1	2	7.191	7.938	0.4706	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-13-ETA-2	1	2	7.368	7.986	0.4625	0.1309	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-14-ETA-3	1	2	7.426	8.115	0.4676	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-15-ETA-4	1	2	7.412	8.109	0.4668	0.1302	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-11-ETA-1	2	1	6.674	7.390	0.4467	0.1293	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-12-ETA-2	2	1	6.774	7.476	0.4471	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-14-ETA-3	2	1	6.510	7.274	0.4461	0.1299	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-15-ETA-4	2	1	6.634	7.502	0.4537	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-11-ETA-1	2	2	6.783	7.495	0.4452	0.1284	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-13-ETA-2	2	2	6.587	7.369	0.4520	0.1279	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-14-ETA-3	2	2	6.526	7.363	0.4518	0.1279	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-15-ETA-4	2	2	6.718	7.505	0.4520	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-11-ETA-1	3	3	6.959	7.571	0.4568	0.1287	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-12-ETA-2	3	3	6.822	7.271	0.4543	0.1279	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-14-ETA-3	3	3	6.661	7.154	0.4536	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-15-ETA-4	3	3	6.869	7.427	0.4626	0.1279	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-11-ETA-1	3	3	6.802	7.444	0.4603	0.1280	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-12-ETA-2	3	3	6.837	7.298	0.4506	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-14-ETA-3	3	3	7.009	7.451	0.4552	0.1271	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-15-ETA-4	3	3	6.888	7.473	0.4623	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-11-ETA-1	4	4	6.606	7.273	0.4652	0.1300	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-12-ETA-2	4	4	6.604	7.122	0.4541	0.1291	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-14-ETA-3	4	4	6.698	7.235	0.4582	0.1293	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-15-ETA-4	4	4	6.678	7.242	0.4555	0.1296	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-11-ETA-1	4	4	6.451	7.080	0.4457	0.1322	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-13-ETA-2	4	4	6.489	7.025	0.4438	0.1325	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-14-ETA-3	4	4	6.756	7.274	0.4397	0.1314	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-15-ETA-4	4	4	6.640	7.241	0.4507	0.1305	FAILURE AT GAGE SECTION

Average	6.788	7.413	0.4547	0.1291
Standard Dev.	0.2546	0.2737	0.007617	0.001397
Coeff. of Var. [%]	3.750	3.693	1.675	1.082
Min.	6.451	7.025	0.4397	0.1271
Max.	7.426	8.115	0.4706	0.1325
Number of Spec.	32	32	32	32



XZ Orientation Dogbone Tension Properties (XZ-T)--ETA
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

- ◆ Machine Run #
- ◆ AM Batch #



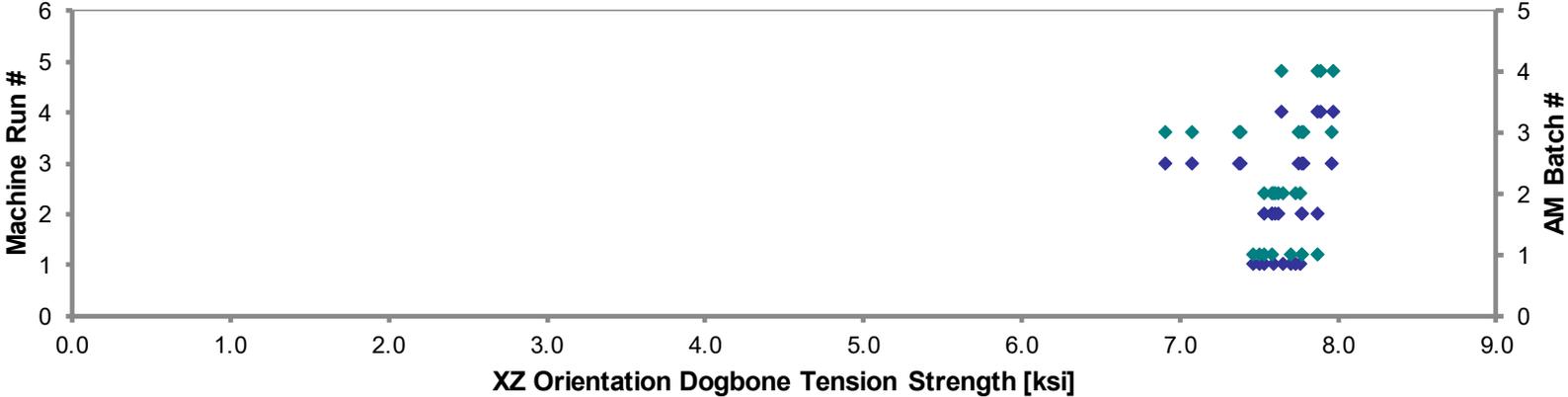
XZ Orientation Dogbone Tension Properties (XZ-T)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksj]	Strength [ksj]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-11-ETW-1	1	1	7.538	9.599	0.4773	0.1277	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-12-ETW-2	1	1	7.510	9.567	0.4789	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-14-ETW-3	1	1	7.465	9.468	0.4710	0.1284	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-T-15-ETW-4	1	1	7.709	9.555	0.4689	0.1276	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-11-ETW-1	1	2	7.775	9.681	0.4790	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-12-ETW-2	1	2	7.590	9.499	0.4756	0.1286	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-13-ETW-3	1	2	7.872	9.917	0.4831	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-T-15-ETW-4	1	2	7.781	9.846	0.4821	0.1276	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-11-ETW-1	2	1	7.654	9.845	0.4793	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-12-ETW-2	2	1	7.732	9.837	0.4786	0.1276	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-14-ETW-3	2	1	7.597	9.719	0.4807	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-T-15-ETW-4	2	1	7.763	9.742	0.4704	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-11-ETW-1	2	2	7.603	9.347	0.4639	0.1296	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-13-ETW-2	2	2	7.539	9.409	0.4669	0.1291	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-14-ETW-3	2	2	7.586	9.590	0.4704	0.1294	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-T-15-ETW-4	2	2	7.628	9.635	0.4716	0.1291	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-11-ETW-1	3	3	7.379	8.223	0.4211	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-12-ETW-2	3	3	6.908	8.230	0.4570	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-14-ETW-3	3	3	7.077	8.226	0.4459	0.1276	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-T-15-ETW-4	3	3	7.387	8.375	0.4386	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-11-ETW-1	3	3	7.960	9.709	0.4622	0.1296	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-12-ETW-2	3	3	7.773	9.583	0.4656	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-14-ETW-3	3	3	7.782	9.607	0.4679	0.1289	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-T-15-ETW-4	3	3	7.755	9.450	0.4583	0.1292	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-11-ETW-1	4	4	7.891	9.640	0.4711	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-12-ETW-2	4	4	7.971	9.749	0.4679	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-14-ETW-3	4	4	7.876	9.795	0.4713	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-T-15-ETW-4	4	4	7.643	9.558	0.4668	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-11-ETW-1	4	4	7.448	8.864	0.4400	0.1323	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-13-ETW-2	4	4	7.605	8.970	0.4357	0.1324	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-14-ETW-3	4	4	7.448	9.133	0.4571	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-T-15-ETW-4	4	4	7.356	8.976	0.4514	0.1315	FAILURE AT GAGE SECTION

Average	7.613	9.386	0.465	0.1288
Standard Dev.	0.2338	0.5013	0.015034	0.0013263
Coeff. of Var. [%]	3.072	5.341	3.234	1.0298
Min.	6.908	8.223	0.4211	0.1272
Max.	7.971	9.917	0.4831	0.1324
Number of Spec.	32	32	32	32

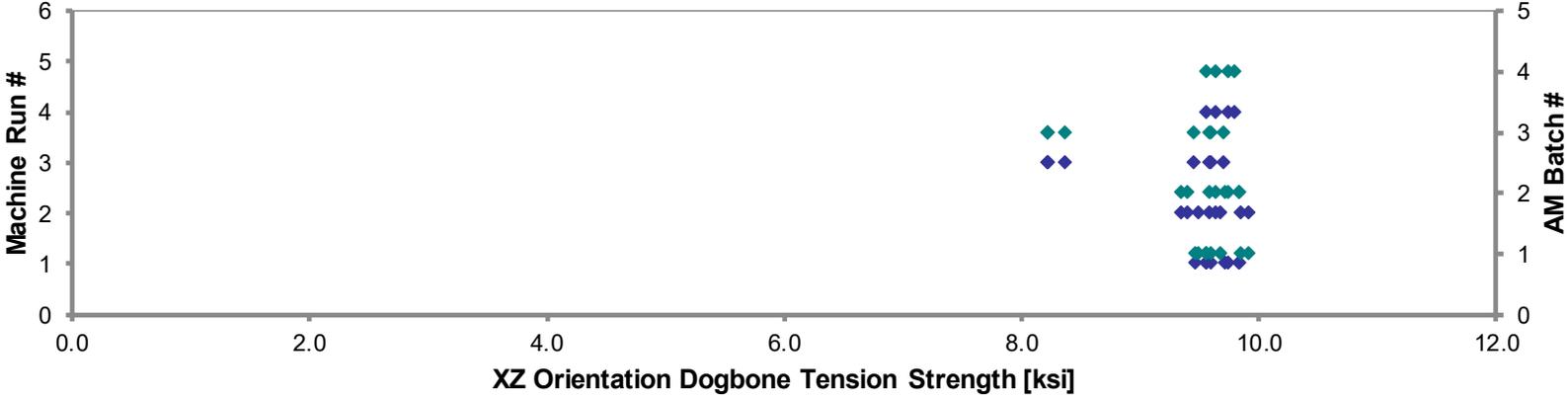
XZ Orientation Dogbone Tension Properties (XZ-T)--ETW
Measured 0.2% Offset Yield Strength (ksi)
Additively Manufactured Antero(R) 840CN03

◆ Machine Run #
◆ AM Batch #



XZ Orientation Dogbone Tension Properties (XZ-T)--ETW
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03

◆ Machine Run #
◆ AM Batch #



4.3 ZX Tension Properties (ZX-T)

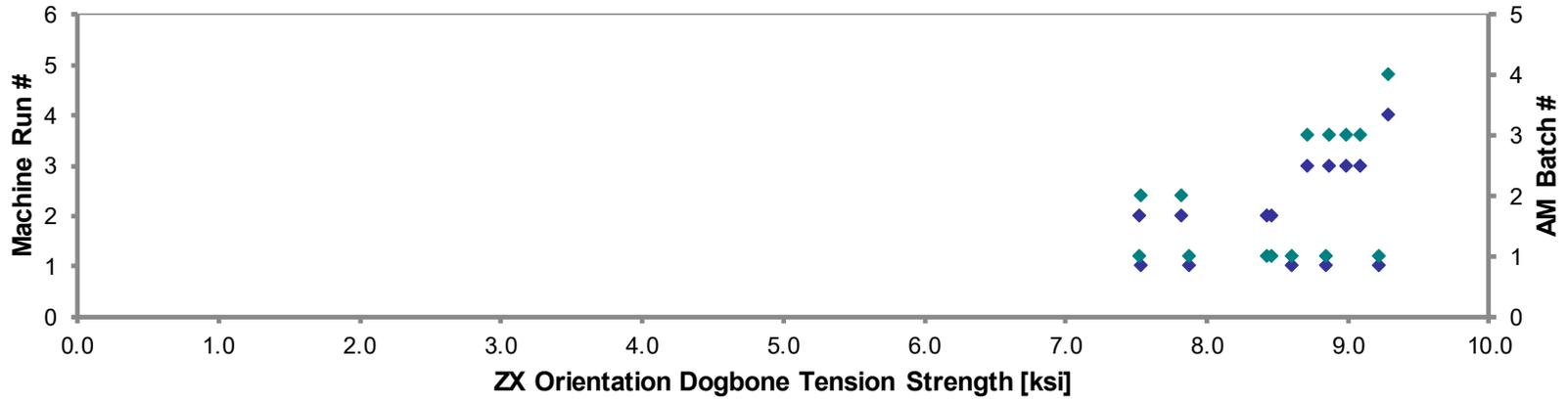
ZX Orientation Dogbone Tension Properties (ZX-T)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-11-CTA-1	1	1	9.220	9.242	0.5056	0.1277	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-12-CTA-2	1	1	8.852	10.09	0.4853	0.1270	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-14-CTA-3	1	1	7.885	10.19	0.5206	0.1265	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-15-CTA-4	1	1	8.610	9.545	0.4890	0.1271	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-11-CTA-1	1	2	8.461	8.880	0.5082	0.1287	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-13-CTA-2	1	2	8.433	9.123	0.4995	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-14-CTA-3	1	2	7.530	8.951	0.5155	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-15-CTA-4*	1	2		8.650	0.4859	0.1278	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-11-CTA-1*	2	1		8.019	0.4861	0.1261	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-12-CTA-2	2	1	7.534	8.097	0.5068	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-14-CTA-3*	2	1		7.920	0.5049	0.1271	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-15-CTA-4*	2	1		5.948	0.4989	0.1256	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-11-CTA-1*	2	2		6.627	0.4967	0.1260	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-13-CTA-2*	2	2		7.296	0.4642	0.1252	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-14-CTA-3*	2	2		8.501	0.4596	0.1265	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-15-CTA-4	2	2	7.828	8.323	0.5220	0.1248	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-11-CTA-1*	3	3		9.328	0.4912	0.1277	FAILURE AT GAGE & FILLET SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-12-CTA-2*	3	3		7.188	0.4787	0.1278	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-14-CTA-3*	3	3		7.749	0.4744	0.1269	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-15-CTA-4*	3	3		7.685	0.4898	0.1265	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-11-CTA-1	3	3	8.869	9.019	0.4849	0.1291	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-12-CTA-2	3	3	8.993	9.300	0.4752	0.1291	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-14-CTA-3	3	3	9.091	9.627	0.4631	0.1287	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-15-CTA-4	3	3	8.721	9.106	0.4748	0.1286	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-11-CTA-1	4	4	9.290	9.323	0.4958	0.1265	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-12-CTA-2*	4	4		7.027	0.4768	0.1263	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-14-CTA-3*	4	4		8.028	0.4888	0.1254	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-15-CTA-4*	4	4		8.022	0.4846	0.1260	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-11-CTA-1*	4	4		6.841	0.4537	0.1304	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-13-CTA-2*	4	4		6.953	0.4878	0.1288	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-14-CTA-3*	4	4		6.477	0.4515	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-15-CTA-4*	4	4		7.709	0.4587	0.1282	FAILURE AT GAGE AND FILLET SECTION

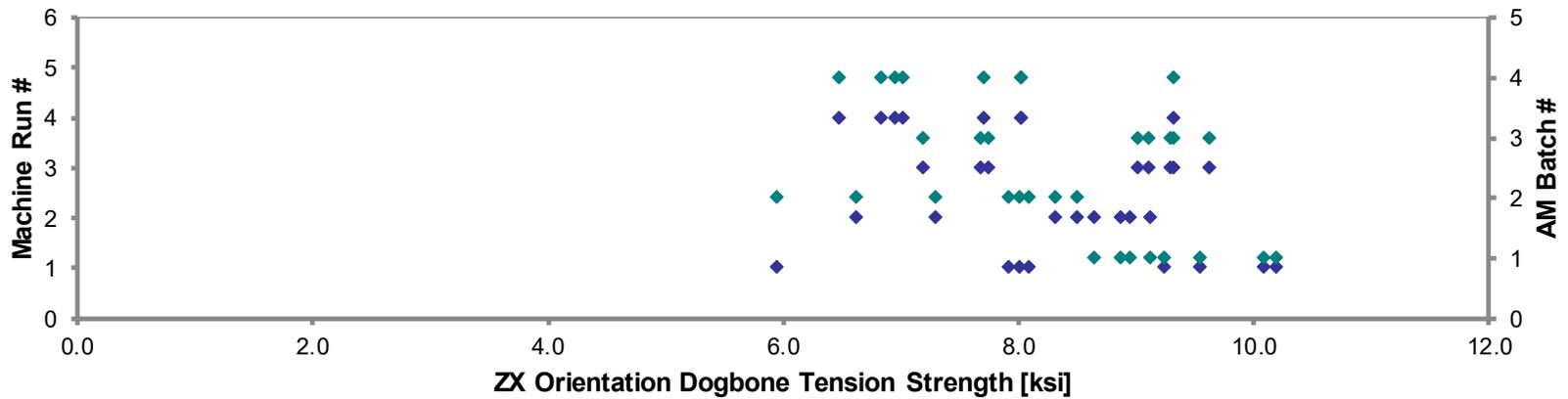
*0.2% Offset Strength is not reported as ultimate strength is achieved prior to that

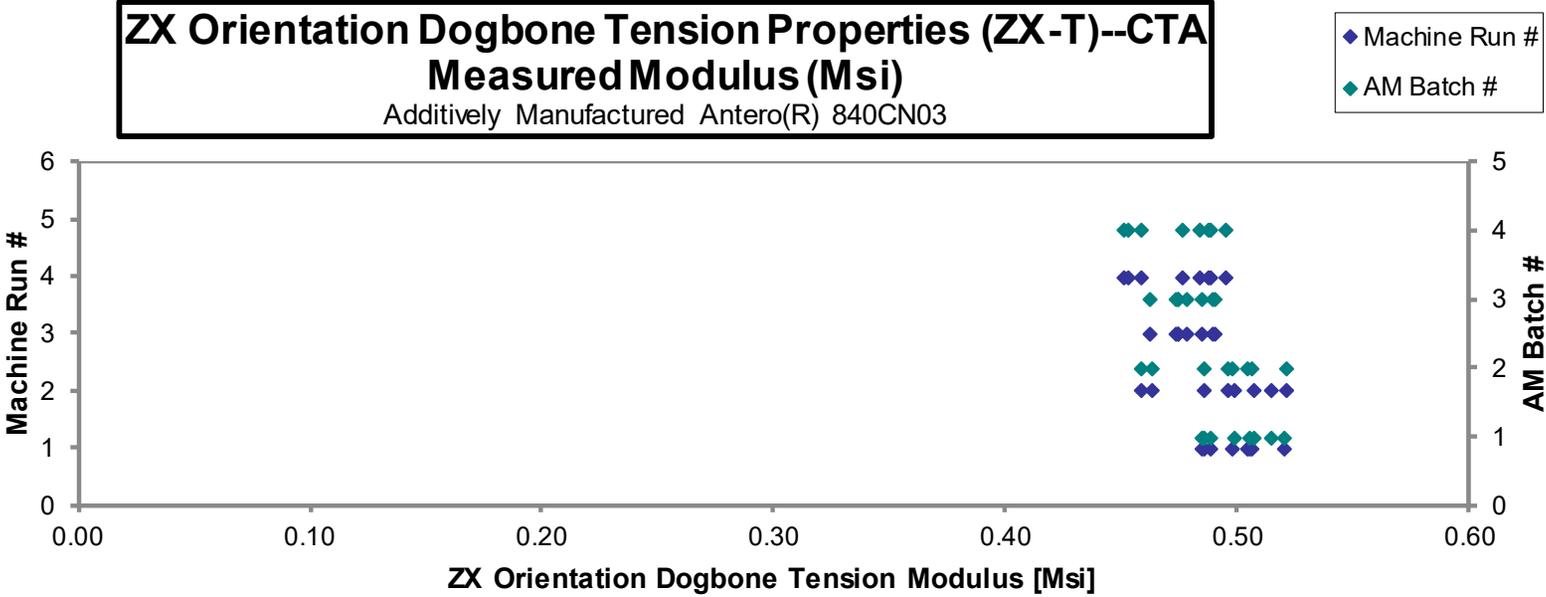
Average	8.523	8.274	0.4868	0.1273
Standard Dev.	0.6050	1.103	0.01868	0.001295
Coeff. of Var. [%]	7.099	13.33	3.838	1.018
Min.	7.530	5.948	0.4515	0.1248
Max.	9.290	10.19	0.5220	0.1304
Number of Spec.	14	32	32	32

ZX Orientation Dogbone Tension Properties (ZX-T)--CTA
Measured 0.2% Offset Yield Strength (ksi)
Additively Manufactured Antero(R) 840CN03



ZX Orientation Dogbone Tension Properties (ZX-T)--CTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03





ZX Orientation Dogbone Tension Properties (ZX-T)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

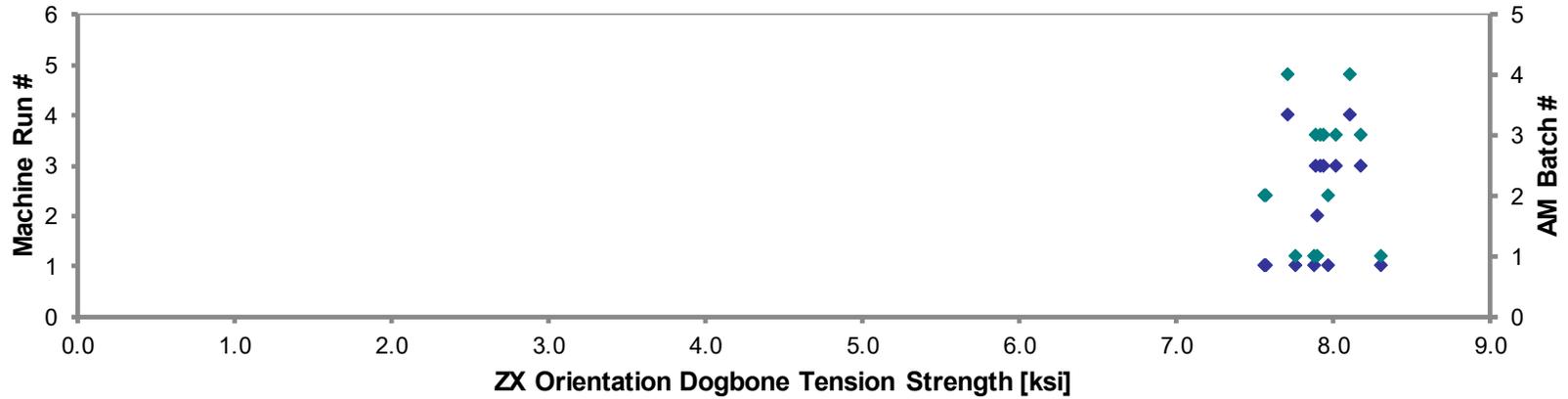
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-11-RTA-1	1	1	8.303	9.145	0.4439	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-12-RTA-2	1	1	7.877	8.560	0.4283	0.1269	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-14-RTA-3*	1	1		7.421	0.4358	0.1268	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-15-RTA-4	1	1	7.764	8.140	0.4270	0.1276	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-11-RTA-1	1	2	7.903	8.160	0.4371	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-13-RTA-2*	1	2		7.049	0.4278	0.1277	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-14-RTA-3*	1	2		7.960	0.4313	0.1280	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-15-RTA-4*	1	2		7.899	0.4320	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-11-RTA-1*	2	1		7.680	0.4484	0.1249	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-12-RTA-2	2	1	7.573	8.464	0.4532	0.1237	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-14-RTA-3	2	1	7.971	8.322	0.4474	0.1254	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-15-RTA-4	2	1	7.564	7.566	0.4527	0.1250	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-11-RTA-1*	2	2		7.071	0.4496	0.1248	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-13-RTA-2*	2	2		6.092	0.4331	0.1247	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-14-RTA-3*	2	2		7.690	0.4513	0.1255	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-15-RTA-4*	2	2		7.825	0.4392	0.1244	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-11-RTA-1	3	3	7.888	8.387	0.4481	0.1284	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-12-RTA-2*	3	3		7.368	0.4374	0.1278	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-14-RTA-3	3	3	8.019	8.071	0.4536	0.1263	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-15-RTA-4*	3	3		7.187	0.4414	0.1268	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-11-RTA-1	3	3	8.173	8.543	0.4477	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-12-RTA-2	3	3	7.915	10.04	0.4333	0.1269	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-14-RTA-3*	3	3		7.351	0.4288	0.1257	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-15-RTA-4	3	3	7.939	8.962	0.4324	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-11-RTA-1	4	4	8.106	8.653	0.4471	0.1271	FAILURE AT GAGE SECTION, FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-12-RTA-2*	4	4		7.724	0.4281	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-14-RTA-3	4	4	7.713	8.656	0.4393	0.1261	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-15-RTA-4*	4	4		7.099	0.4367	0.1257	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-11-RTA-1*	4	4		6.094	0.4097	0.1304	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-13-RTA-2*	4	4		6.528	0.4063	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-14-RTA-3	4	4	7.204	7.670	0.4100	0.1298	FAILURE AT GAGE SECTION, FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-15-RTA-4*	4	4		6.446	0.4005	0.1304	FAILURE AT GAGE SECTION

Average	7.861	7.807	0.4356	0.1268
Standard Dev.	0.2721	0.8811	0.01390	0.001749
Coeff. of Var. [%]	3.461	11.286	3.191	1.3788
Min.	7.204	6.092	0.4005	0.1237
Max.	8.303	10.04	0.4536	0.1305
Number of Spec.	15	32	32	32

*0.2% Offset Strength is not reported as ultimate strength is achieved prior to that

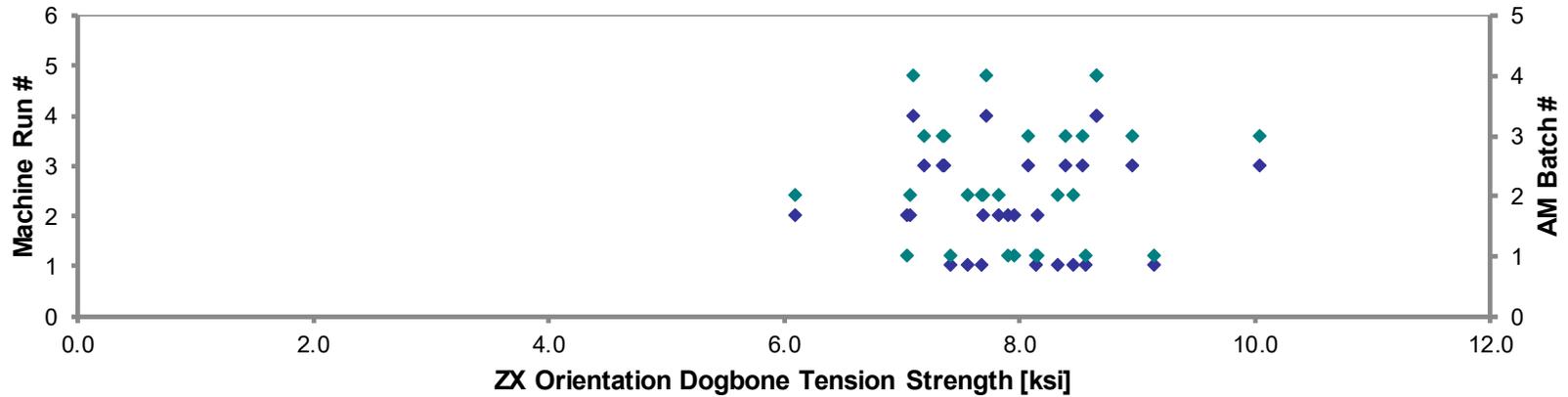
ZX Orientation Dogbone Tension Properties (ZX-T)--RTA
Measured 0.2% Offset Yield Strength (ksi)
Additively Manufactured Antero(R) 840CN03

◆ Machine Run #
◆ AM Batch #

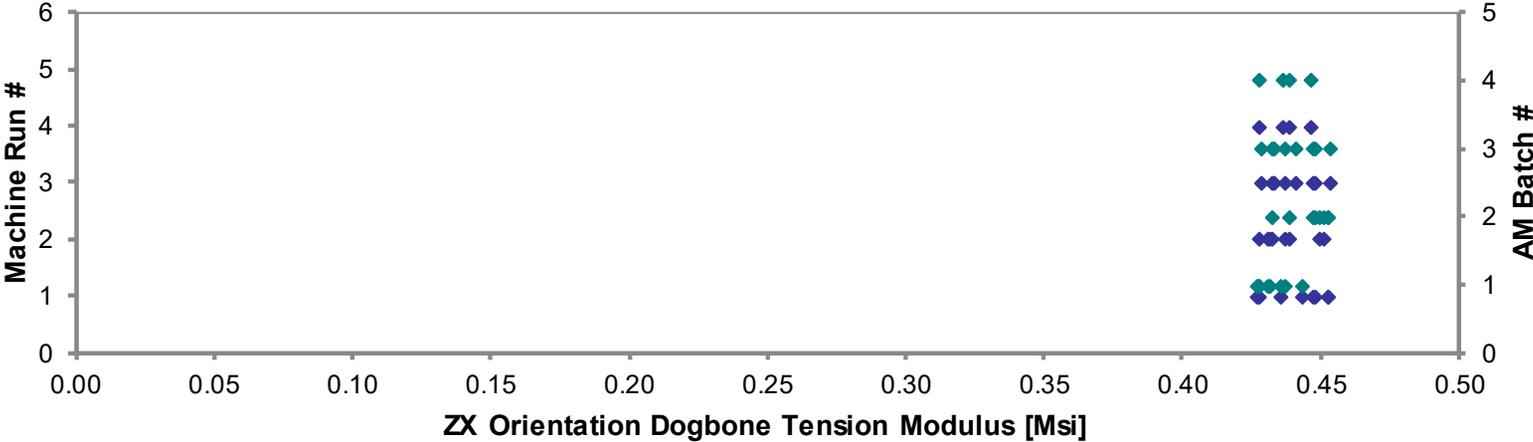
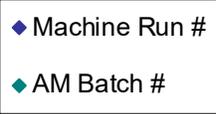


ZX Orientation Dogbone Tension Properties (ZX-T)--RTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03

◆ Machine Run #
◆ AM Batch #



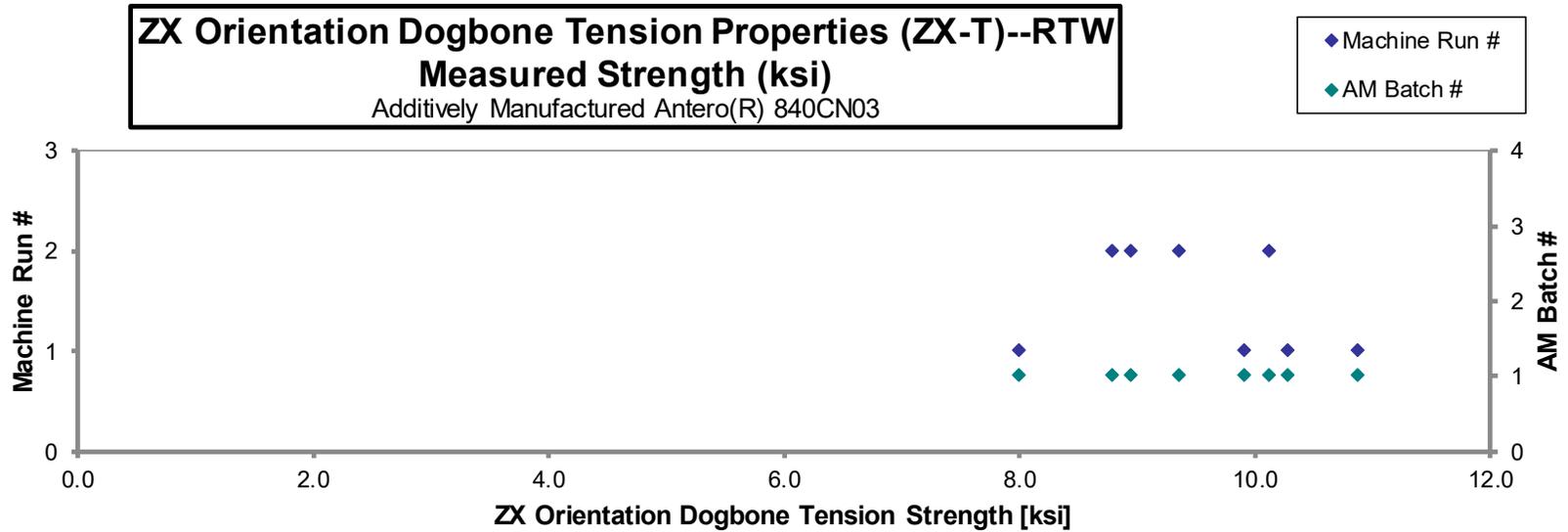
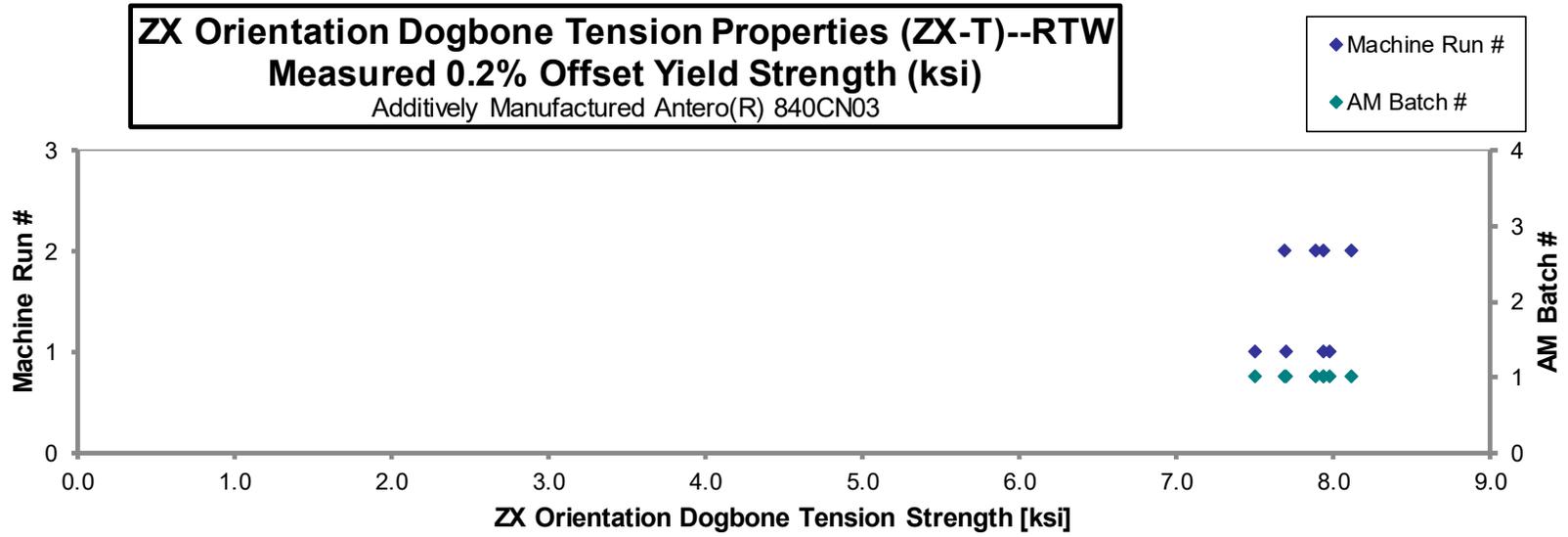
ZX Orientation Dogbone Tension Properties (ZX-T)--RTA
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

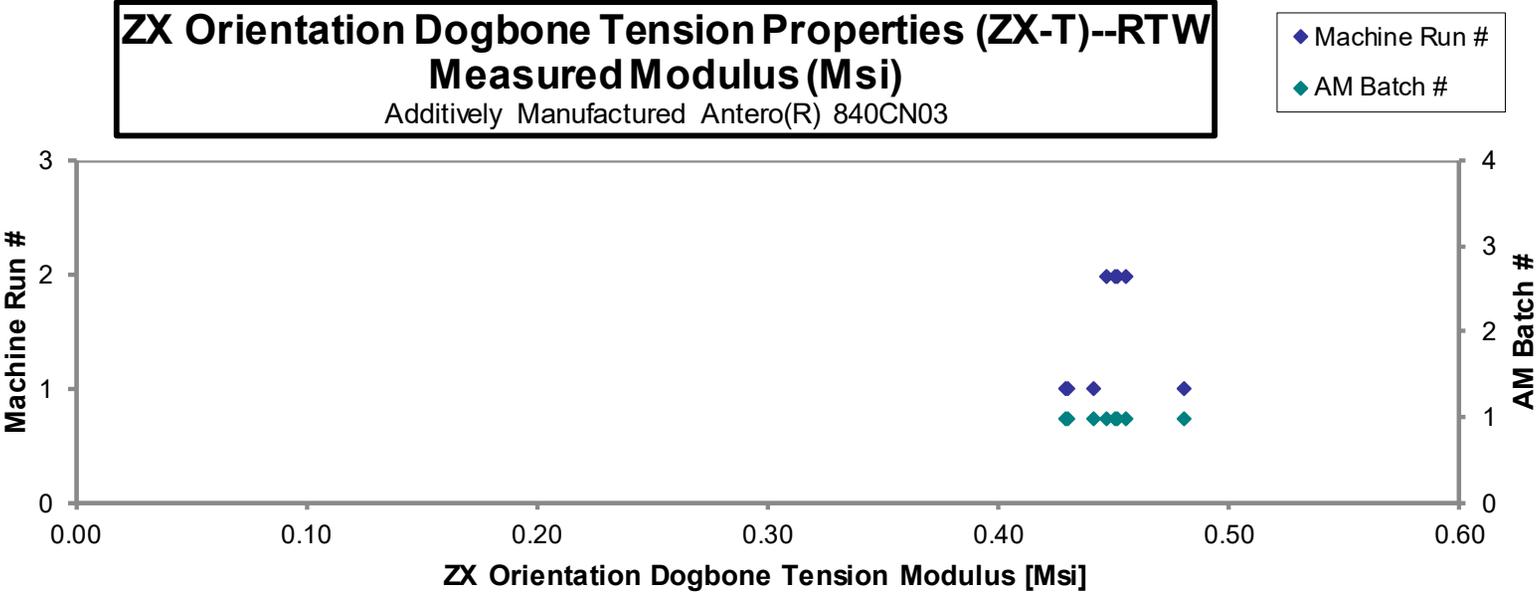


ZX Orientation Dogbone Tension Properties (ZX-T)--RTW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-11-RTW-1	1	1	7.702	10.29	0.4417	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-12-RTW-2	1	1	7.975	8.003	0.4808	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-14-RTW-3	1	1	7.935	10.88	0.4307	0.1245	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-15-RTW-4	1	1	7.502	9.906	0.4299	0.1265	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-11-RTW-1	1	2	8.122	8.950	0.4560	0.1273	FAILURE AT GAGE & FILLET SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-12-RTW-2	1	2	7.937	8.795	0.4474	0.1266	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-13-RTW-3	1	2	7.696	10.12	0.4510	0.1268	FAILURE AT GAGE & GRIP SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-15-RTW-4	1	2	7.887	9.353	0.4523	0.1257	FAILURE AT GAGE SECTION

Average	7.844	9.537	0.4487	0.1264
Standard Dev.	0.1971	0.9352	0.01620	0.0009177
Coeff. of Var. [%]	2.513	9.806	3.609	0.7262
Min.	7.502	8.003	0.4299	0.1245
Max.	8.122	10.88	0.4808	0.1273
Number of Spec.	8	8	8	8

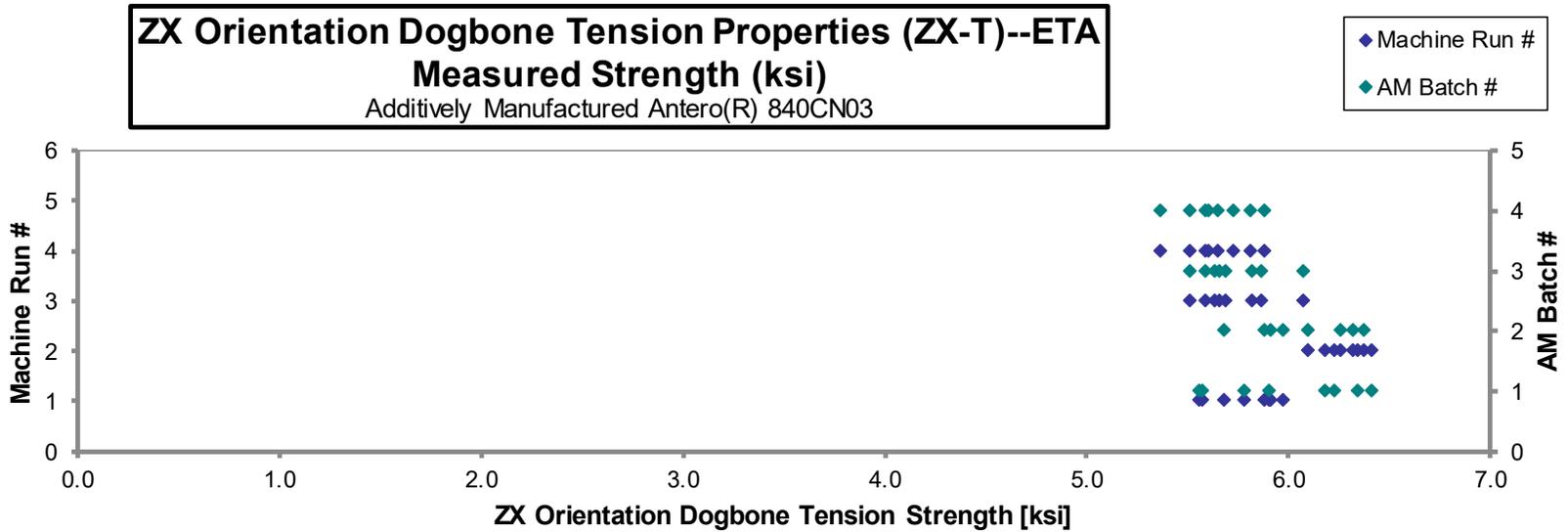
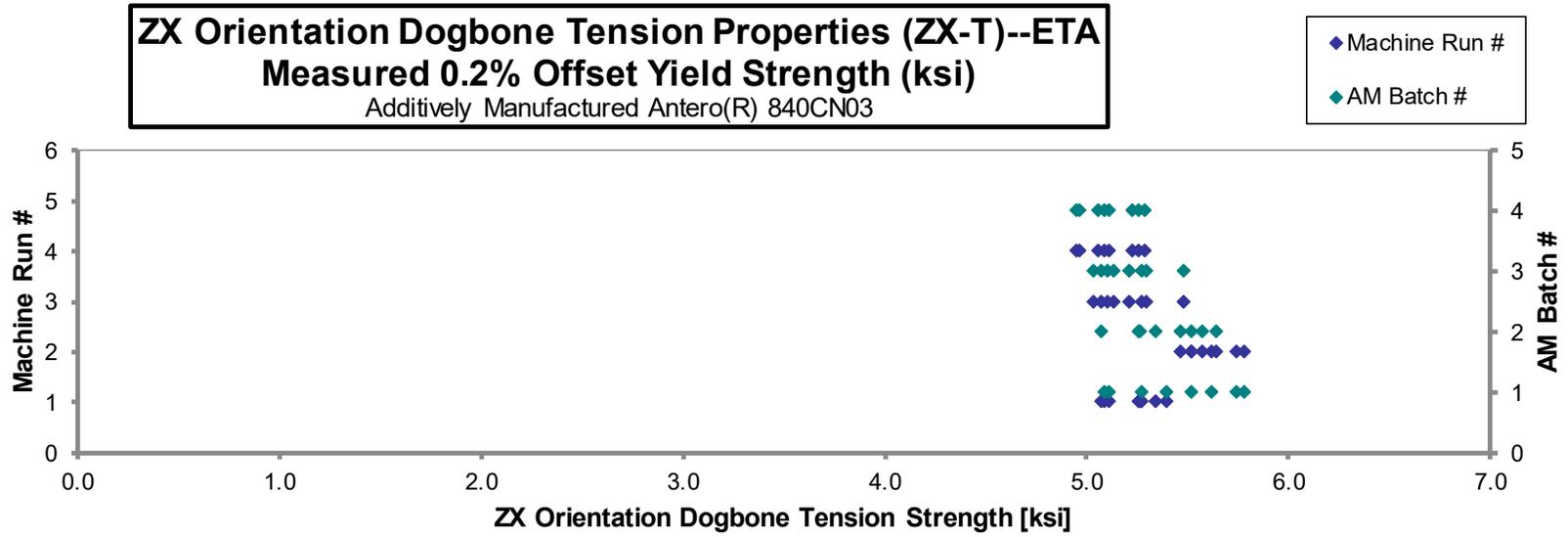




ZX Orientation Dogbone Tension Properties (ZX-T)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-11-ETA-1	1	1	5.275	5.779	0.4058	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-12-ETA-2	1	1	5.113	5.573	0.3991	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-14-ETA-3	1	1	5.396	5.902	0.4005	0.1266	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-15-ETA-4	1	1	5.086	5.562	0.3979	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-11-ETA-1	1	2	5.784	6.412	0.4092	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-13-ETA-2	1	2	5.524	6.186	0.4096	0.1284	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-14-ETA-3	1	2	5.623	6.232	0.4120	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-15-ETA-4	1	2	5.743	6.346	0.4121	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-11-ETA-1	2	1	5.343	5.915	0.4015	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-12-ETA-2	2	1	5.071	5.679	0.4015	0.1271	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-14-ETA-3	2	1	5.269	5.978	0.4191	0.1287	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-15-ETA-4	2	1	5.258	5.885	0.4012	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-11-ETA-1	2	2	5.573	6.373	0.4175	0.1250	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-13-ETA-2	2	2	5.470	6.095	0.4028	0.1247	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-14-ETA-3	2	2	5.644	6.320	0.4398	0.1250	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-15-ETA-4	2	2	5.522	6.262	0.4123	0.1244	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-11-ETA-1	3	3	5.481	6.076	0.3966	0.1286	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-12-ETA-2	3	3	5.215	5.690	0.3904	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-14-ETA-3	3	3	5.300	5.867	0.3996	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-15-ETA-4	3	3	5.271	5.817	0.4040	0.1262	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-11-ETA-1	3	3	5.135	5.659	0.4091	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-12-ETA-2	3	3	5.071	5.587	0.4019	0.1257	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-14-ETA-3	3	3	5.038	5.510	0.4023	0.1246	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-15-ETA-4	3	3	5.106	5.636	0.4060	0.1253	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-11-ETA-1	4	4	5.089	5.605	0.4025	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-12-ETA-2	4	4	4.947	5.367	0.3832	0.1277	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-14-ETA-3	4	4	5.113	5.586	0.3967	0.1279	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-15-ETA-4	4	4	4.963	5.514	0.4027	0.1270	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-11-ETA-1	4	4	5.291	5.881	0.3934	0.1294	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-13-ETA-2	4	4	5.255	5.815	0.3879	0.1287	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-14-ETA-3	4	4	5.228	5.730	0.3785	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-15-ETA-4	4	4	5.056	5.652	0.390	0.129	FAILURE AT GAGE SECTION

Average	5.289	5.859	0.403	0.127
Standard Dev.	0.2279	0.2917	0.01135	0.001465
Coeff. of Var. [%]	4.309	4.979	2.819	1.151
Min.	4.947	5.367	0.3785	0.1244
Max.	5.784	6.412	0.4398	0.1294
Number of Spec.	32	32	32	32

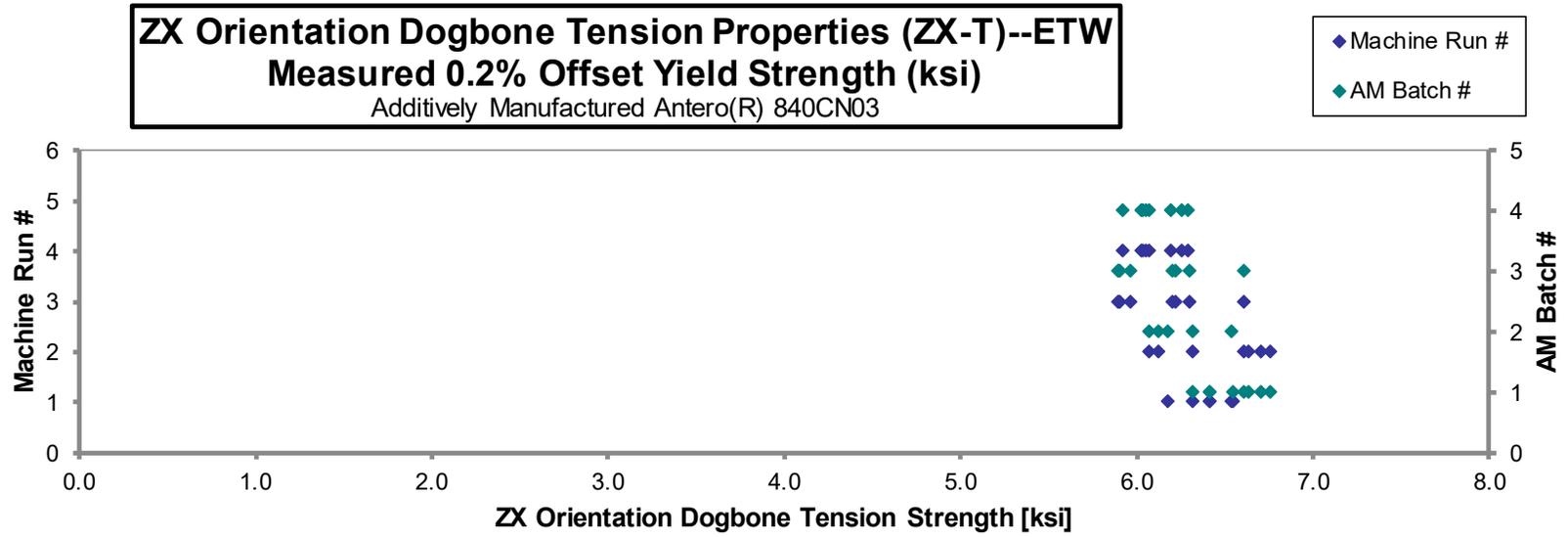


ZX Orientation Dogbone Tension Properties (ZX-T)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-11-ETW-1	1	1	6.554	7.967	0.4245	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-12-ETW-2	1	1	6.420	7.685	0.4104	0.1258	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-14-ETW-3	1	1	6.319	7.804	0.4216	0.1261	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-T-15-ETW-4	1	1	6.420	7.544	0.3995	0.1265	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-11-ETW-1	1	2	6.764	8.360	0.4275	0.1269	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-12-ETW-2	1	2	6.614	8.095	0.4292	0.1258	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-13-ETW-3	1	2	6.642	8.288	0.4260	0.1263	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-T-15-ETW-4	1	2	6.709	8.278	0.4295	0.1255	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-11-ETW-1*	2	1		5.893	0.4189	0.1265	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-12-ETW-2	2	1	6.179	6.325	0.4187	0.1258	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-14-ETW-3	2	1	6.546	7.135	0.4181	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-T-15-ETW-4*	2	1		5.622	0.4139	0.1259	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-11-ETW-1	2	2	6.326	6.682	0.4287	0.1266	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-13-ETW-2	2	2	6.075	7.525	0.4146	0.1262	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-14-ETW-3*	2	2		6.064	0.4132	0.1261	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-T-15-ETW-4	2	2	6.130	6.788	0.4050	0.1263	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-11-ETW-1	3	3	6.208	7.471	0.4185	0.1276	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-12-ETW-2	3	3	5.905	7.122	0.4089	0.1278	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-14-ETW-3	3	3	5.904	7.321	0.4235	0.1259	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-T-15-ETW-4	3	3	5.971	7.021	0.4111	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-11-ETW-1	3	3	6.612	7.851	0.4218	0.1274	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-12-ETW-2	3	3	6.305	7.598	0.4219	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-14-ETW-3	3	3	5.899	7.431	0.4233	0.1271	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-T-15-ETW-4	3	3	6.223	7.558	0.4156	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-11-ETW-1	4	4	6.262	6.926	0.4051	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-12-ETW-2	4	4	6.043	7.294	0.3999	0.1278	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-14-ETW-3	4	4	6.298	7.651	0.4050	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-T-15-ETW-4	4	4	6.202	7.500	0.4036	0.1269	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-11-ETW-1	4	4	6.058	7.317	0.3961	0.1302	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-13-ETW-2	4	4	6.033	7.227	0.3885	0.1292	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-14-ETW-3	4	4	5.927	7.215	0.3902	0.1295	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-T-15-ETW-4	4	4	6.075	7.145	0.3777	0.1299	FAILURE AT GAGE SECTION

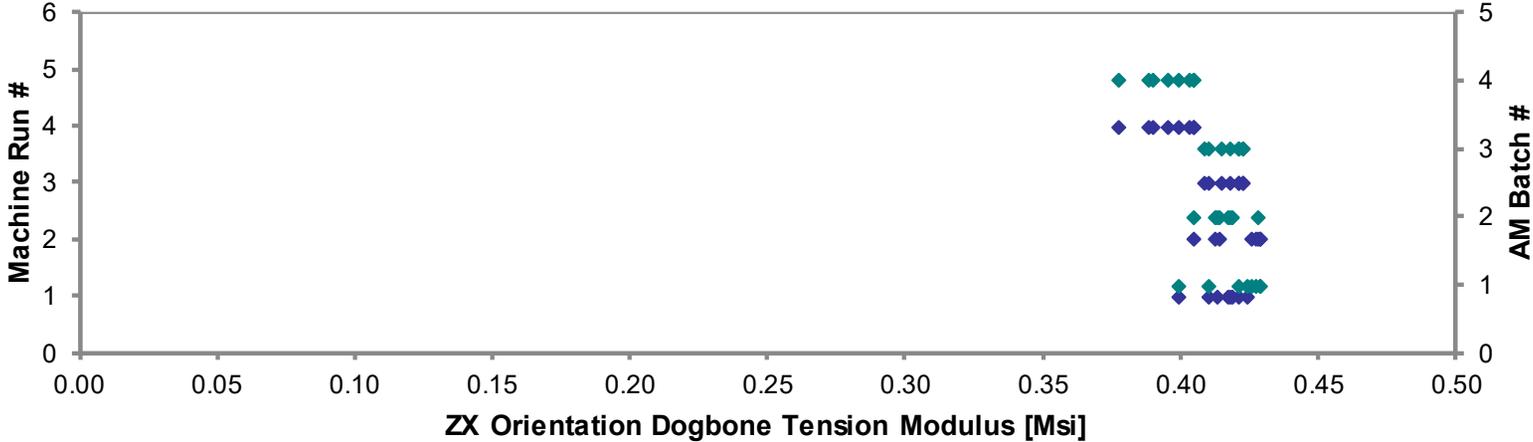
*0.2% Offset Strength is not reported as ultimate strength is achieved prior to that

Average	6.263	7.303	0.4128	0.1270
Standard Dev.	0.2603	0.6610	0.01292	0.001229
Coeff. of Var. [%]	4.157	9.051	3.131	0.9673
Min.	5.899	5.622	0.3777	0.1255
Max.	6.764	8.360	0.4295	0.1302
Number of Spec.	29	32	32	32



ZX Orientation Dogbone Tension Properties (ZX-T)--ETW
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

- ◆ Machine Run #
- ◆ AM Batch #



4.4 Z45 Tension Properties (Z45-T)

Z45 Orientation Dogbone Tension Properties (Z45-T)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-11-CTA-1	1	1	9.404	10.71	0.4808	0.1262	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-12-CTA-2	1	1	7.877	13.51	0.5351	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-14-CTA-3	1	1	9.310	13.41	0.4873	0.1269	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-15-CTA-4	1	1	8.561	14.22	0.5103	0.1267	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-11-CTA-1	1	2	8.163	12.47	0.5015	0.1295	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-13-CTA-2	1	2	8.838	11.72	0.4996	0.1292	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-14-CTA-3	1	2	10.288	12.10	0.4702	0.1296	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-15-CTA-4	1	2	8.765	11.93	0.4896	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-11-CTA-1	2	1	8.794	9.064	0.4847	0.1278	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-12-CTA-2	2	1	8.978	9.088	0.4991	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-14-CTA-3	2	1	8.893	9.077	0.4843	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-15-CTA-4**	2	1		9.677		0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-11-CTA-1	2	2	8.615	9.777	0.5040	0.1280	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-13-CTA-2	2	2	8.973	10.91	0.5065	0.1265	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-14-CTA-3	2	2	7.726	10.69	0.5160	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-15-CTA-4	2	2	8.591	8.935	0.5095	0.1279	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-11-CTA-1	3	3	8.782	8.782	0.5058	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-12-CTA-2	3	3	9.559	12.22	0.4912	0.1264	FAILURE AT GAGE & FILLET SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-14-CTA-3	3	3	9.482	10.87	0.4924	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-15-CTA-4	3	3	9.449	12.90	0.4990	0.1263	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-11-CTA-1	3	3	7.811	8.29	0.5022	0.1300	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-12-CTA-2	3	3	8.423	11.21	0.4906	0.1301	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-14-CTA-3	3	3	8.085	10.73	0.5120	0.1300	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-15-CTA-4	3	3	9.660	10.48	0.4757	0.1303	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-11-CTA-1	4	4	8.071	9.952	0.4905	0.1276	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-12-CTA-2*	4	4		8.246	0.4777	0.1258	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-14-CTA-3	4	4	9.083	12.37	0.4896	0.1263	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-15-CTA-4	4	4	9.220	12.77	0.4982	0.1262	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-11-CTA-1	4	4	8.414	8.683	0.4592	0.1301	FAILURE AT GAGE AND FILLET SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-13-CTA-2	4	4	7.947	9.764	0.4746	0.1300	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-14-CTA-3*	4	4		8.634	0.4530	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-15-CTA-4	4	4	8.632	10.11	0.4768	0.1284	FAILURE AT FILLET SECTION

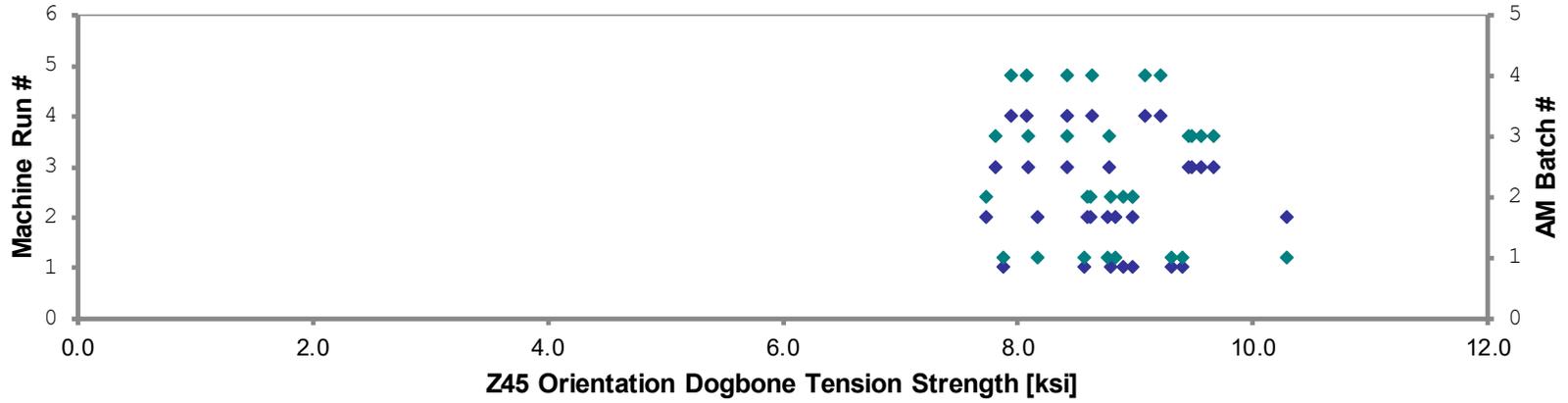
*0.2% Offset Strength is not reported as ultimate strength is achieved prior to that

**0.2% Offset Strength and modulus is not reported as odd bumps were observed in the strain reading, prior to 0.2%

Average	8.772	10.73	0.4925	0.1278
Standard Dev.	0.6258	1.688	0.01708	0.001510
Coeff. of Var. [%]	7.134	15.74	3.469	1.181
Min.	7.726	8.246	0.4530	0.1258
Max.	10.29	14.22	0.5351	0.1303
Number of Spec.	29	32	31	32

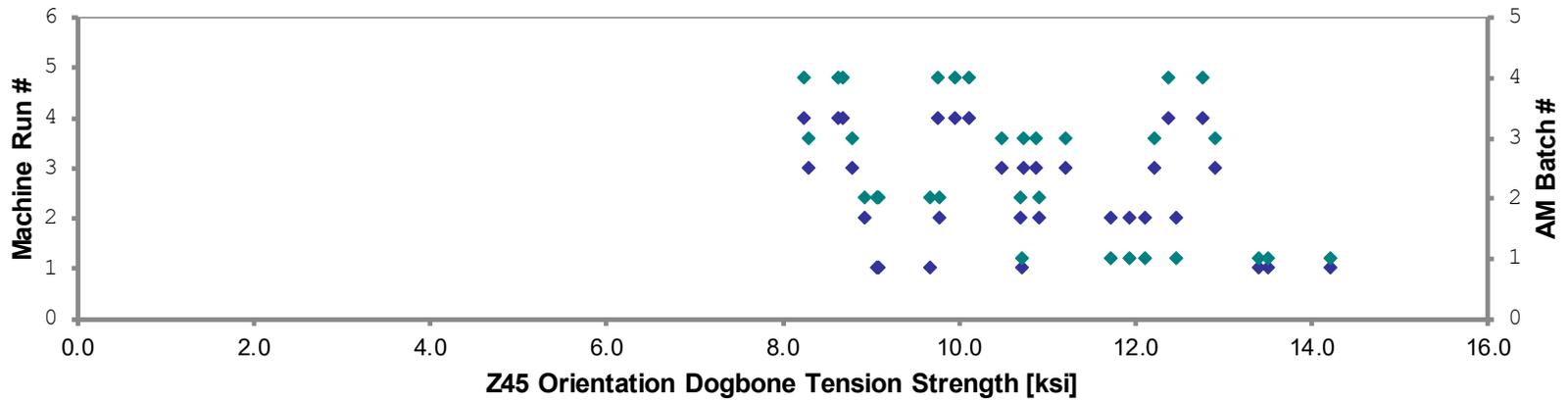
Z45 Orientation Dogbone Tension Properties (Z45-T)--CTA
Measured 0.2% Offset Yield Strength (ksi)
Additively Manufactured Antero(R) 840CN03

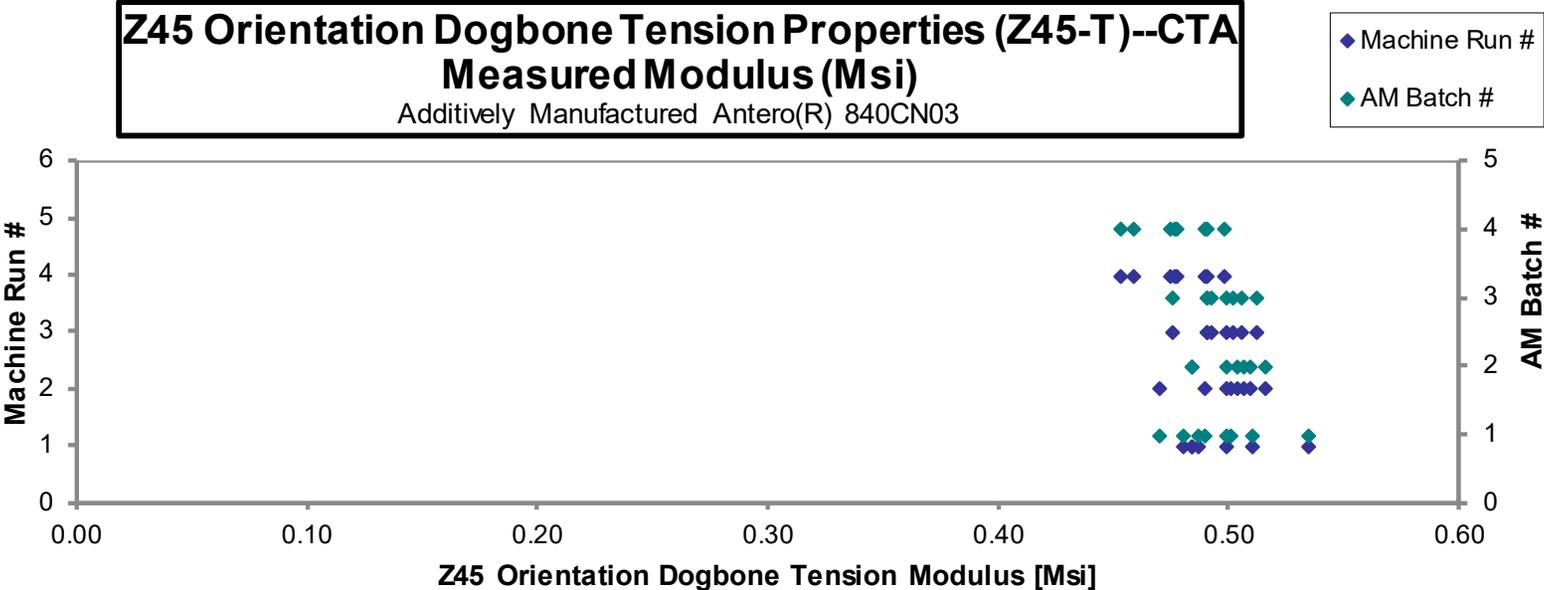
◆ Machine Run #
◆ AM Batch #



Z45 Orientation Dogbone Tension Properties (Z45-T)--CTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03

◆ Machine Run #
◆ AM Batch #

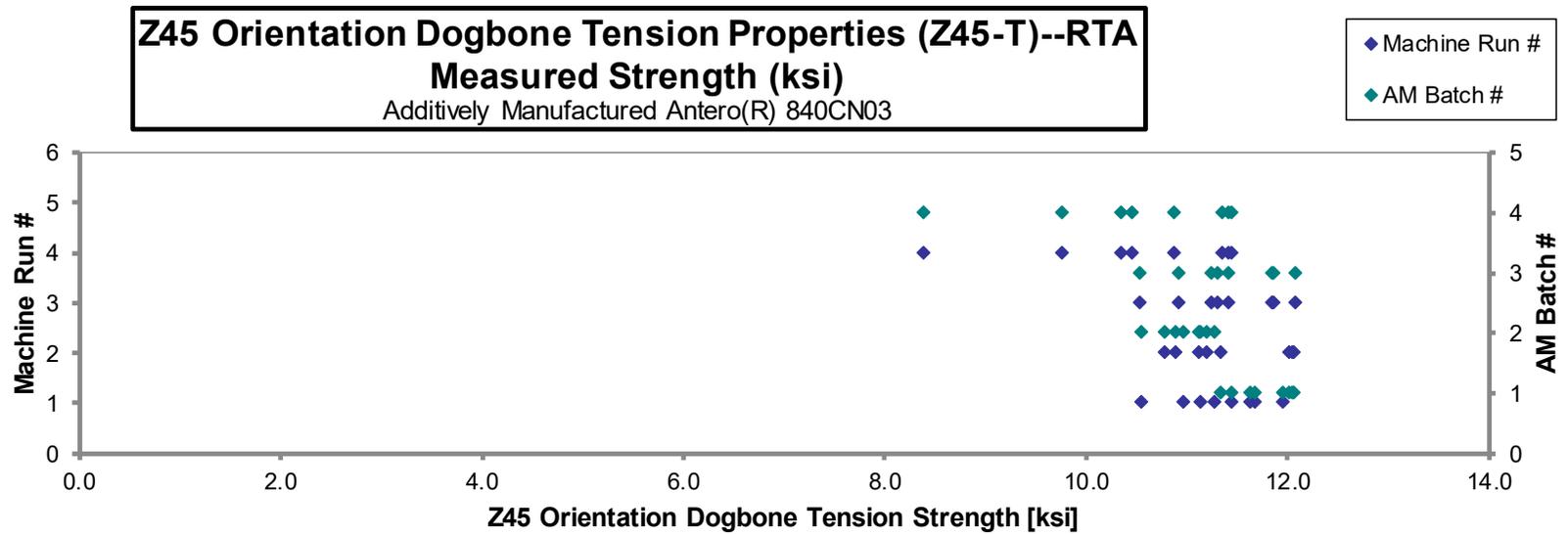
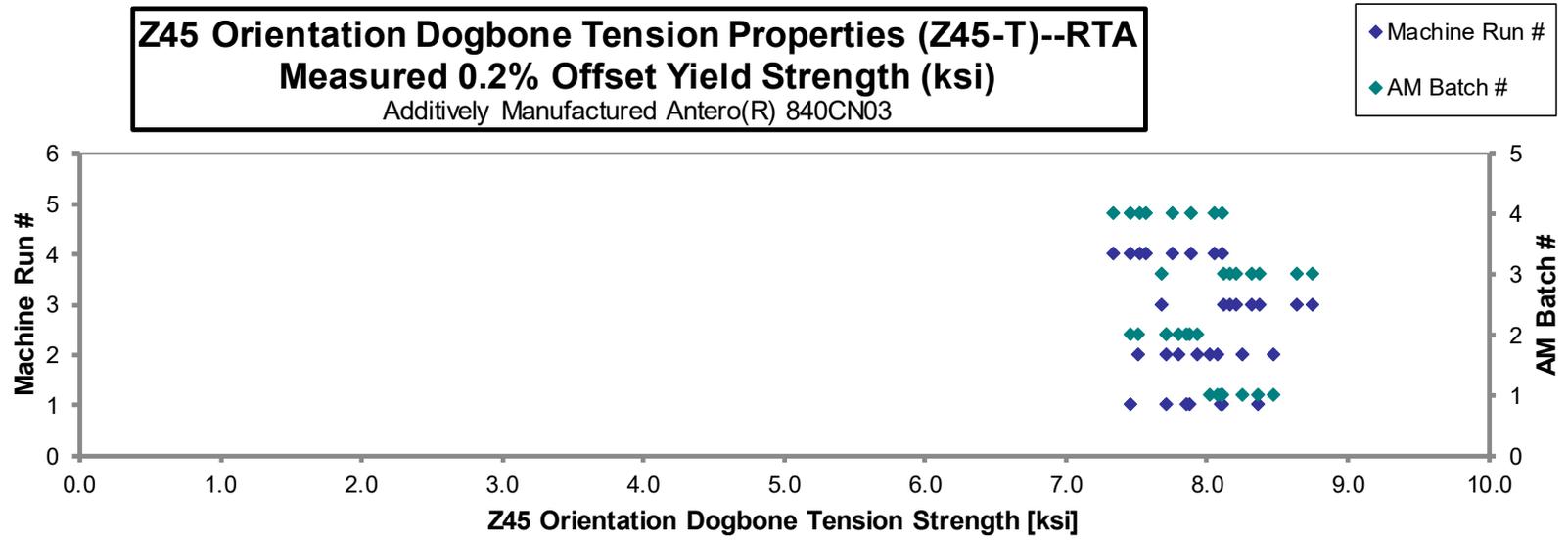




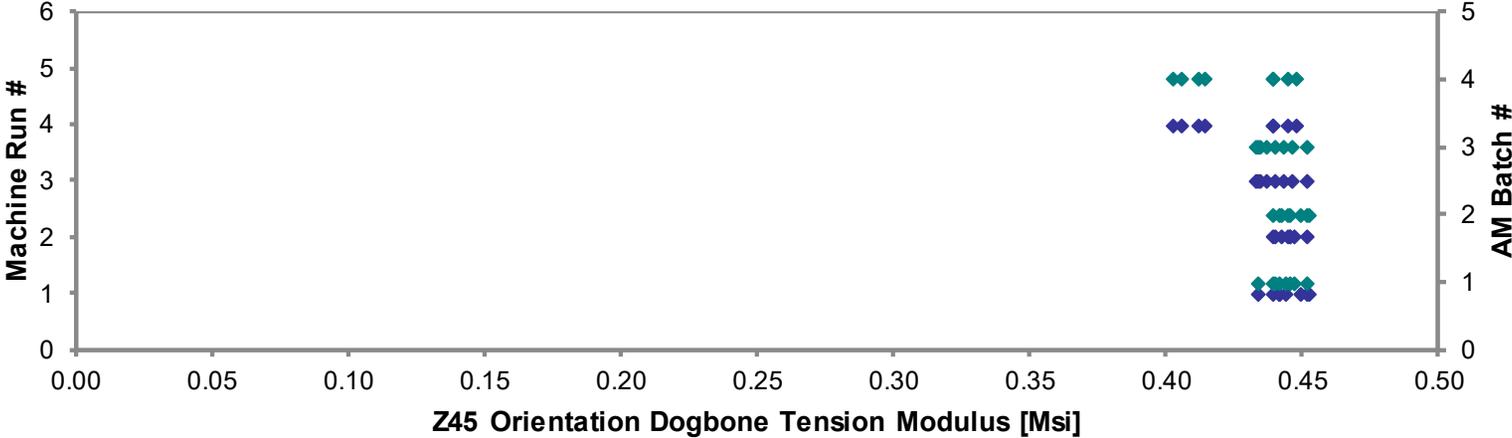
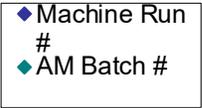
Z45 Orientation Dogbone Tension Properties (Z45-T)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-11-RTA-1	1	1	8.096	11.44	0.4336	0.1280	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-12-RTA-2	1	1	8.105	11.63	0.4417	0.1277	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-14-RTA-3	1	1	8.361	11.95	0.4437	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-15-RTA-4	1	1	8.104	11.68	0.4395	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-11-RTA-1	1	2	8.253	12.02	0.4514	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-13-RTA-2	1	2	8.470	12.05	0.4403	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-14-RTA-3	1	2	8.077	12.07	0.4472	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-15-RTA-4	1	2	8.015	11.34	0.4453	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-11-RTA-1	2	1	7.712	10.96	0.4490	0.1277	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-12-RTA-2	2	1	7.851	11.28	0.4520	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-14-RTA-3	2	1	7.448	10.55	0.4418	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-15-RTA-4	2	1	7.877	11.13	0.4523	0.1270	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-11-RTA-1	2	2	7.703	10.89	0.4389	0.1280	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-13-RTA-2	2	2	7.933	11.19	0.4421	0.1270	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-14-RTA-3	2	2	7.514	10.77	0.4452	0.1265	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-15-RTA-4	2	2	7.796	11.12	0.4448	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-11-RTA-1	3	3	8.166	10.92	0.4518	0.1284	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-12-RTA-2	3	3	8.631	11.84	0.4402	0.1280	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-14-RTA-3	3	3	8.374	11.86	0.4334	0.1300	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-15-RTA-4	3	3	8.750	12.07	0.4431	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-11-RTA-1	3	3	7.675	10.53	0.4329	0.1303	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-12-RTA-2	3	3	8.208	11.23	0.4365	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-14-RTA-3	3	3	8.121	11.40	0.4344	0.1303	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-15-RTA-4	3	3	8.312	11.30	0.4459	0.1298	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-11-RTA-1	4	4	7.754	10.87	0.4393	0.1249	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-12-RTA-2	4	4	8.107	11.34	0.4396	0.1257	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-14-RTA-3	4	4	7.882	11.41	0.4478	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-15-RTA-4	4	4	8.052	11.44	0.4448	0.1258	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-11-RTA-1	4	4	7.522	10.34	0.4025	0.1307	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-13-RTA-2	4	4	7.562	8.377	0.4122	0.1316	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-14-RTA-3	4	4	7.450	10.44	0.4055	0.1320	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-15-RTA-4	4	4	7.330	9.751	0.4145	0.1320	FAILURE AT GAGE SECTION

Average	7.975	11.16	0.4385	0.1284
Standard Dev.	0.3536	0.7556	0.01278	0.001810
Coeff. of Var. [%]	4.434	6.769	2.915	1.410
Min.	7.330	8.377	0.4025	0.1249
Max.	8.750	12.07	0.4523	0.1320
Number of Spec.	32	32	32	32



Z45 Orientation Dogbone Tension Properties (Z45-T)--RTA
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03



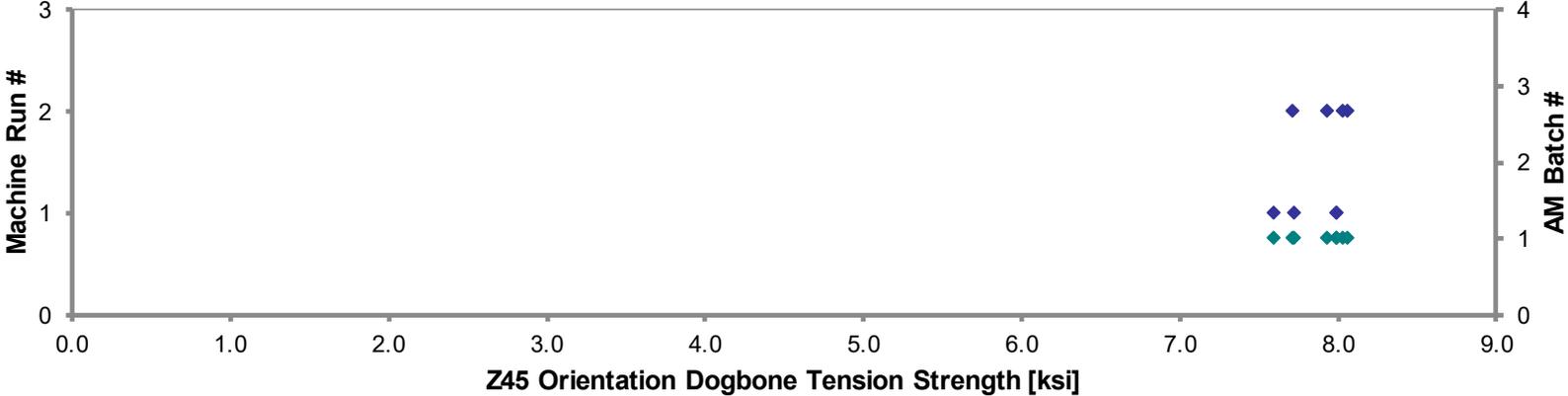
Z45 Orientation Dogbone Tension Properties (Z45-T)--RTW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

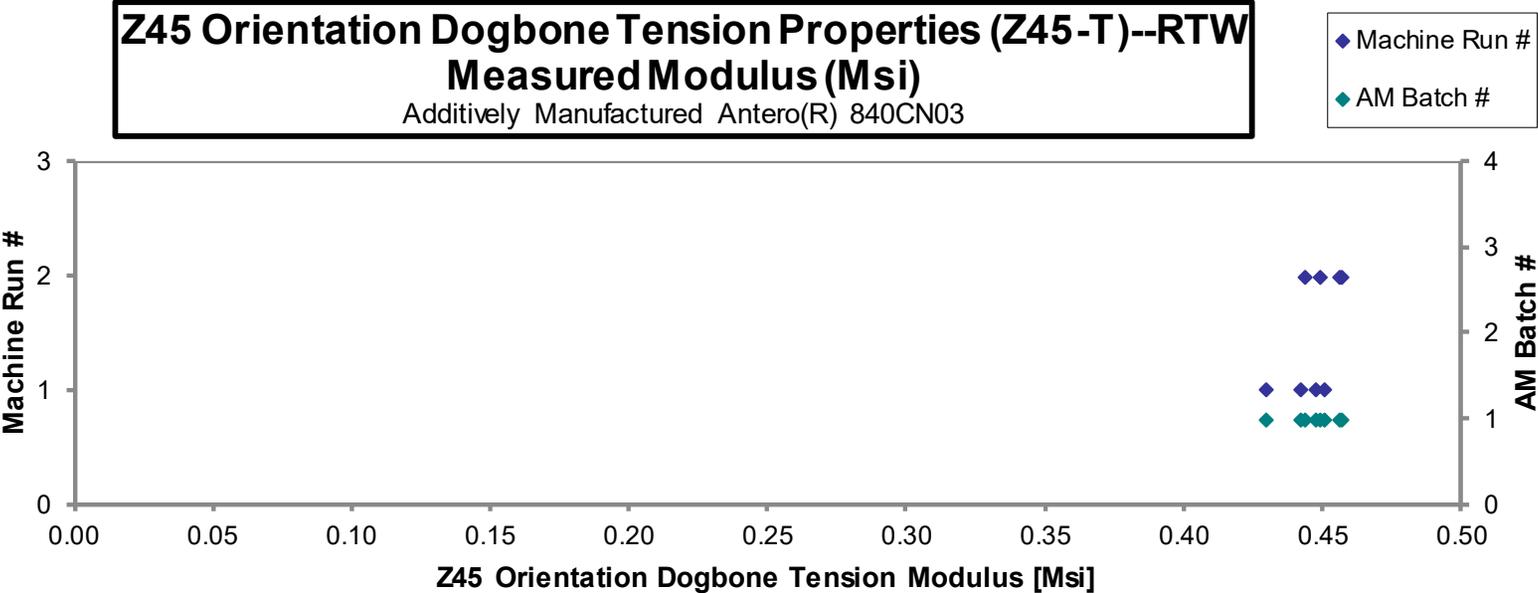
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-11-RTW-1	1	1	7.990	11.10	0.4303	0.1271	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-12-RTW-2	1	1	7.727	11.20	0.4481	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-14-RTW-3	1	1	7.991	11.56	0.4425	0.1266	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-15-RTW-4	1	1	7.601	11.31	0.4510	0.1274	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-11-RTW-1	1	2	8.067	11.56	0.4445	0.1277	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-12-RTW-2	1	2	8.037	11.72	0.4497	0.1276	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-13-RTW-3	1	2	7.936	11.68	0.4565	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-15-RTW-4	1	2	7.719	11.69	0.4574	0.1275	FAILURE AT GAGE SECTION

Average	7.884	11.48	0.4475	0.1274
Standard Dev.	0.1751	0.2395	0.008657	0.0004515
Coeff. of Var. [%]	2.221	2.086	1.934	0.3543
Min.	7.601	11.10	0.4303	0.1266
Max.	8.067	11.72	0.4574	0.1282
Number of Spec.	8	8	8	8

Z45 Orientation Dogbone Tension Properties (Z45-T)--RTW
Measured 0.2% Offset Yield Strength (ksi)
Additively Manufactured Antero(R) 840CN03

◆ Machine Run #
◆ AM Batch #

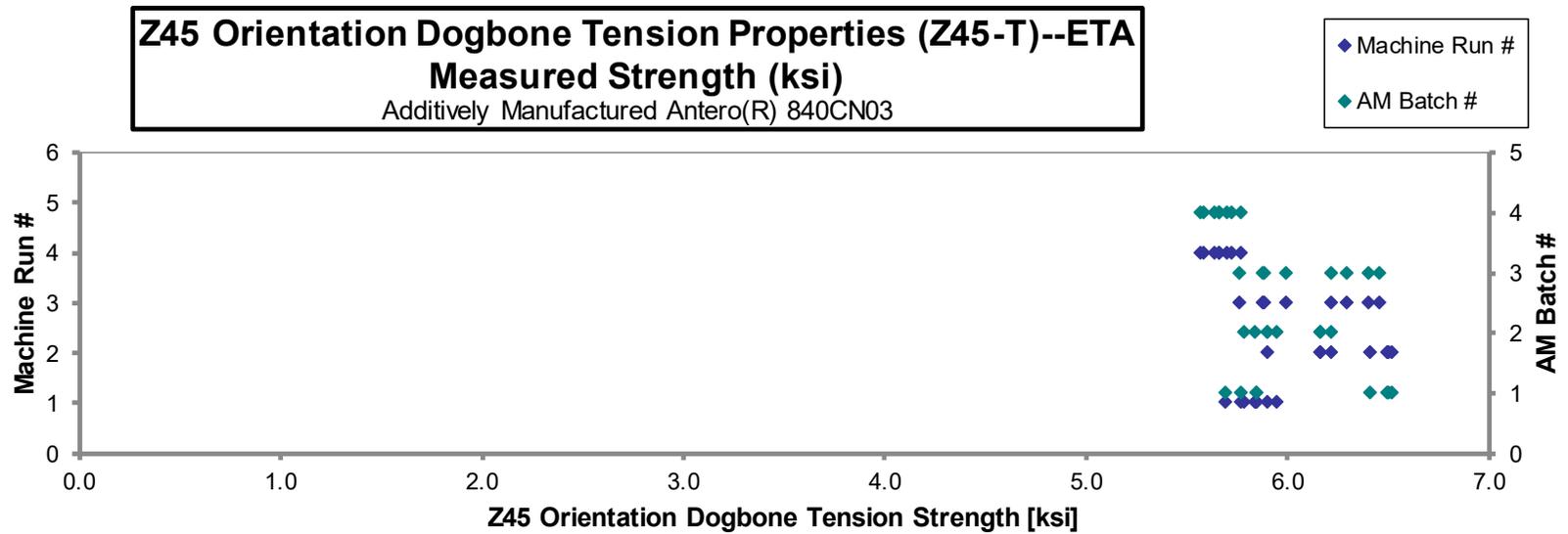
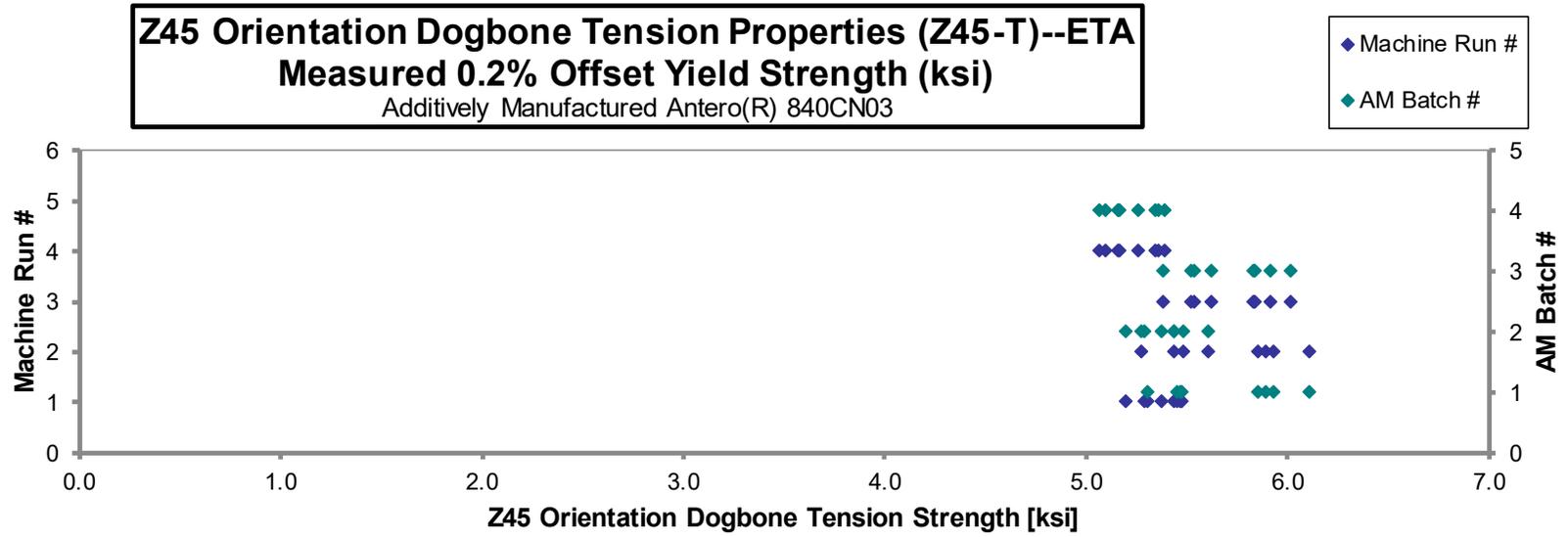




Z45 Orientation Dogbone Tension Properties (Z45-T)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

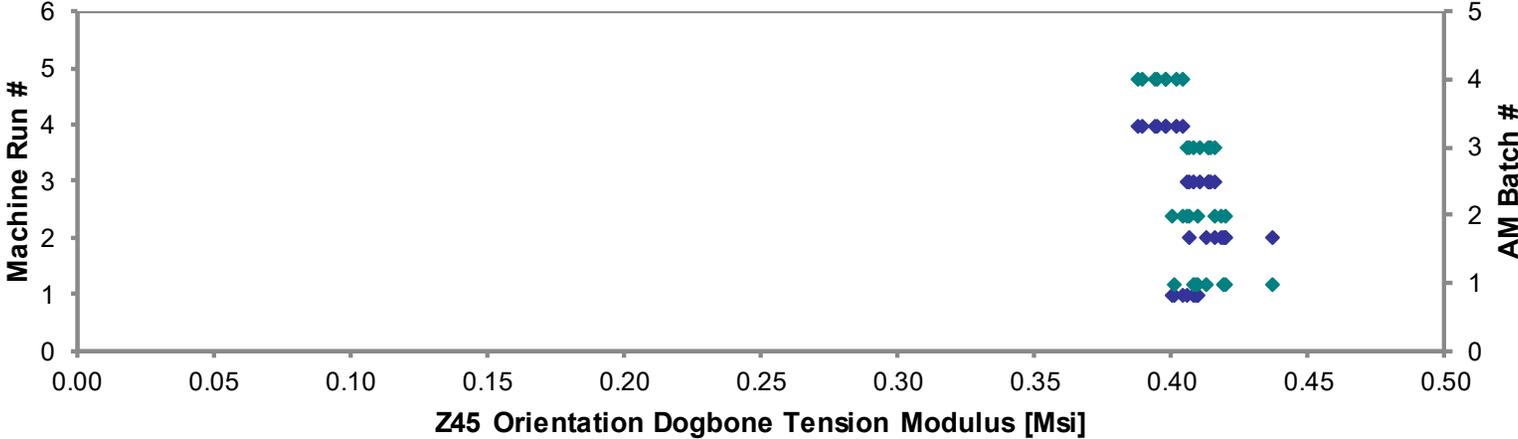
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-11-ETA-1	1	1	5.303	5.689	0.4089	0.1266	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-12-ETA-2	1	1	5.463	5.767	0.4006	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-14-ETA-3	1	1	5.452	5.842	0.4095	0.1284	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-15-ETA-4	1	1	5.473	5.847	0.4077	0.1280	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-11-ETA-1	1	2	5.851	6.405	0.4186	0.1291	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-13-ETA-2	1	2	6.105	6.502	0.4126	0.1280	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-14-ETA-3	1	2	5.926	6.497	0.4195	0.1288	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-15-ETA-4	1	2	5.893	6.518	0.4366	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-11-ETA-1	2	1	5.369	5.837	0.4043	0.1299	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-12-ETA-2	2	1	5.432	5.947	0.4000	0.1300	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-14-ETA-3	2	1	5.193	5.783	0.4058	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-15-ETA-4	2	1	5.284	5.900	0.4092	0.1303	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-11-ETA-1	2	2	5.601	6.214	0.4160	0.1255	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-13-ETA-2	2	2	5.434	6.163	0.4196	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-14-ETA-3	2	2	5.270	5.899	0.4067	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-15-ETA-4	2	2	5.482	6.157	0.4178	0.1268	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-11-ETA-1	3	3	5.916	6.454	0.4105	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-12-ETA-2	3	3	6.016	6.400	0.4077	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-14-ETA-3	3	3	5.839	6.217	0.4054	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-15-ETA-4	3	3	5.829	6.292	0.4133	0.1279	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-11-ETA-1	3	3	5.377	5.757	0.4063	0.1270	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-12-ETA-2	3	3	5.536	5.885	0.4136	0.1271	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-14-ETA-3	3	3	5.621	5.987	0.4159	0.1270	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-15-ETA-4	3	3	5.522	5.875	0.4141	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-11-ETA-1	4	4	5.257	5.634	0.3942	0.1298	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-12-ETA-2	4	4	5.356	5.698	0.3979	0.1297	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-14-ETA-3	4	4	5.385	5.766	0.3976	0.1294	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-15-ETA-4	4	4	5.344	5.722	0.4018	0.1294	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-11-ETA-1	4	4	5.166	5.582	0.3879	0.1289	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-13-ETA-2	4	4	5.097	5.658	0.4043	0.1289	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-14-ETA-3	4	4	5.060	5.564	0.3946	0.1299	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-15-ETA-4	4	4	5.159	5.655	0.3893	0.1293	FAILURE AT GAGE SECTION

Average	5.500	5.972	0.4077	0.1283
Standard Dev.	0.2836	0.3028	0.009958	0.001182
Coeff. of Var. [%]	5.157	5.070	2.442	0.9212
Min.	5.060	5.564	0.3879	0.1255
Max.	6.105	6.518	0.4366	0.1303
Number of Spec.	32	32	32	32



Z45 Orientation Dogbone Tension Properties (Z45-T)--ETA
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

- ◆ Machine Run #
- ◆ AM Batch #



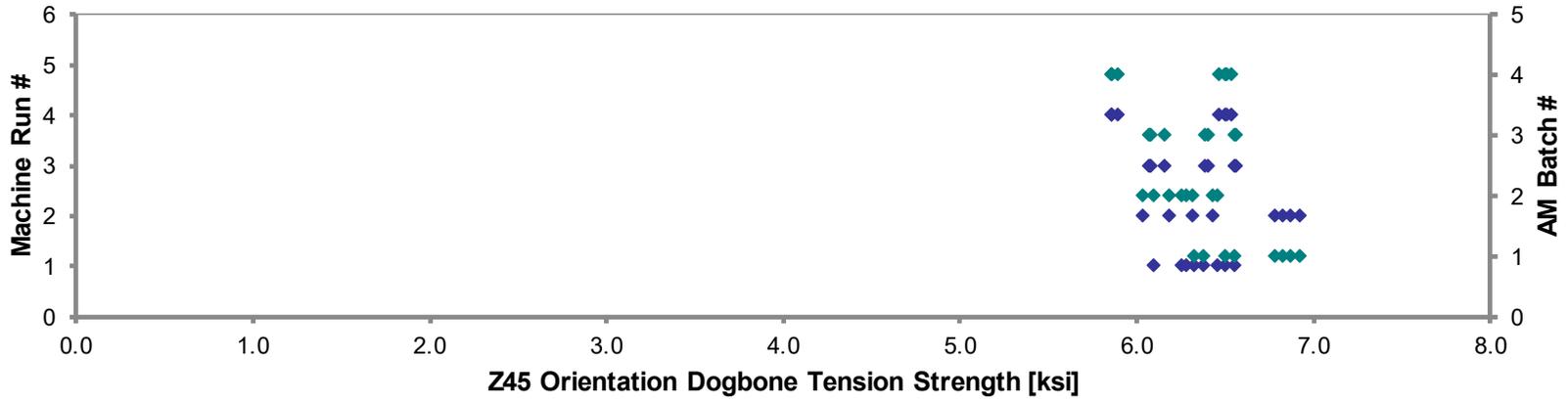
Z45 Orientation Dogbone Tension Properties (Z45-T)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Tensile Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-11-ETW-1	1	1	6.501	7.417	0.3985	0.1265	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-12-ETW-2	1	1	6.328	7.635	0.4245	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-14-ETW-3	1	1	6.380	7.801	0.4274	0.1263	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-T-15-ETW-4	1	1	6.556	7.679	0.4152	0.1266	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-11-ETW-1	1	2	6.828	8.346	0.4291	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-12-ETW-2	1	2	6.787	8.404	0.4311	0.1270	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-13-ETW-3	1	2	6.921	8.326	0.4283	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-T-15-ETW-4	1	2	6.876	8.328	0.4308	0.1268	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-11-ETW-1	2	1	6.257	7.469	0.4046	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-12-ETW-2	2	1	6.457	7.681	0.4130	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-14-ETW-3	2	1	6.094	7.347	0.4114	0.1257	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-T-15-ETW-4	2	1	6.279	7.616	0.4185	0.1266	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-11-ETW-1	2	2	6.037	7.279	0.4065	0.1266	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-13-ETW-2	2	2	6.431	7.528	0.4070	0.1270	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-14-ETW-3	2	2	6.185	7.579	0.4219	0.1256	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-T-15-ETW-4	2	2	6.318	7.551	0.4165	0.1262	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-11-ETW-1	3	3	6.081	7.191	0.4224	0.1284	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-12-ETW-2	3	3	6.074	7.260	0.4268	0.1288	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-14-ETW-3	3	3	6.162	7.211	0.4163	0.1298	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-T-15-ETW-4	3	3	6.076	7.327	0.4241	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-11-ETW-1	3	3	6.405	7.660	0.4165	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-12-ETW-2	3	3	6.388	7.712	0.4221	0.1288	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-14-ETW-3	3	3	6.566	7.820	0.4246	0.1292	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-T-15-ETW-4	3	3	6.551	7.753	0.4169	0.1296	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-11-ETW-1	4	4	6.535	7.638	0.4034	0.1288	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-12-ETW-2	4	4	6.466	7.754	0.4140	0.1294	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-14-ETW-3	4	4	6.501	7.853	0.4157	0.1294	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-T-15-ETW-4	4	4	6.514	7.783	0.4131	0.1287	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-11-ETW-1	4	4	5.856	7.026	0.3937	0.1303	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-13-ETW-2	4	4	5.862	7.012	0.3998	0.1299	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-14-ETW-3	4	4	5.861	6.916	0.3845	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-T-15-ETW-4	4	4	5.894	6.990	0.3905	0.1305	FAILURE AT GAGE SECTION

Average	6.345	7.590	0.4146	0.1280
Standard Dev.	0.2945	0.3923	0.01206	0.001530
Coeff. of Var. [%]	4.642	5.168	2.907	1.196
Min.	5.856	6.916	0.3845	0.1256
Max.	6.921	8.404	0.4311	0.1305
Number of Spec.	32	32	32	32

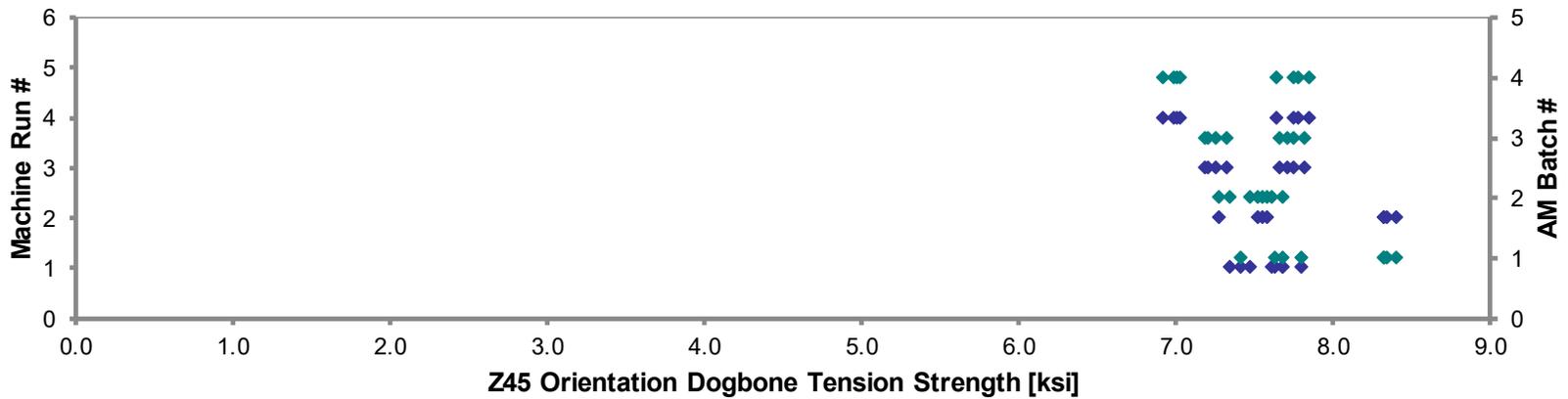
Z45 Orientation Dogbone Tension Properties (Z45-T)--ETW
Measured 0.2% Offset Yield Strength (ksi)
Additively Manufactured Antero(R) 840CN03

◆ Machine Run #
◆ AM Batch #

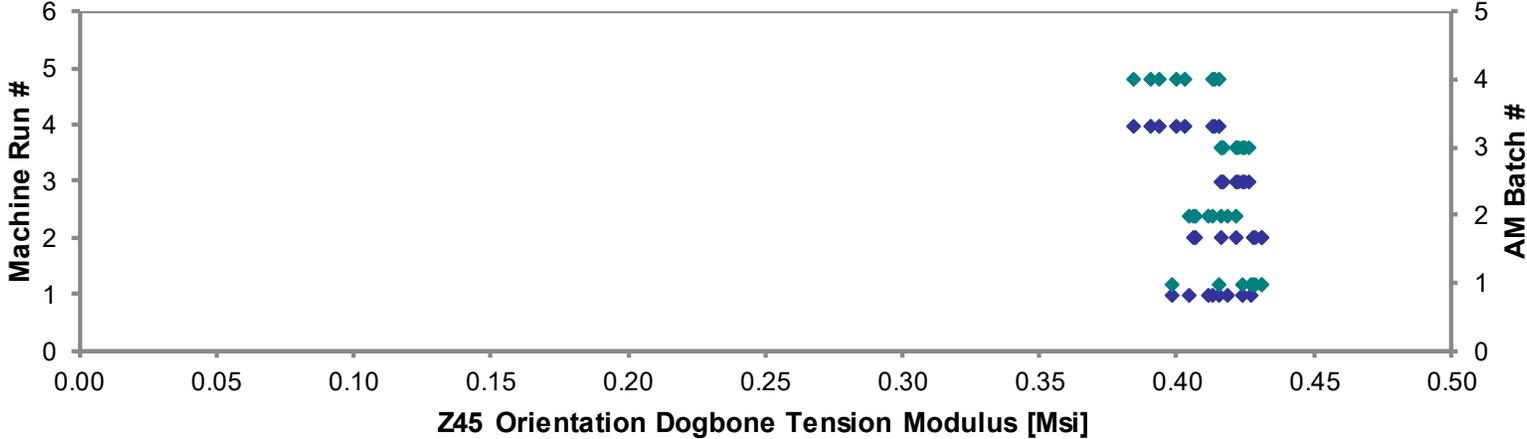
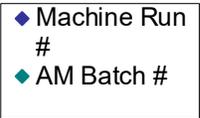


Z45 Orientation Dogbone Tension Properties (Z45-T)--ETW
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03

◆ Machine Run #
◆ AM Batch #



Z45 Orientation Dogbone Tension Properties (Z45-T)--ETW
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03



4.5 XY Compression Prism Properties (XY-C)

**XY Orientation Compression Prism Properties (XY-C)--CTA
Strength & Modulus**

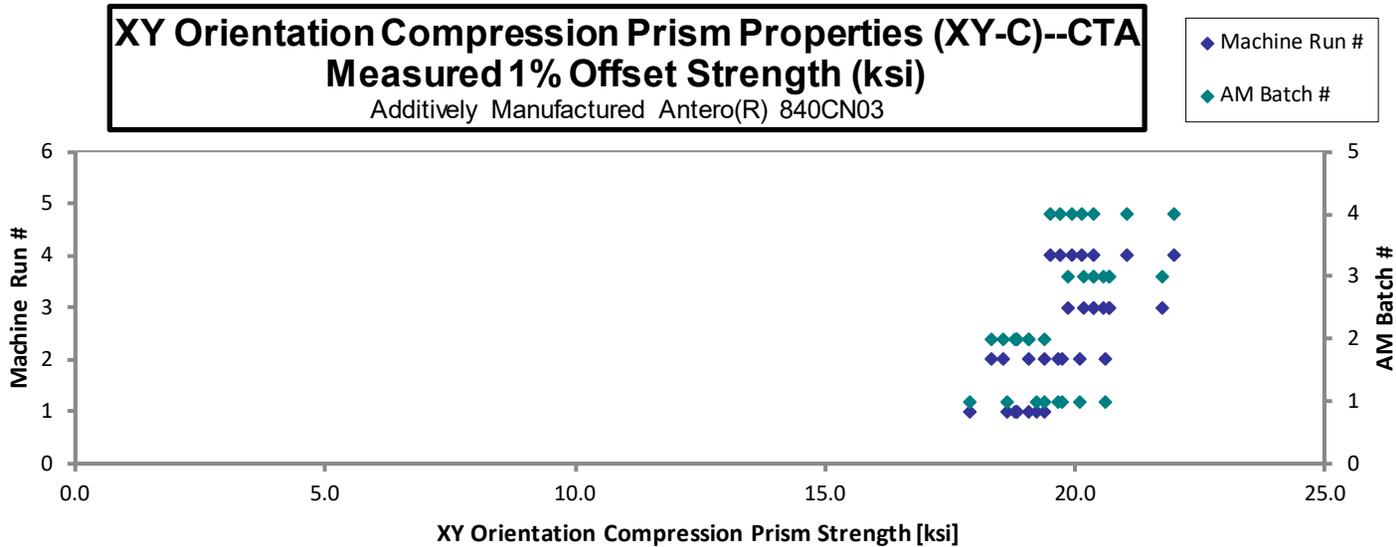
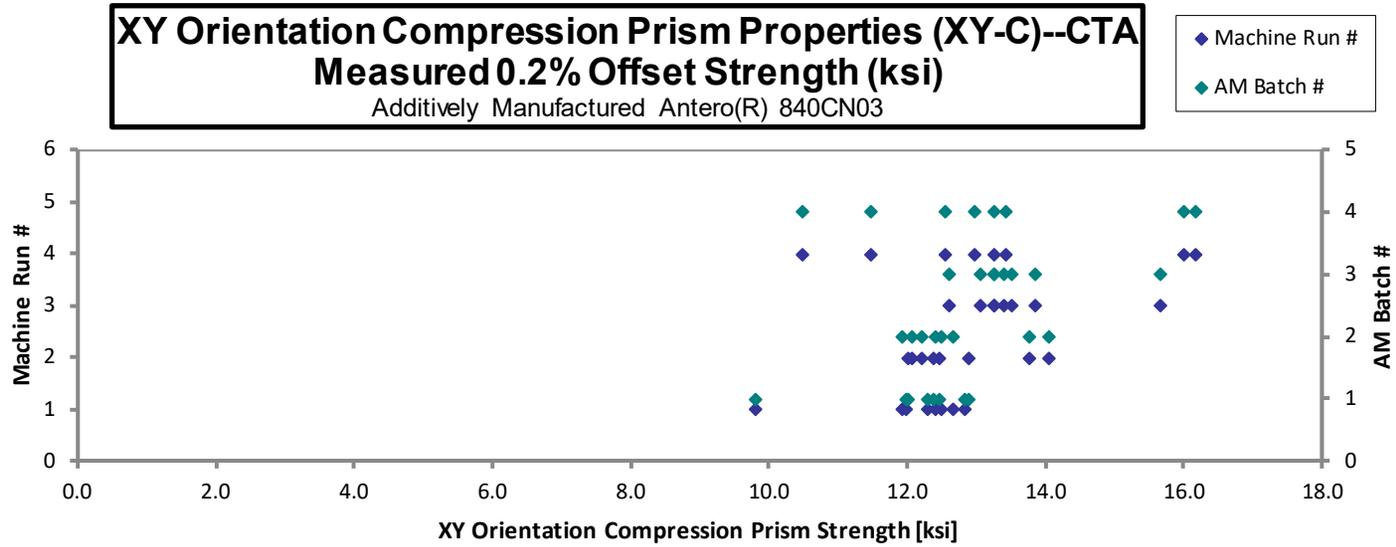
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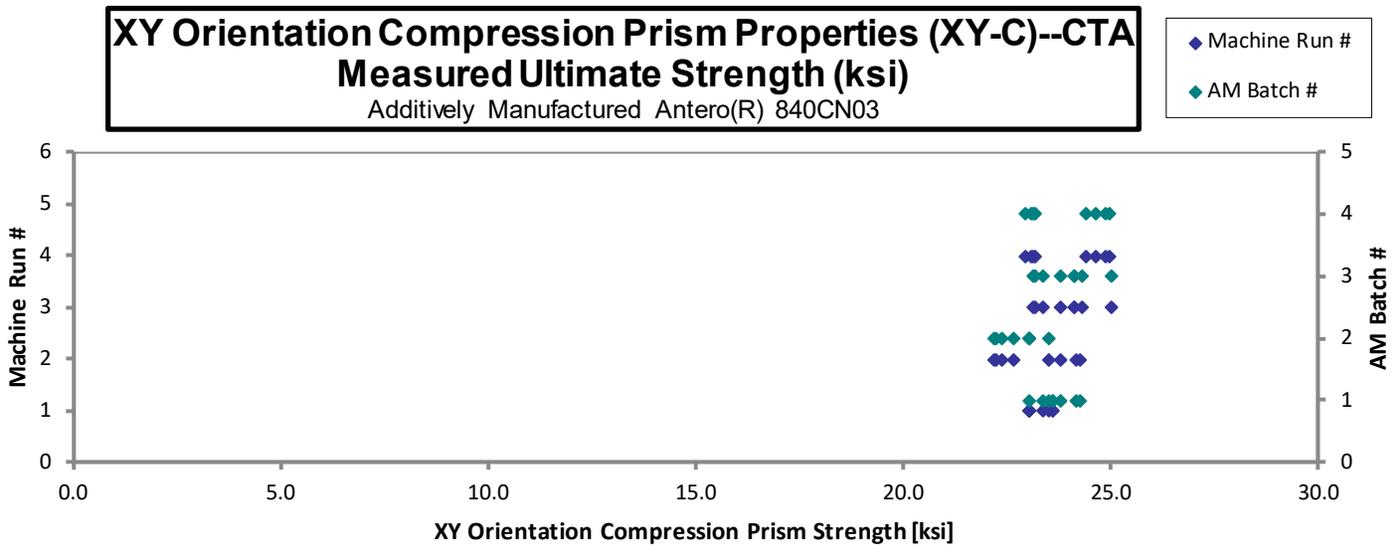
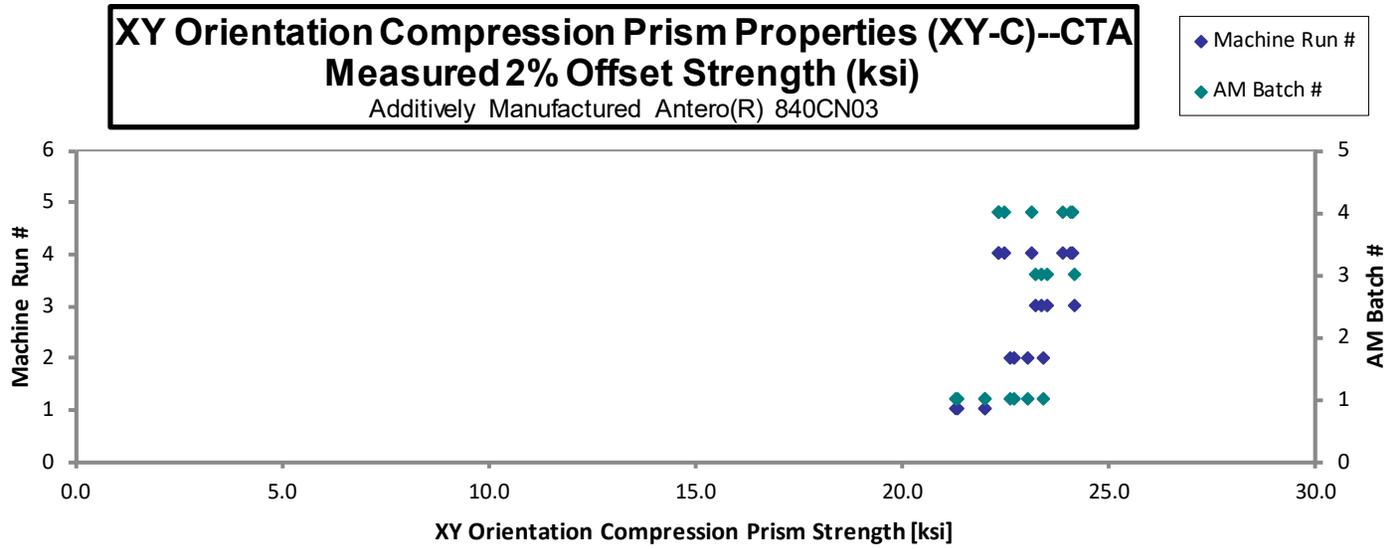
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-11-CTA-1	1	1	12.82	19.39	22.01	23.62	0.5634	0.5005	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-12-CTA-2	1	1	12.30	19.22	22.01	23.59	0.5951	0.4998	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-14-CTA-3	1	1	11.99	18.66	21.32	23.05	0.5725	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-15-CTA-4	1	1	9.816	17.90	21.27	23.39	0.6419	0.5029	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-11-CTA-1	1	2	12.01	19.66	22.71	23.80	0.6284	0.5027	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-13-CTA-2	1	2	12.47	20.09	23.02	24.27	0.5982	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-14-CTA-3	1	2	12.39	19.75	22.61	23.52	0.5998	0.5009	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-15-CTA-4	1	2	12.89	20.63	23.42	24.16	0.6105	0.5006	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-11-CTA-1*	2	1	11.92	18.82	23.52	23.52	0.5823	0.4984	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-12-CTA-2*	2	1	12.50	18.83	23.05	23.05	0.5583	0.4987	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-14-CTA-3*	2	1	12.68	18.85	23.02	23.02	0.5585	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-15-CTA-4*	2	1	12.40	19.06	23.04	23.04	0.5874	0.4980	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-11-CTA-1*	2	2	13.76	19.10	22.23	22.23	0.5280	0.5028	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-13-CTA-2*	2	2	12.06	18.34	22.35	22.35	0.5671	0.4984	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-14-CTA-3*	2	2	12.20	18.58	22.18	22.18	0.5688	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-15-CTA-4*	2	2	14.04	19.40	22.65	22.65	0.5379	0.4968	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-11-CTA-1*	3	3	13.51	19.86	23.20	23.20	0.5453	0.4994	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-12-CTA-2*	3	3	13.38	20.38	23.13	23.13	0.5839	0.5009	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-14-CTA-3*	3	3	13.84	20.17	23.38	23.38	0.5623	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-15-CTA-4*	3	3	13.26	20.56	23.78	23.78	0.5991	0.4996	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-11-CTA-1	3	3	13.07	20.69	23.36	24.10	0.6032	0.5041	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-12-CTA-2	3	3	15.66	21.76	24.15	25.03	0.5547	0.5035	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-14-CTA-3	3	3	13.25	20.69	23.52	24.30	0.5902	0.5038	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-15-CTA-4	3	3	12.60	20.37	23.22	24.11	0.5988	0.5032	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-11-CTA-1	4	4	16.18	22.00	24.13	24.62	0.5510	0.5020	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-12-CTA-2	4	4	11.49	20.37	23.88	24.98	0.6549	0.5015	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-14-CTA-3	4	4	13.25	21.05	24.09	24.90	0.6100	0.4981	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-15-CTA-4	4	4	10.49	19.50	23.13	24.39	0.6718	0.5015	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-11-CTA-1	4	4	13.42	20.13	22.48	23.09	0.5745	0.5001	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-13-CTA-2**	4	4	15.99			23.12	0.5571	0.4999	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-14-CTA-3	4	4	12.54	19.69	22.31	23.16	0.5915	0.4998	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-15-CTA-4	4	4	12.98	19.92	22.34	22.95	0.5729	0.5001	UNIFORM COMPRESSIVE FAILURE

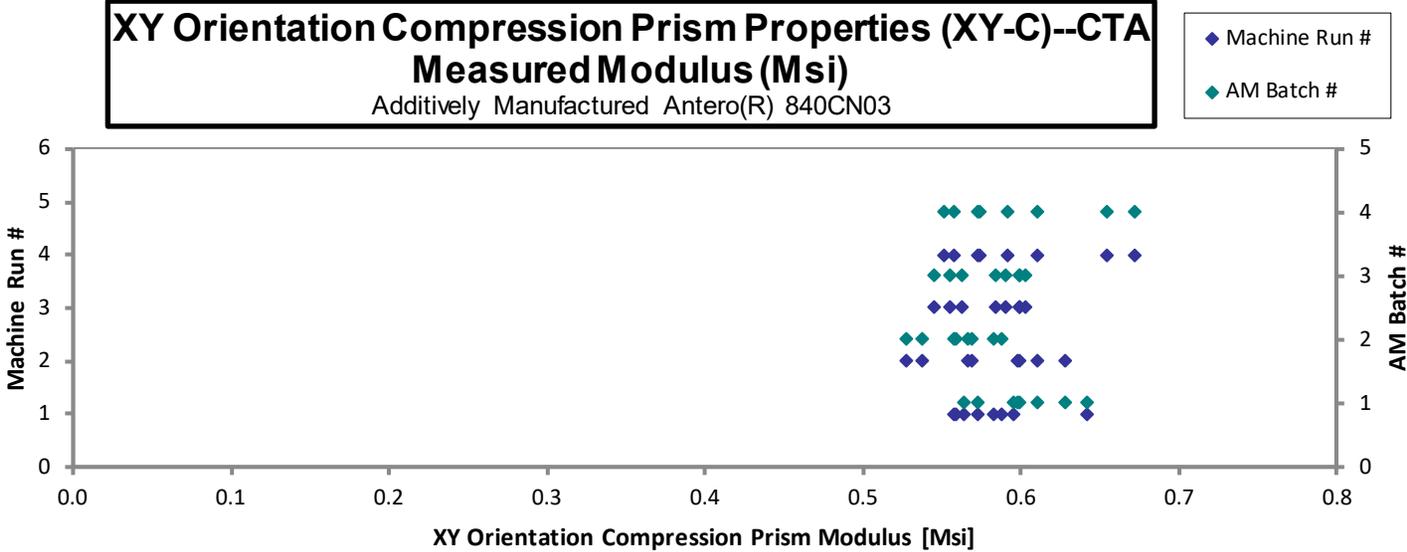
*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

**1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	12.91	19.79	22.89	23.55	0.5850	0.5005
Standard Dev.	1.328	0.9590	0.8878	0.7673	0.03283	0.001926
Coeff. of Var. [%]	10.29	4.846	3.878	3.258	5.612	0.3849
Min.	9.816	17.90	21.27	22.18	0.5280	0.4968
Max.	16.18	22.00	24.15	25.03	0.6718	0.5041
Number of Spec.	32	31	19	32	32	32







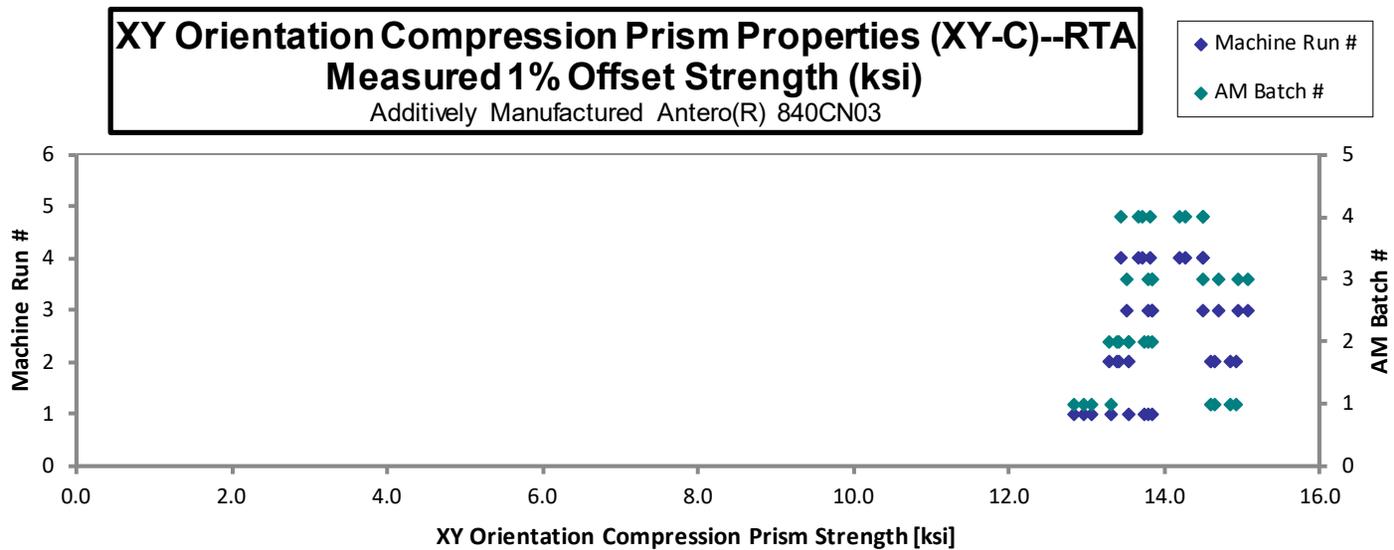
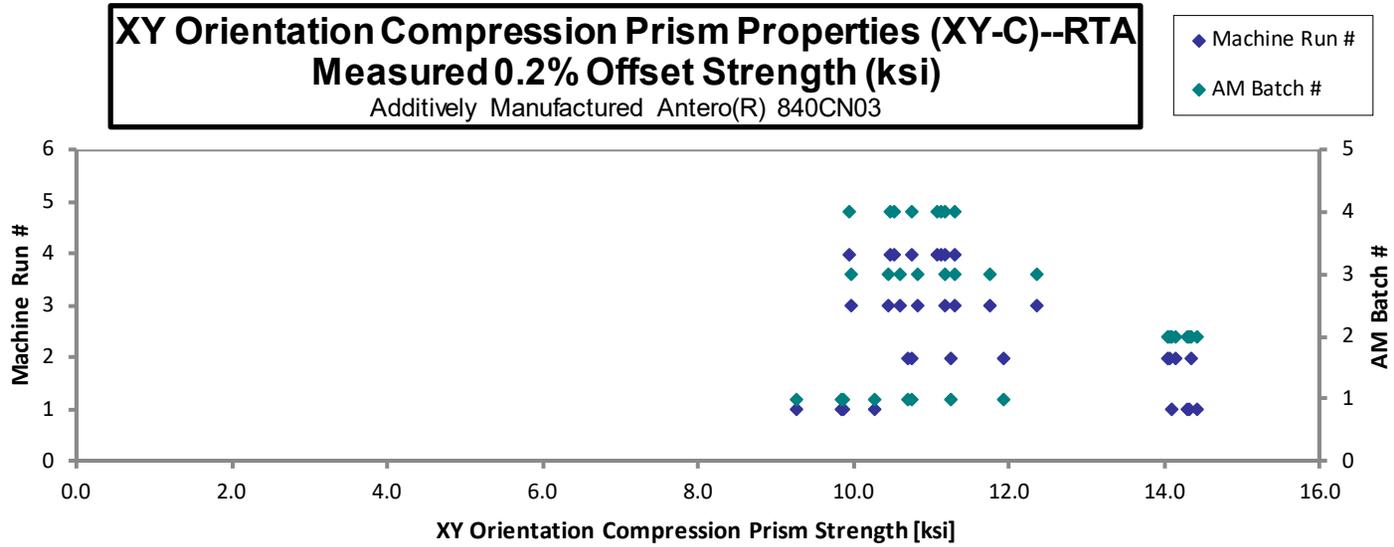
**XY Orientation Compression Prism Properties (XY-C)--RTA
Strength & Modulus**

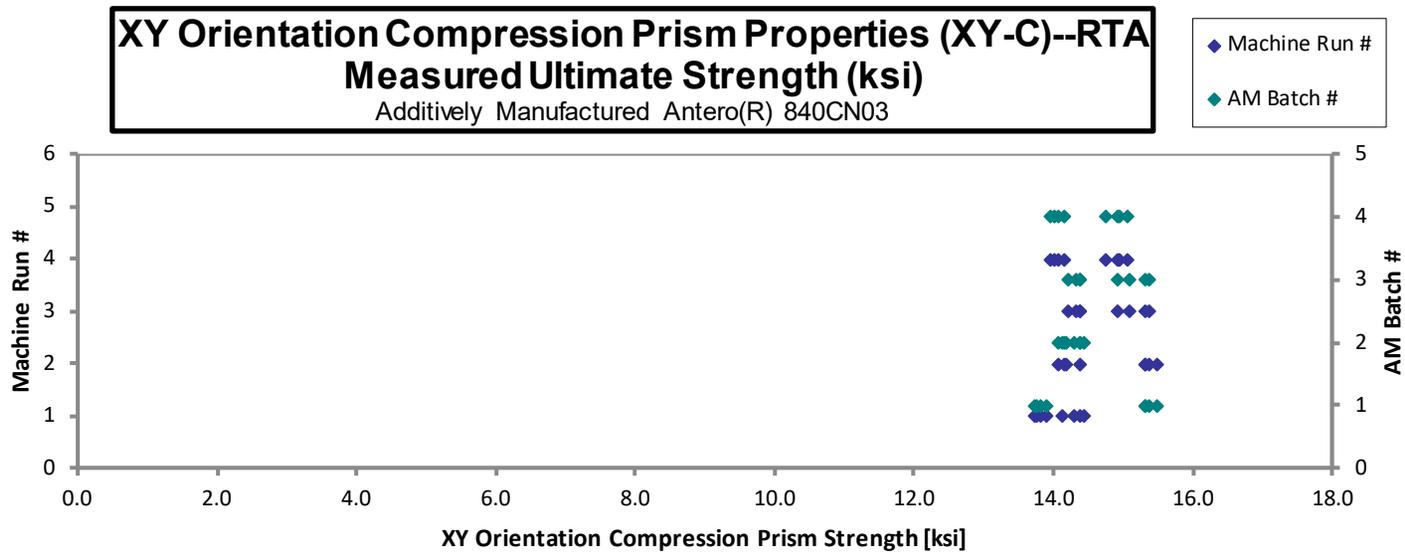
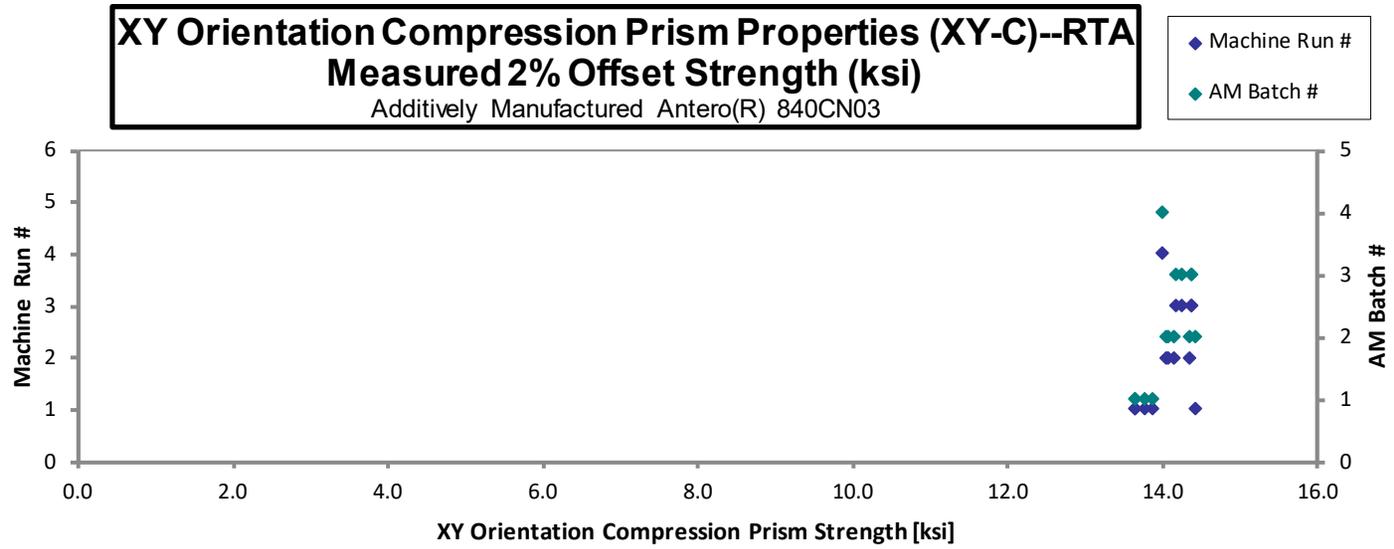
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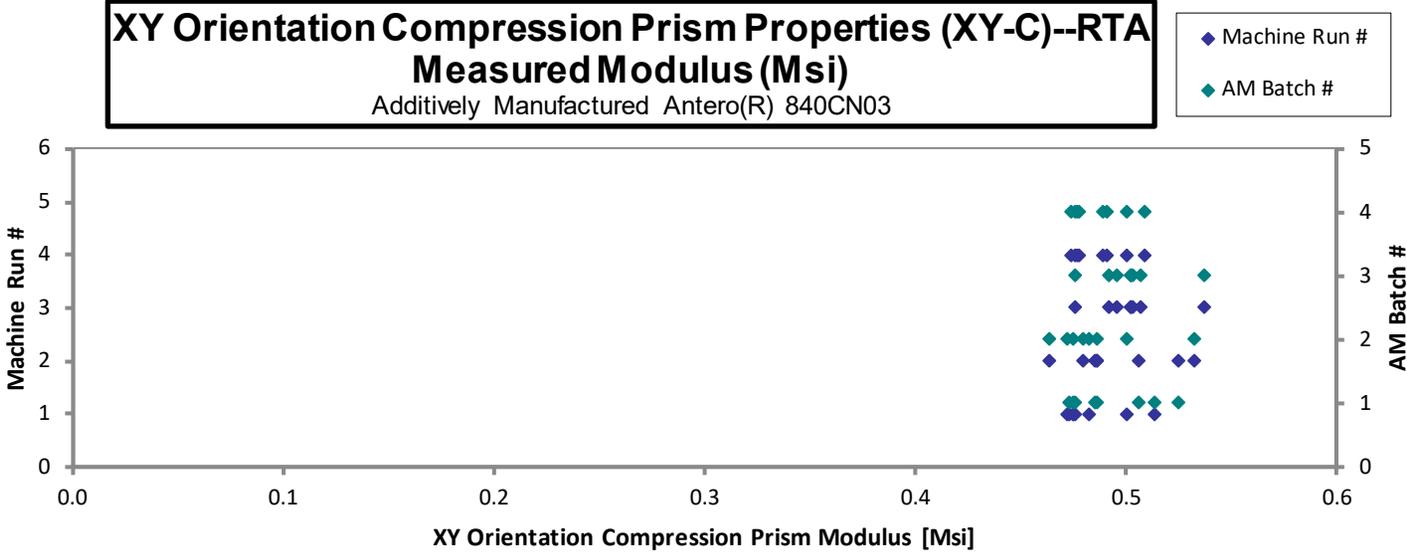
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-11-RTA-1	1	1	9.855	13.07	13.76	13.82	0.4760	0.5001	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-12-RTA-2	1	1	9.259	12.84	13.65	13.77	0.5132	0.5013	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-14-RTA-3	1	1	9.873	12.98	13.63	13.72	0.4729	0.5002	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-15-RTA-4	1	1	10.29	13.31	13.87	13.89	0.4745	0.5009	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-11-RTA-1*	1	2	11.93	14.94		15.38	0.4853	0.5042	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-13-RTA-2*	1	2	11.27	14.86		15.49	0.4865	0.5038	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-14-RTA-3*	1	2	10.75	14.60		15.33	0.5058	0.5032	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-15-RTA-4*	1	2	10.69	14.66		15.33	0.5253	0.5032	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-11-RTA-1	2	1	14.42	13.75	14.42	14.44	0.4829	0.4980	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-12-RTA-2*	2	1	14.31	13.79		14.31	0.4717	0.4986	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-14-RTA-3*	2	1	14.11	13.54		14.11	0.4751	0.5025	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-15-RTA-4*	2	1	14.33	13.84		14.37	0.5000	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-11-RTA-1	2	2	14.16	13.54	14.16	14.16	0.4860	0.5008	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-13-RTA-2	2	2	14.07	13.30	14.07	14.18	0.4633	0.5008	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-14-RTA-3	2	2	14.06	13.39	14.06	14.07	0.4793	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-15-RTA-4	2	2	14.34	13.42	14.34	14.38	0.5321	0.4976	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-11-RTA-1	3	3	9.981	13.53	14.24	14.31	0.5020	0.4998	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-12-RTA-2	3	3	10.60	13.84	14.36	14.39	0.5029	0.4998	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-14-RTA-3	3	3	10.82	13.79	14.18	14.21	0.5023	0.4990	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-15-RTA-4	3	3	10.44	13.84	14.38	14.39	0.5368	0.4992	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-11-RTA-1*	3	3	11.17	14.49		14.91	0.5070	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-12-RTA-2*	3	3	12.37	15.09		15.37	0.4763	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-14-RTA-3*	3	3	11.75	14.96		15.32	0.4954	0.4976	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-15-RTA-4*	3	3	11.29	14.71		15.08	0.4917	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-11-RTA-1*	4	4	10.75	14.19		14.74	0.4772	0.5032	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-12-RTA-2*	4	4	11.18	14.50		15.07	0.4777	0.5029	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-14-RTA-3*	4	4	10.46	14.27		14.94	0.4760	0.5032	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-15-RTA-4*	4	4	11.09	14.51		14.91	0.4886	0.5029	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-11-RTA-1	4	4	9.959	13.44	14.01	14.01	0.4913	0.4982	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-13-RTA-2*	4	4	11.30	13.81		14.07	0.4739	0.5003	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-14-RTA-3*	4	4	11.14	13.67		13.96	0.4999	0.5017	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-15-RTA-4*	4	4	10.54	13.71		14.14	0.5091	0.5009	UNIFORM COMPRESSIVE FAILURE

*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	11.64	13.94	14.08	14.52	0.4918	0.5004
Standard Dev.	1.638	0.6249	0.2672	0.5495	0.01833	0.002121
Coeff. of Var. [%]	14.07	4.482	1.897	3.785	3.728	0.4237
Min.	9.259	12.84	13.63	13.72	0.4633	0.4974
Max.	14.42	15.09	14.42	15.49	0.5368	0.5042
Number of Spec.	32	32	14	32	32	32







**XY Orientation Compression Prism Properties (XY-C)--RTW
Strength & Modulus**

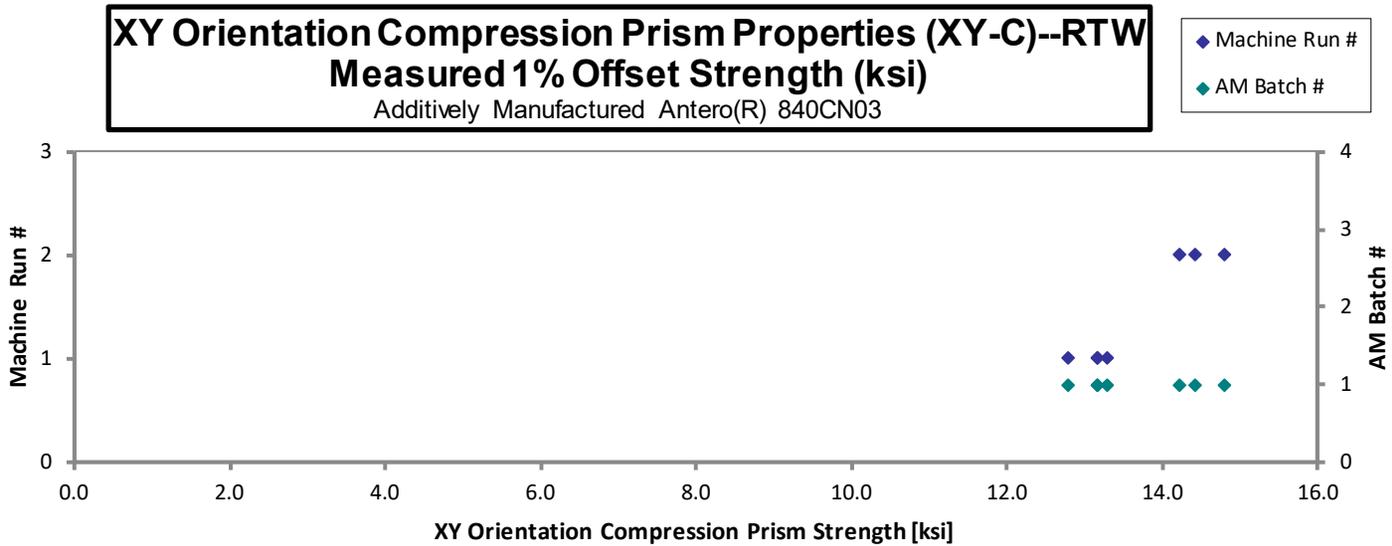
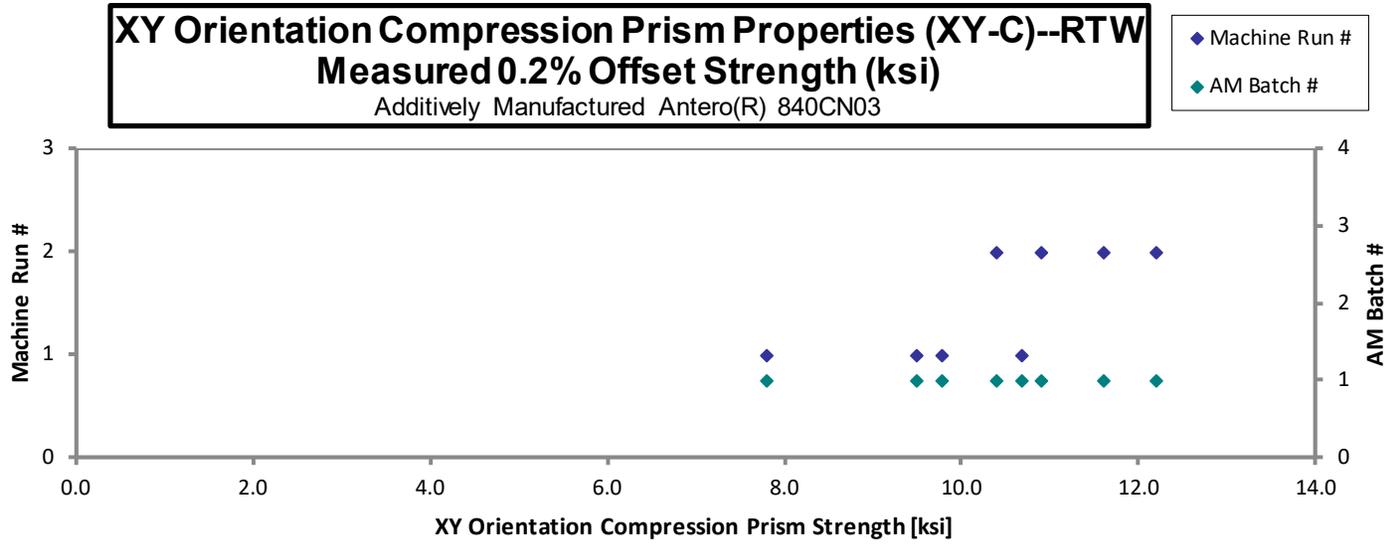
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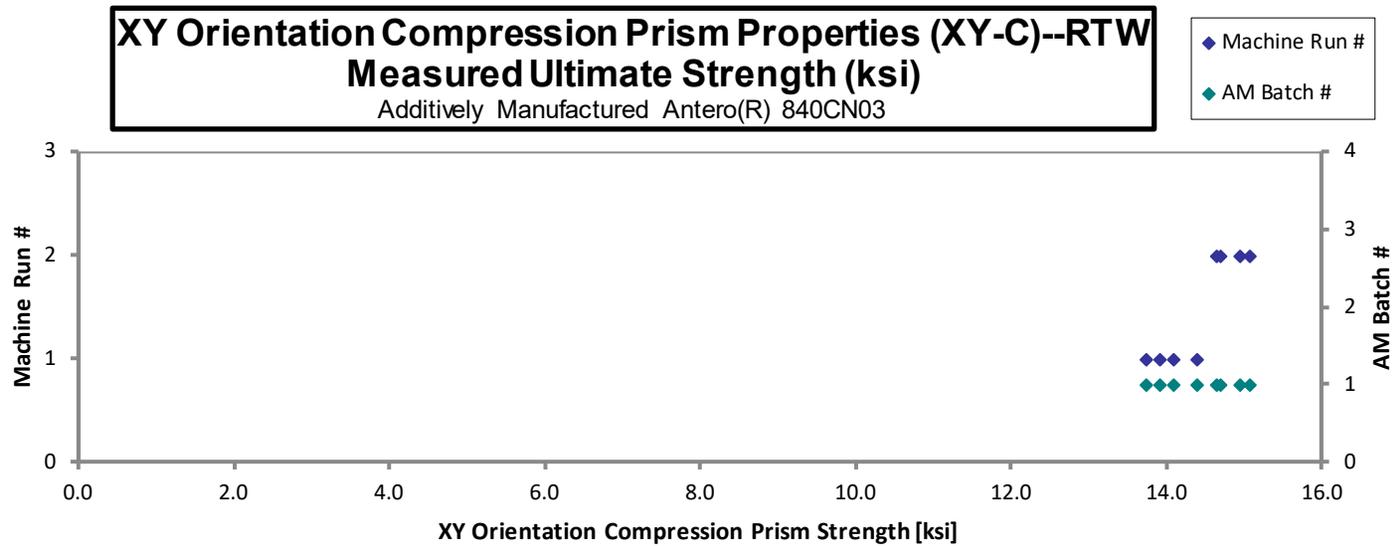
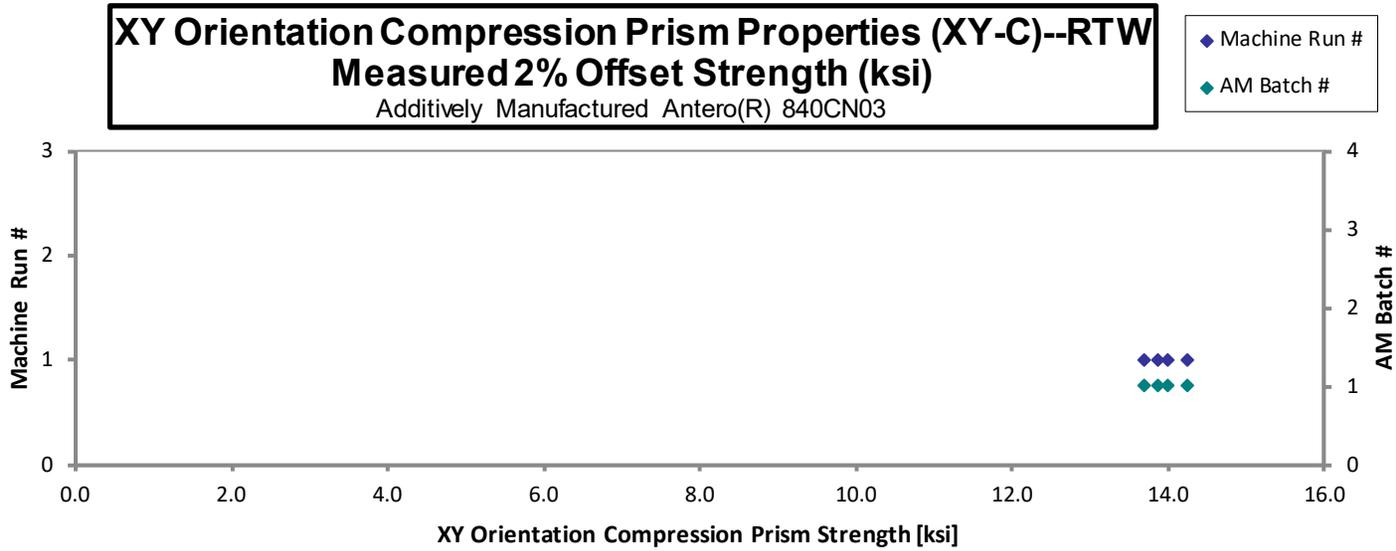
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-11-RTW-1	1	1	9.500	13.29	14.25	14.40	0.5283	0.4964	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-12-RTW-2	1	1	9.790	13.16	13.99	14.09	0.5256	0.4980	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-14-RTW-3	1	1	10.68	13.17	13.69	13.74	0.4656	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-15-RTW-4	1	1	7.791	12.80	13.87	13.92	0.6100	0.4963	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-11-RTW-1*	1	2	10.41	14.42		15.07	0.5382	0.5016	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-12-RTW-2*	1	2	12.20	14.81		14.96	0.4789	0.5021	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-14-RTW-3**	1	2	10.91			14.71	0.4484	0.5020	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-15-RTW-4*	1	2	11.61	14.21		14.66	0.4347	0.5019	UNIFORM COMPRESSIVE FAILURE

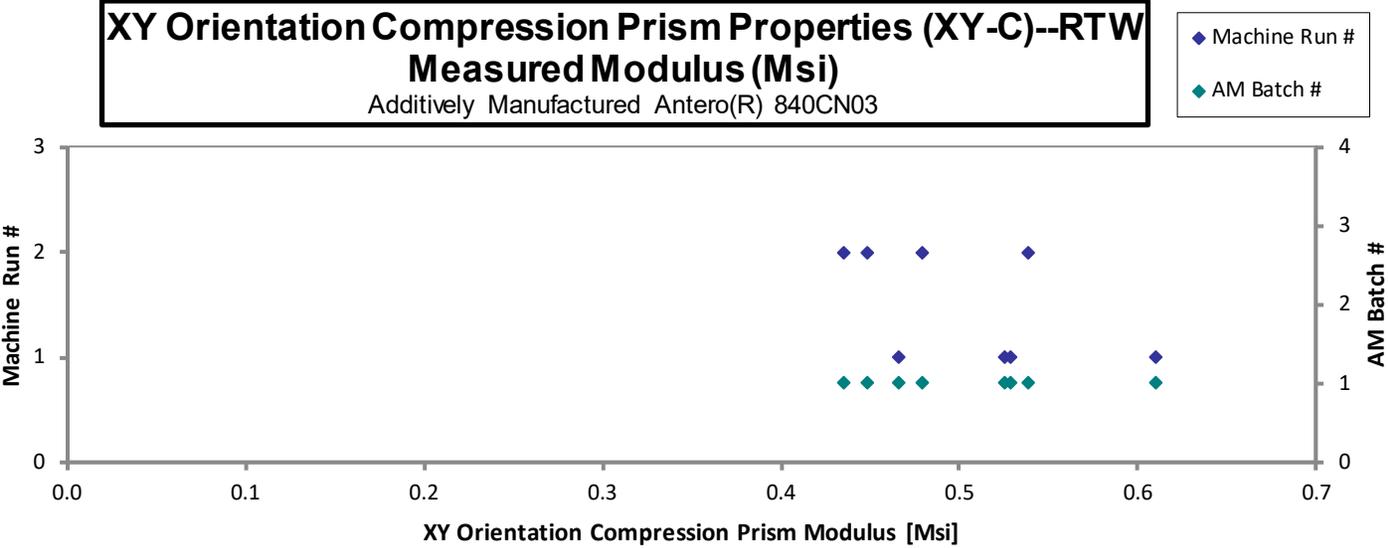
*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

**1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	10.36	13.69	13.95	14.44	0.5037	0.4996
Standard Dev.	1.364	0.7698	0.2344	0.4890	0.05791	0.002604
Coeff. of Var. [%]	13.16	5.621	1.680	3.386	11.50	0.5213
Min.	7.791	12.80	13.69	13.74	0.4347	0.4963
Max.	12.20	14.81	14.25	15.07	0.6100	0.5021
Number of Spec.	8	7	4	8	8	8







**XY Orientation Compression Prism Properties (XY-C)--ETA
Strength & Modulus**

Additively Manufactured Antero(R) 840CN03

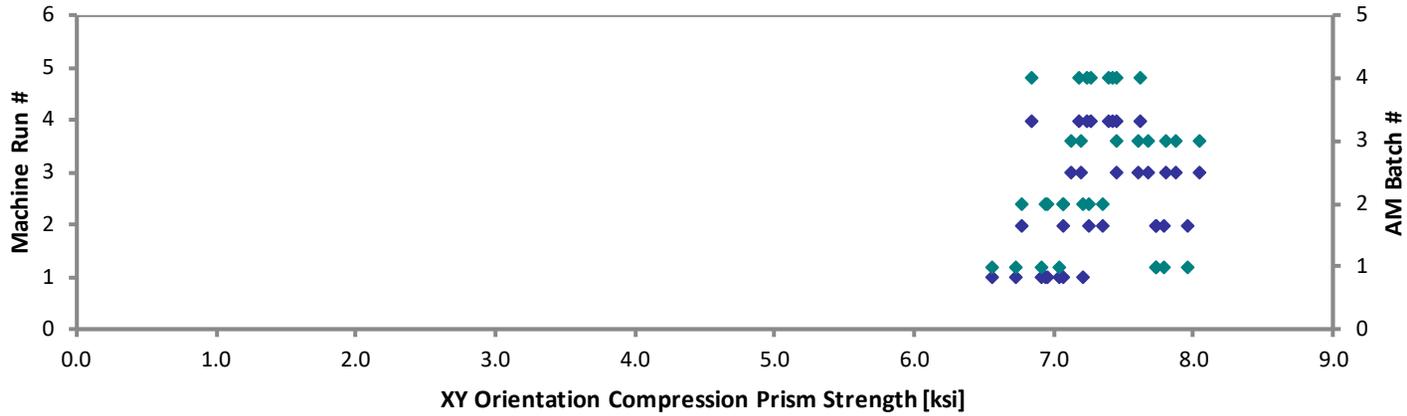
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-11-ETA-1**	1	1	6.563			7.509	0.4357	0.5000	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-12-ETA-2**	1	1	6.909			7.629	0.4493	0.4998	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-14-ETA-3**	1	1	6.728			7.479	0.4449	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-15-ETA-4**	1	1	7.035			7.760	0.4499	0.4999	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-11-ETA-1**	1	2	7.725			8.391	0.4528	0.5034	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-13-ETA-2**	1	2	7.783			8.428	0.4583	0.5036	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-14-ETA-3**	1	2	7.952			8.375	0.4972	0.5025	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-15-ETA-4**	1	2	7.728			8.220	0.4572	0.5033	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-11-ETA-1**	2	1	7.069			7.916	0.4388	0.4980	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-12-ETA-2**	2	1	6.944			7.664	0.5052	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-14-ETA-3**	2	1	6.948			7.651	0.4639	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-15-ETA-4**	2	1	7.209			7.769	0.4717	0.4980	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-11-ETA-1	2	2	7.250	7.911	7.862	8.050	0.5117	0.5007	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-13-ETA-2	2	2	6.765	7.640	7.549	7.721	0.4925	0.5009	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-14-ETA-3**	2	2	7.065			7.741	0.4533	0.5006	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-15-ETA-4	2	2	7.343	7.775	7.743	7.886	0.4842	0.5006	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-11-ETA-1**	3	3	7.124			8.285	0.4760	0.5021	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-12-ETA-2**	3	3	8.047			8.755	0.4793	0.5013	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-13-ETA-3**	3	3	7.200			8.101	0.4649	0.5006	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-15-ETA-4**	3	3	7.446			8.087	0.4720	0.5002	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-11-ETA-1**	3	3	7.605			8.119	0.4516	0.5021	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-12-ETA-2**	3	3	7.678			8.366	0.4532	0.5016	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-14-ETA-3**	3	3	7.868			8.392	0.4602	0.5021	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-15-ETA-4**	3	3	7.800			8.396	0.4916	0.5021	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-11-ETA-1**	4	4	7.450			7.946	0.4734	0.5026	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-12-ETA-2**	4	4	7.612			8.033	0.4907	0.5016	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-14-ETA-3**	4	4	7.426			7.884	0.4718	0.5032	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-15-ETA-4**	4	4	7.393			7.821	0.4877	0.5035	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-11-ETA-1**	4	4	6.833			7.587	0.4529	0.4984	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-13-ETA-2**	4	4	7.181			7.707	0.4346	0.5003	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-14-ETA-3**	4	4	7.269			7.732	0.4424	0.4963	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-15-ETA-4**	4	4	7.234			7.872	0.4664	0.4996	UNIFORM COMPRESSIVE FAILURE

**1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	7.318	7.776	7.718	7.977	0.4667	0.5008
Standard Dev.	0.3841	0.1355	0.1579	0.3209	0.02050	0.001843
Coeff. of Var. [%]	5.249	1.742	2.046	4.023	4.393	0.3679
Min.	6.563	7.640	7.549	7.479	0.4346	0.4963
Max.	8.047	7.911	7.862	8.755	0.5117	0.5036
Number of Spec.	32	3	3	32	32	32

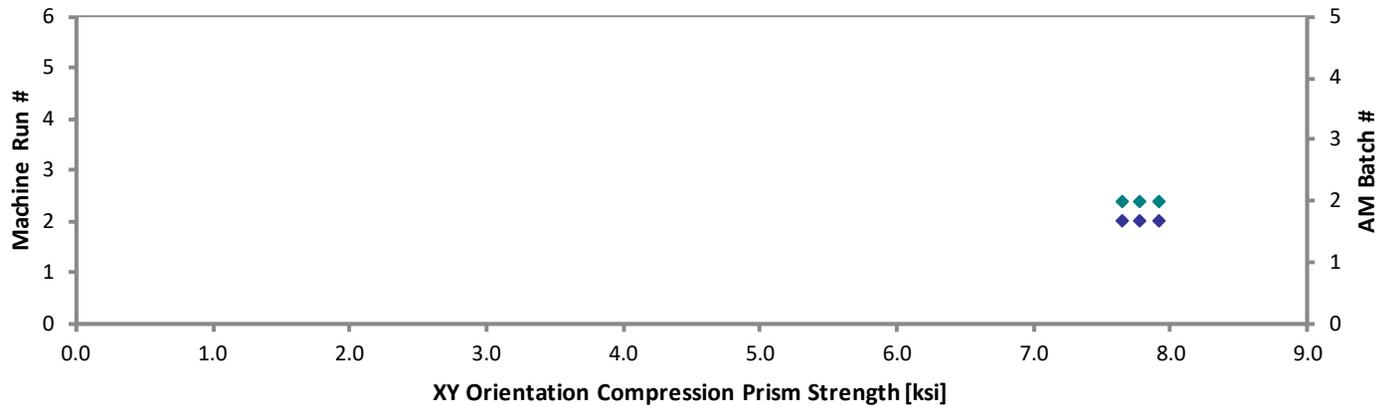
XY Orientation Compression Prism Properties (XY-C)--ETA
Measured 0.2% Offset Strength (ksi)
Additively Manufactured Antero(R) 840CN03

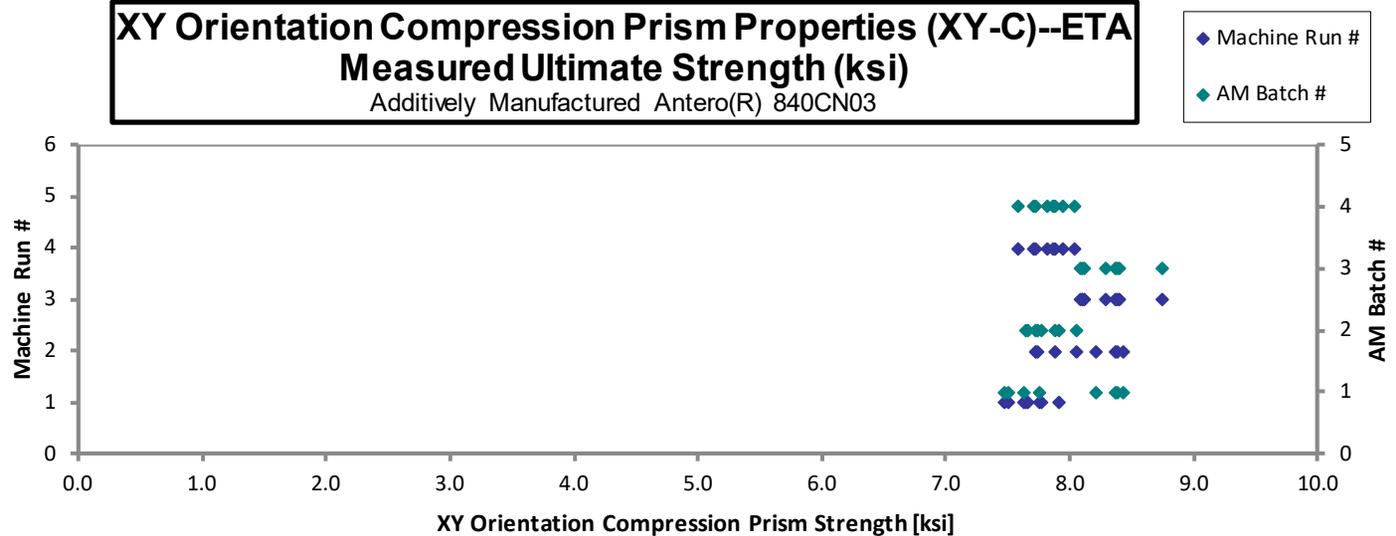
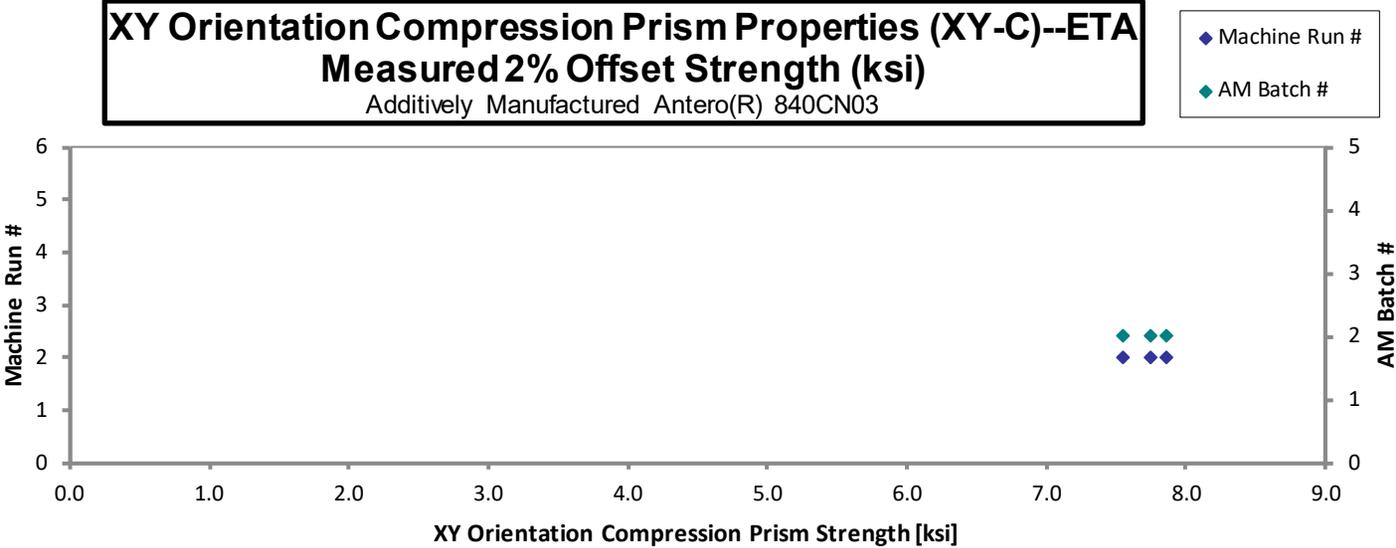
- ◆ Machine Run #
- ◆ AM Batch #

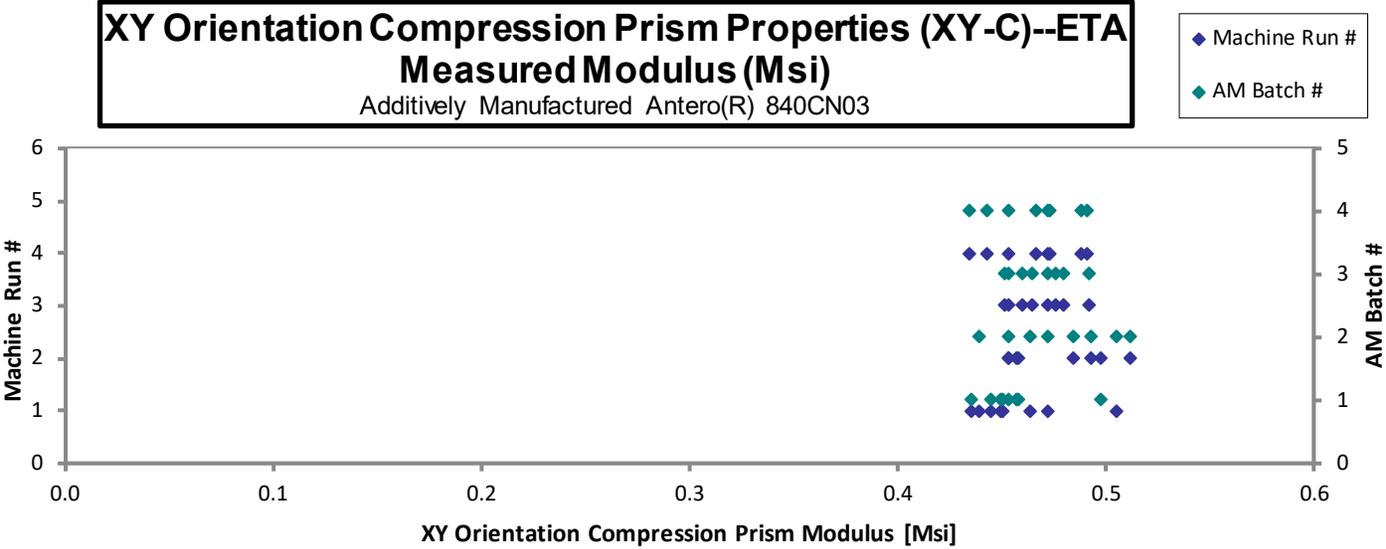


XY Orientation Compression Prism Properties (XY-C)--ETA
Measured 1% Offset Strength (ksi)
Additively Manufactured Antero(R) 840CN03

- ◆ Machine Run #
- ◆ AM Batch #







XY Orientation Compression Prism Properties (XY-C)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-11-ETW-1*	1	1	8.387	9.874	9.920	0.4573	0.4976	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-12-ETW-2*	1	1	7.895	9.844	9.946	0.4952	0.4982	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-14-ETW-3*	1	1	8.199	9.773	9.813	0.4517	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-C-15-ETW-4**/**	1	1	9.081		9.732		0.4960	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-11-ETW-1**	1	2	9.425		10.99	0.5040	0.5017	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-12-ETW-2**	1	2	8.857		10.37	0.4948	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-14-ETW-3**	1	2	9.818		10.27	0.5681	0.5020	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-C-15-ETW-4**	1	2	9.284		10.40	0.5800	0.5000	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-11-ETW-1**	2	1	9.236		10.37	0.5091	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-12-ETW-2*	2	1	8.581	10.18	10.21	0.4856	0.4962	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-14-ETW-3**	2	1	9.627		10.32	0.5072	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-C-15-ETW-4**	2	1	9.400		10.24	0.5124	0.4964	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-11-ETW-1**	2	2	9.550		10.60	0.4946	0.4990	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-13-ETW-2*	2	2	8.697	10.01	10.01	0.4826	0.4989	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-14-ETW-3**	2	2	9.325		10.44	0.4914	0.4995	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-C-15-ETW-4**	2	2	9.781		10.46	0.5557	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-11-ETW-1*	3	3	7.995	9.330	9.347	0.4844	0.5013	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-12-ETW-2**	3	3	7.916		9.064	0.4935	0.5027	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-14-ETW-3**	3	3	8.288		9.066	0.4989	0.5017	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-C-15-ETW-4**	3	3	8.435		9.229	0.4784	0.5025	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-11-ETW-1**	3	3	9.413		10.62	0.4910	0.5031	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-12-ETW-2**	3	3	9.232		10.92	0.5489	0.5016	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-14-ETW-3**	3	3	9.441		10.93	0.5375	0.5030	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-C-15-ETW-4**	3	3	9.313		10.76	0.5240	0.5026	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-11-ETW-1**	4	4	9.415		10.36	0.5041	0.5032	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-12-ETW-2**	4	4	8.986		10.54	0.4723	0.5029	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-14-ETW-3**	4	4	9.041		10.48	0.4661	0.5030	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-C-15-ETW-4**	4	4	9.003		10.47	0.4660	0.5026	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-11-ETW-1*	4	4	8.654	10.24	10.25	0.4839	0.4978	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-13-ETW-2**	4	4	8.889		10.24	0.4722	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-14-ETW-3**	4	4	9.064		10.20	0.4622	0.4965	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-C-15-ETW-4*	4	4	8.665	10.19	10.21	0.4670	0.4977	UNIFORM COMPRESSIVE FAILURE

*2% offset load is not reported as the max load is achieved

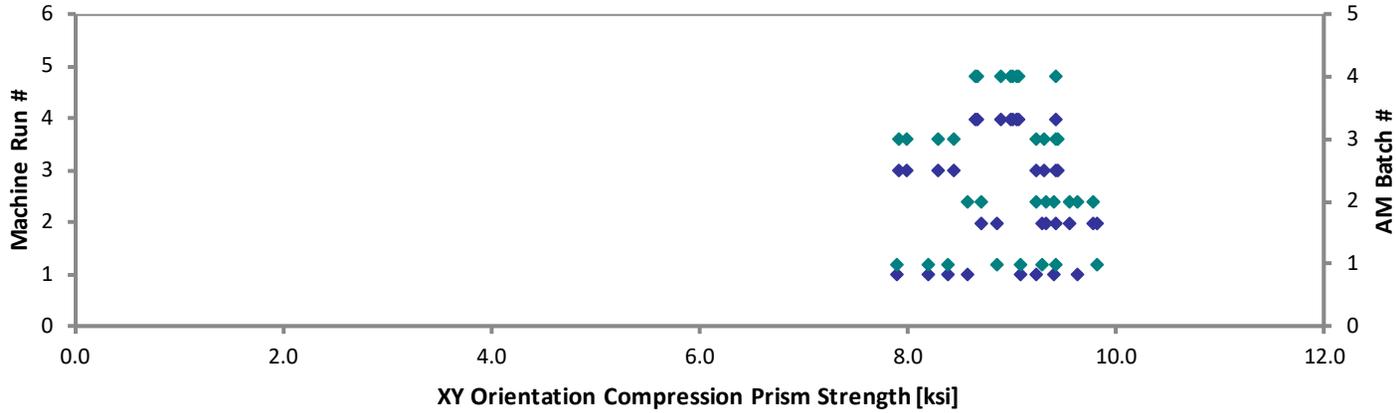
prior to the offset strength, hence it is not reported

**1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

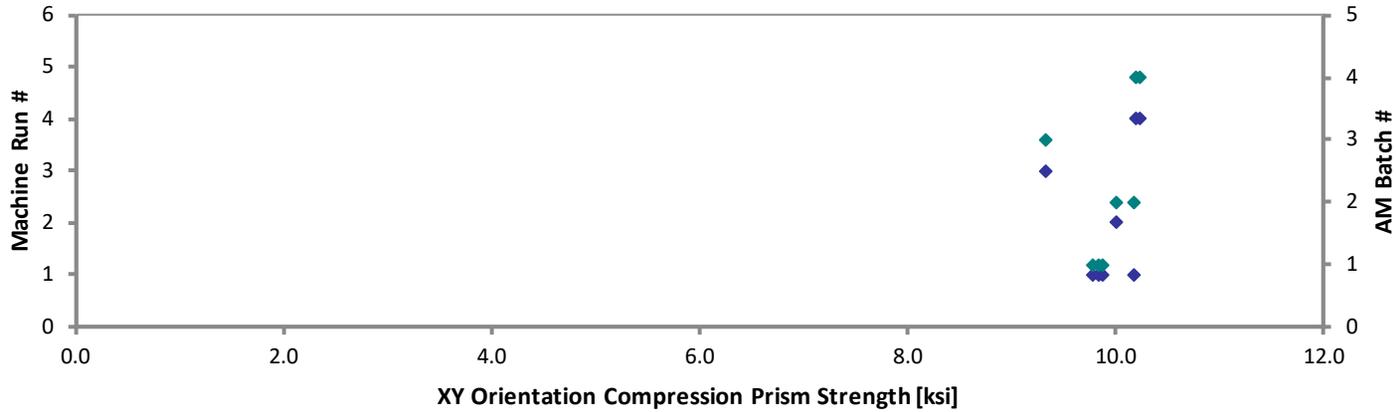
***Compressive modulus not reported due to faulty extensometer reading

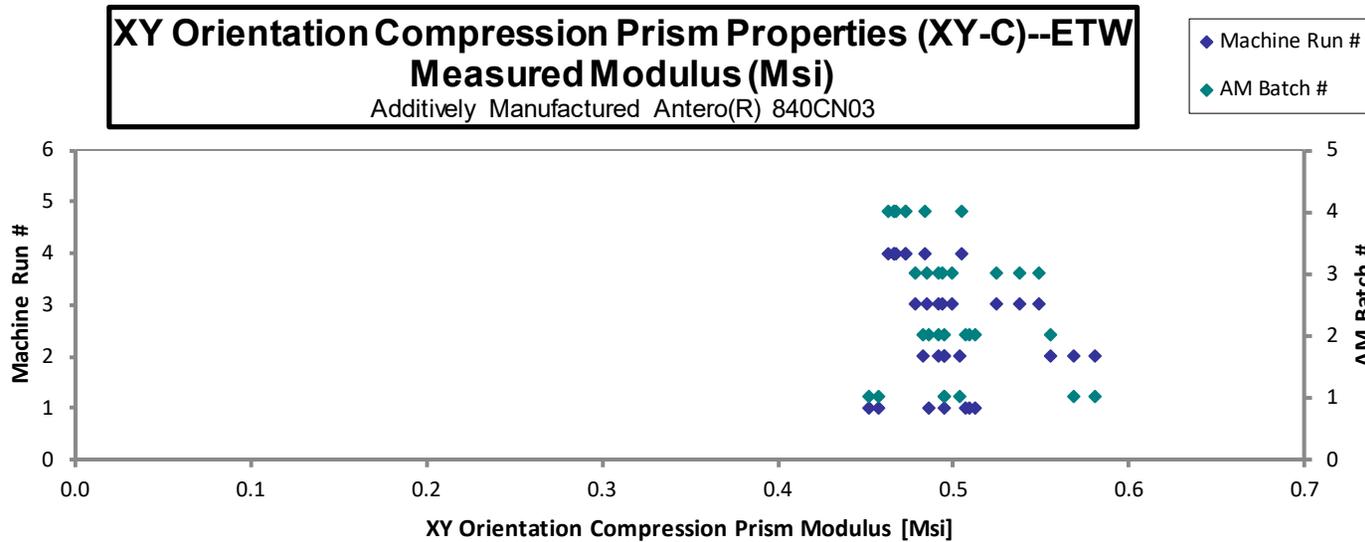
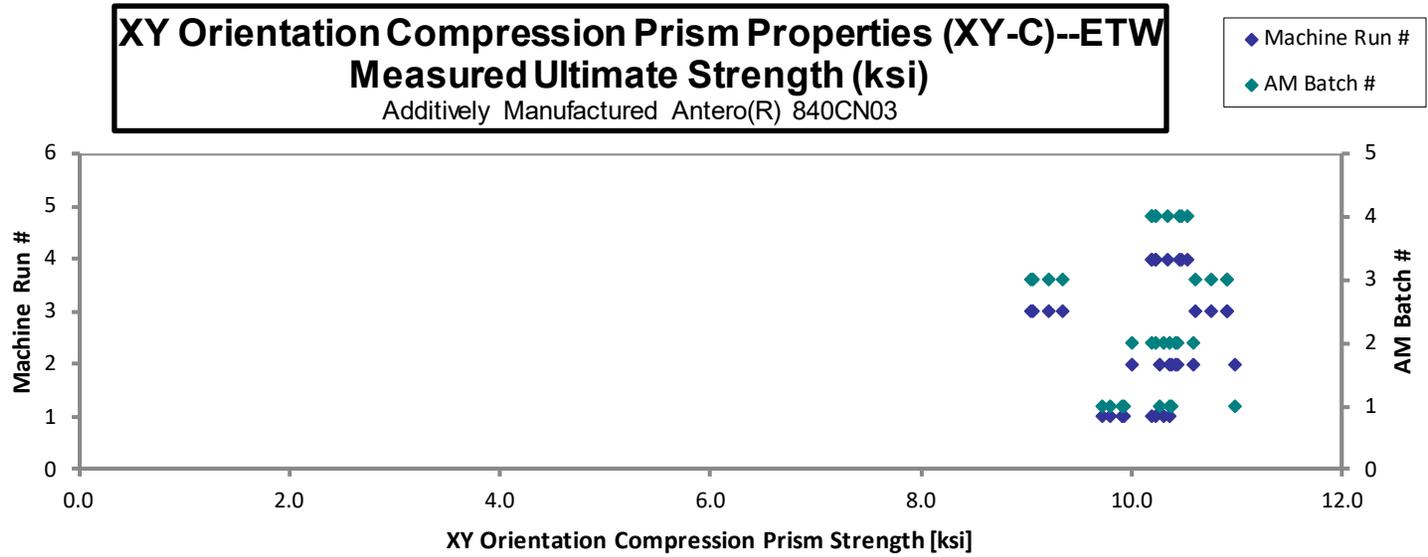
Average	8.965	9.931	10.21	0.4981	0.4999
Standard Dev.	0.5389	0.3004	0.4968	0.03215	0.002487
Coeff. of Var. [%]	6.010	3.025	4.865	6.454	0.4975
Min.	7.895	9.330	9.064	0.4517	0.4960
Max.	9.818	10.24	10.99	0.5800	0.5032
Number of Spec.	32	8	32	31	32

XY Orientation Compression Prism Properties (XY-C)--ETW
Measured 0.2% Offset Strength (ksi)
Additively Manufactured Antero(R) 840CN03



XY Orientation Compression Prism Properties (XY-C)--ETW
Measured 1% Offset Strength (ksi)
Additively Manufactured Antero(R) 840CN03





4.6 XZ Compression Prism Properties (XZ-C)

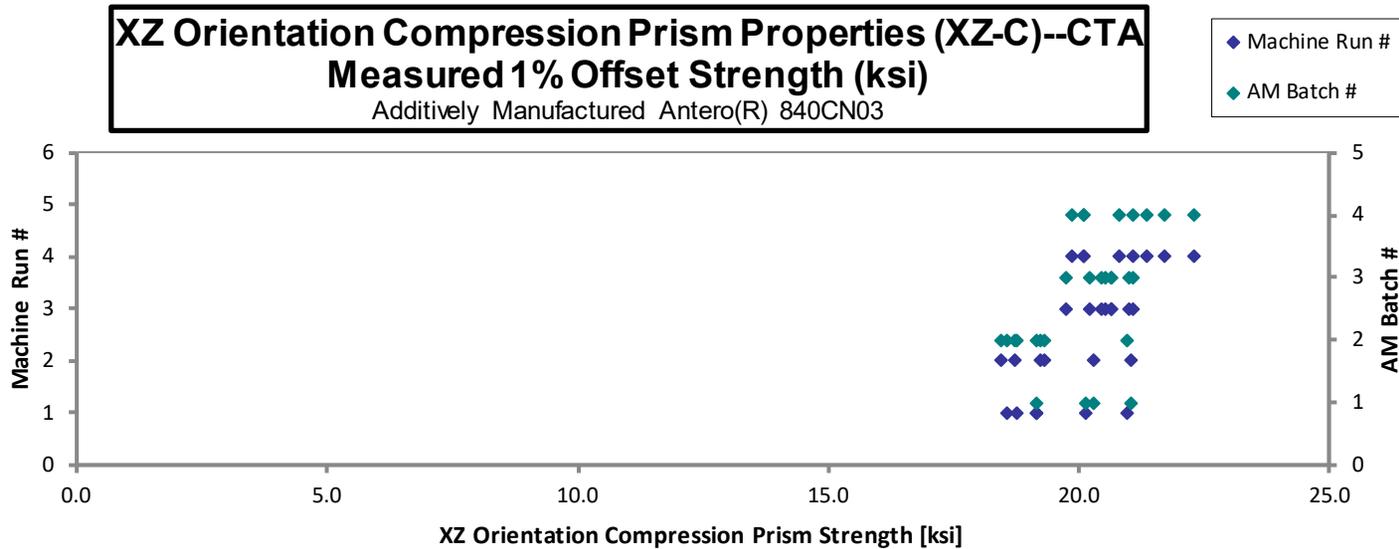
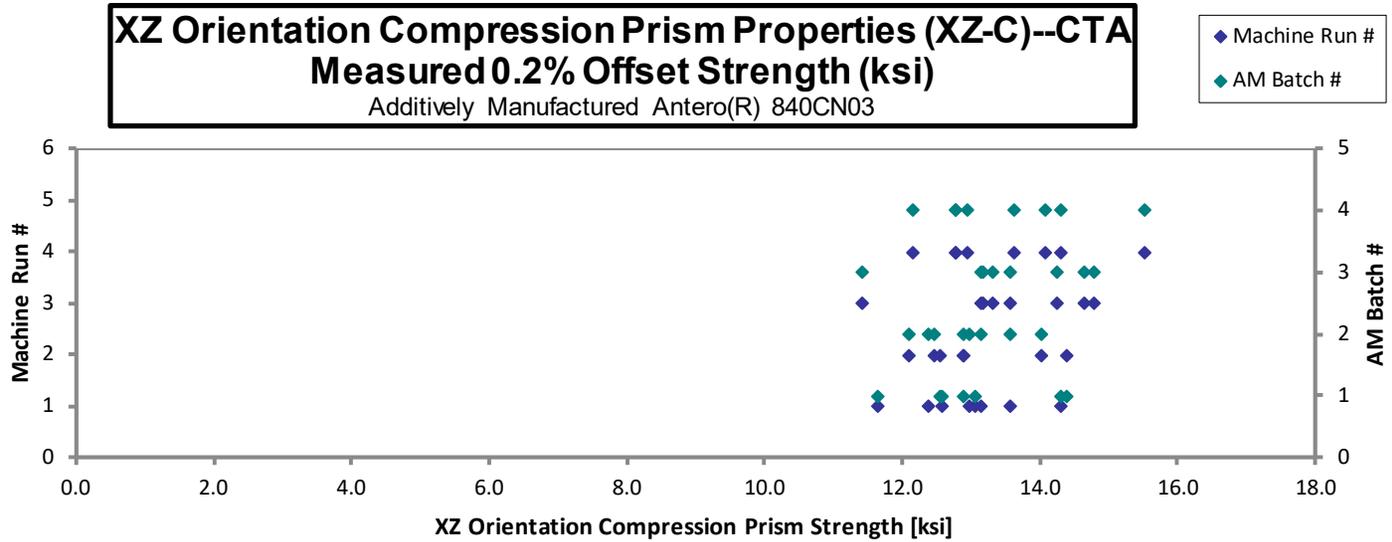
XZ Orientation Compression Prism Properties (XZ-C)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

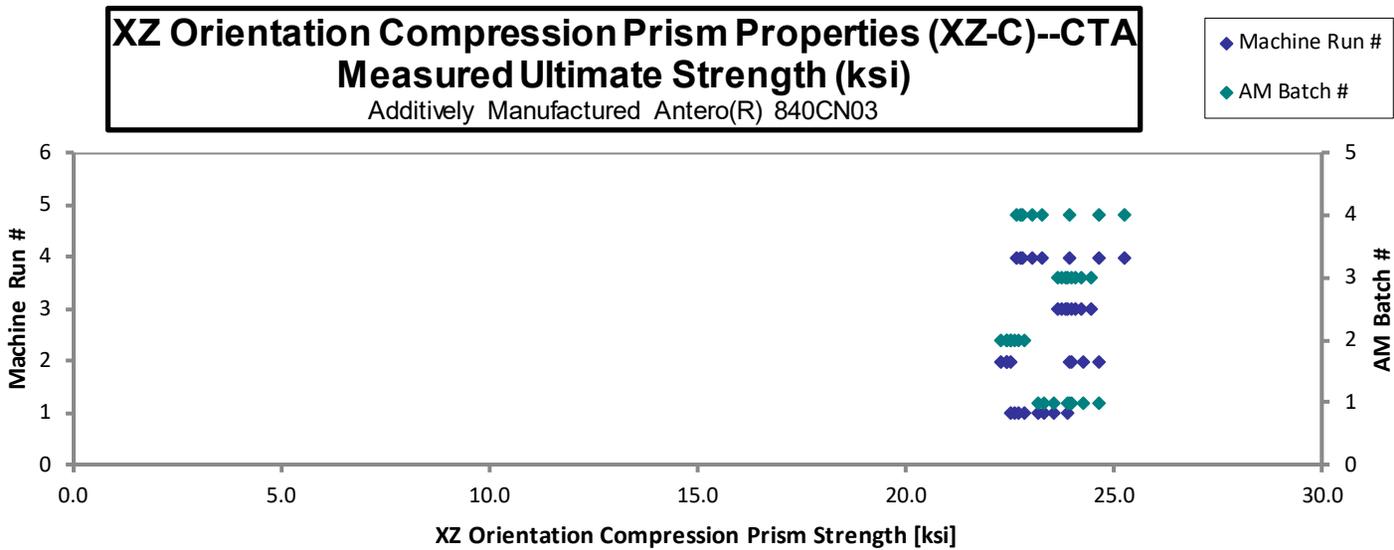
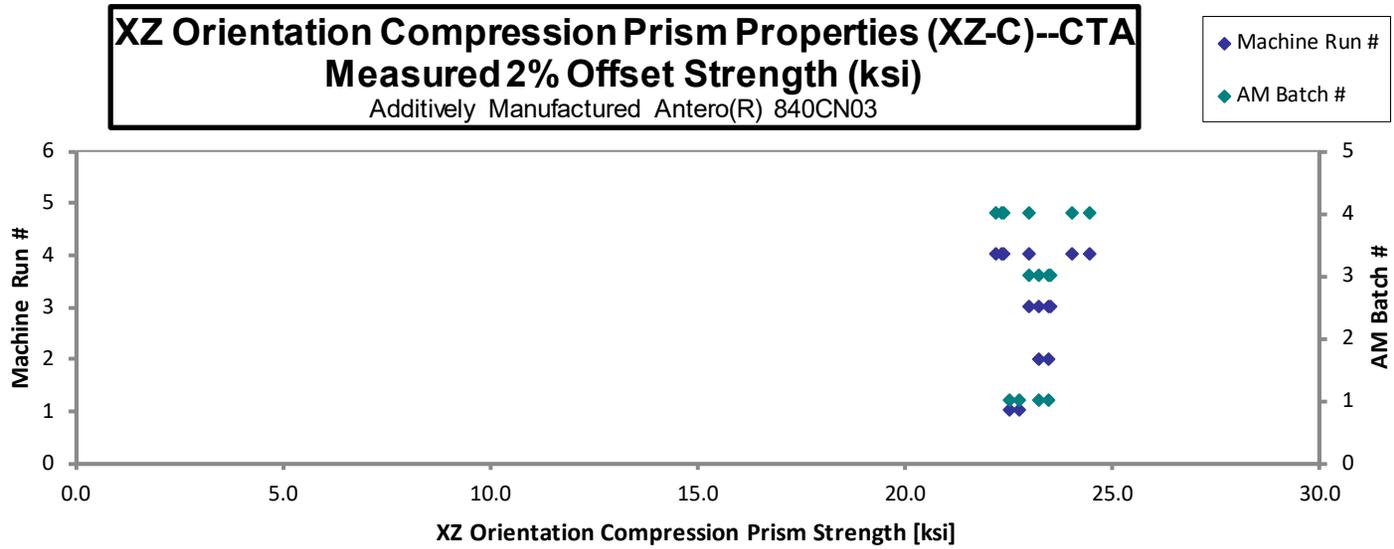
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-11-CTA-1	1	1	14.31	20.16	22.53	23.54	0.5357	0.5028	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-12-CTA-2*	1	1	12.57			23.86	0.5828	0.5002	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-14-CTA-3*	1	1	13.06			23.16	0.5715	0.5037	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-15-CTA-4	1	1	11.63	19.14	22.77	23.33	0.5945	0.5031	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-11-CTA-1	1	2	12.54	20.29	23.20	23.99	0.6222	0.4995	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-13-CTA-2**	1	2				24.26	0.5845	0.4999	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-14-CTA-3	1	2	14.38	21.03	23.44	23.96	0.5746	0.4984	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-15-CTA-4*	1	2	12.90			24.65	0.6157	0.4961	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-11-CTA-1*	2	1	12.98	20.98		22.54	0.5619	0.4992	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-12-CTA-2*	2	1	13.14	18.76		22.60	0.5278	0.4991	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-14-CTA-3*	2	1	13.58	19.15		22.68	0.5309	0.4992	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-15-CTA-4*	2	1	12.38	18.58		22.86	0.5567	0.4977	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-11-CTA-1*	2	2	12.89	18.72		22.44	0.5506	0.5039	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-13-CTA-2*	2	2	14.02	19.25		22.30	0.5256	0.5043	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-14-CTA-3*	2	2	12.45	19.32		22.51	0.5767	0.5036	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-15-CTA-4*	2	2	12.10	18.44		22.43	0.5654	0.5030	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-11-CTA-1*	3	3	13.32	20.23		23.82	0.5741	0.5007	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-12-CTA-2*	3	3	14.80	21.10		23.73	0.5575	0.5013	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-14-CTA-3*	3	3	13.14	20.46		23.99	0.6026	0.5002	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-15-CTA-4*	3	3	14.63	20.54		23.65	0.5460	0.5005	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-11-CTA-1	3	3	14.26	21.02	23.51	24.20	0.5800	0.4982	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-12-CTA-2	3	3	11.41	19.73	22.98	24.47	0.6387	0.5021	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-14-CTA-3	3	3	13.17	20.65	23.46	24.08	0.5876	0.4981	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-15-CTA-4	3	3	13.57	20.65	23.24	23.89	0.5848	0.5029	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-11-CTA-1	4	4	14.31	22.32	24.45	24.66	0.5928	0.5019	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-12-CTA-2	4	4	12.15	20.80	24.01	25.25	0.6228	0.5017	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-14-CTA-3*	4	4	13.63	21.10		23.29	0.6105	0.5018	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-15-CTA-4*	4	4	12.78	21.72		23.91	0.6081	0.5017	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-11-CTA-1	4	4	14.07	20.11	22.19	22.75	0.5407	0.5002	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-13-CTA-2	4	4	15.53	21.36	23.01	23.02	0.5315	0.4997	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-14-CTA-3	4	4	12.94	19.87	22.32	22.82	0.5829	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-15-CTA-4	4	4	12.78	20.09	22.37	22.64	0.5847	0.5003	UNIFORM COMPRESSIVE FAILURE

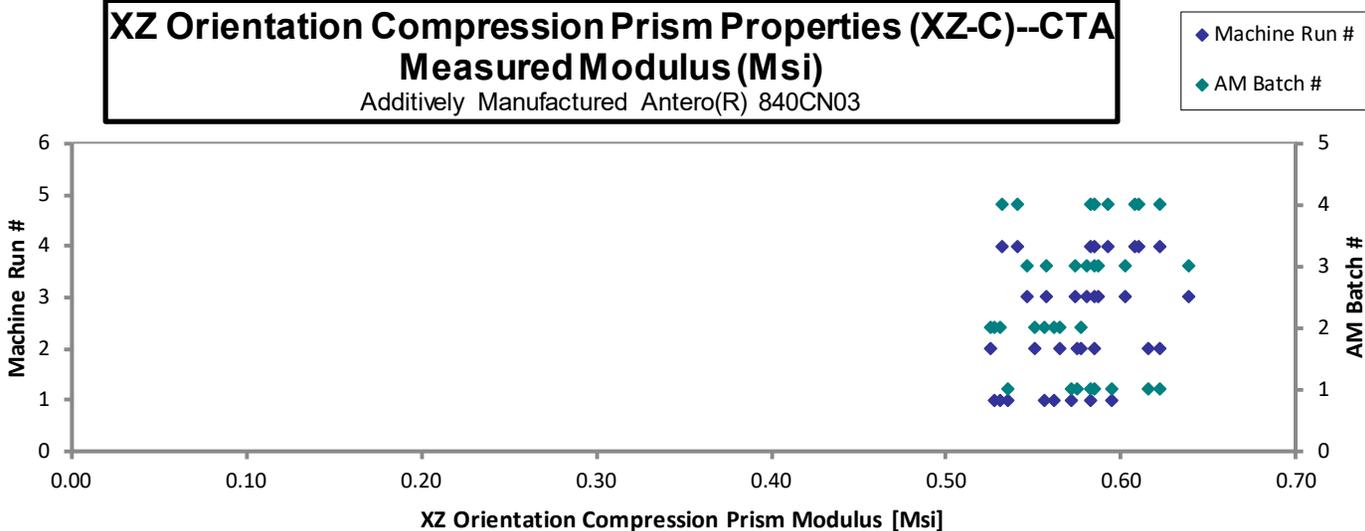
*1% and/or 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

**0.2%, 1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	13.27	20.20	23.11	23.48	0.5757	0.5007
Standard Dev.	0.9577	0.9989	0.6535	0.7845	0.03016	0.002137
Coeff. of Var. [%]	7.217	4.946	2.828	3.341	5.238	0.4269
Min.	11.41	18.44	22.19	22.30	0.5256	0.4961
Max.	15.53	22.32	24.45	25.25	0.6387	0.5043
Number of Spec.	31	28	14	32	32	32







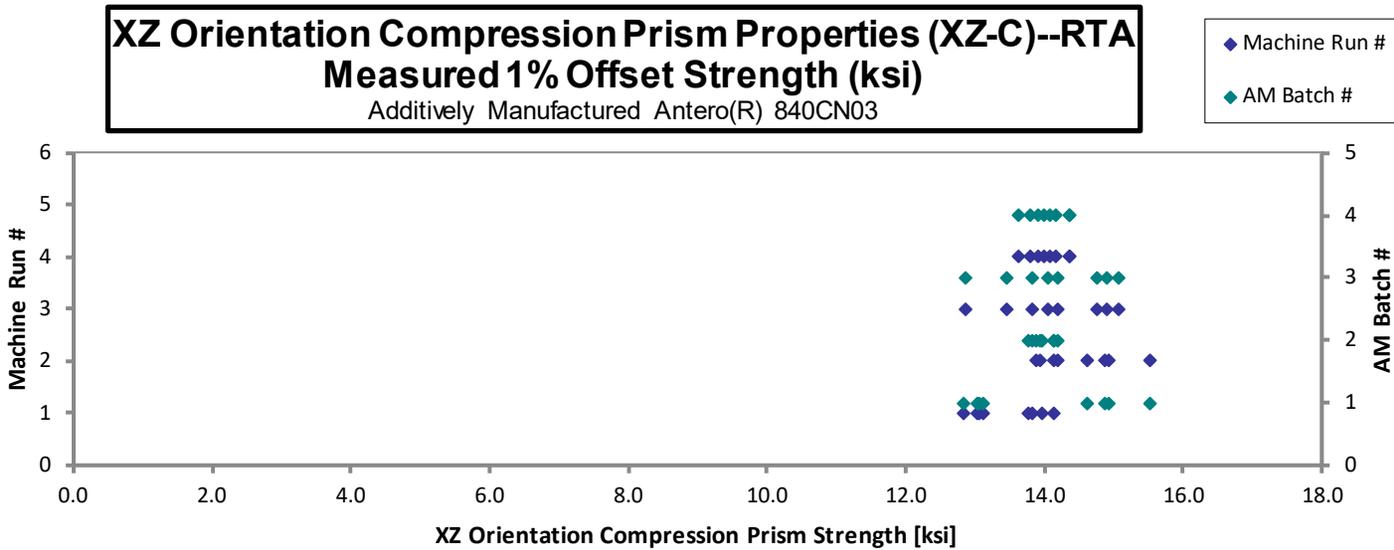
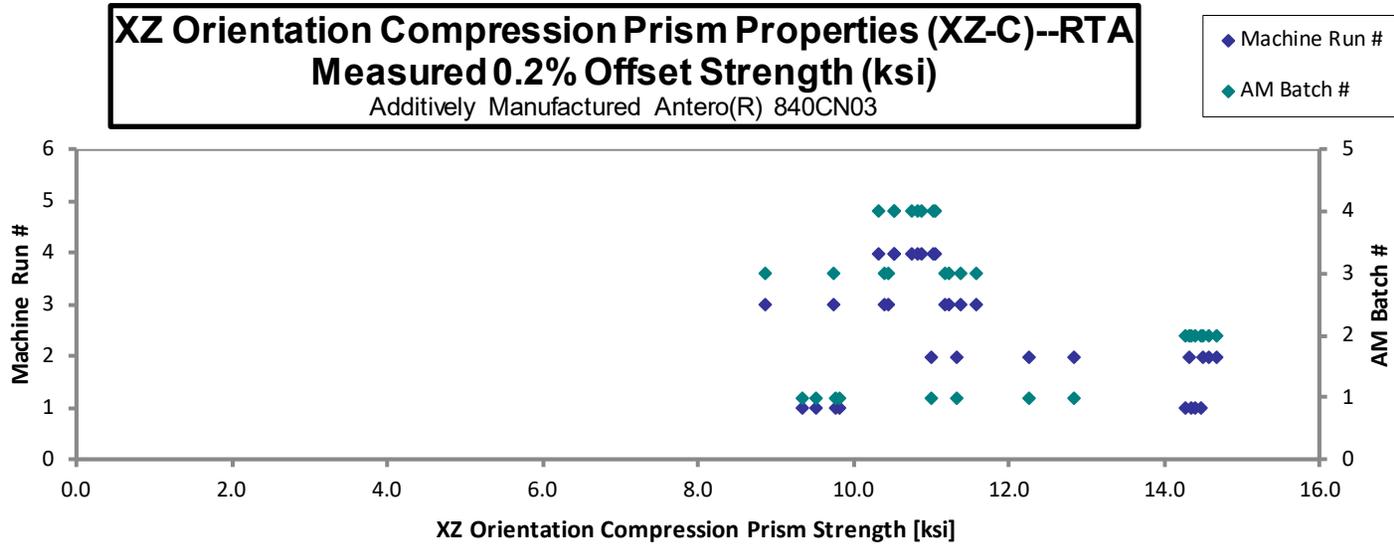
**XZ Orientation Compression Prism Properties (XZ-C)--RTA
Strength & Modulus**

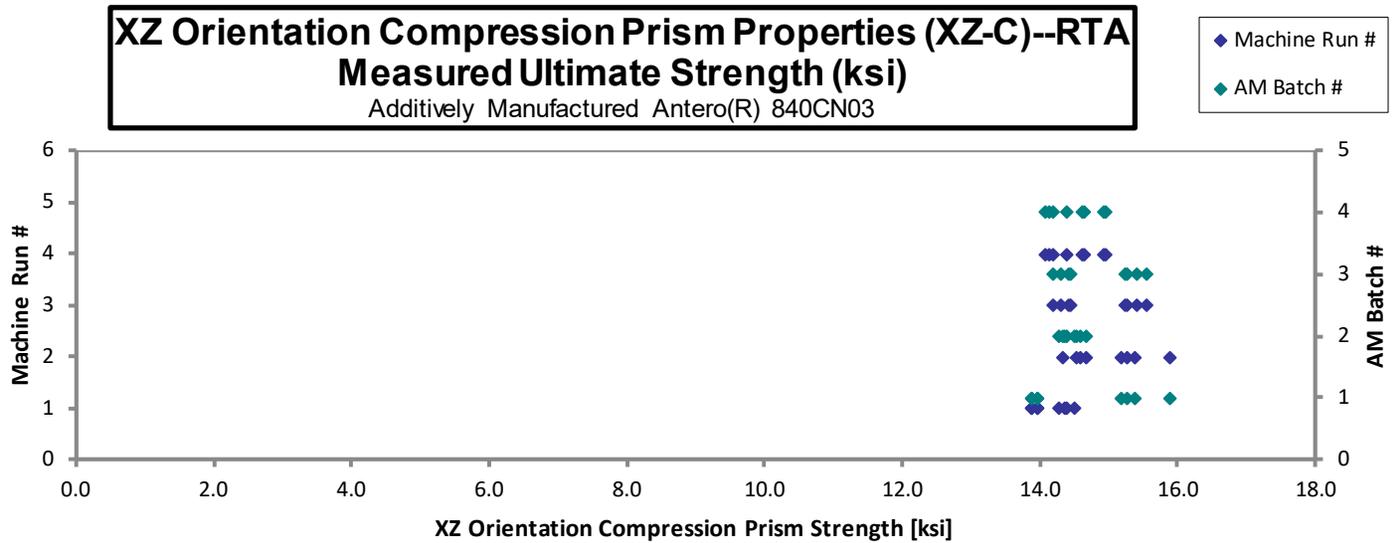
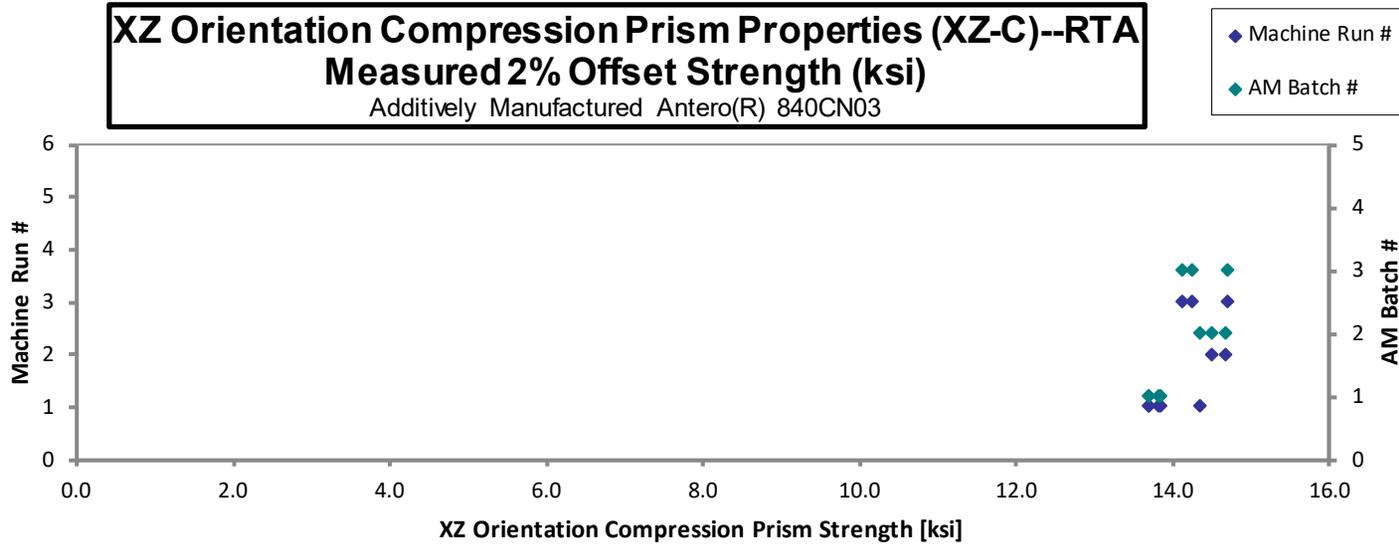
Additively Manufactured Antero(R) 840CN03

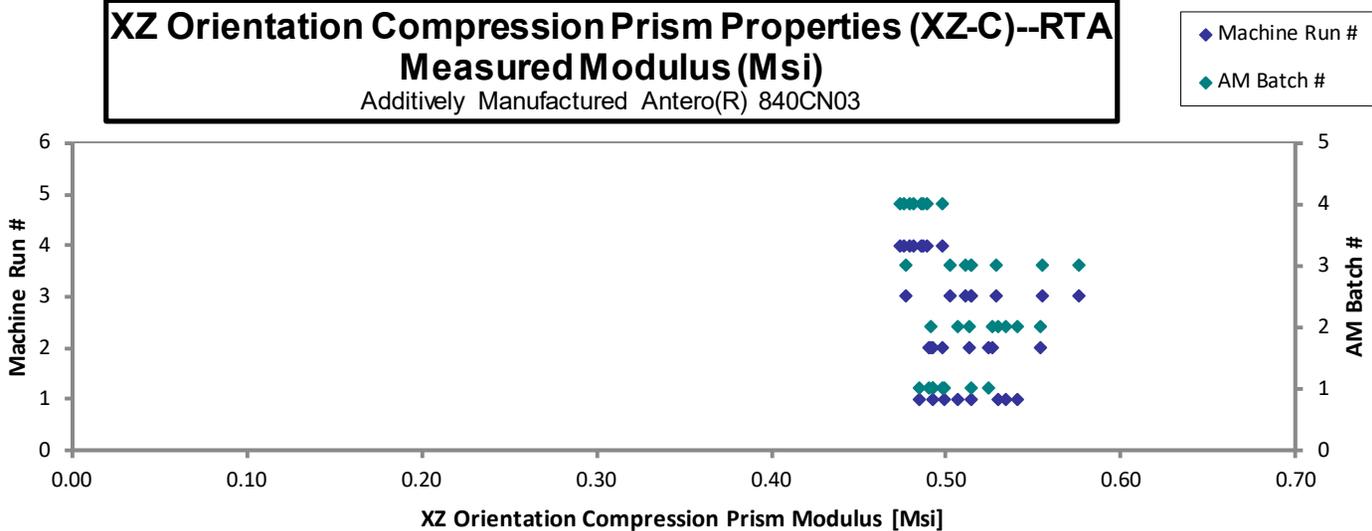
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-11-RTA-1	1	1	9.344	12.84	13.69	13.88	0.4990	0.5039	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-12-RTA-2	1	1	9.524	13.06	13.84	13.97	0.5146	0.5040	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-14-RTA-3	1	1	9.832	13.04	13.70	13.89	0.4924	0.5041	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-15-RTA-4	1	1	9.772	13.12	13.83	13.96	0.4847	0.4982	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-11-RTA-1*	1	2	12.26	14.93		15.27	0.5246	0.4986	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-13-RTA-2*	1	2	11.00	14.63		15.18	0.4978	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-14-RTA-3*	1	2	11.34	14.87		15.38	0.4926	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-15-RTA-4*	1	2	12.84	15.51		15.88	0.4904	0.4957	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-11-RTA-1	2	1	14.35	13.83	14.35	14.35	0.5071	0.5022	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-12-RTA-2*	2	1	14.39	13.96		14.40	0.5295	0.5021	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-14-RTA-3*	2	1	14.48	14.12		14.50	0.5403	0.4970	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-15-RTA-4*	2	1	14.28	13.78		14.29	0.5348	0.4982	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-11-RTA-1	2	2	14.67	14.13	14.67	14.68	0.5128	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-13-RTA-2*	2	2	14.57	14.18		14.58	0.5538	0.4987	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-14-RTA-3	2	2	14.51	13.89	14.51	14.52	0.5266	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-15-RTA-4*	2	2	14.31	13.94		14.32	0.4909	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-11-RTA-1*	3	3	10.40	14.04		14.46	0.5288	0.4997	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-12-RTA-2	3	3	10.46	13.82	14.12	14.19	0.5144	0.5003	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-14-RTA-3	3	3	9.736	13.45	14.26	14.31	0.4770	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-15-RTA-4*	3	3	11.59	14.19		14.42	0.5757	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-11-RTA-1*	3	3	11.24	14.91		15.40	0.5019	0.5018	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-12-RTA-2*	3	3	11.38	15.07		15.55	0.5546	0.5009	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-14-RTA-3*	3	3	11.18	14.77		15.24	0.5140	0.5024	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-15-RTA-4	3	3	8.867	12.85	14.71	15.26	0.5107	0.5019	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-11-RTA-1*	4	4	10.82	14.35		14.95	0.4982	0.5033	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-12-RTA-2*	4	4	10.76	14.36		14.93	0.4741	0.5020	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-14-RTA-3*	4	4	10.53	14.15		14.61	0.4763	0.5028	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-15-RTA-4*	4	4	10.52	14.07		14.64	0.4857	0.5037	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-11-RTA-1*	4	4	11.03	13.90		14.19	0.4888	0.5007	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-13-RTA-2*	4	4	11.06	13.98		14.39	0.4816	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-14-RTA-3*	4	4	10.33	13.61		14.14	0.4787	0.4962	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-15-RTA-4*	4	4	10.88	13.79		14.09	0.4872	0.4982	UNIFORM COMPRESSIVE FAILURE

*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	11.63	14.04	14.17	14.62	0.5075	0.5002
Standard Dev.	1.828	0.6502	0.3927	0.5316	0.02551	0.002446
Coeff. of Var. [%]	15.71	4.633	2.772	3.636	5.027	0.4891
Min.	8.867	12.84	13.69	13.88	0.4741	0.4957
Max.	14.67	15.51	14.71	15.88	0.5757	0.5041
Number of Spec.	32	32	10	32	32	32







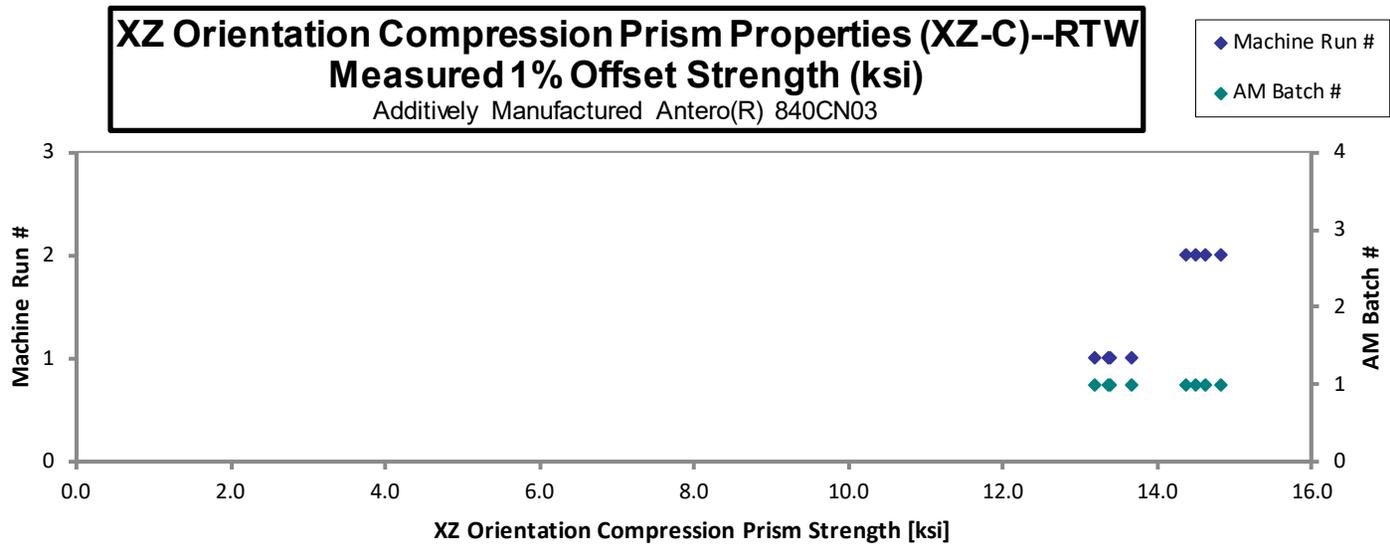
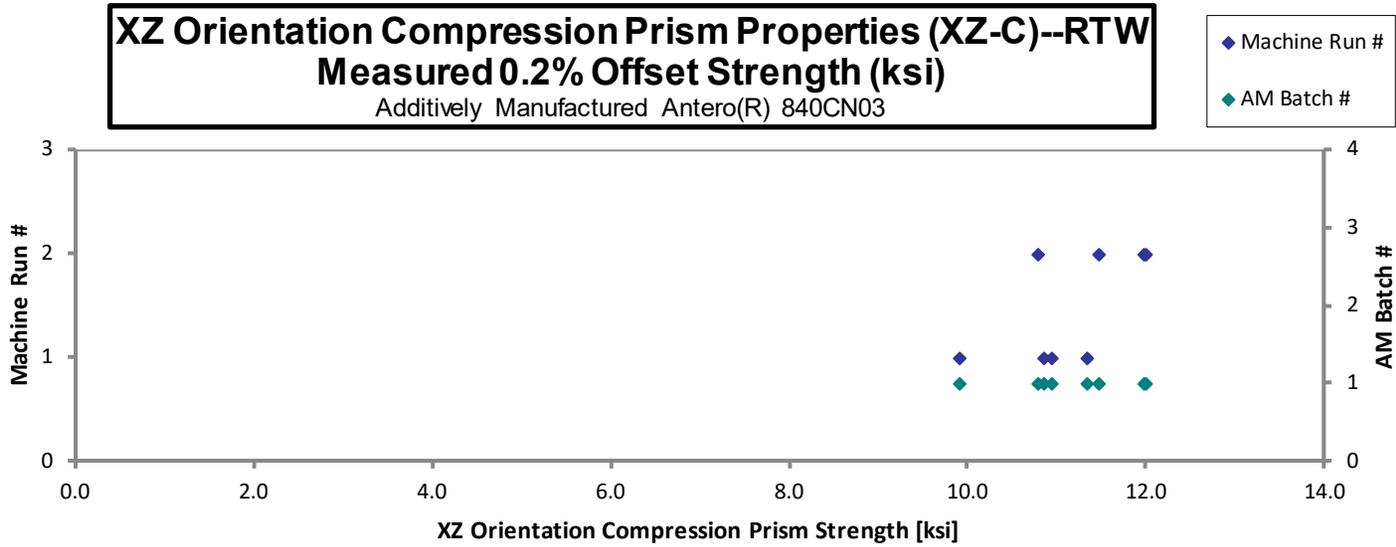
**XZ Orientation Compression Prism Properties (XZ-C)--RTW
Strength & Modulus**

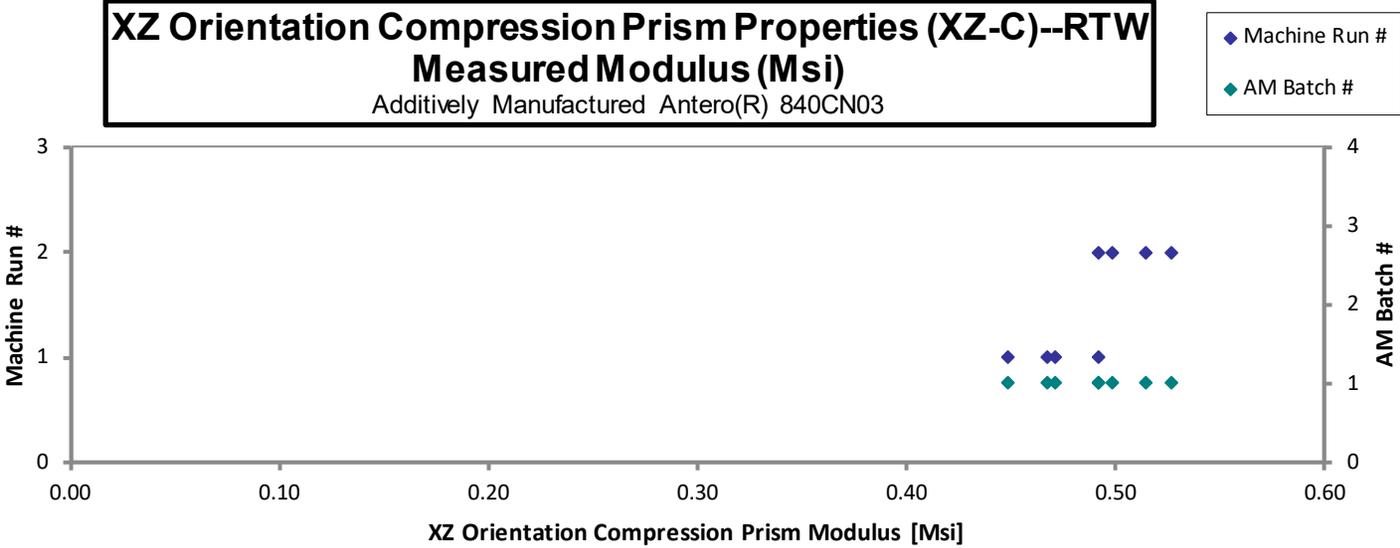
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-11-RTW-1	1	1	10.86	13.39	13.79	13.88	0.4714	0.5013	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-12-RTW-2*	1	1	11.35	13.66		13.98	0.4672	0.5022	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-14-RTW-3	1	1	10.94	13.36	13.72	13.73	0.4482	0.5020	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-15-RTW-4	1	1	9.910	13.19	13.87	13.92	0.4915	0.5032	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-11-RTW-1	1	2	10.79	14.62	14.91	14.94	0.5142	0.4999	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-12-RTW-2*	1	2	11.97	14.36		14.67	0.4919	0.4997	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-14-RTW-3*	1	2	12.00	14.51		14.57	0.5271	0.4982	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-15-RTW-4*	1	2	11.48	14.83		15.31	0.4986	0.4956	UNIFORM COMPRESSIVE FAILURE

*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	11.16	13.99	14.07	14.38	0.4887	0.5003
Standard Dev.	0.6913	0.6579	0.5589	0.5766	0.02575	0.002478
Coeff. of Var. [%]	6.192	4.703	3.971	4.011	5.268	0.4953
Min.	9.910	13.19	13.72	13.73	0.4482	0.4956
Max.	12.00	14.83	14.91	15.31	0.5271	0.5032
Number of Spec.	8	8	4	8	8	8





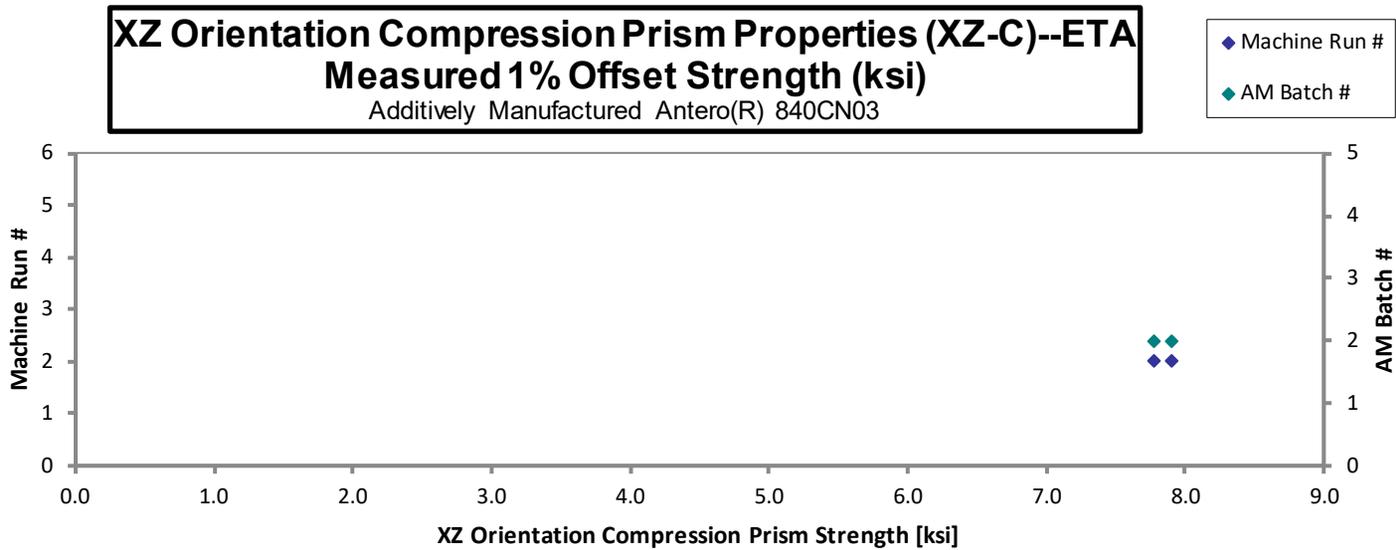
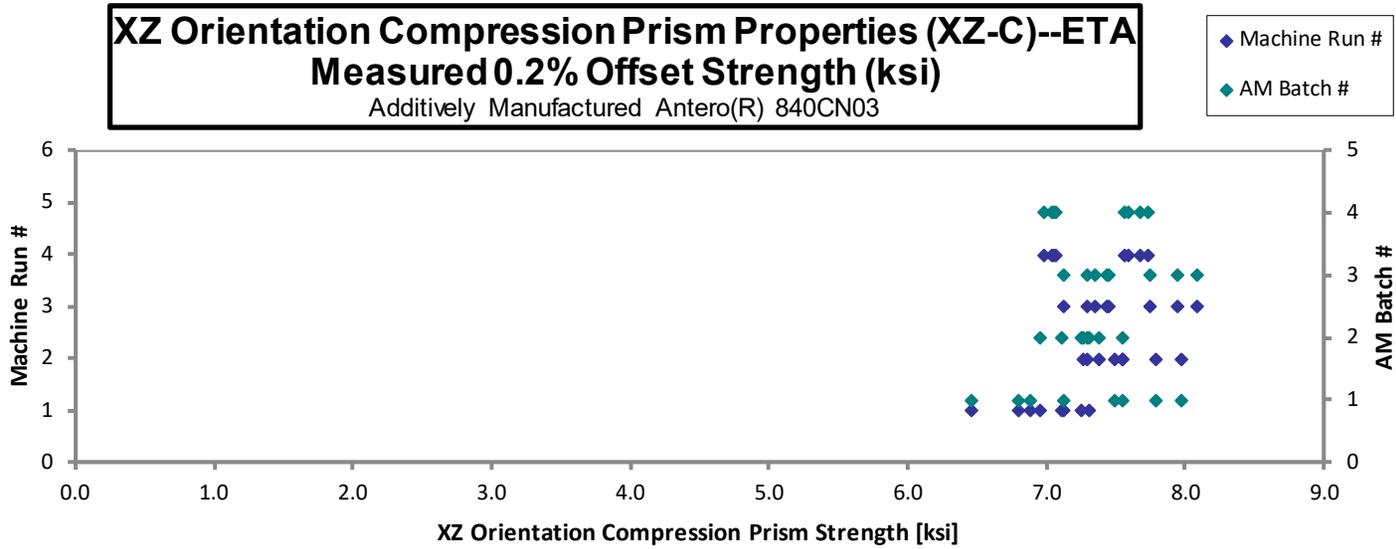
**XZ Orientation Compression Prism Properties (XZ-C)--ETA
Strength & Modulus**

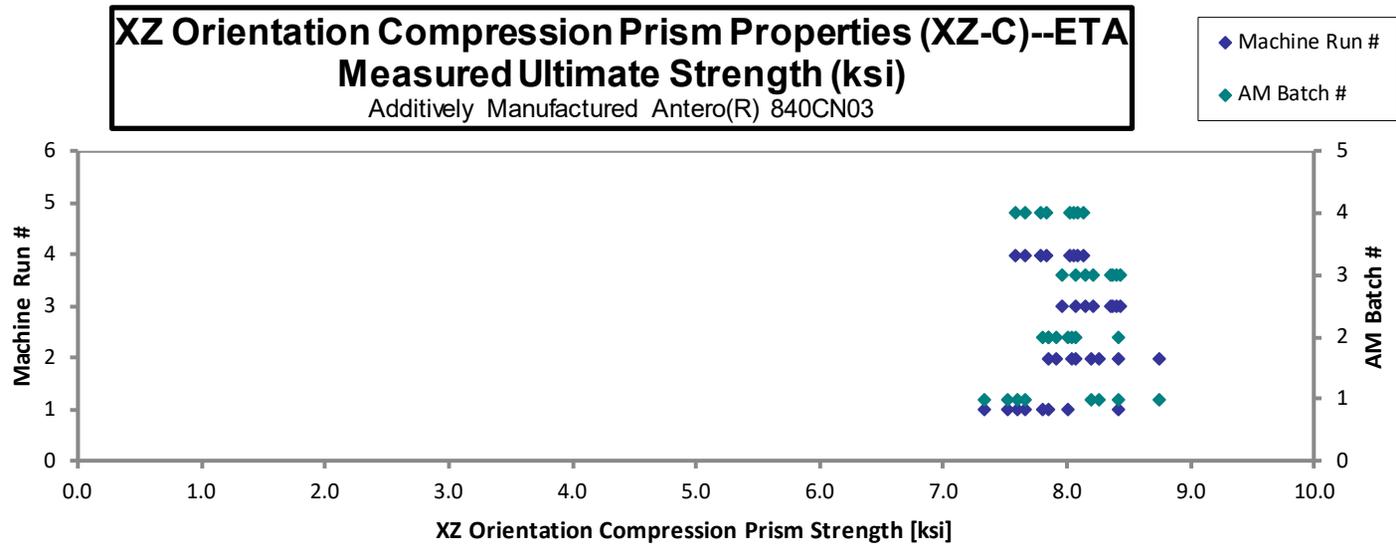
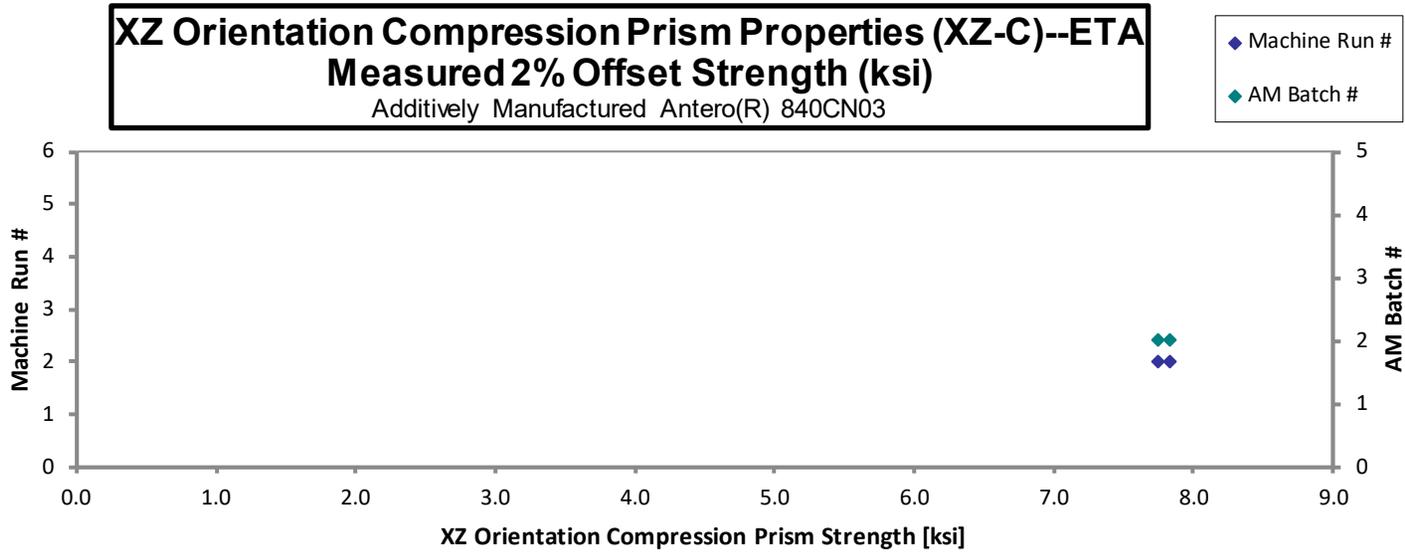
Additively Manufactured Antero(R) 840CN03

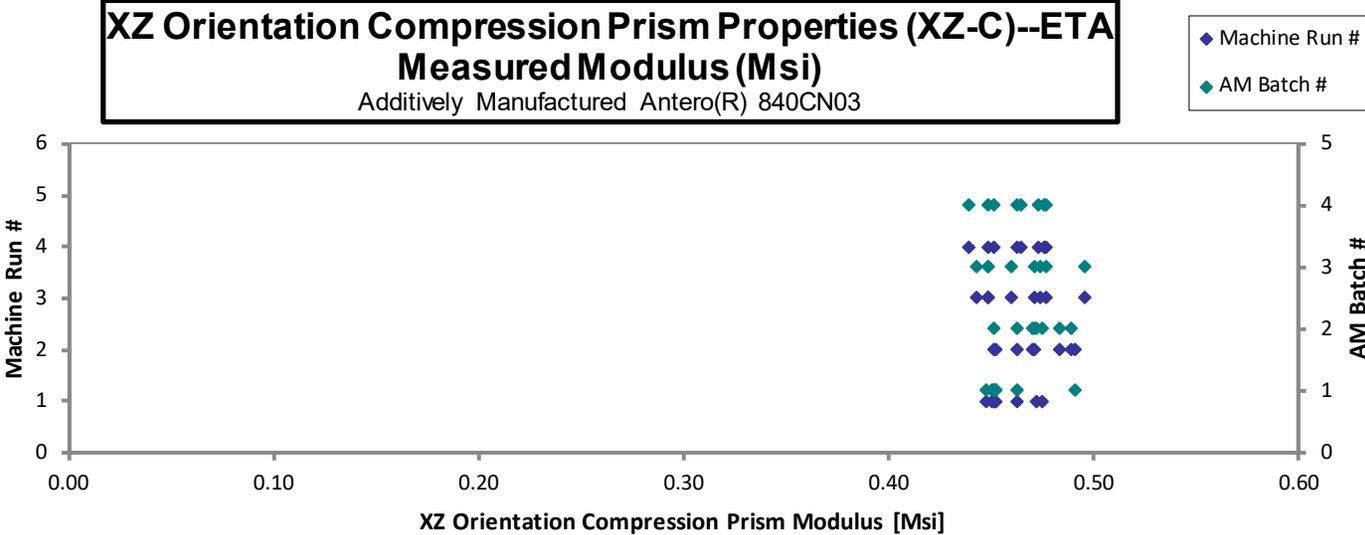
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-11-ETA-1*	1	1	6.458			7.339	0.4499	0.5002	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-12-ETA-2*	1	1	7.119			7.659	0.4521	0.5035	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-14-ETA-3*	1	1	6.890			7.515	0.4515	0.5013	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-15-ETA-4*	1	1	6.797			7.607	0.4472	0.5004	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-11-ETA-1*	1	2	7.494			8.199	0.4521	0.4984	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-13-ETA-2*	1	2	7.790			8.424	0.4517	0.4995	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-14-ETA-3*	1	2	7.548			8.267	0.4624	0.4989	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-15-ETA-4*	1	2	7.969			8.747	0.4909	0.4946	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-11-ETA-1*	2	1	7.310			8.421	0.4753	0.5011	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-12-ETA-2*	2	1	7.105			8.002	0.4512	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-14-ETA-3*	2	1	6.948			7.846	0.4720	0.5016	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-15-ETA-4*	2	1	7.245			7.809	0.4622	0.5004	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-11-ETA-1	2	2	7.552	7.907	7.835	8.047	0.4891	0.4961	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-13-ETA-2*	2	2	7.265			7.859	0.4698	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-14-ETA-3*	2	2	7.299			8.067	0.4714	0.4965	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-15-ETA-4	2	2	7.385	7.772	7.742	7.917	0.4835	0.4980	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-11-ETA-1*	3	3	7.124			8.211	0.4427	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-12-ETA-2*	3	3	7.297			8.148	0.4593	0.5011	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-13-ETA-3*	3	3	7.350			7.968	0.4486	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-15-ETA-4*	3	3	7.434			8.078	0.4735	0.4996	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-11-ETA-1*	3	3	7.741			8.368	0.4953	0.5021	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-12-ETA-2*	3	3	7.937			8.432	0.4767	0.5011	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-14-ETA-3*	3	3	8.086			8.352	0.4489	0.5017	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-15-ETA-4*	3	3	7.447			8.399	0.4708	0.5019	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-11-ETA-1*	4	4	7.738			8.133	0.4628	0.5027	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-12-ETA-2*	4	4	7.597			8.089	0.4754	0.5025	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-14-ETA-3*	4	4	7.677			8.017	0.4647	0.5028	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-15-ETA-4*	4	4	7.556			8.061	0.4486	0.5027	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-11-ETA-1*	4	4	6.975			7.782	0.4726	0.5004	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-13-ETA-2*	4	4	7.050			7.834	0.4764	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-14-ETA-3*	4	4	7.071			7.663	0.4389	0.4996	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-15-ETA-4*	4	4	7.036			7.582	0.4515	0.4986	UNIFORM COMPRESSIVE FAILURE

*1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	7.353	7.840	7.788	8.026	0.4637	0.4999
Standard Dev.	0.3667	0.09579	0.06583	0.3168	0.01487	0.002239
Coeff. of Var. [%]	4.988	1.222	0.8452	3.947	3.207	0.4480
Min.	6.458	7.772	7.742	7.339	0.4389	0.4946
Max.	8.086	7.907	7.835	8.747	0.4953	0.5035
Number of Spec.	32	2	2	32	32	32







XZ Orientation Compression Prism Properties (XZ-C)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

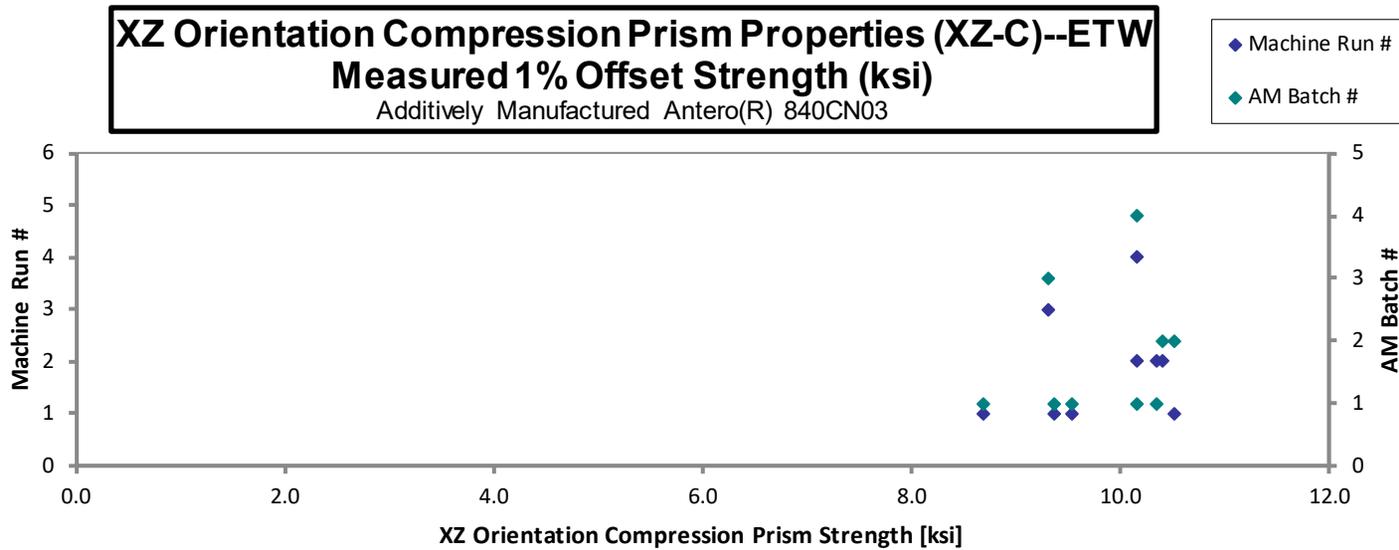
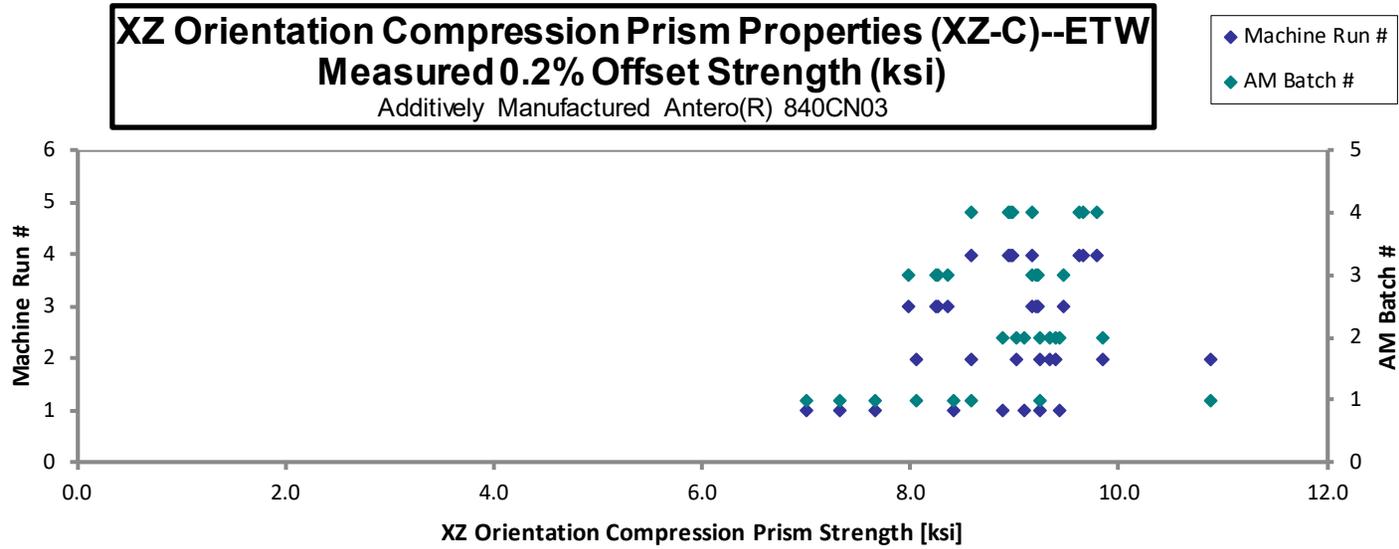
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-11-ETW-1*	1	1	7.320	9.535	9.640	0.5618	0.5014	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-12-ETW-2*	1	1	7.660	9.365	9.410	0.5377	0.5020	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-14-ETW-3**	1	1	8.419		9.473	0.4328	0.5022	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-C-15-ETW-4**/**	1	1	7.003	8.679	9.500	0.5146	0.5015	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-11-ETW-1*	1	2	8.589	10.17	10.19	0.4711	0.4994	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-12-ETW-2*	1	2	8.068	10.34	10.43	0.5123	0.4998	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-14-ETW-3**	1	2	9.254		10.26	0.4610	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-C-15-ETW-4**	1	2	10.88		10.91	0.4976	0.4953	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-11-ETW-1*	2	1	8.883	10.51	10.52	0.4914	0.4963	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-12-ETW-2**	2	1	9.251		10.43	0.4917	0.4984	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-14-ETW-3**	2	1	9.433		10.24	0.5620	0.4953	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-C-15-ETW-4**	2	1	9.099		10.34	0.6377	0.4971	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-11-ETW-1**	2	2	9.349		10.80	0.5006	0.4976	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-13-ETW-2*	2	2	9.022	10.40	10.40	0.4873	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-14-ETW-3**	2	2	9.394		10.32	0.5013	0.4966	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-C-15-ETW-4**	2	2	9.848		10.45	0.5967	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-11-ETW-1*	3	3	7.977	9.302	9.310	0.4924	0.5016	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-12-ETW-2**	3	3	8.258		9.136	0.4715	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-14-ETW-3**	3	3	8.252		9.174	0.5264	0.5015	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-C-15-ETW-4**	3	3	8.354		9.197	0.5032	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-11-ETW-1**	3	3	9.468		10.84	0.4525	0.5023	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-12-ETW-2**	3	3	9.208		10.90	0.4901	0.5018	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-14-ETW-3**	3	3	9.163		10.66	0.4687	0.5017	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-C-15-ETW-4**	3	3	9.230		10.72	0.4674	0.5015	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-11-ETW-1**	4	4	9.634		10.40	0.5188	0.5036	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-12-ETW-2**	4	4	9.661		10.46	0.5716	0.5042	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-14-ETW-3**	4	4	9.176		10.22	0.4631	0.5041	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-C-15-ETW-4**	4	4	9.791		10.21	0.5243	0.5036	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-11-ETW-1**	4	4	8.949		10.17	0.4619	0.5007	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-13-ETW-2*	4	4	8.973	10.16	10.20	0.4496	0.5013	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-14-ETW-3**	4	4	8.591		10.04	0.4844	0.5010	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-C-15-ETW-4**	4	4	8.986		10.07	0.4531	0.5009	UNIFORM COMPRESSIVE FAILURE

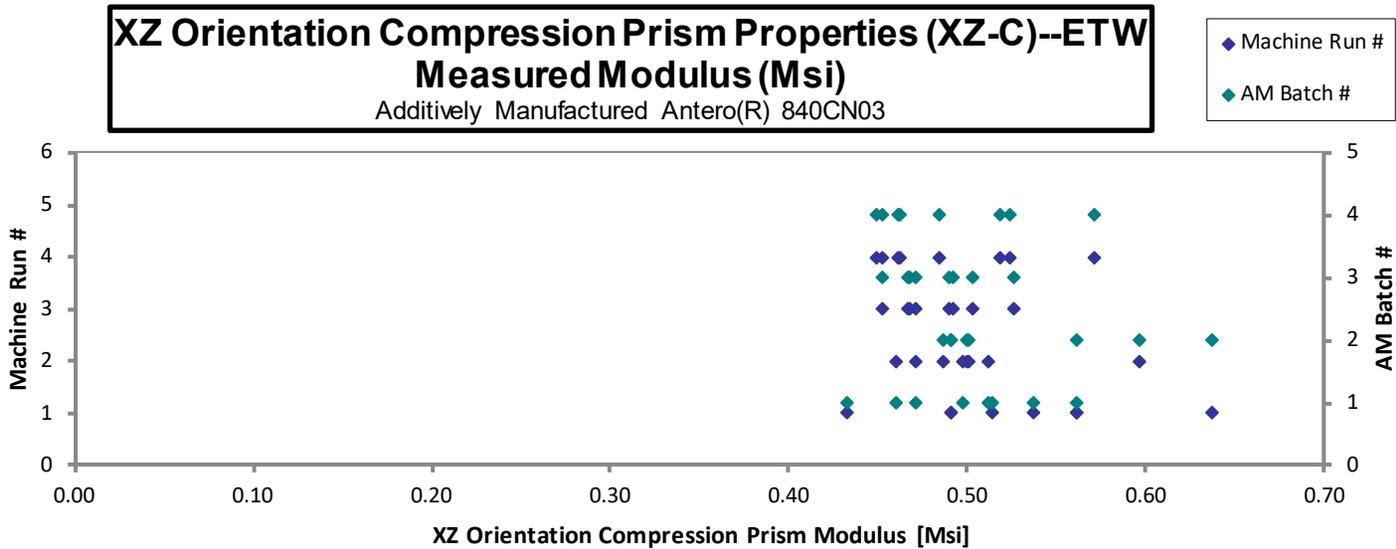
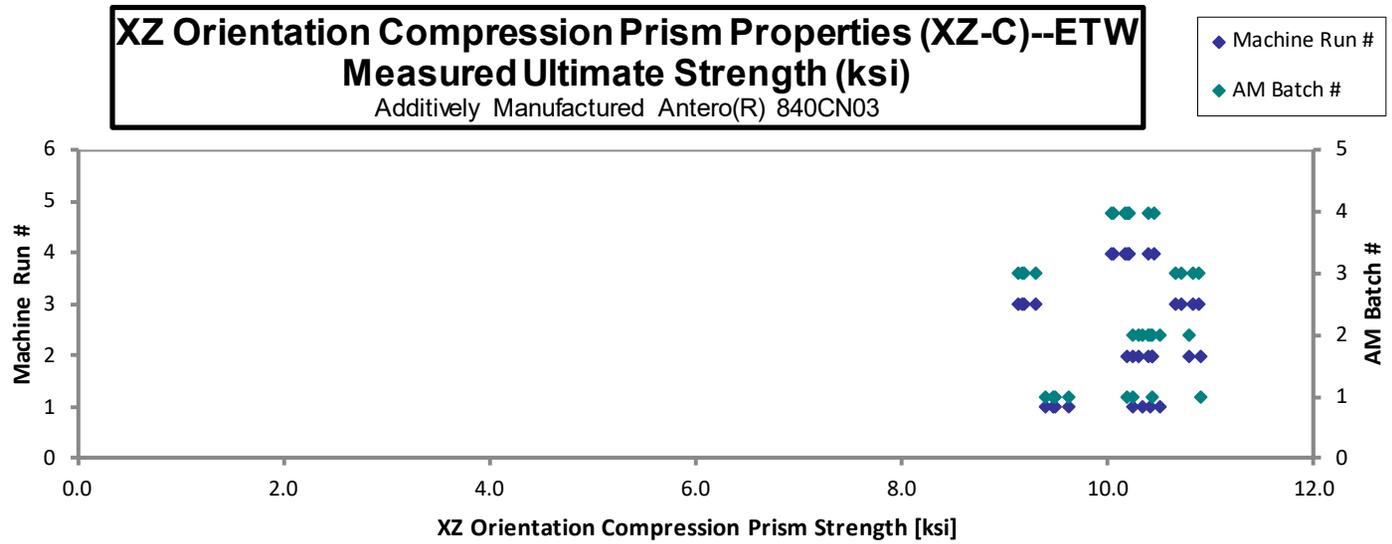
*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

**1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

***Test was stopped after no significant load drop was observed

Average	8.911	9.829	10.16	0.5018	0.5002
Standard Dev.	0.7864	0.6302	0.5277	0.04568	0.002535
Coeff. of Var. [%]	8.826	6.412	5.195	9.104	0.5067
Min.	7.003	8.679	9.136	0.4328	0.4953
Max.	10.88	10.51	10.91	0.6377	0.5042
Number of Spec.	32	9	32	32	32





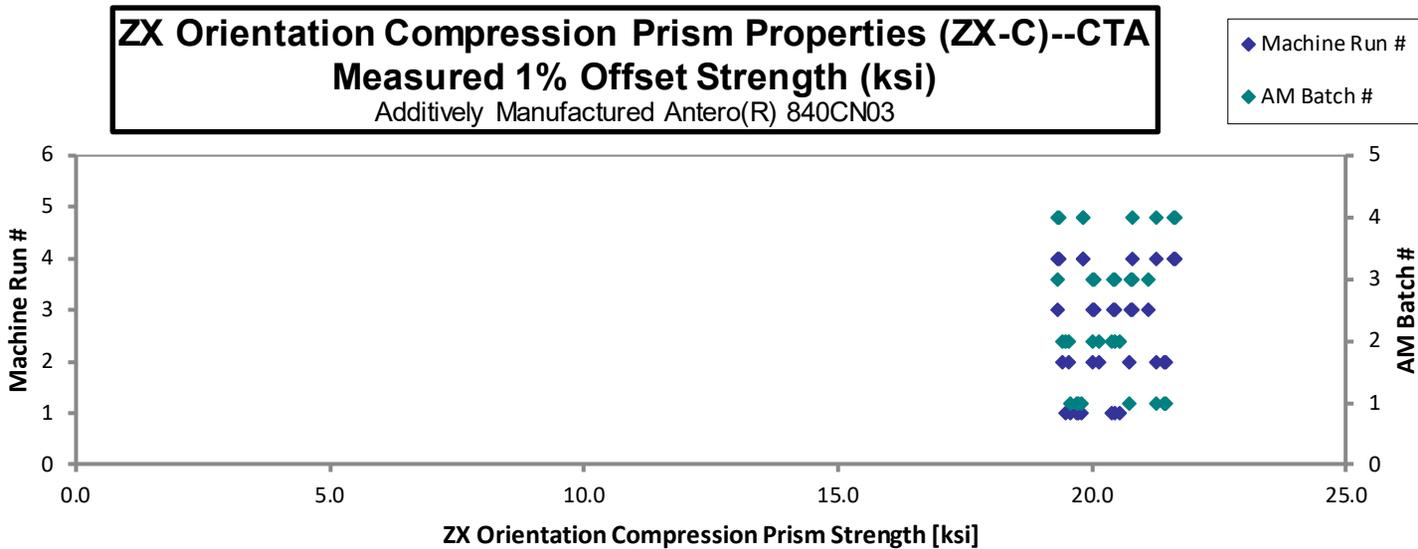
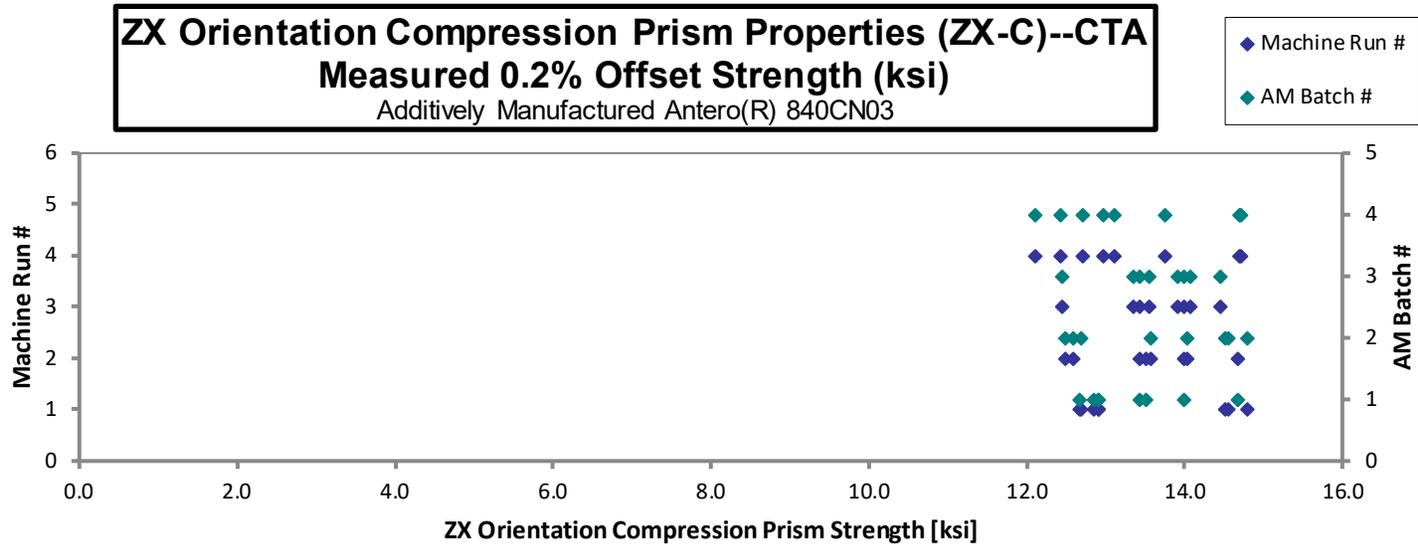
4.7 ZX Compression Prism Properties (ZX-C)

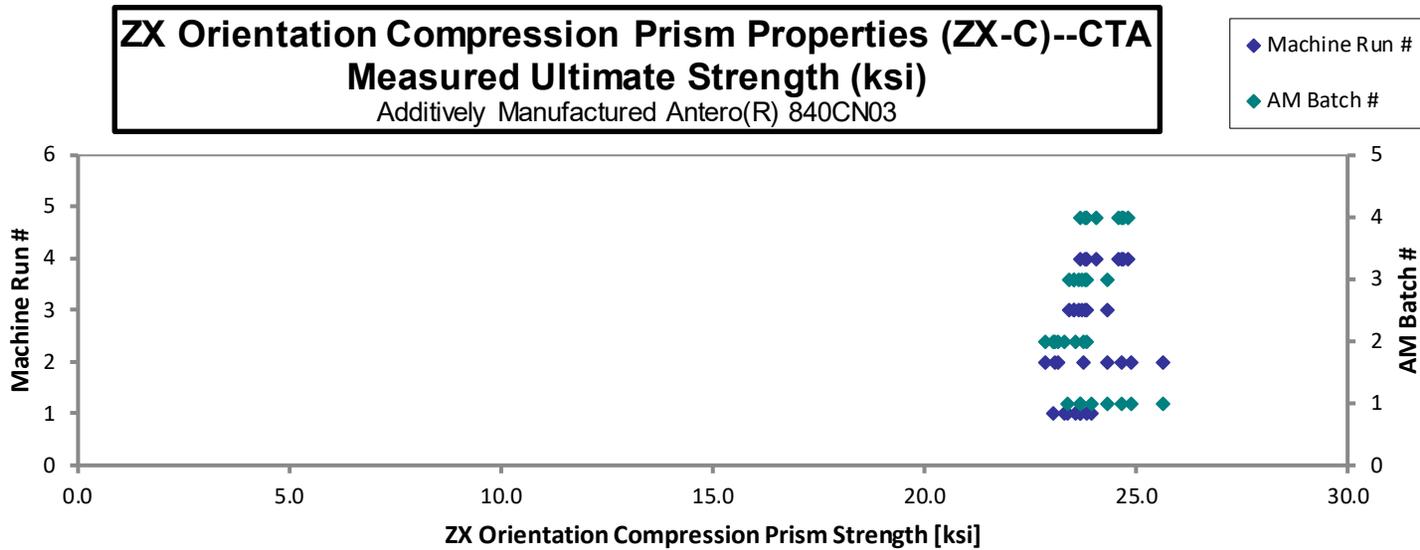
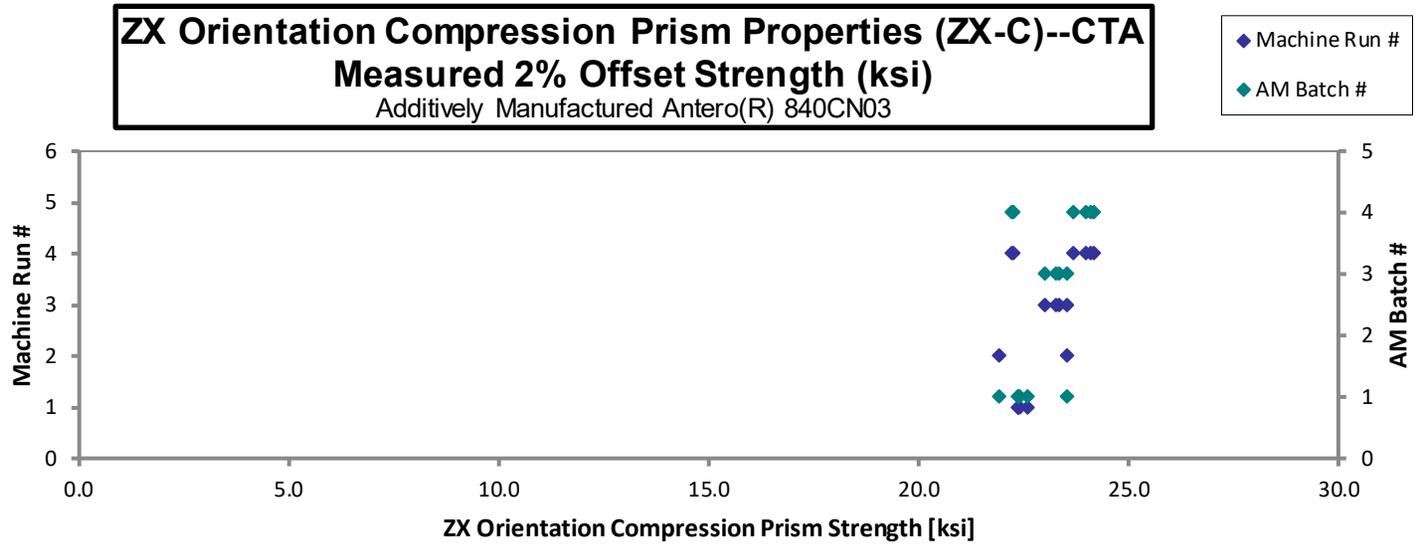
ZX Orientation Compression Prism Properties (ZX-C)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

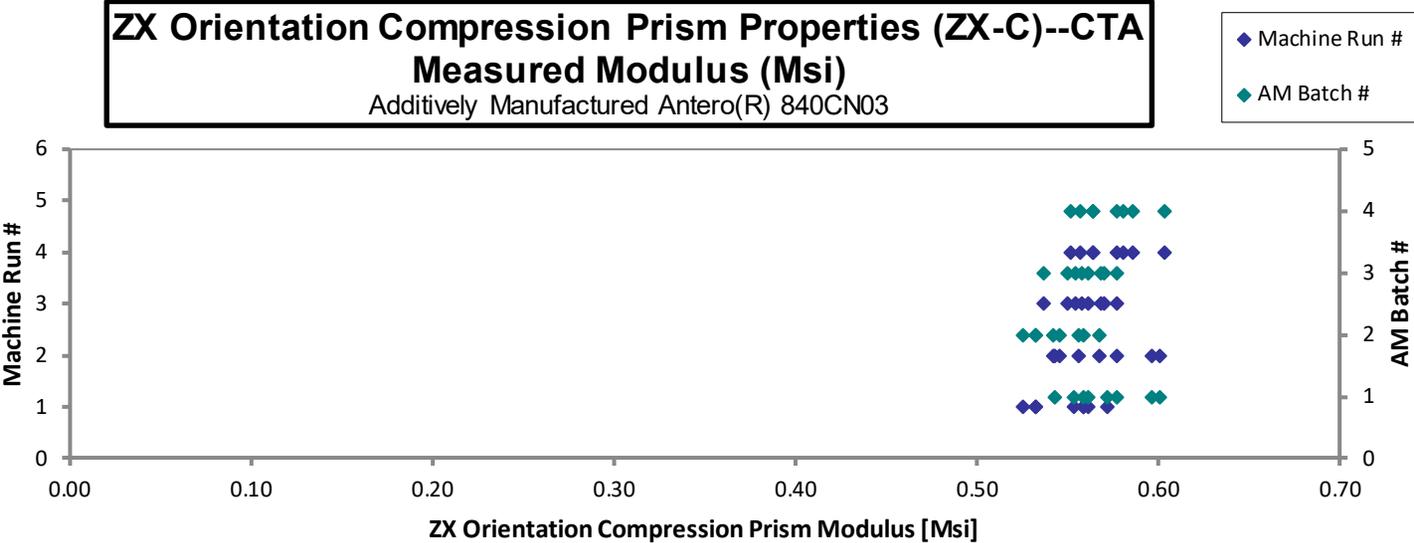
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-11-CTA-1	1	1	12.68	19.81	22.57	23.94	0.5722	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-12-CTA-2	1	1	12.91	19.74	22.41	23.69	0.5614	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-14-CTA-3	1	1	12.91	19.70	22.37	23.37	0.5587	0.4986	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-15-CTA-4	1	1	12.84	19.59	22.36	23.67	0.5537	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-11-CTA-1	1	2	13.99	21.42	21.91	24.89	0.5960	0.4953	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-13-CTA-2*	1	2	13.50	21.26		25.63	0.6007	0.4961	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-14-CTA-3	1	2	13.44	20.72	23.53	24.67	0.5770	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-15-CTA-4*	1	2	14.67	21.44		24.32	0.5429	0.4991	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-11-CTA-1*	2	1	14.80	20.55		23.55	0.5255	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-12-CTA-2*	2	1	14.51	20.45		23.83	0.5327	0.4960	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-14-CTA-3*	2	1	14.55	20.38		23.05	0.5321	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-15-CTA-4*	2	1	12.69	19.49		23.30	0.5587	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-11-CTA-1*	2	2	13.56	20.01		23.77	0.5451	0.4990	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-13-CTA-2*	2	2	12.49	19.53		23.07	0.5671	0.4967	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-14-CTA-3*	2	2	14.02	20.15		22.84	0.5423	0.4998	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-15-CTA-4*	2	2	12.60	19.41		23.16	0.5564	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-11-CTA-1*	3	3	13.36	20.05		23.63	0.5703	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-12-CTA-2*	3	3	13.42	20.01		23.42	0.5500	0.4977	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-14-CTA-3*	3	3	12.45	19.31		23.51	0.5545	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-15-CTA-4*	3	3	14.46	20.47		23.51	0.5364	0.4980	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-11-CTA-1	3	3	13.92	21.10	23.54	23.81	0.5771	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-12-CTA-2	3	3	13.99	20.77	23.33	24.30	0.5610	0.4981	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-14-CTA-3	3	3	13.54	20.43	22.99	23.72	0.5680	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-15-CTA-4	3	3	14.07	20.81	23.28	23.82	0.5575	0.4967	UNIFORM COMPRESSIVE FAILURE
NTPAM8000Q1-STR-800NA-SDM-D-M4-ZX-C-11-CTA-1	4	4	13.75	21.27	23.99	24.58	0.5862	0.4978	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-12-CTA-2	4	4	14.72	21.62	24.08	24.81	0.5805	0.4986	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-14-CTA-3	4	4	14.69	21.64	24.16	24.65	0.5772	0.4997	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-15-CTA-4	4	4	12.96	20.79	23.67	24.69	0.6033	0.4978	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-11-CTA-1*	4	4	13.11	19.83		23.82	0.5515	0.4952	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-13-CTA-2*	4	4	12.72	19.82		24.07	0.5639	0.4957	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-14-CTA-3	4	4	12.43	19.36	22.19	23.67	0.5568	0.4970	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-15-CTA-4	4	4	12.11	19.34	22.23	23.80	0.5635	0.4963	UNIFORM COMPRESSIVE FAILURE

*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	13.50	20.32	23.04	23.89	0.5619	0.4976
Standard Dev.	0.8009	0.7315	0.7500	0.6242	0.01923	0.001249
Coeff. of Var. [%]	5.935	3.600	3.255	2.612	3.423	0.2511
Min.	12.11	19.31	21.91	22.84	0.5255	0.4952
Max.	14.80	21.64	24.16	25.63	0.6033	0.4998
Number of Spec.	32	32	16	32	32	32







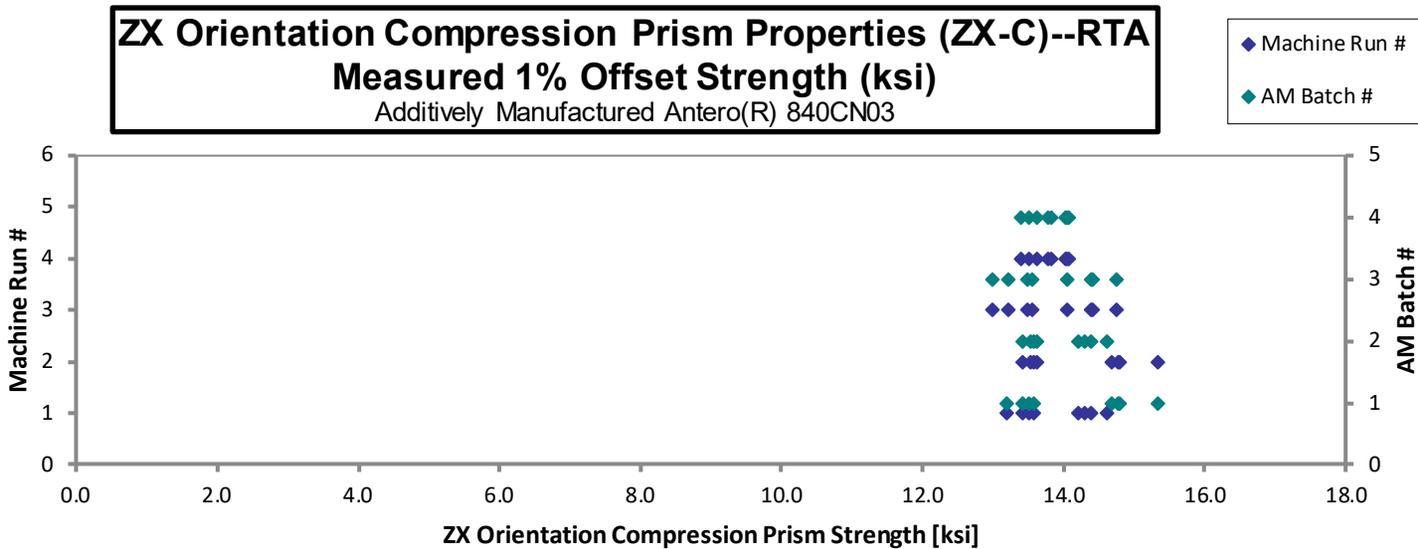
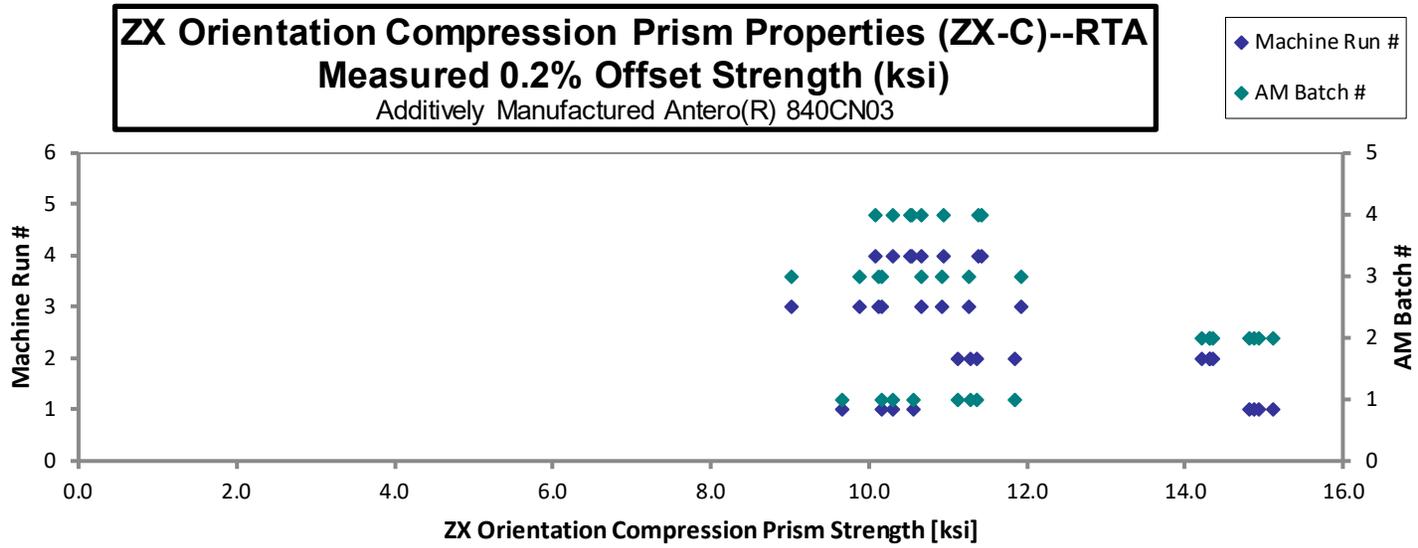
**ZX Orientation Compression Prism Properties (ZX-C)--RTA
Strength & Modulus**

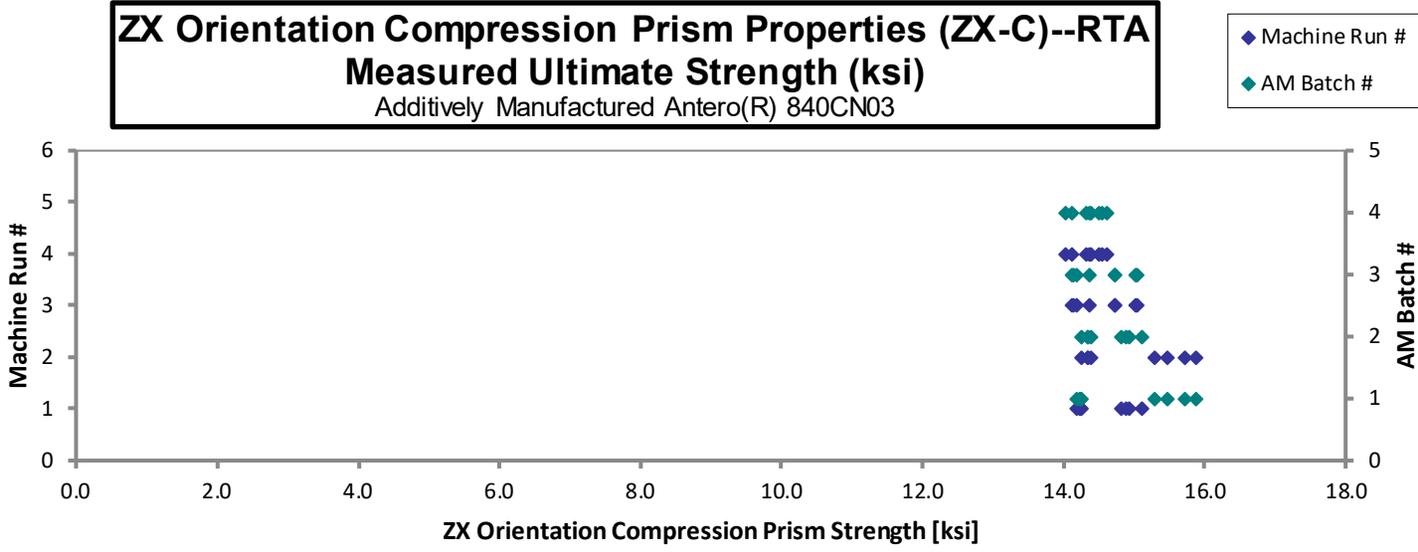
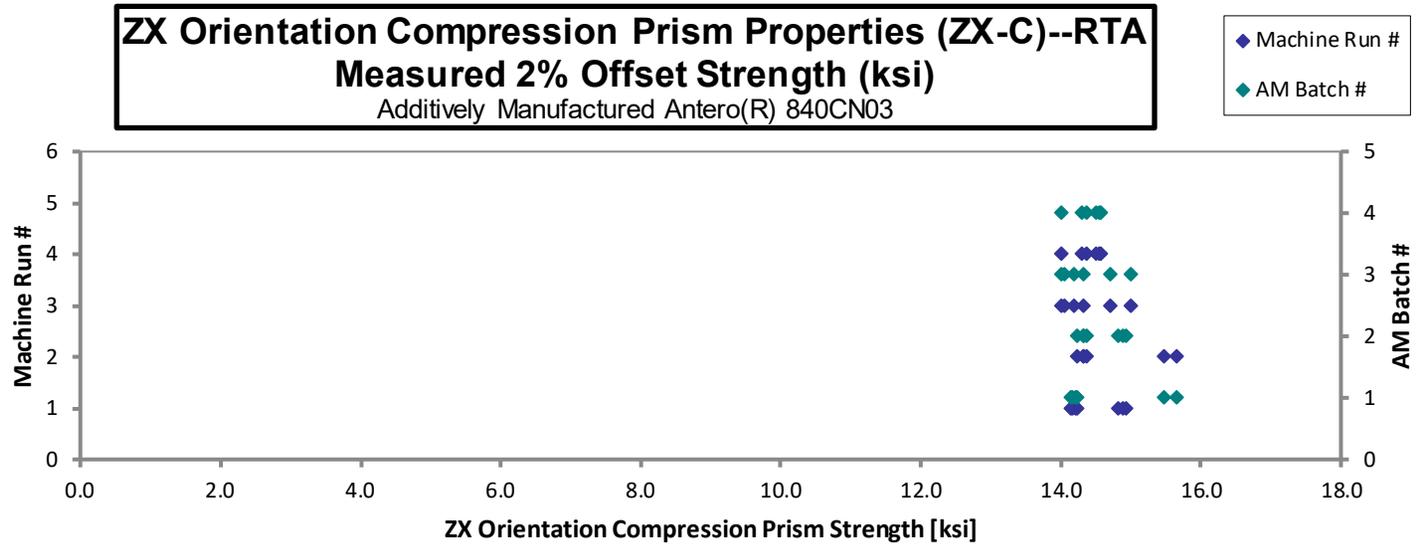
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-11-RTA-1	1	1	10.30	13.58	14.22	14.22	0.4488	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-12-RTA-2	1	1	10.57	13.52	14.22	14.25	0.4225	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-14-RTA-3	1	1	10.17	13.42	14.16	14.19	0.4698	0.4998	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-15-RTA-4	1	1	9.654	13.19	14.13	14.24	0.4426	0.4978	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-11-RTA-1	1	2	11.12	14.77	15.65	15.72	0.4809	0.4956	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-13-RTA-2*	1	2	11.84	15.32		15.87	0.5205	0.4959	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-14-RTA-3	1	2	11.36	14.80	15.47	15.47	0.4744	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-15-RTA-4*	1	2	11.28	14.68		15.28	0.4708	0.5002	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-11-RTA-1	2	1	14.88	14.30	14.88	14.89	0.5211	0.4971	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-12-RTA-2	2	1	14.81	14.21	14.81	14.82	0.4925	0.4968	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-14-RTA-3*	2	1	15.11	14.60		15.12	0.4653	0.4952	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-15-RTA-4	2	1	14.93	14.39	14.93	14.93	0.4824	0.4963	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-11-RTA-1	2	2	14.31	13.52	14.31	14.35	0.4534	0.4967	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-13-RTA-2	2	2	14.22	13.42	14.22	14.26	0.4646	0.4966	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-14-RTA-3	2	2	14.36	13.63		14.38	0.4631	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-15-RTA-4	2	2	14.32	13.58	14.32	14.34	0.4685	0.4962	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-11-RTA-1	3	3	9.883	13.22	14.06	14.14	0.4679	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-12-RTA-2	3	3	10.16	13.56	14.31	14.36	0.4802	0.4970	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-14-RTA-3	3	3	10.12	13.49	14.18	14.18	0.4554	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-15-RTA-4	3	3	9.013	13.00	14.01	14.12	0.4894	0.4970	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-11-RTA-1	3	3	10.65	14.04	14.69	14.73	0.4487	0.4987	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-12-RTA-2	3	3	10.92	14.38	15.01	15.03	0.4614	0.4978	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-14-RTA-3*	3	3	11.92	14.75		15.03	0.4853	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-15-RTA-4*	3	3	11.26	14.42		14.72	0.4627	0.4990	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-11-RTA-1*	4	4	11.38	14.07		14.39	0.4514	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-12-RTA-2	4	4	11.42	14.04	14.49	14.50	0.4638	0.4989	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-14-RTA-3	4	4	10.94	14.02	14.54	14.54	0.4823	0.4995	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-15-RTA-4	4	4	10.52	13.83	14.58	14.62	0.4571	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-11-RTA-1	4	4	10.67	13.77	14.36	14.36	0.4528	0.4967	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-13-RTA-2	4	4	10.08	13.50	14.29	14.33	0.4494	0.4955	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-14-RTA-3	4	4	10.30	13.40	14.01	14.02	0.4644	0.4968	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-15-RTA-4*	4	4	10.55	13.63		14.13	0.4606	0.4961	UNIFORM COMPRESSIVE FAILURE

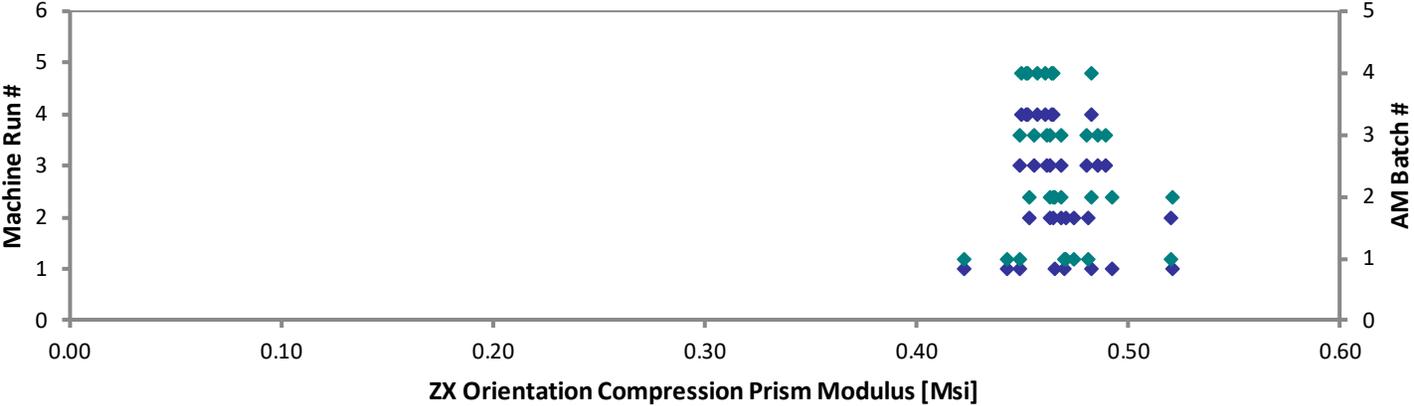
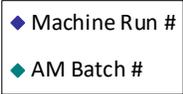
*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	11.66	13.94	14.49	14.61	0.4679	0.4975
Standard Dev.	1.847	0.5694	0.4301	0.4848	0.02025	0.001315
Coeff. of Var. [%]	15.84	4.085	2.969	3.318	4.328	0.2643
Min.	9.013	13.00	14.01	14.02	0.4225	0.4952
Max.	15.11	15.32	15.65	15.87	0.5211	0.5002
Number of Spec.	32	32	25	32	32	32





ZX Orientation Compression Prism Properties (ZX-C)--RTA
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

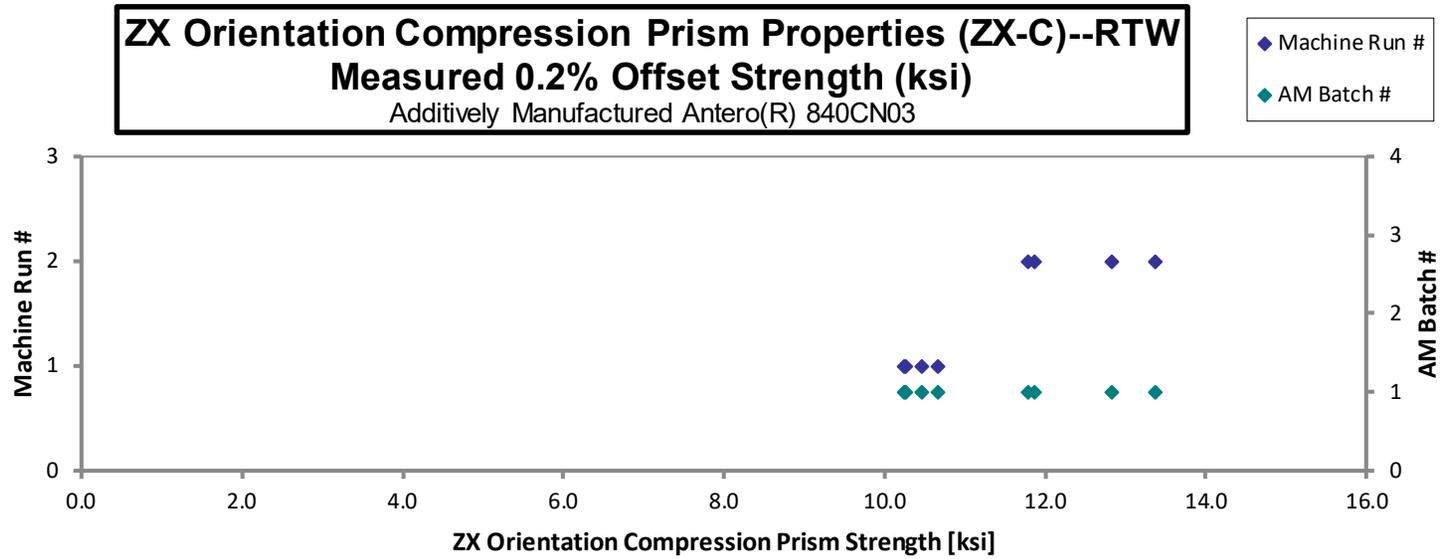


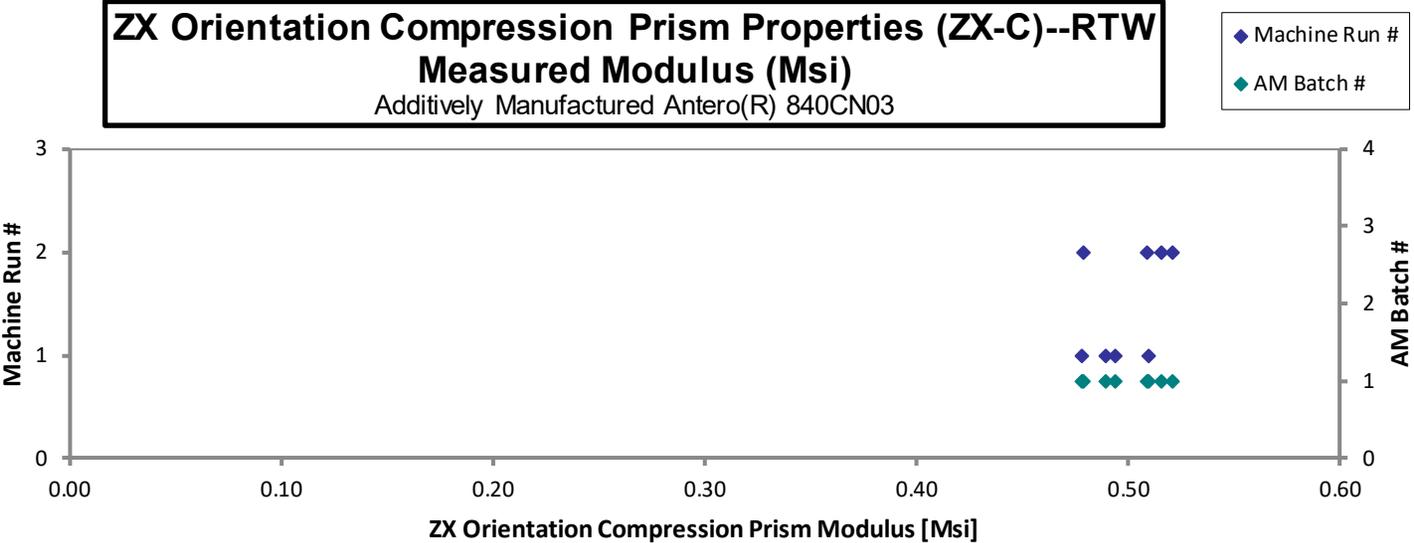
ZX Orientation Compression Prism Properties (ZX-C)--RTW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-11-RTW-1*	1	1	10.66	13.95		14.48	0.5094	0.4959	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-12-RTW-2	1	1	10.47	13.68	14.31	14.33	0.4938	0.4967	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-14-RTW-3	1	1	10.25	13.44	14.18	14.22	0.4780	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-15-RTW-4	1	1	10.27	13.50	14.20	14.25	0.4893	0.4964	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-11-RTW-1*	1	2	11.78	15.05		15.43	0.5156	0.4956	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-12-RTW-2*	1	2	11.87	15.08		15.42	0.5207	0.4947	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-14-RTW-3*	1	2	13.36	14.79		14.90	0.5086	0.4966	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-15-RTW-4*	1	2	12.82	14.30		14.48	0.4785	0.4984	UNIFORM COMPRESSIVE FAILURE

*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	11.44	14.23	14.23	14.69	0.4992	0.4965
Standard Dev.	1.211	0.6816	0.06638	0.5005	0.01659	0.001104
Coeff. of Var. [%]	10.59	4.791	0.4664	3.407	3.323	0.2224
Min.	10.25	13.44	14.18	14.22	0.4780	0.4947
Max.	13.36	15.08	14.31	15.43	0.5207	0.4984
Number of Spec.	8	8	3	8	8	8



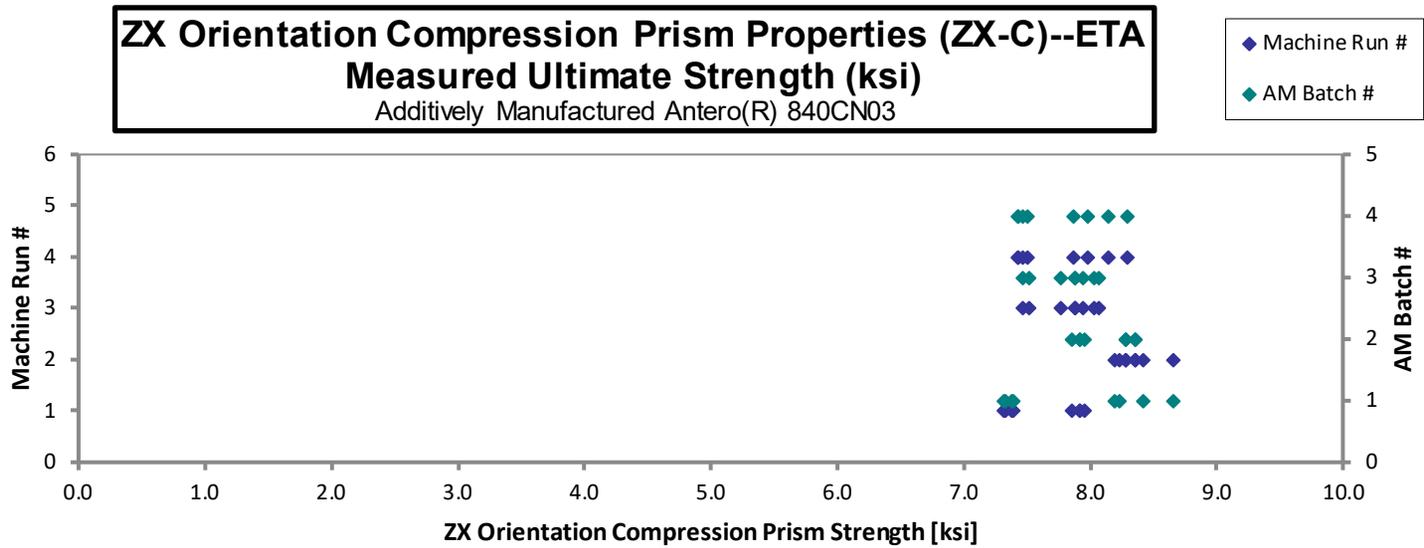
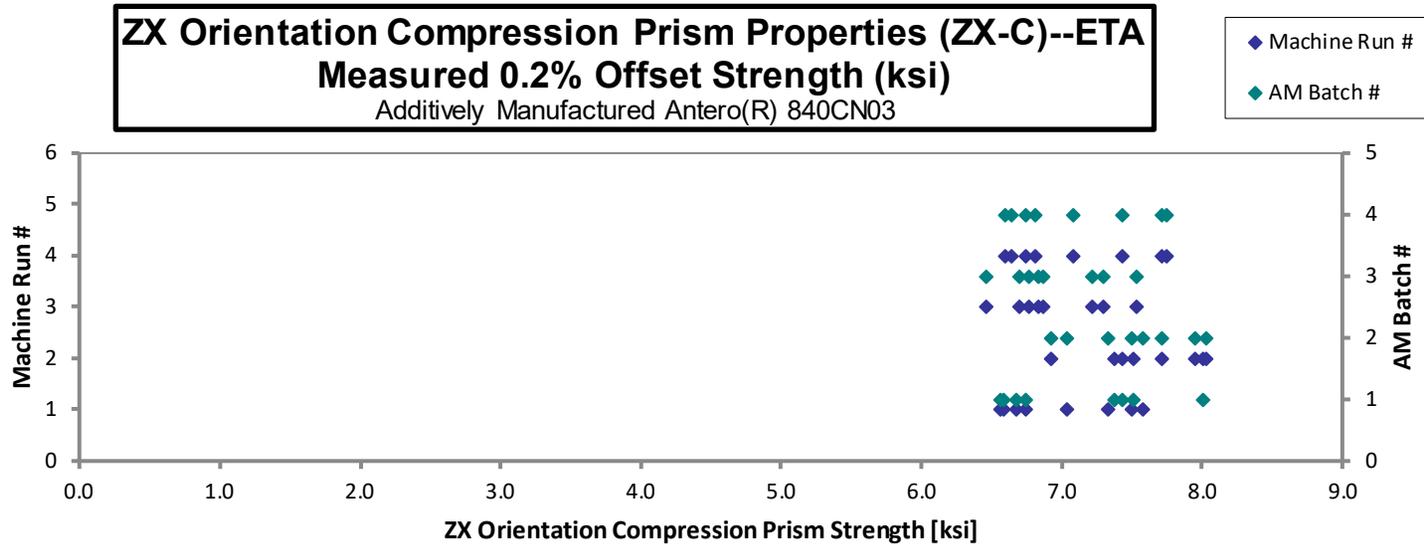


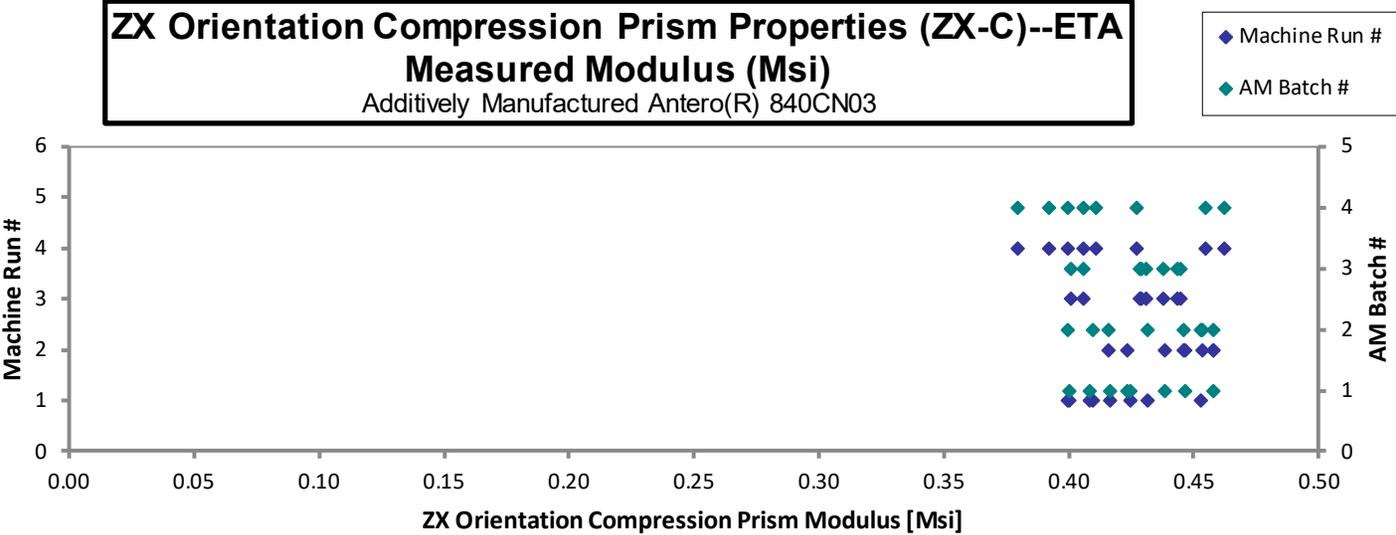
ZX Orientation Compression Prism Properties (ZX-C)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-11-ETA-1	1	1	6.676	7.324	0.4168	0.4982	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-12-ETA-2	1	1	6.566	7.377	0.4087	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-14-ETA-3	1	1	6.746	7.386	0.4003	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-15-ETA-4	1	1	6.583	7.318	0.4247	0.4984	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-11-ETA-1	1	2	7.505	8.416	0.4465	0.4947	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-13-ETA-2	1	2	8.004	8.659	0.4582	0.4942	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-14-ETA-3	1	2	7.431	8.235	0.4386	0.4977	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-15-ETA-4	1	2	7.378	8.189	0.4233	0.4996	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-11-ETA-1	2	1	7.326	7.912	0.4527	0.4987	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-12-ETA-2	2	1	7.574	7.956	0.4096	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-14-ETA-3	2	1	7.495	7.856	0.3996	0.4987	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-15-ETA-4	2	1	7.040	7.917	0.4317	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-11-ETA-1	2	2	8.024	8.354	0.4162	0.4987	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-13-ETA-2	2	2	7.717	8.283	0.4577	0.4968	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-14-ETA-3	2	2	7.947	8.354	0.4537	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-15-ETA-4	2	2	6.928	8.281	0.4458	0.4981	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-11-ETA-1	3	3	6.867	7.949	0.4432	0.4984	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-12-ETA-2	3	3	6.837	7.766	0.4292	0.4978	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-13-ETA-3	3	3	6.465	7.465	0.4008	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-15-ETA-4	3	3	6.701	7.521	0.4060	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-11-ETA-1	3	3	6.762	7.879	0.4379	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-12-ETA-2	3	3	7.300	8.029	0.4284	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-14-ETA-3	3	3	7.530	8.069	0.4450	0.4976	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-15-ETA-4	3	3	7.214	7.884	0.4310	0.4962	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-11-ETA-1	4	4	7.077	7.872	0.3793	0.4984	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-12-ETA-2	4	4	7.749	8.292	0.4274	0.4977	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-14-ETA-3	4	4	7.712	8.142	0.4545	0.4955	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-15-ETA-4	4	4	7.432	7.982	0.4624	0.4967	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-11-ETA-1	4	4	6.645	7.498	0.3921	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-13-ETA-2	4	4	6.746	7.427	0.4112	0.4966	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-14-ETA-3	4	4	6.592	7.429	0.3993	0.4977	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-15-ETA-4	4	4	6.808	7.467	0.4057	0.4971	UNIFORM COMPRESSIVE FAILURE

1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	7.168	7.890	0.4262	0.4976
Standard Dev.	0.4722	0.3753	0.02223	0.001203
Coeff. of Var. [%]	6.588	4.757	5.217	0.2418
Min.	6.465	7.318	0.3793	0.4942
Max.	8.024	8.659	0.4624	0.4996
Number of Spec.	32	32	32	32





**ZX Orientation Compression Prism Properties (ZX-C)--ETW
Strength & Modulus**

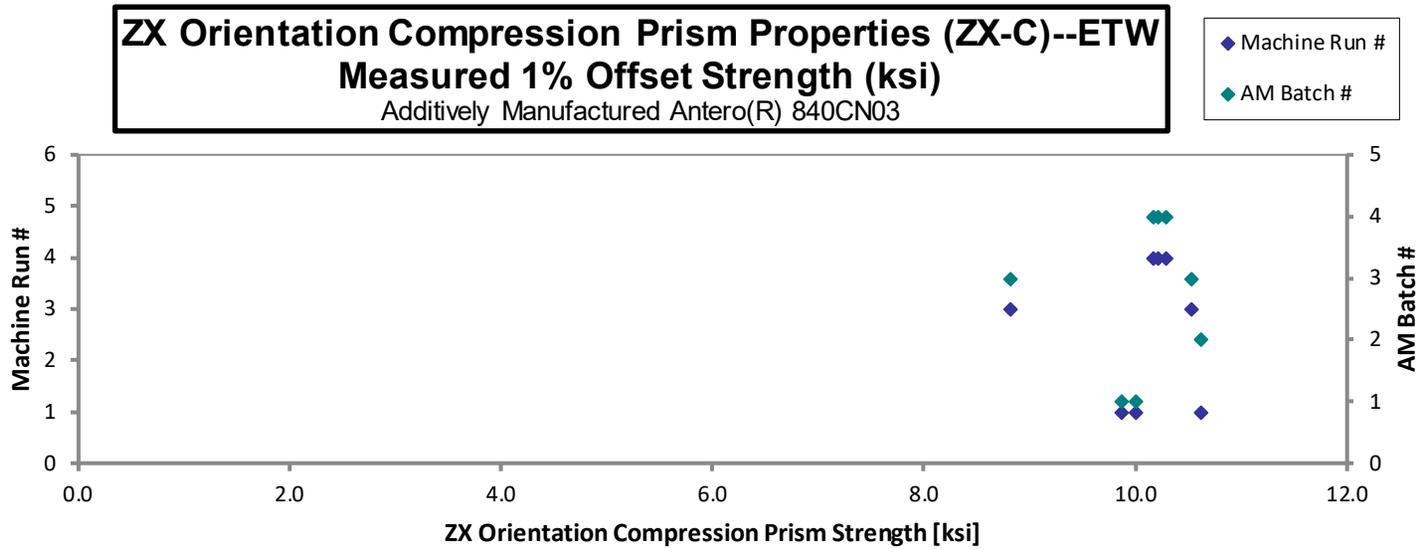
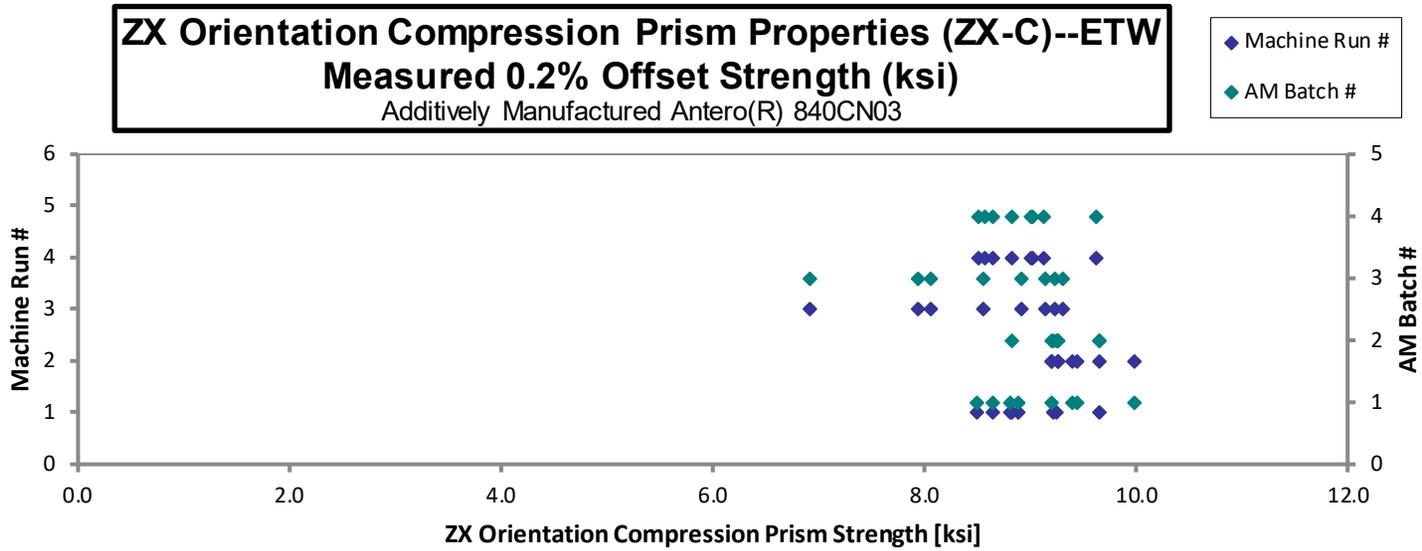
Additively Manufactured Antero(R) 840CN03

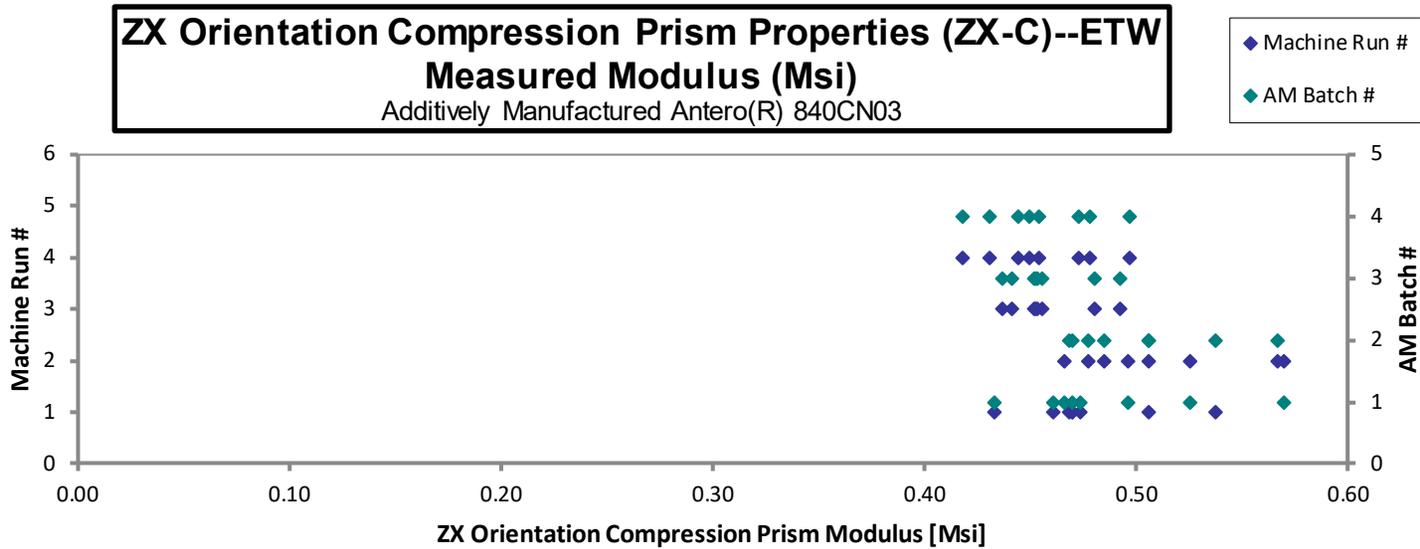
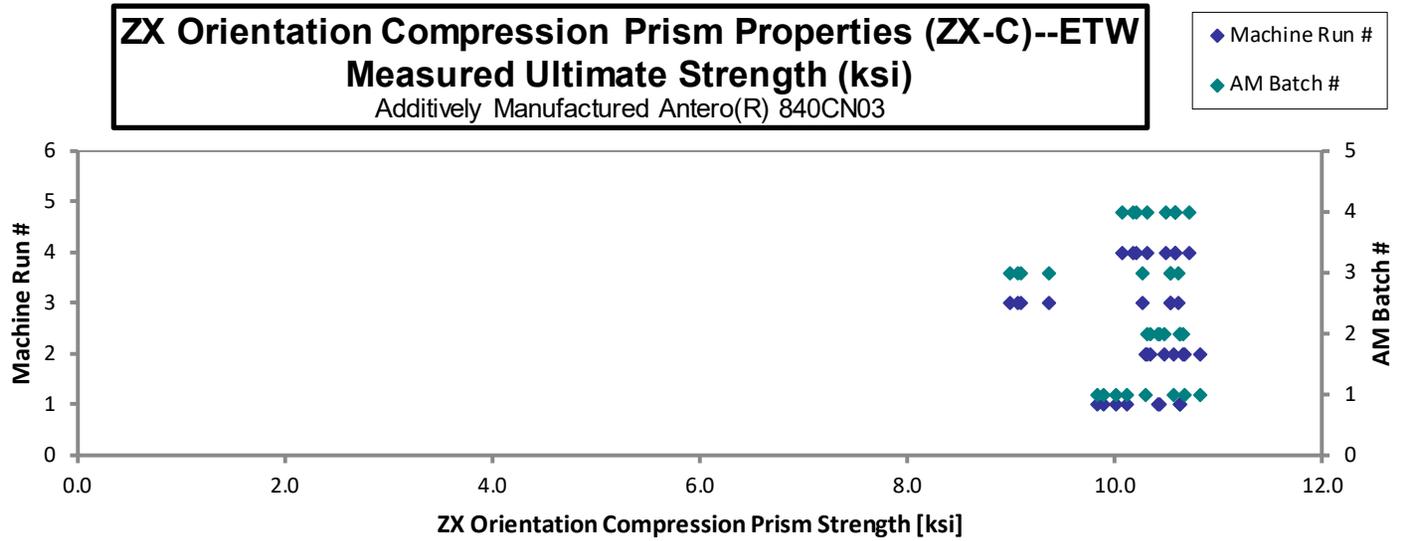
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msj]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-11-ETW-1*	1	1	8.888		10.12	0.4695	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-12-ETW-2	1	1	8.639	10.01	10.02	0.4733	0.4966	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-14-ETW-3	1	1	8.497	9.878	9.890	0.4611	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-C-15-ETW-4*	1	1	8.814		9.836	0.4333	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-11-ETW-1*	1	2	9.988		10.68	0.4661	0.4958	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-12-ETW-2*	1	2	9.403		10.83	0.4959	0.4952	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-14-ETW-3*	1	2	9.439		10.29	0.5252	0.4976	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-C-15-ETW-4*	1	2	9.198		10.57	0.5696	0.4994	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-11-ETW-1*	2	1	9.220		10.63	0.4685	0.4965	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-12-ETW-2	2	1	9.251	10.63	10.63	0.4697	0.4953	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-14-ETW-3*	2	1	9.653		10.42	0.5056	0.4965	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-C-15-ETW-4*	2	1	8.827		10.44	0.5373	0.4966	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-11-ETW-1*	2	2	9.259		10.67	0.4852	0.4963	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-13-ETW-2*	2	2	9.206		10.47	0.4774	0.4961	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-14-ETW-3*	2	2	9.255		10.34	0.5056	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-C-15-ETW-4*	2	2	9.653		10.31	0.5666	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-11-ETW-1*	3	3	8.553		9.361	0.4523	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-13-ETW-2*	3	3	7.930		8.996	0.4553	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-14-ETW-3	3	3	6.912	8.824	9.066	0.4921	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-C-15-ETW-4*	3	3	8.064		9.089	0.4806	0.4964	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-11-ETW-1*	3	3	8.913		10.27	0.4411	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-12-ETW-2*	3	3	9.223		10.53	0.4534	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-14-ETW-3*	3	3	9.303		10.61	0.4521	0.4957	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-C-15-ETW-4	3	3	9.146	10.53	10.53	0.4371	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-11-ETW-1*	4	4	9.627		10.49	0.4779	0.4989	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-12-ETW-2*	4	4	9.120		10.58	0.4969	0.4970	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-14-ETW-3*	4	4	9.004		10.72	0.4726	0.4982	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-C-15-ETW-4*	4	4	9.025		10.58	0.4494	0.4996	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-11-ETW-1	4	4	8.511	10.21	10.21	0.4541	0.4966	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-13-ETW-2	4	4	8.575	10.29	10.32	0.4304	0.4968	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-14-ETW-3*	4	4	8.825		10.08	0.4179	0.4968	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-C-15-ETW-4	4	4	8.640	10.17	10.18	0.4446	0.4967	UNIFORM COMPRESSIVE FAILURE

2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	8.955	10.07	10.24	0.4756	0.4971
Standard Dev.	0.5859	0.5596	0.4924	0.03630	0.001123
Coeff. of Var. [%]	6.543	5.558	4.808	7.633	0.2260
Min.	6.912	8.824	8.996	0.4179	0.4952
Max.	9.988	10.63	10.83	0.5696	0.4996
Number of Spec.	32	8	32	32	32

*1% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported





4.8 Z45 Compression Prism Properties (Z45-C)

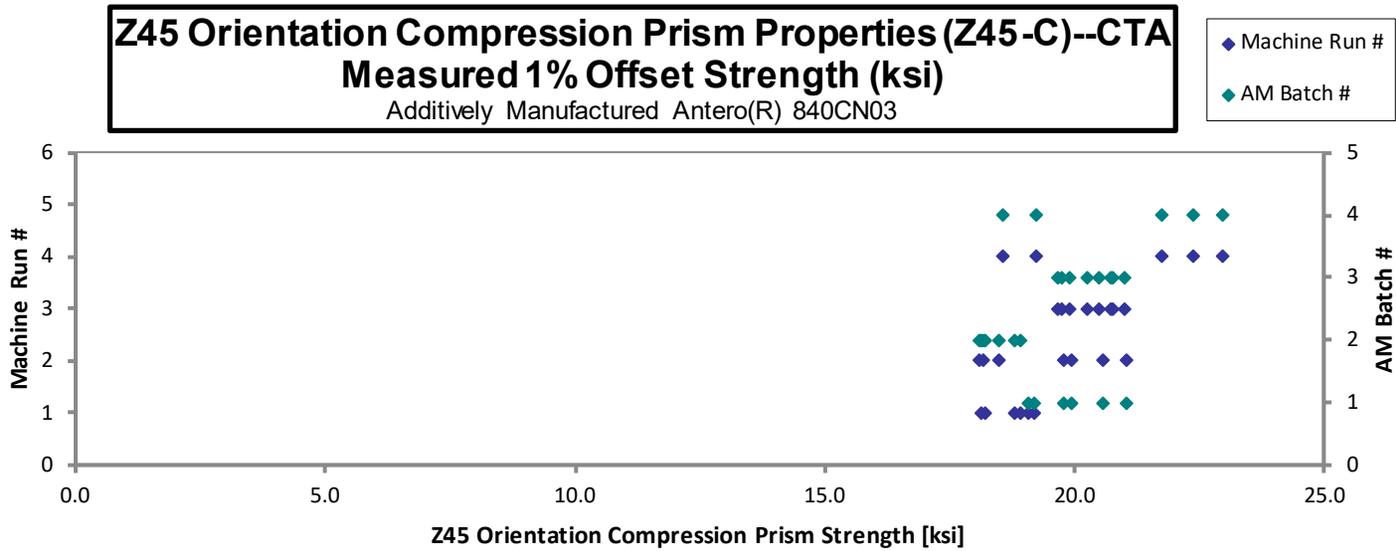
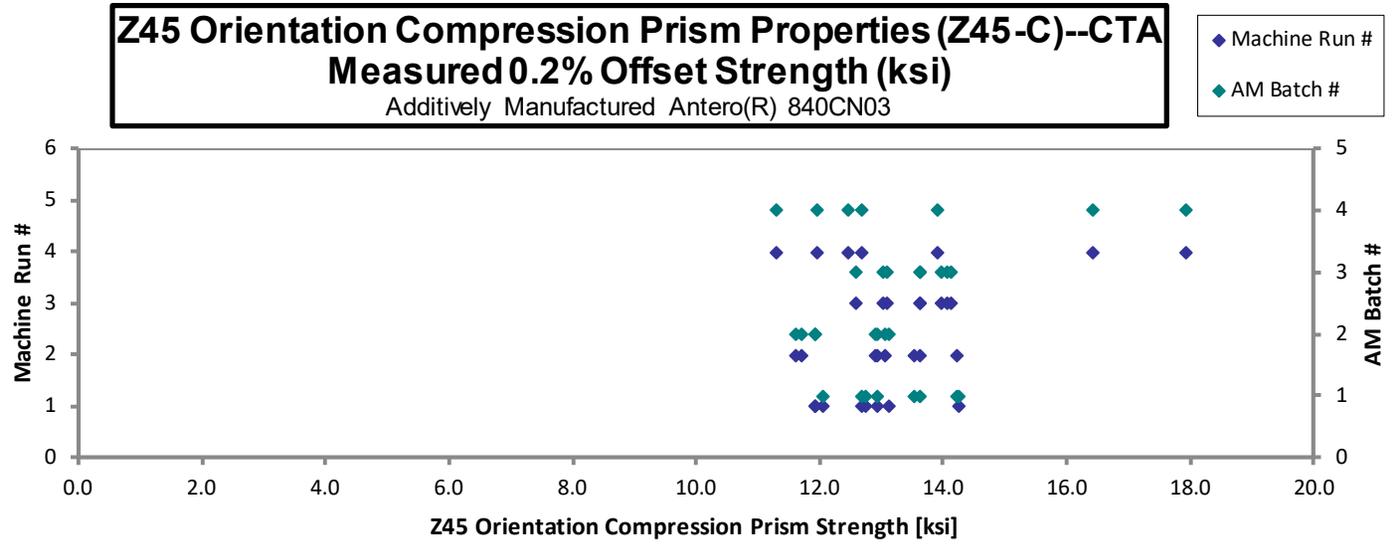
Z45 Orientation Compression Prism Properties (Z45-C)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

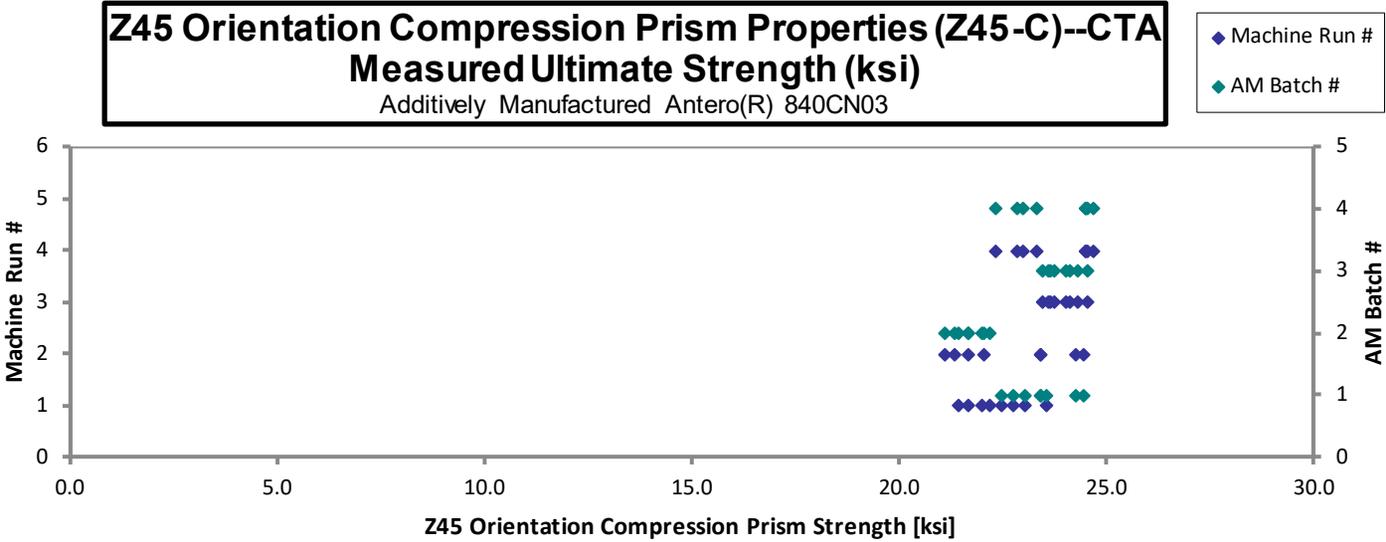
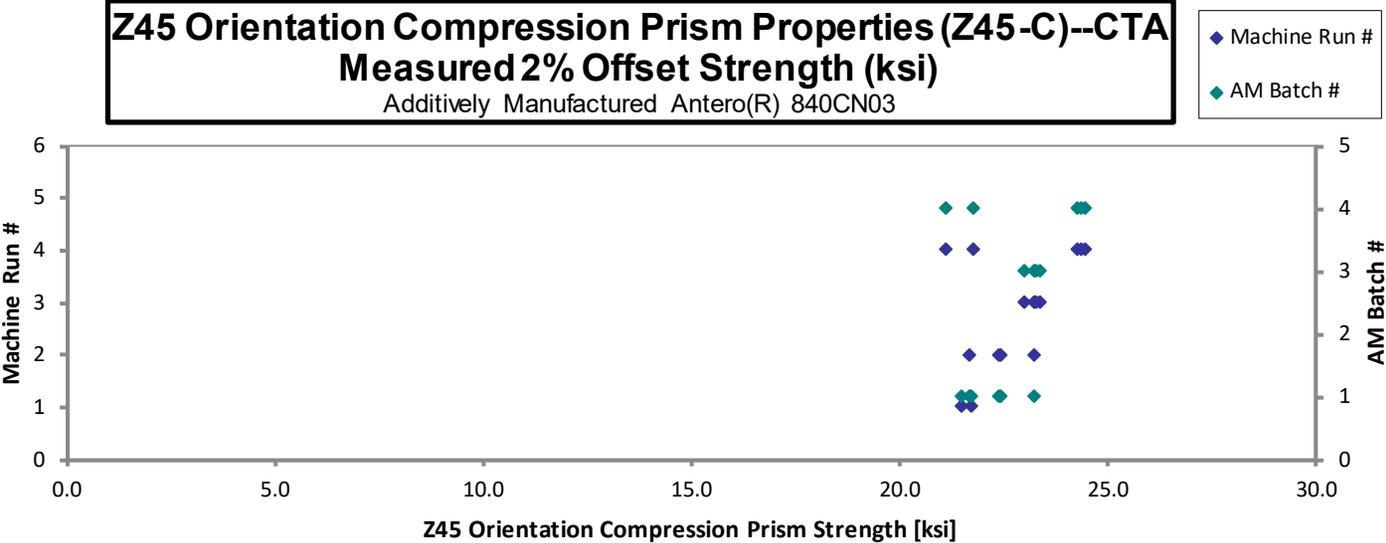
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-11-CTA-1	1	1	12.05	19.09	21.70	23.56	0.5941	0.5000	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-12-CTA-2*	1	1	14.27			23.06	0.5393	0.4996	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-14-CTA-3*	1	1	12.69			22.73	0.5753	0.4989	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-15-CTA-4	1	1	12.75	19.19	21.50	22.49	0.5607	0.5001	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-11-CTA-1	1	2	14.22	21.04	21.67	24.47	0.5720	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-13-CTA-2	1	2	13.54	20.57	23.24	24.24	0.5734	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-14-CTA-3	1	2	13.62	19.95	22.40	23.44	0.5457	0.4982	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-15-CTA-4	1	2	12.94	19.80	22.40	23.39	0.5671	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-11-CTA-1*	2	1	12.93	18.94		22.20	0.5312	0.5002	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-12-CTA-2*	2	1	11.92	18.14		21.43	0.5354	0.4998	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-14-CTA-3*	2	1	11.94	18.21		21.65	0.5483	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-15-CTA-4*	2	1	13.12	18.80		22.01	0.5295	0.5006	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-11-CTA-1*	2	2	11.70	18.19		21.65	0.5482	0.5003	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-13-CTA-2*	2	2	13.06			21.35	0.5079	0.5002	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-14-CTA-3*	2	2	11.61	18.10		22.05	0.5643	0.4995	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-15-CTA-4*	2	2	12.91	18.47		21.08	0.5119	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-11-CTA-1*	3	3	13.04	19.90		23.66	0.5682	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-12-CTA-2*	3	3	13.63	20.26		24.32	0.5619	0.4977	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-14-CTA-3*	3	3	13.64	19.74		23.46	0.5343	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-15-CTA-4*	3	3	12.58	19.68		24.04	0.5764	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-11-CTA-1	3	3	13.08	20.48	23.27	24.53	0.5969	0.4967	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-12-CTA-2	3	3	14.13	20.78	23.23	24.14	0.5608	0.4968	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-14-CTA-3	3	3	13.96	21.00	23.39	23.76	0.5874	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-15-CTA-4	3	3	14.05	20.71	22.99	23.59	0.5687	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-11-CTA-1	4	4	16.43	22.37	24.35	24.70	0.5469	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-12-CTA-2	4	4	17.95	22.96	24.43	24.55	0.5256	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-14-CTA-3	4	4	13.91	21.74	24.25	24.49	0.5968	0.4986	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-15-CTA-4**	4	4				24.52	0.5869	0.4976	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-11-CTA-1	4	4	12.68	19.24	21.77	23.01	0.5615	0.4966	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-13-CTA-2*	4	4	12.47			23.34	0.5637	0.4962	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-14-CTA-3	4	4	11.95	18.56	21.11	22.33	0.5502	0.4994	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-15-CTA-4*	4	4	11.31			22.84	0.5981	0.4963	UNIFORM COMPRESSIVE FAILURE

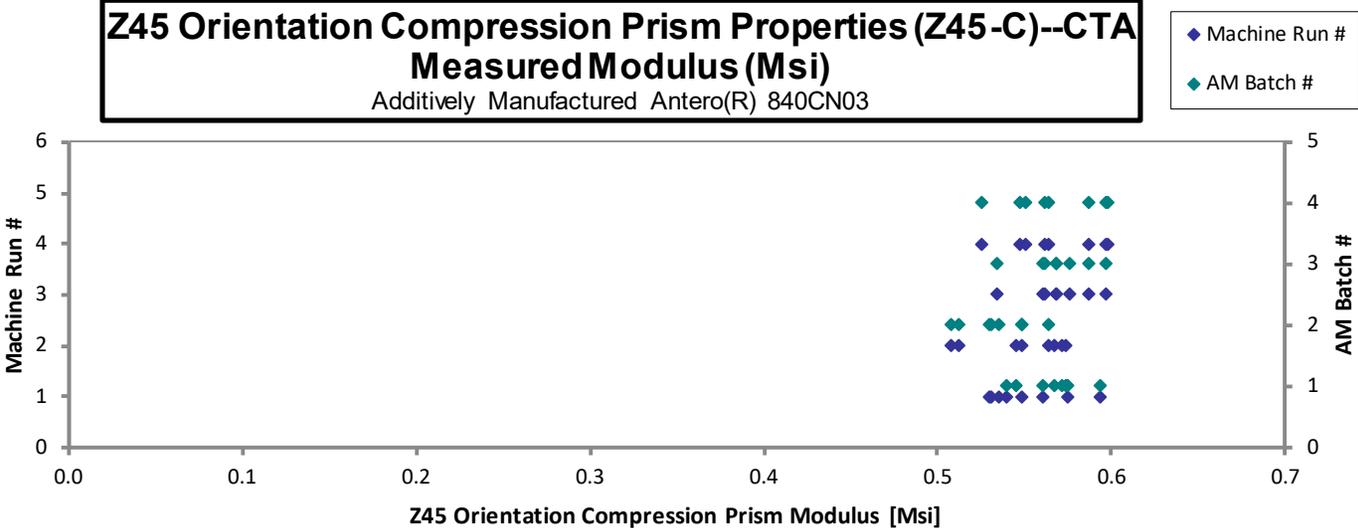
*1% and/or 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

**0.2%, 1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	13.23	19.84	22.78	23.19	0.5590	0.4984
Standard Dev.	1.352	1.317	1.088	1.093	0.02426	0.001405
Coeff. of Var. [%]	10.22	6.639	4.778	4.711	4.341	0.2819
Min.	11.31	18.10	21.11	21.08	0.5079	0.4962
Max.	17.95	22.96	24.43	24.70	0.5981	0.5012
Number of Spec.	31	26	15	32	32	32







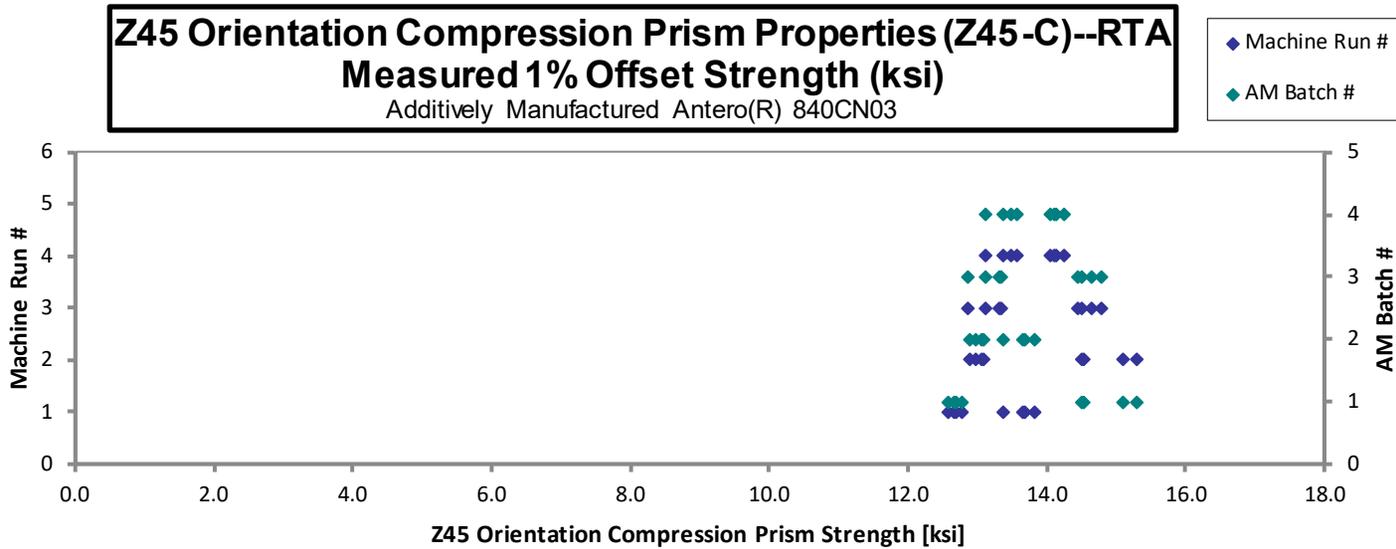
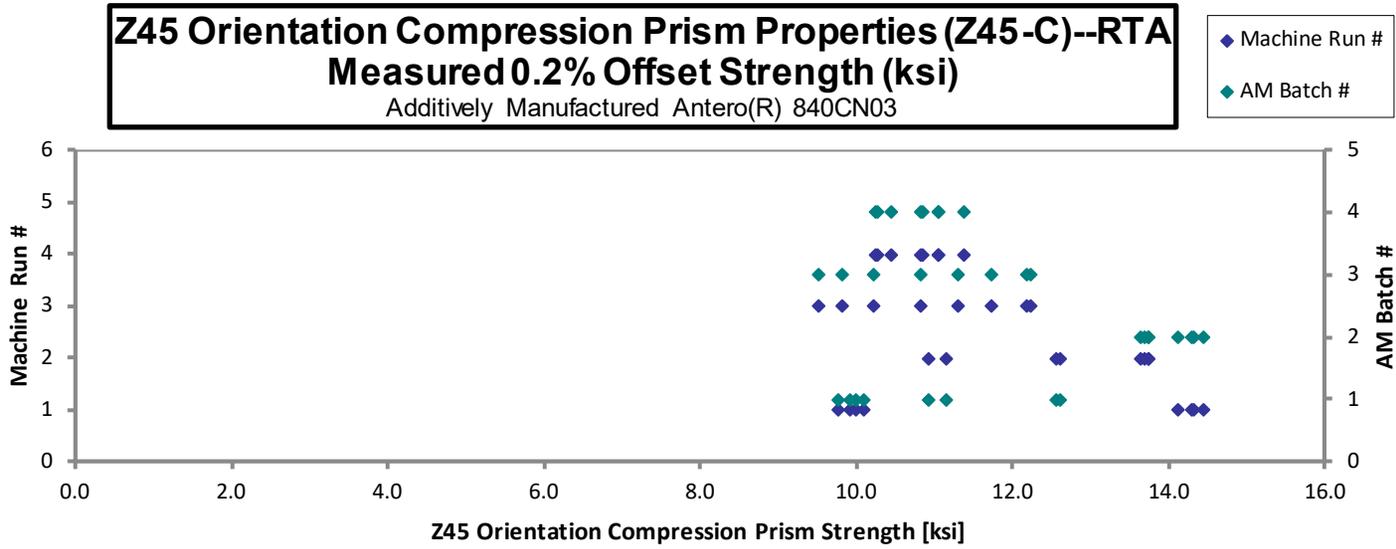
**Z45 Orientation Compression Prism Properties (Z45-C)--RTA
Strength & Modulus**

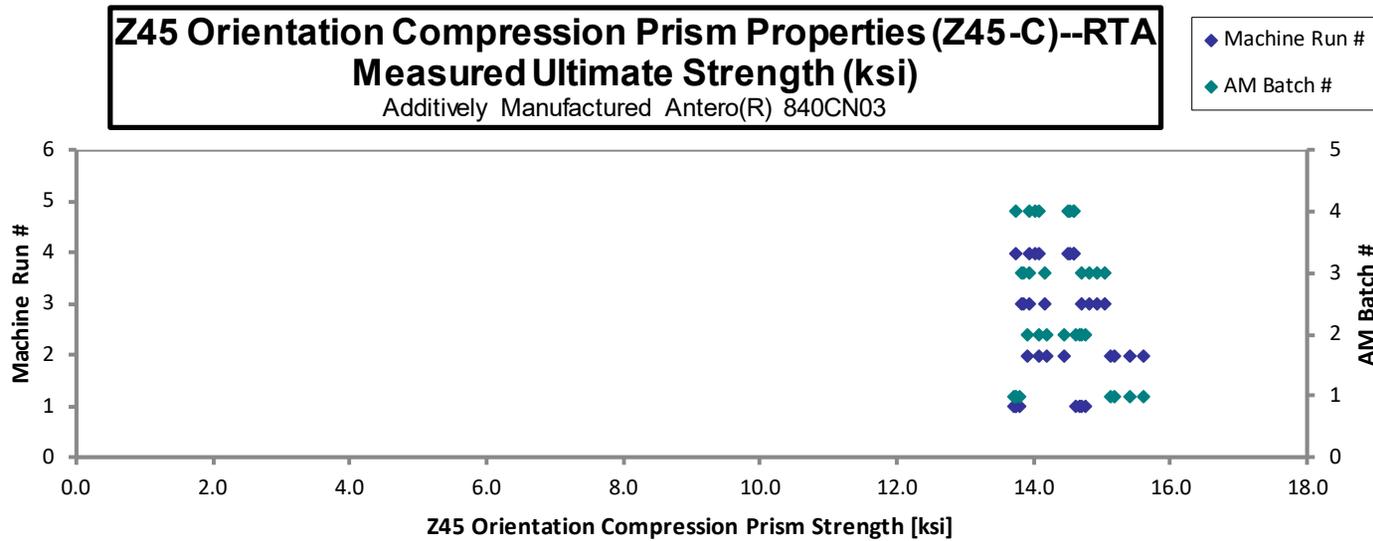
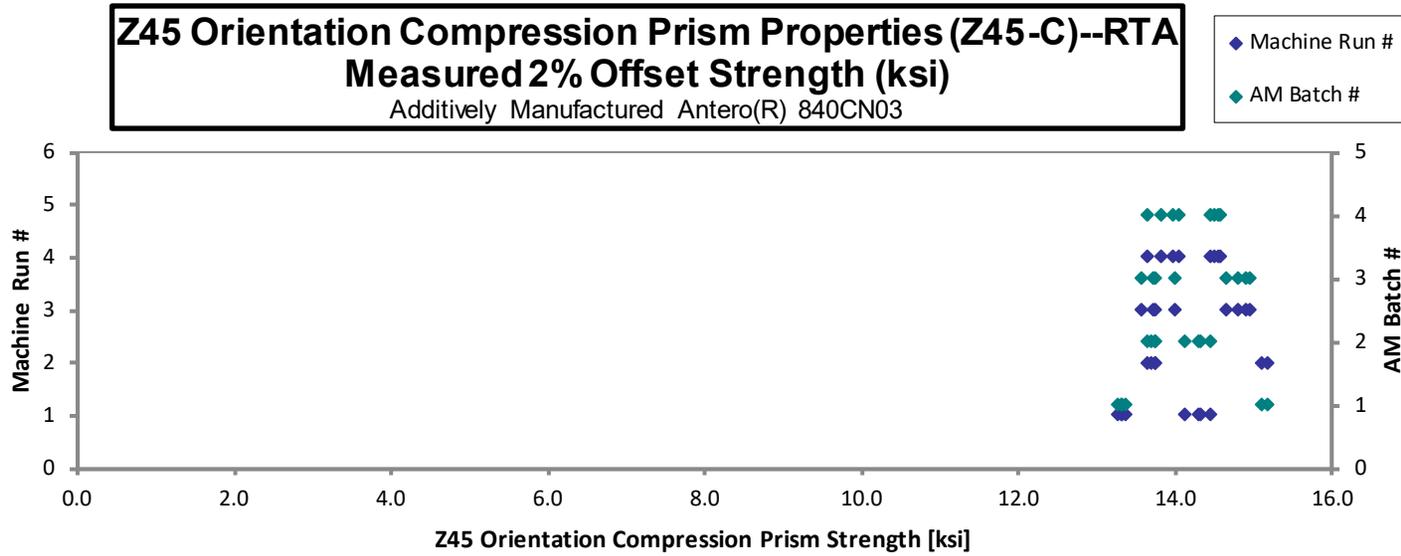
Additively Manufactured Antero(R) 840CN03

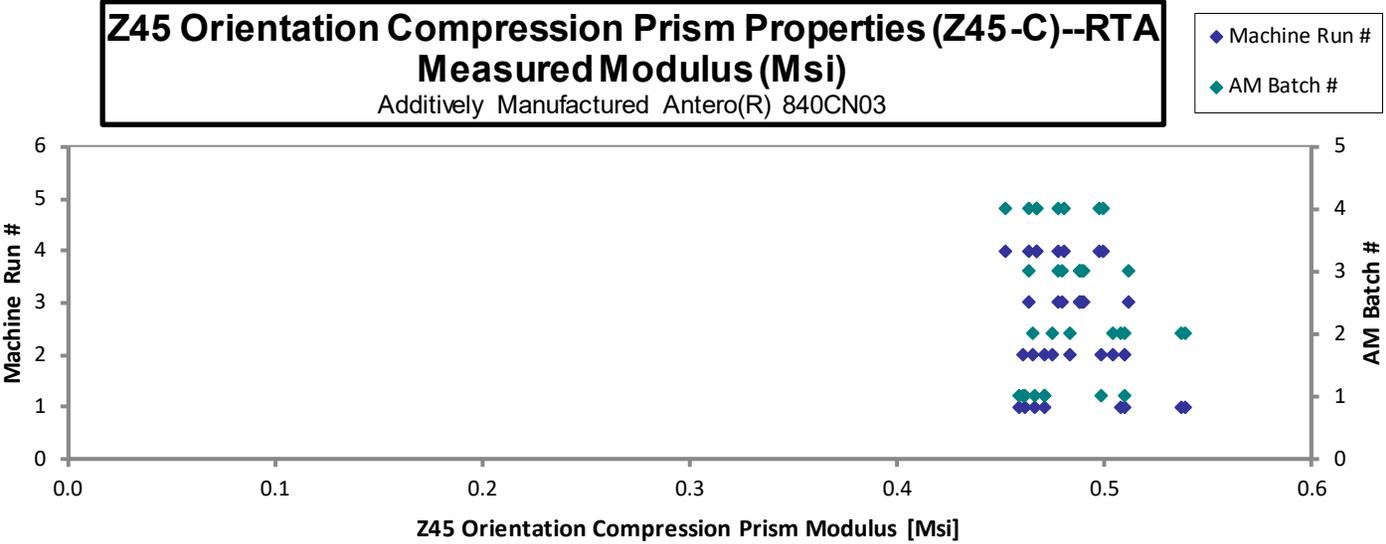
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-11-RTA-1	1	1	10.00	12.78	13.31	13.71	0.4659	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-12-RTA-2	1	1	10.11	12.69	13.32	13.74	0.4614	0.4977	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-14-RTA-3	1	1	9.772	12.65	13.37	13.79	0.4714	0.4960	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-15-RTA-4	1	1	9.915	12.58	13.27	13.74	0.4589	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-11-RTA-1*	1	2	12.62	15.29		15.60	0.4610	0.4991	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-13-RTA-2*	1	2	12.56	15.11		15.40	0.5099	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-14-RTA-3	1	2	11.15	14.53	15.11	15.12	0.4707	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-15-RTA-4	1	2	10.93	14.51	15.18	15.19	0.4983	0.4994	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-11-RTA-1	2	1	14.13	13.37	14.13	14.66	0.5100	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-12-RTA-2	2	1	14.31	13.69	14.31	14.75	0.5372	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-14-RTA-3	2	1	14.45	13.83	14.45	14.62	0.5082	0.4990	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-15-RTA-4	2	1	14.33	13.64	14.33	14.70	0.5390	0.4986	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-11-RTA-1	2	2	13.71	12.89	13.71	14.19	0.5046	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-13-RTA-2	2	2	13.65	12.97	13.65	13.90	0.4837	0.4963	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-14-RTA-3	2	2	13.76	13.05	13.76	14.43	0.4652	0.4963	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-15-RTA-4	2	2	13.76	13.09	13.76	14.08	0.4751	0.4991	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-11-RTA-1	3	3	9.507	12.85	13.57	13.86	0.4882	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-12-RTA-2	3	3	10.21	13.35	13.99	14.16	0.4899	0.4970	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-14-RTA-3	3	3	10.84	13.31	13.71	13.83	0.4792	0.4964	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-15-RTA-4	3	3	9.815	13.11	13.74	13.95	0.4635	0.4971	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-11-RTA-1	3	3	12.22	14.45	14.64	14.70	0.4778	0.4976	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-12-RTA-2	3	3	11.30	14.49	14.81	14.82	0.5118	0.4978	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-14-RTA-3	3	3	12.19	14.77	14.95	15.03	0.4882	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-15-RTA-4	3	3	11.73	14.65	14.90	14.91	0.4890	0.4971	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-11-RTA-1	4	4	11.37	14.24	14.58	14.59	0.4674	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-12-RTA-2	4	4	10.85	14.04	14.50	14.52	0.4638	0.4989	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-14-RTA-3	4	4	11.05	14.13	14.46	14.49	0.4996	0.4979	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-15-RTA-4	4	4	10.84	14.10	14.56	14.60	0.4781	0.4977	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-11-RTA-1	4	4	10.25	13.38	13.96	14.03	0.4973	0.4967	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-13-RTA-2	4	4	10.46	13.57	14.05	14.08	0.4678	0.4965	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-14-RTA-3	4	4	10.28	13.11	13.64	13.73	0.4526	0.4969	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-15-RTA-4	4	4	11.07	13.49	13.82	13.93	0.4805	0.4967	UNIFORM COMPRESSIVE FAILURE

*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	11.66	13.68	14.12	14.40	0.4848	0.4977
Standard Dev.	1.589	0.7618	0.5641	0.5345	0.02193	0.001155
Coeff. of Var. [%]	13.62	5.570	3.996	3.711	4.524	0.2320
Min.	9.507	12.58	13.27	13.71	0.4526	0.4960
Max.	14.45	15.29	15.18	15.60	0.5390	0.5012
Number of Spec.	32	32	30	32	32	32





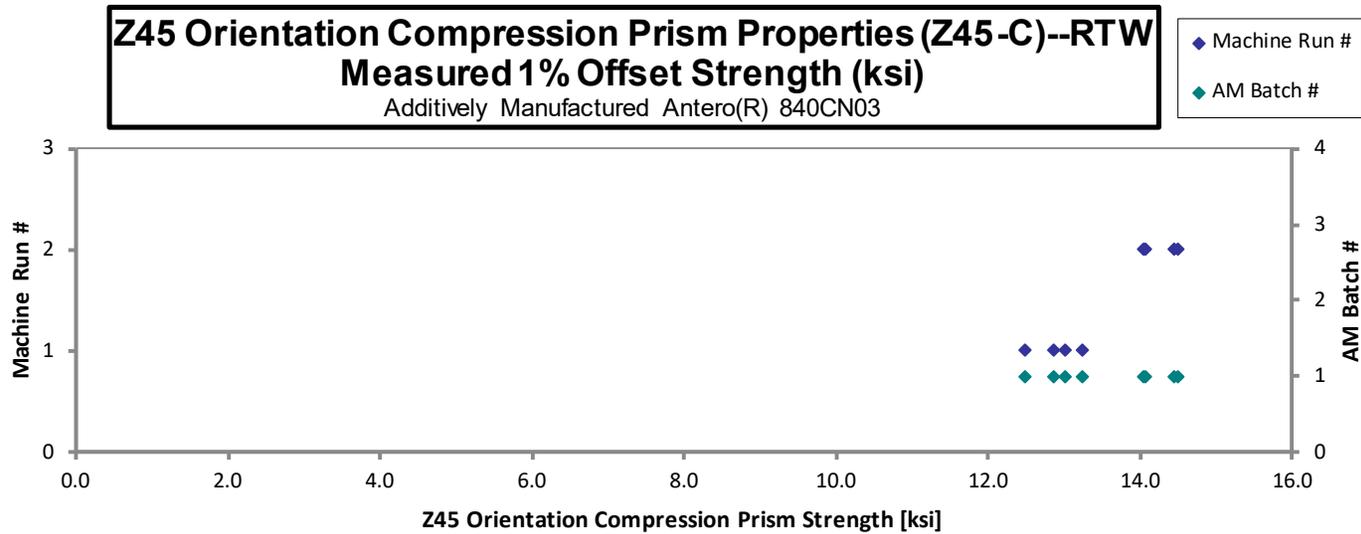
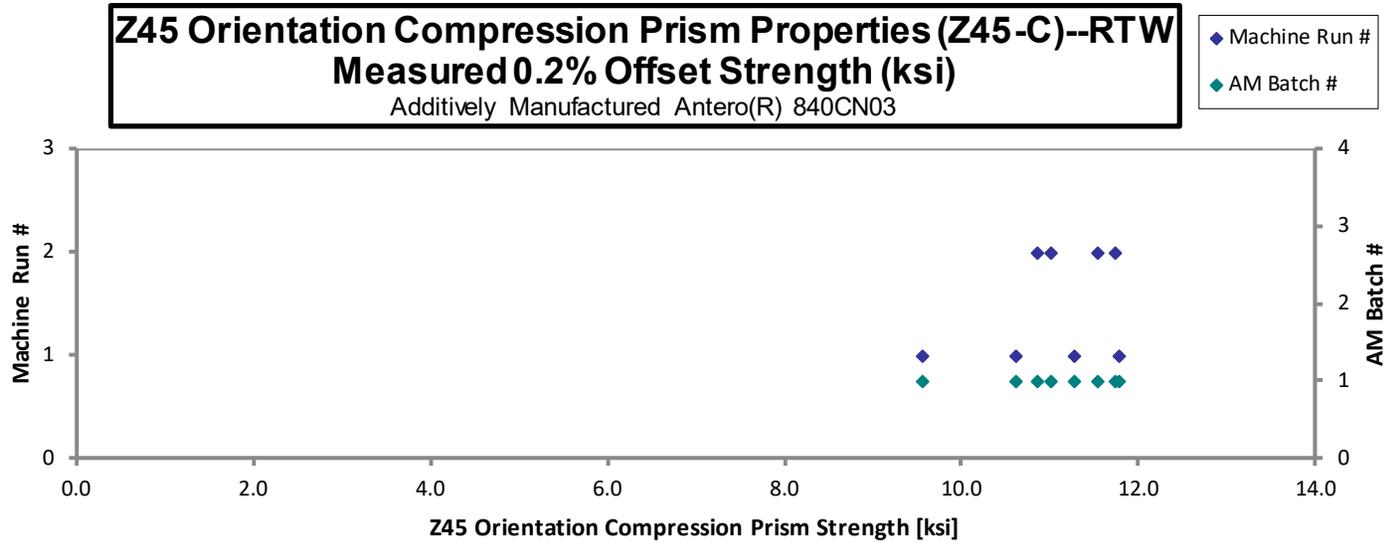


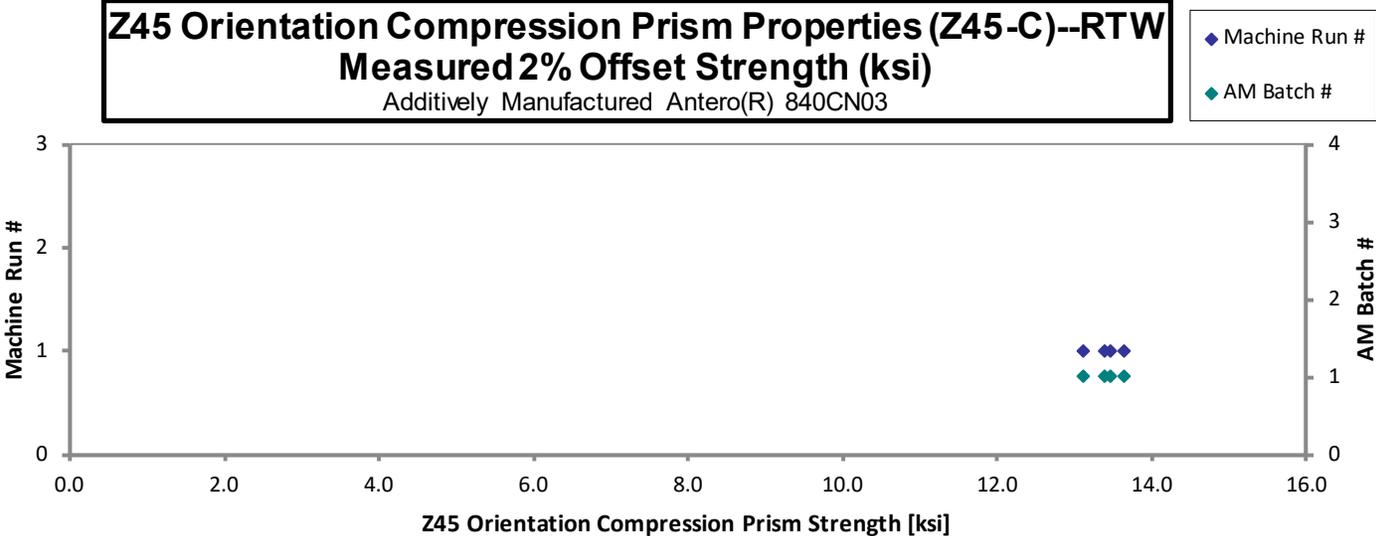
Z45 Orientation Compression Prism Properties (Z45-C)--RTW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

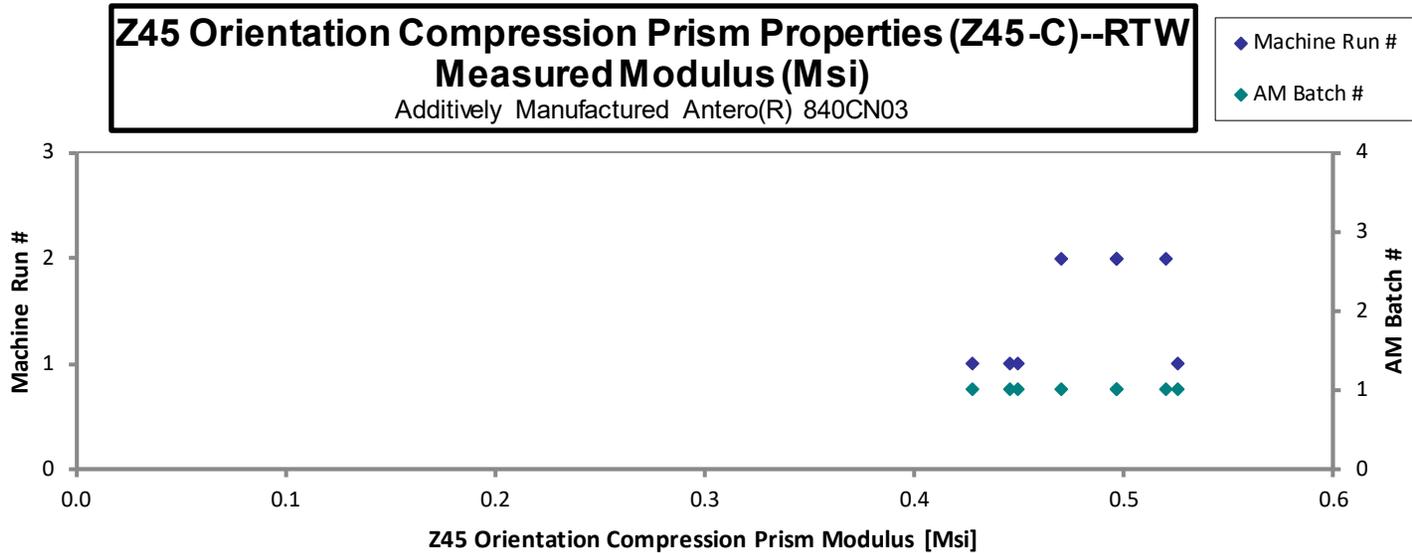
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-11-RTW-1	1	1	11.79	13.23	13.65	13.89	0.4277	0.4990	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-12-RTW-2	1	1	11.28	13.01	13.46	13.71	0.4452	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-14-RTW-3	1	1	10.62	12.87	13.38	13.72	0.4490	0.4981	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-15-RTW-4	1	1	9.566	12.49	13.13	13.68	0.5258	0.4989	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-11-RTW-1*	1	2	11.74	14.51		14.86	0.4961	0.4991	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-12-RTW-2*	1	2	11.55	14.44		14.72	0.5201	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-14-RTW-3*	1	2	11.02	14.05		14.37	0.4967	0.4981	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-15-RTW-4*	1	2	10.86	14.08		14.46	0.4702	0.4994	UNIFORM COMPRESSIVE FAILURE

*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	11.05	13.59	13.41	14.18	0.4789	0.4988
Standard Dev.	0.7313	0.7754	0.2150	0.4804	0.03631	0.0004914
Coeff. of Var. [%]	6.616	5.708	1.604	3.389	7.583	0.09850
Min.	9.566	12.49	13.13	13.68	0.4277	0.4981
Max.	11.79	14.51	13.65	14.86	0.5258	0.4994
Number of Spec.	8	8	4	8	8	8







**Z45 Orientation Compression Prism Properties (Z45-C)--ETA
Strength & Modulus**

Additively Manufactured Antero(R) 840CN03

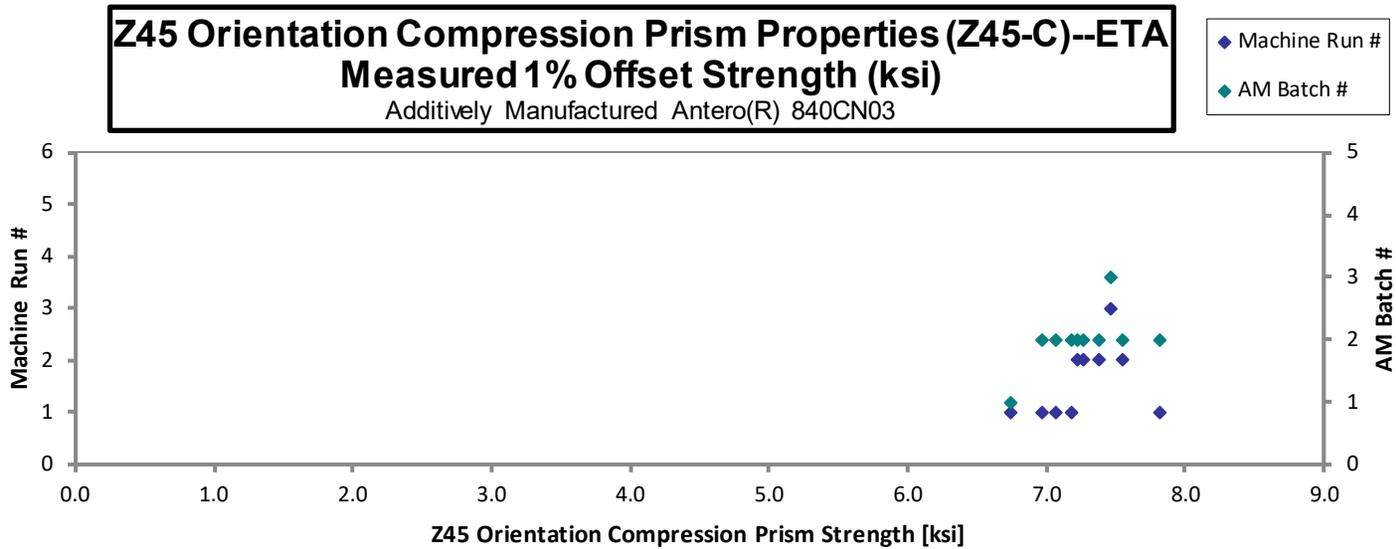
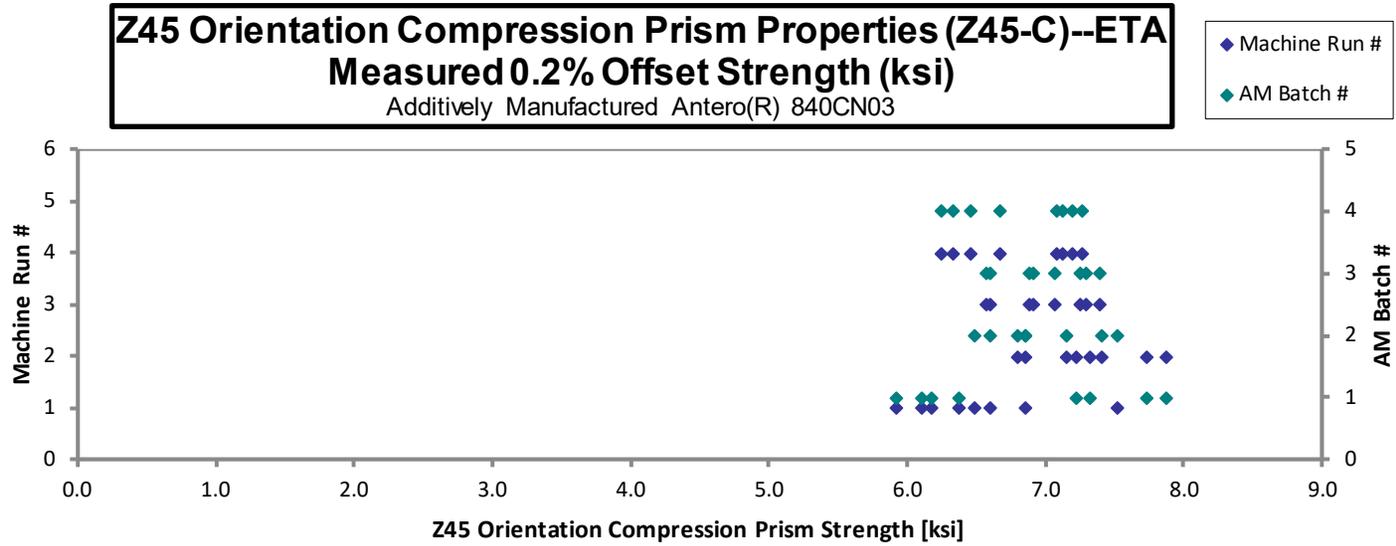
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-11-ETA-1**	1	1	5.918			6.549	0.4030	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-12-ETA-2**	1	1	6.099			6.701	0.4303	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-14-ETA-3*	1	1	6.367	6.746		6.760	0.4126	0.4968	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-15-ETA-4**	1	1	6.170			6.620	0.4148	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-11-ETA-1**	1	2	7.871			7.871	0.4659	0.4988	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-13-ETA-2**	1	2	7.725			7.725	0.4471	0.4985	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-14-ETA-3**	1	2	7.315			7.315	0.4382	0.4991	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-15-ETA-4**	1	2	7.222			7.222	0.4276	0.4998	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-11-ETA-1	2	1	6.849	7.173	7.279	7.347	0.4618	0.4970	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-12-ETA-2	2	1	7.523	7.817	7.896	7.940	0.4406	0.4977	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-14-ETA-3	2	1	6.491	7.074	7.137	7.221	0.4579	0.4971	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-15-ETA-4	2	1	6.603	6.967	7.043	7.076	0.4497	0.4997	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-11-ETA-1***	2	2	7.412	7.546	7.695		0.4329	0.4964	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-13-ETA-2***	2	2	6.799	7.225	7.322		0.4407	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-14-ETA-3***	2	2	6.860	7.271	7.343		0.4648	0.4957	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-15-ETA-4	2	2	7.157	7.371	7.478	7.726	0.4391	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-11-ETA-1*	3	3	6.601	7.458		7.460	0.4513	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-12-ETA-2**	3	3	6.886			7.694	0.4419	0.4970	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-13-ETA-3**	3	3	6.567			7.094	0.4154	0.4970	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-15-ETA-4**	3	3	6.908			7.340	0.4423	0.4976	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-11-ETA-1**	3	3	7.065			7.624	0.4309	0.4990	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-12-ETA-2**	3	3	7.393			7.766	0.4367	0.4980	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-14-ETA-3**	3	3	7.289			7.562	0.4437	0.4970	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-15-ETA-4**	3	3	7.248			7.570	0.4333	0.4976	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-11-ETA-1**	4	4	7.199			7.570	0.4530	0.4992	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-12-ETA-2**	4	4	7.268			7.511	0.4457	0.4990	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-14-ETA-3**	4	4	7.125			7.412	0.4382	0.4990	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-15-ETA-4**	4	4	7.074			7.397	0.4472	0.5000	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-11-ETA-1**	4	4	6.326			6.944	0.4127	0.4968	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-13-ETA-2**	4	4	6.668			7.186	0.4064	0.4962	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-14-ETA-3**	4	4	6.245			6.958	0.4195	0.4962	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-15-ETA-4**	4	4	6.451			7.117	0.4191	0.4975	UNIFORM COMPRESSIVE FAILURE

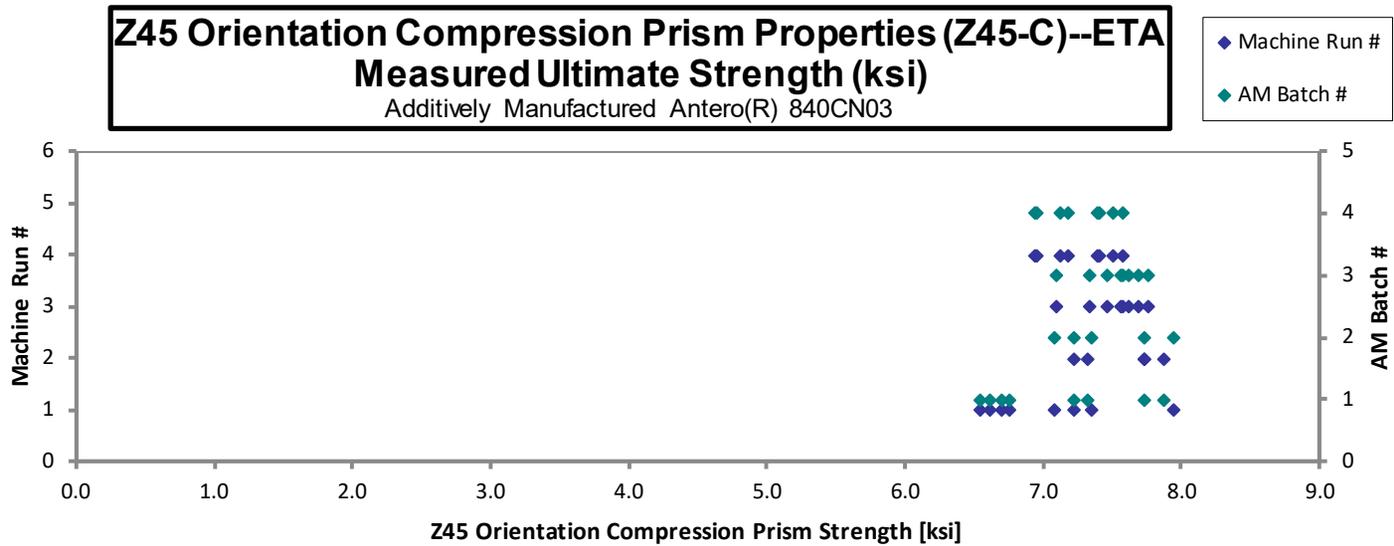
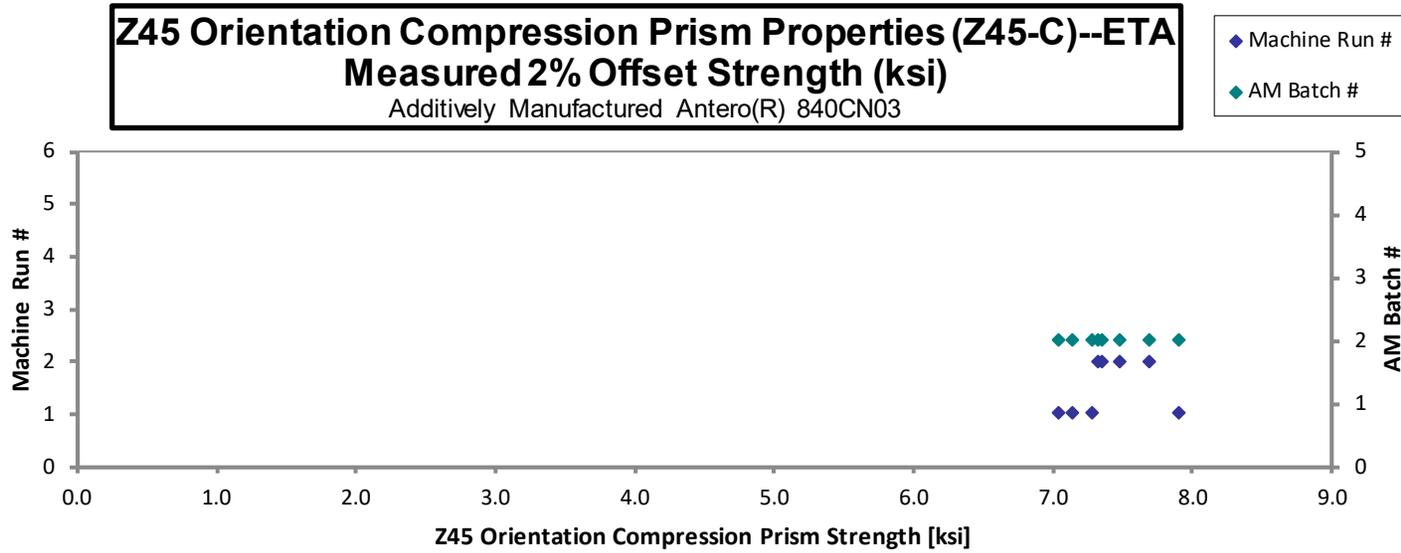
*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

**1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

***Max load not reported as no significant load drop was observed

Average	6.897	7.265	7.399	7.320	0.4364	0.4978
Standard Dev.	0.4877	0.3048	0.2828	0.3753	0.01680	0.001150
Coeff. of Var. [%]	7.071	4.195	3.822	5.127	3.850	0.2309
Min.	5.918	6.746	7.043	6.549	0.4030	0.4957
Max.	7.871	7.817	7.896	7.940	0.4659	0.5000
Number of Spec.	32	10	8	29	32	32





**Z45 Orientation Compression Prism Properties (Z45-C)--ETW
Strength & Modulus**

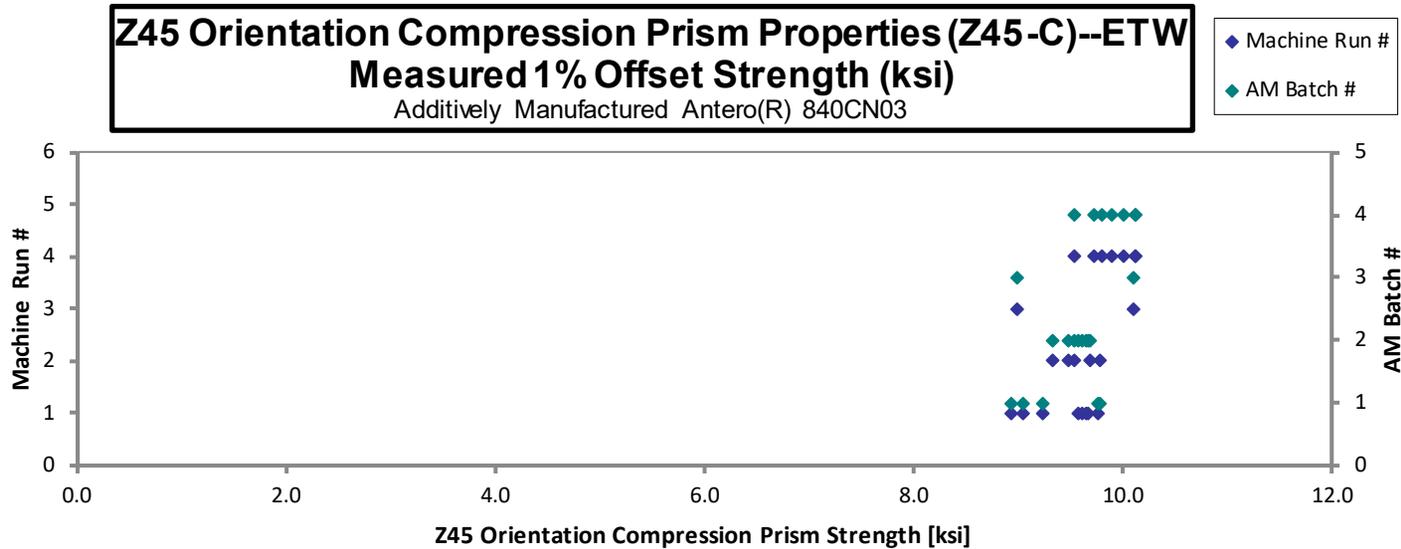
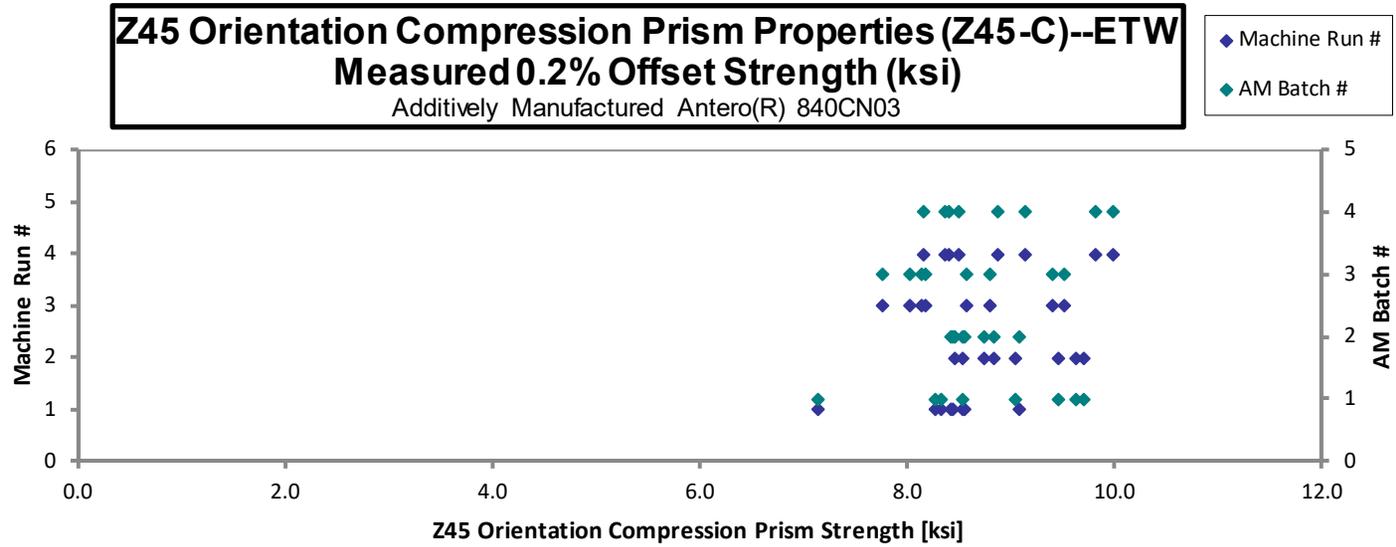
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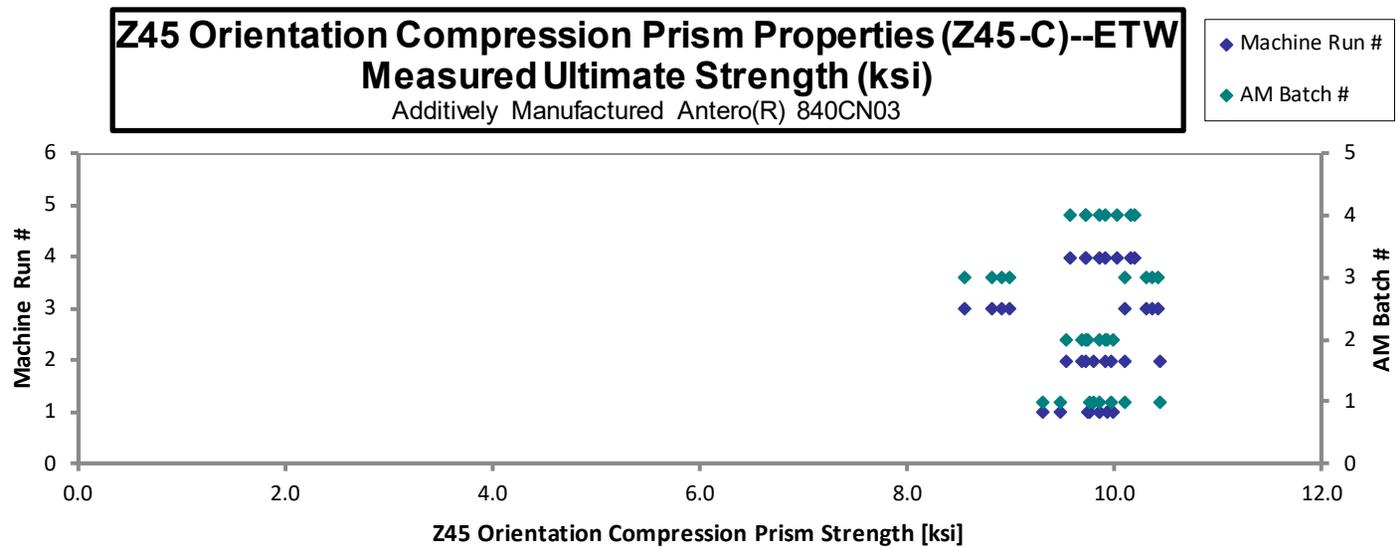
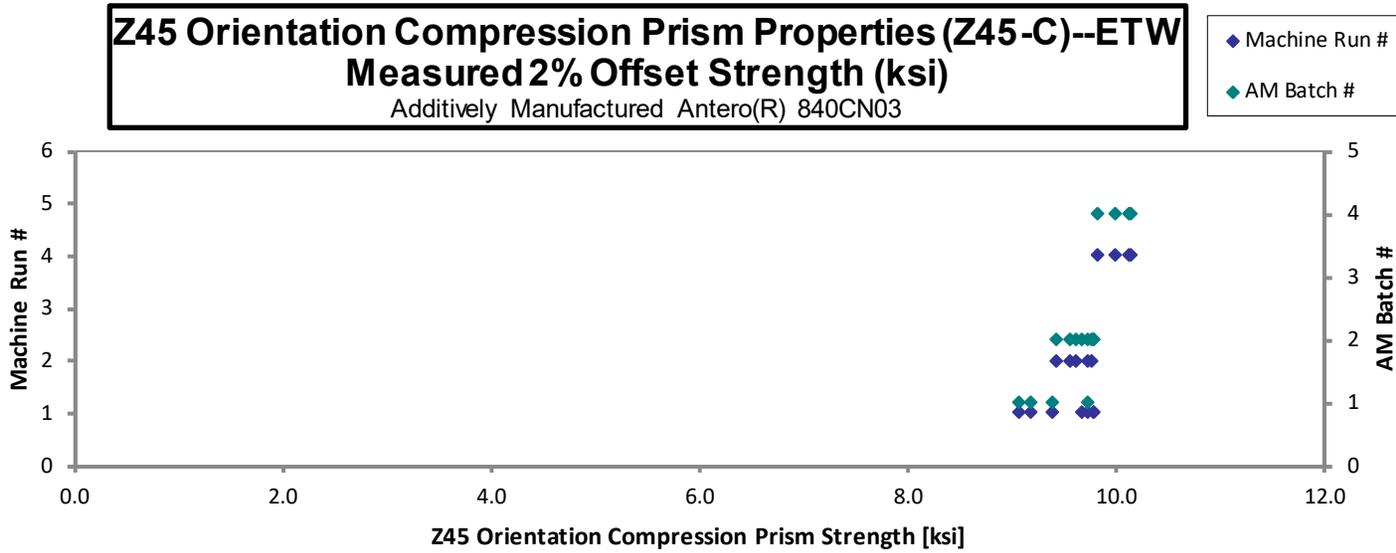
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Strength [ksi]	1% Offset Strength [ksi]	2% Offset Strength [ksi]	Ultimate Compressive Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-11-ETW-1	1	1	8.542	9.226	9.380	9.756	0.4362	0.4997	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-12-ETW-2	1	1	8.323	9.041	9.174	9.472	0.4206	0.4968	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-14-ETW-3	1	1	8.270	8.922	9.057	9.305	0.4074	0.4971	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-C-15-ETW-4*	1	1	7.146	9.763		9.856	0.5090	0.4978	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-11-ETW-1**	1	2	9.629			10.44	0.4671	0.4983	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-12-ETW-2**	1	2	9.466			10.11	0.4865	0.4980	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-14-ETW-3	1	2	9.039	9.785	9.731	9.798	0.4155	0.4986	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-C-15-ETW-4**	1	2	9.706			9.966	0.5340	0.4989	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-11-ETW-1	2	1	8.558	9.665	9.779	9.980	0.4588	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-12-ETW-2	2	1	8.413	9.649	9.771	9.923	0.4782	0.4965	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-14-ETW-3	2	1	9.090	9.615	9.715	9.742	0.5430	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-C-15-ETW-4	2	1	8.436	9.568	9.668	9.847	0.4738	0.4972	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-11-ETW-1	2	2	8.737	9.677	9.752	9.906	0.4806	0.4995	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-13-ETW-2	2	2	8.451	9.475	9.563	9.686	0.4665	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-14-ETW-3	2	2	8.540	9.329	9.431	9.543	0.4948	0.5002	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-C-15-ETW-4	2	2	8.831	9.533	9.613	9.721	0.5523	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-11-ETW-1*	3	3	8.026	8.987		8.996	0.4639	0.4966	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-12-ETW-2**	3	3	8.140			8.810	0.4611	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-14-ETW-3**	3	3	7.754			8.550	0.4777	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-C-15-ETW-4**	3	3	8.173			8.909	0.5024	0.4966	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-11-ETW-1*	3	3	8.798	10.10		10.11	0.4389	0.4989	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-12-ETW-2**	3	3	9.515			10.37	0.4479	0.4974	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-14-ETW-3**	3	3	9.402			10.42	0.4550	0.4981	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-C-15-ETW-4**	3	3	8.582			10.31	0.4801	0.4981	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-11-ETW-1	4	4	9.141	9.797	9.817	9.857	0.5716	0.5012	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-12-ETW-2	4	4	9.982	10.12	10.13	10.16	0.4856	0.4990	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-14-ETW-3	4	4	9.815	10.13	10.14	10.19	0.5112	0.5001	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-C-15-ETW-4	4	4	8.877	9.998	9.981	10.03	0.4480	0.4991	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-11-ETW-1*	4	4	8.366	9.723		9.732	0.4652	0.4973	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-13-ETW-2*	4	4	8.491	9.885		9.911	0.4352	0.4993	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-14-ETW-3*	4	4	8.151	9.542		9.570	0.4354	0.4975	UNIFORM COMPRESSIVE FAILURE
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-C-15-ETW-4**	4	4	8.411			9.729	0.4560	0.4989	UNIFORM COMPRESSIVE FAILURE

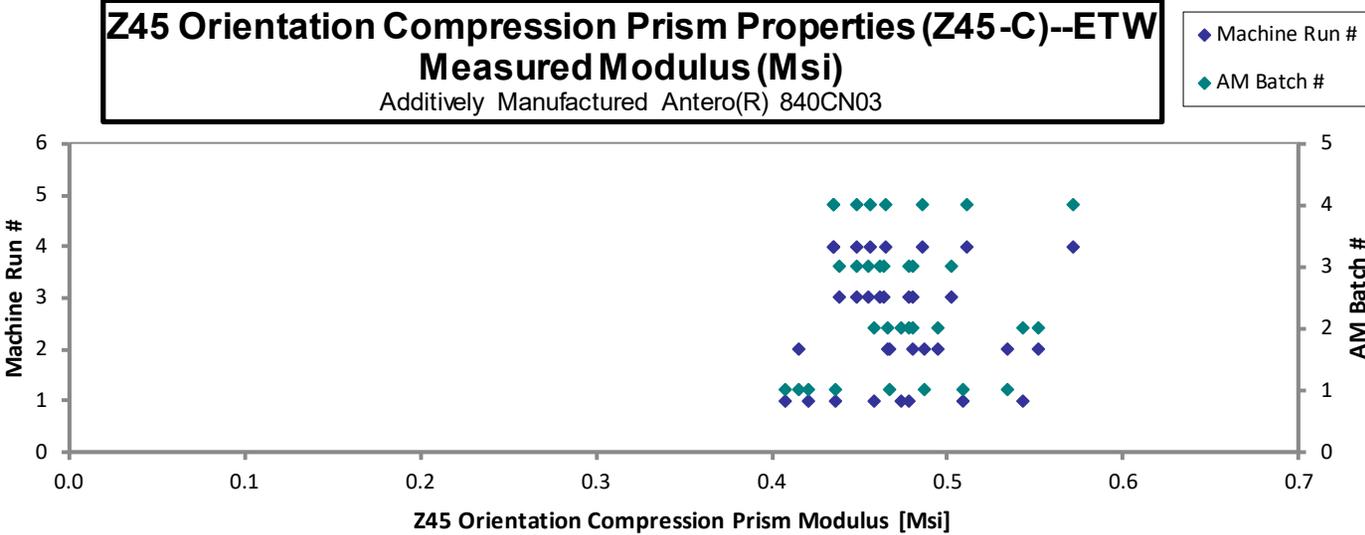
*2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

**1% and 2% offset load is not reported as the max load is achieved prior to the offset strength, hence it is not reported

Average	8.712	9.615	9.669	9.772	0.4737	0.4983
Standard Dev.	0.6361	0.3481	0.3012	0.4571	0.03908	0.001283
Coeff. of Var. [%]	7.301	3.621	3.115	4.678	8.250	0.2574
Min.	7.146	8.922	9.057	8.550	0.4074	0.4965
Max.	9.982	10.13	10.14	10.44	0.5716	0.5012
Number of Spec.	32	22	16	32	32	32







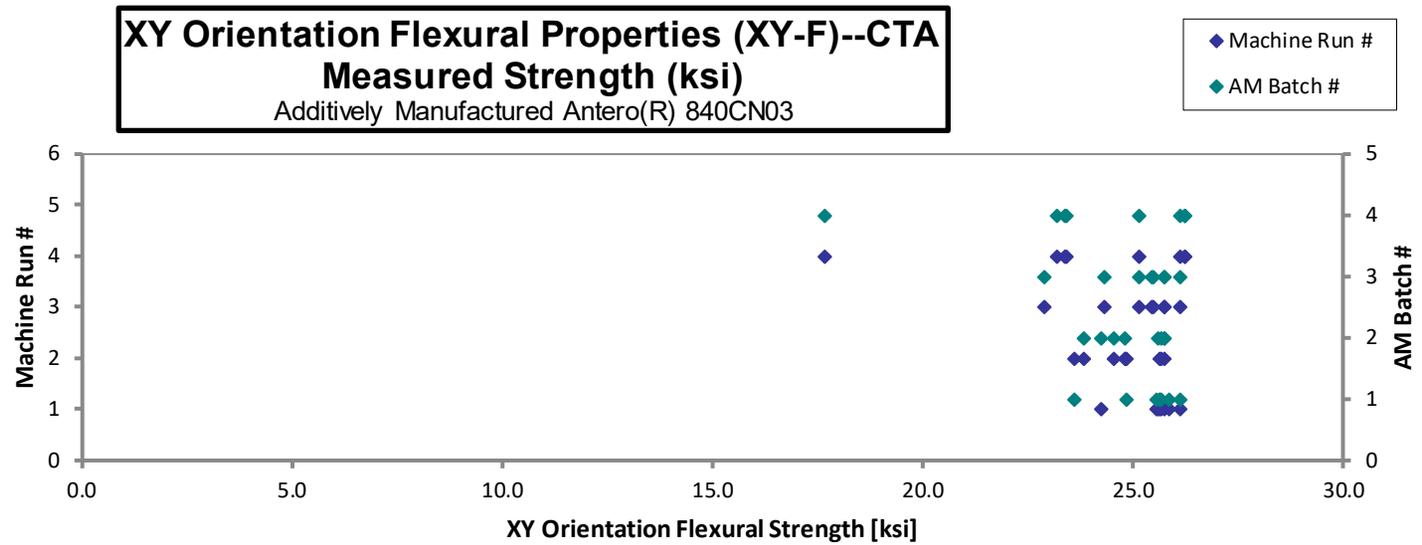
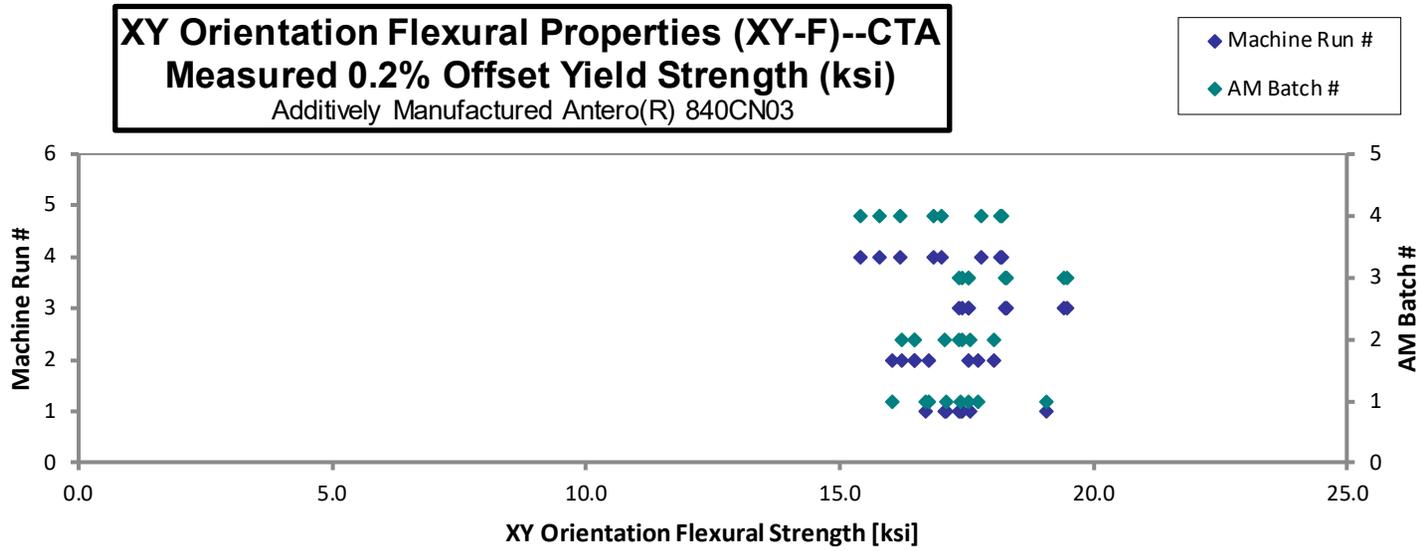
4.9 XY Flex Proc. B Properties (XY-F)

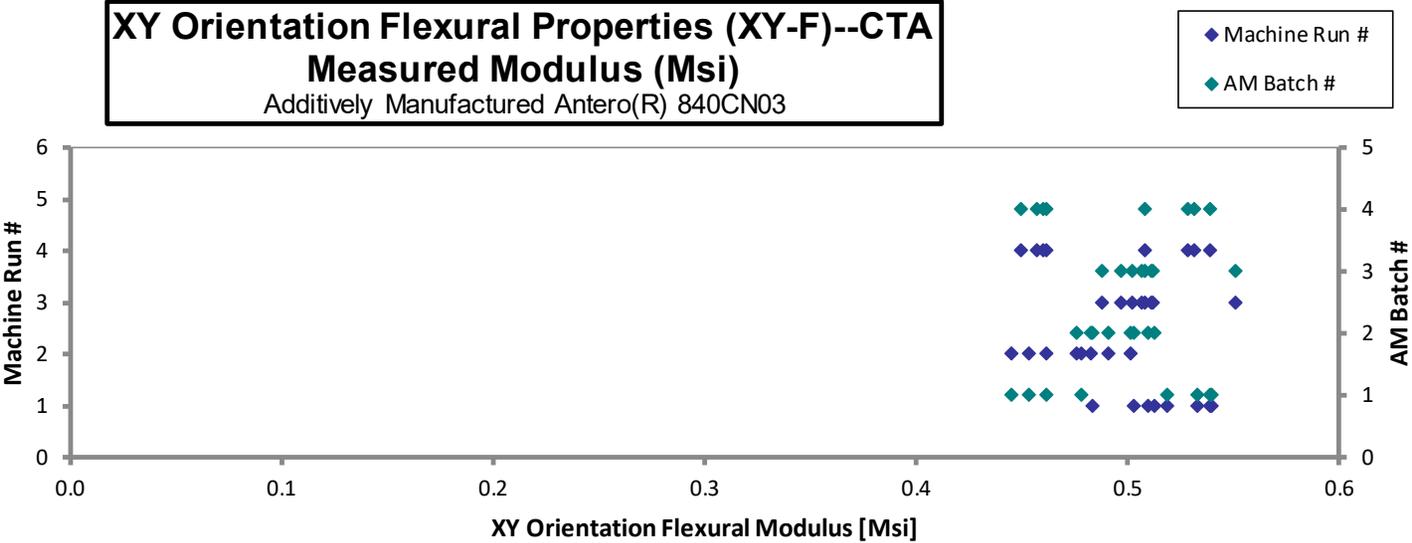
XY Orientation Flexural Properties (XY-F)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksij]	Flexural Strength [ksij]*	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-11-CTA-1	1	1	17.09	25.64	0.5387	0.1296	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-12-CTA-2	1	1	16.68	25.57	0.5396	0.1304	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-14-CTA-3	1	1	17.39	25.85	0.5333	0.1297	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-15-CTA-4	1	1	19.07	26.12	0.5188	0.1301	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-11-CTA-1	1	2	16.76	24.83	0.4612	0.1336	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-13-CTA-2	1	2	16.02	23.60	0.4450	0.1347	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-14-CTA-3	1	2	17.73	25.66	0.4783	0.1328	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-15-CTA-4	1	2	17.54	25.62	0.4536	0.1345	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-11-CTA-1	2	1	17.41	25.75	0.5130	0.1307	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-12-CTA-2	2	1	17.58	25.67	0.5094	0.1308	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-14-CTA-3	2	1	17.06	24.24	0.4835	0.1318	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-15-CTA-4	2	1	17.34	25.60	0.5032	0.1310	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-11-CTA-1	2	2	18.04	25.73	0.5017	0.1307	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-13-CTA-2	2	2	16.49	23.84	0.4762	0.1326	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-14-CTA-3	2	2	16.22	24.54	0.4823	0.1322	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-15-CTA-4	2	2	16.49	24.80	0.4906	0.1314	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-11-CTA-1	3	3	17.55	22.88	0.5117	0.1301	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-12-CTA-2	3	3	17.36	24.33	0.5509	0.1301	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-14-CTA-3	3	3	19.47	25.16	0.4876	0.1301	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-15-CTA-4	3	3	18.29	25.50	0.5115	0.1302	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-11-CTA-1	3	3	18.26	26.13	0.5022	0.1308	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-12-CTA-2	3	3	17.53	25.75	0.5084	0.1312	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-14-CTA-3	3	3	19.42	25.44	0.4971	0.1304	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-15-CTA-4	3	3	17.41	25.76	0.5069	0.1308	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-11-CTA-1	4	4	18.19	26.13	0.5393	0.1298	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-12-CTA-2	4	4	18.18	26.22	0.5318	0.1298	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-14-CTA-3	4	4	15.41	25.15	0.5081	0.1306	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-15-CTA-4	4	4	17.78	26.23	0.5288	0.1297	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-11-CTA-1	4	4	16.85	17.66	0.4618	0.1312	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-13-CTA-2	4	4	17.00	23.18	0.4496	0.1327	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-14-CTA-3	4	4	15.79	23.42	0.4598	0.1320	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-15-CTA-4	4	4	16.19	23.39	0.4572	0.1321	TAB, CAT

*All coupons except BLU-D-M6-XY-F-11-CTA-1 failed after 5% was achieved

Average	17.36	24.86	0.4982	0.1312
Standard Dev.	0.9705	1.639	0.02959	0.001366
Coeff. of Var. [%]	5.590	6.596	5.940	1.042
Min.	15.41	17.66	0.4450	0.1296
Max.	19.47	26.23	0.5509	0.1347
Number of Spec.	32	32	32	32



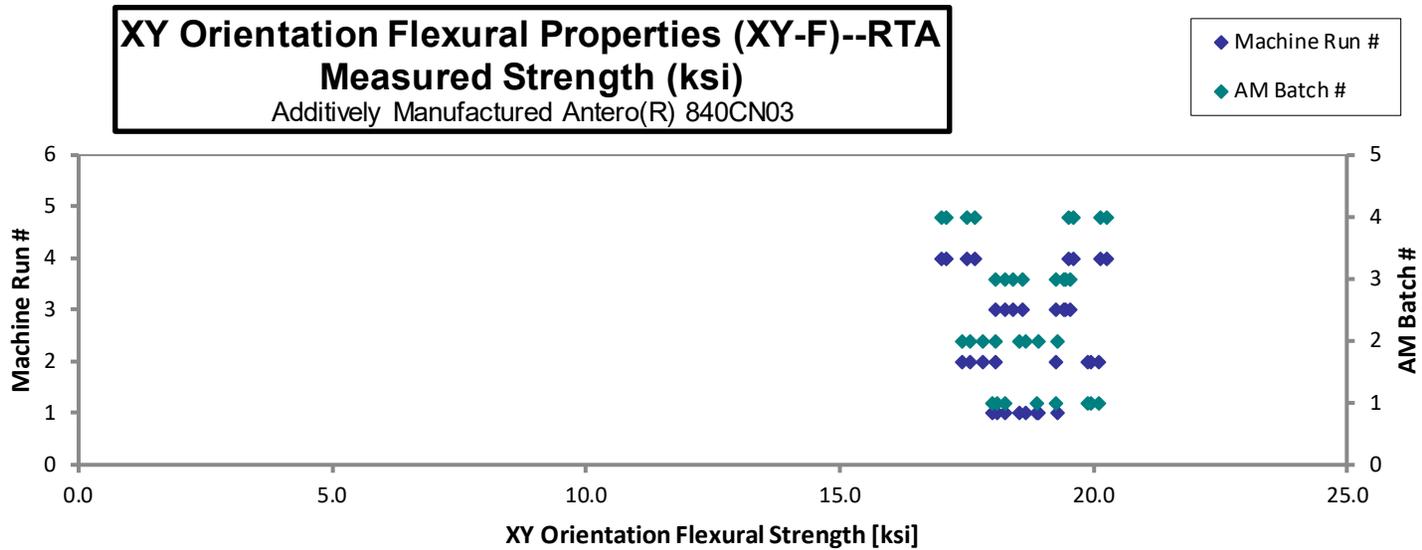
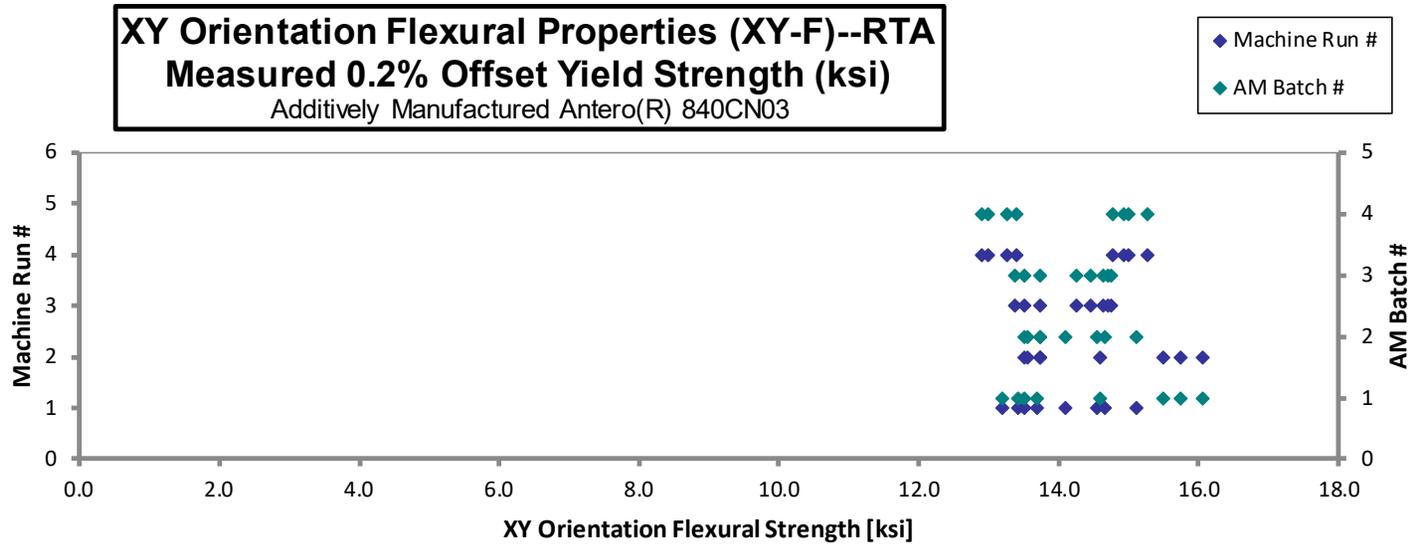


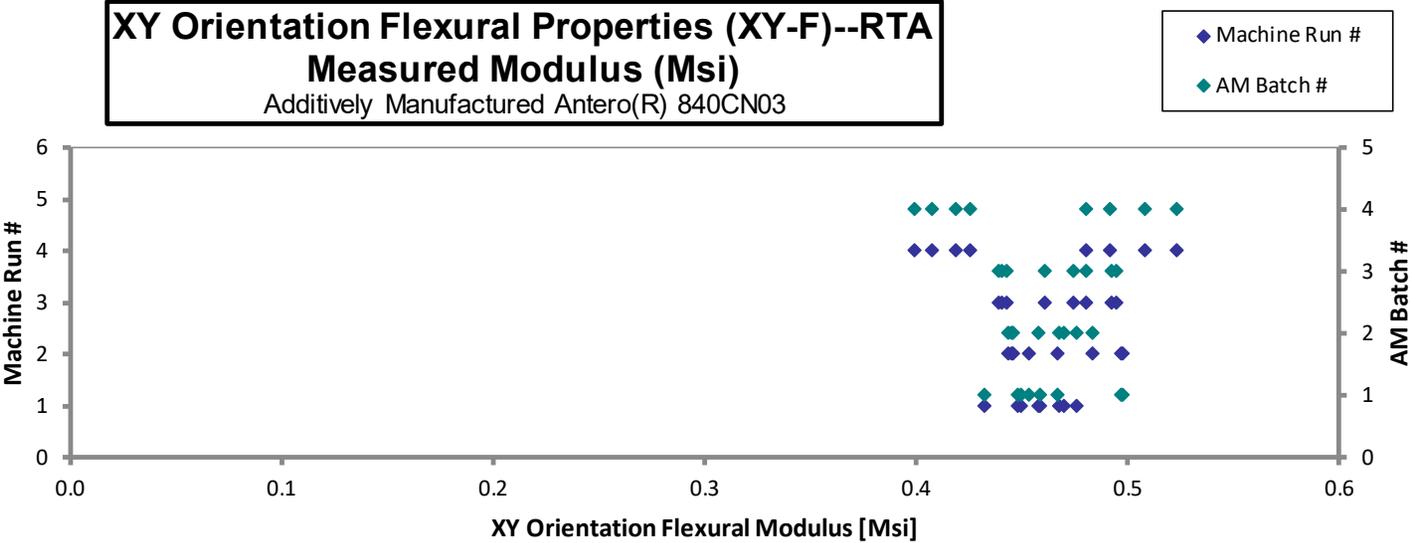
XY Orientation Flexural Properties (XY-F)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksi]*	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-11-RTA-1	1	1	13.68	18.89	0.4323	0.1314	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-12-RTA-2	1	1	13.43	18.25	0.4478	0.1306	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-14-RTA-3	1	1	13.18	18.11	0.4584	0.1304	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-15-RTA-4	1	1	13.50	18.02	0.4497	0.1305	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-11-RTA-1	1	2	15.50	20.11	0.4973	0.1308	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-13-RTA-2	1	2	15.74	19.95	0.4969	0.1303	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-14-RTA-3	1	2	16.07	19.88	0.4665	0.1309	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-15-RTA-4	1	2	14.59	19.26	0.4532	0.1321	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-11-RTA-1	2	1	14.65	18.93	0.4695	0.1285	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-12-RTA-2	2	1	14.56	18.54	0.4759	0.1290	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-14-RTA-3	2	1	15.11	19.30	0.4673	0.1281	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-15-RTA-4	2	1	14.09	18.66	0.4577	0.1286	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-11-RTA-1	2	2	13.56	17.56	0.4448	0.1304	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-13-RTA-2	2	2	13.52	17.40	0.4435	0.1307	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-14-RTA-3	2	2	13.72	18.08	0.4836	0.1292	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-15-RTA-4	2	2	13.73	17.82	0.4458	0.1303	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-11-RTA-1	3	3	13.73	18.60	0.4611	0.1306	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-12-RTA-2	3	3	13.37	18.06	0.4393	0.1312	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-14-RTA-3	3	3	13.51	18.26	0.4428	0.1308	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-15-RTA-4	3	3	14.25	18.41	0.4404	0.1310	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-11-RTA-1	3	3	14.71	19.56	0.4944	0.1294	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-12-RTA-2	3	3	14.45	19.46	0.4741	0.1302	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-14-RTA-3	3	3	14.76	19.27	0.4802	0.1298	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-15-RTA-4	3	3	14.64	19.41	0.4925	0.1298	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-11-RTA-1	4	4	15.28	20.13	0.5084	0.1292	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-12-RTA-2	4	4	15.01	20.27	0.5229	0.1288	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-14-RTA-3	4	4	14.92	19.50	0.4919	0.1298	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-15-RTA-4	4	4	14.78	19.59	0.4806	0.1295	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-11-RTA-1	4	4	13.40	17.52	0.4255	0.1320	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-13-RTA-2	4	4	12.99	17.09	0.3988	0.1333	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-14-RTA-3	4	4	13.25	17.65	0.4185	0.1330	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-15-RTA-4	4	4	12.89	17.00	0.4077	0.1333	TAB, CAT

*All coupons failed after 5% was achieved

Average	14.21	18.70	0.4615	0.1304
Standard Dev.	0.8462	0.9445	0.02926	0.001325
Coeff. of Var. [%]	5.957	5.050	6.341	1.016
Min.	12.89	17.00	0.3988	0.1281
Max.	16.07	20.27	0.5229	0.1333
Number of Spec.	32	32	32	32

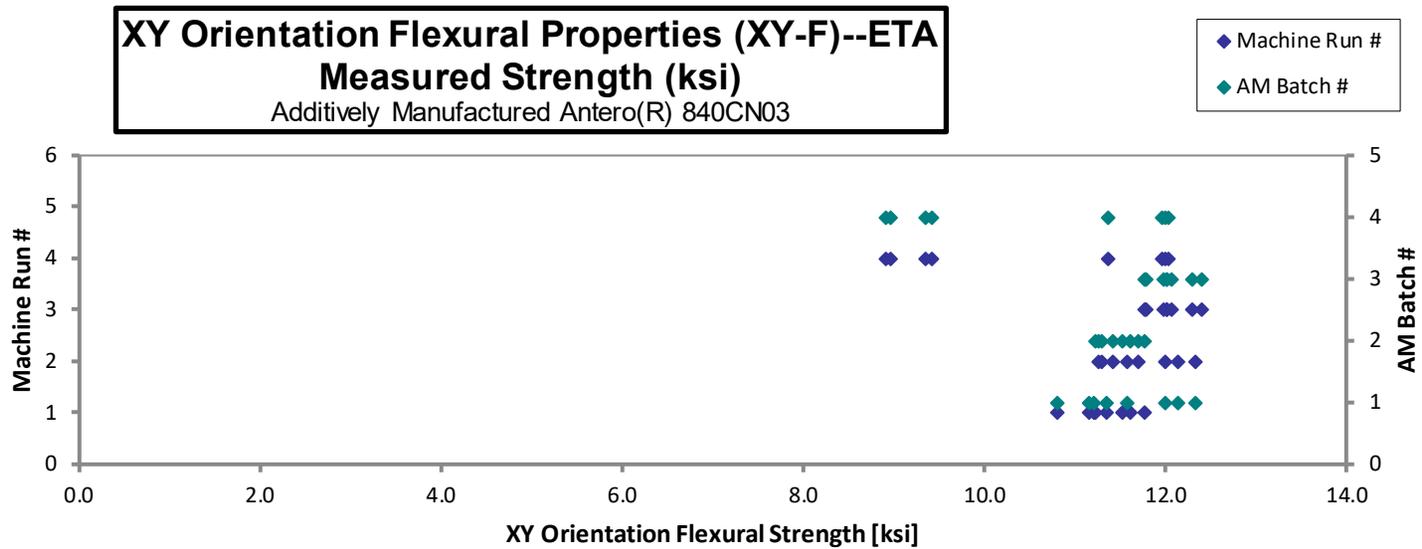
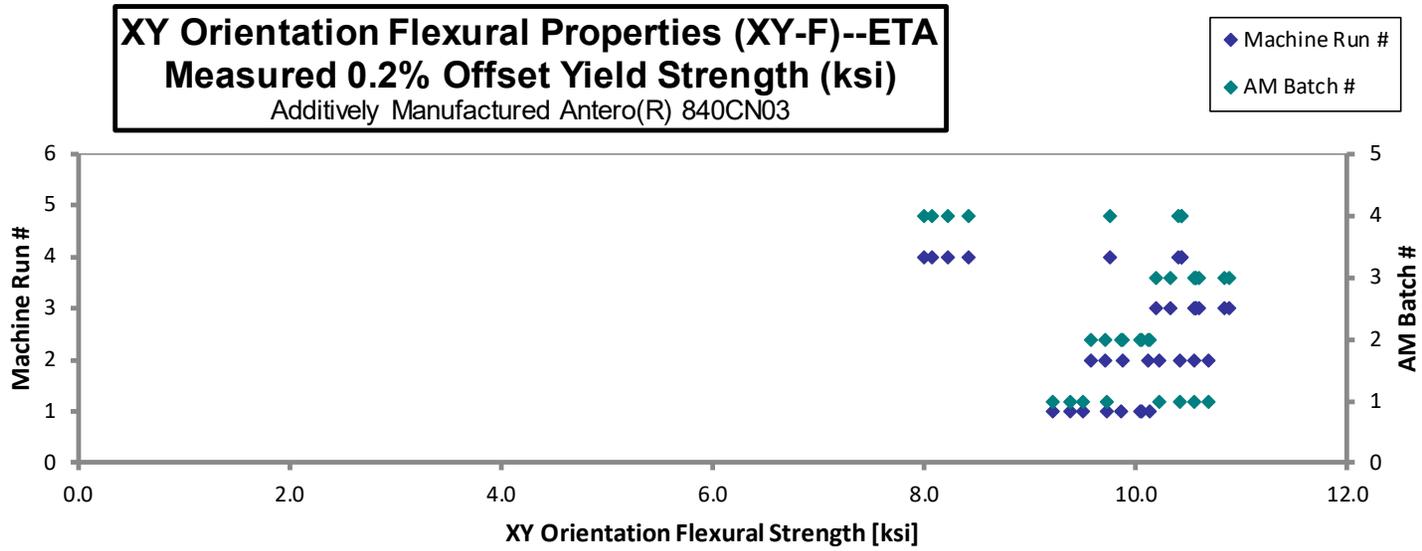


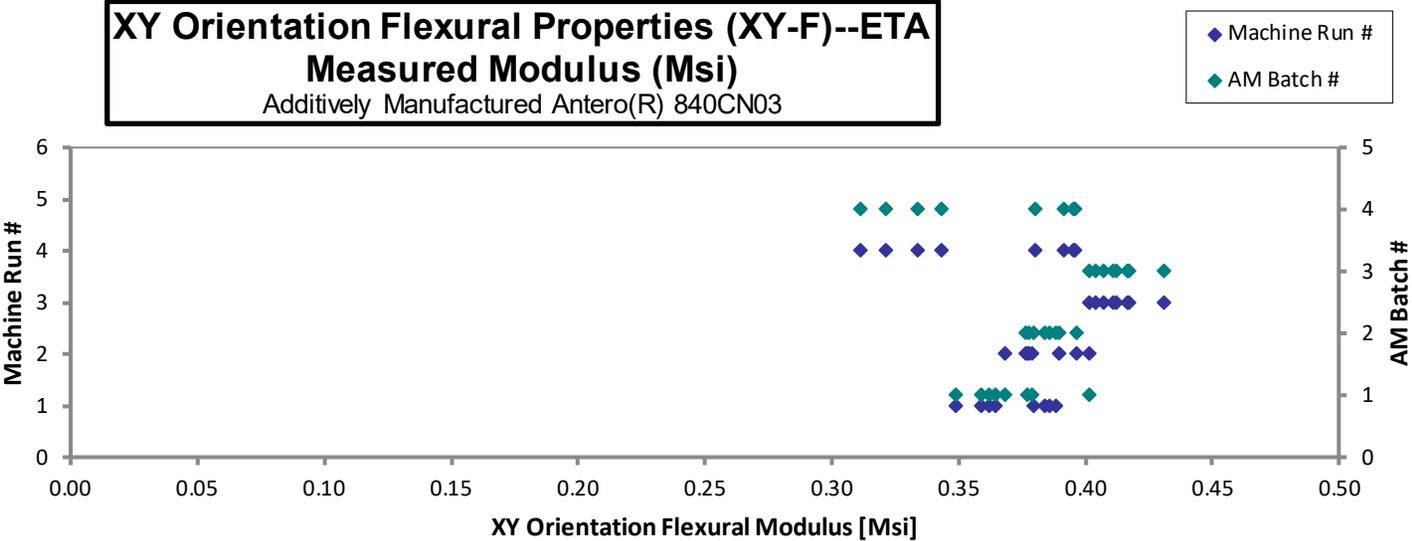


XY Orientation Flexural Properties (XY-F)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-11-ETA-1	1	1	9.724	11.35	0.3592	0.1312	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-12-ETA-2	1	1	9.388	11.15	0.3623	0.1309	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-14-ETA-3	1	1	9.215	10.81	0.3489	0.1316	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-15-ETA-4	1	1	9.506	11.21	0.3648	0.1310	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-11-ETA-1	1	2	10.42	12.00	0.3685	0.1332	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-13-ETA-2	1	2	10.56	12.32	0.3793	0.1329	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-14-ETA-3	1	2	10.69	12.15	0.4015	0.1327	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-15-ETA-4	1	2	10.22	11.58	0.3772	0.1336	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-11-ETA-1	2	1	10.06	11.77	0.3884	0.1314	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-12-ETA-2	2	1	9.857	11.22	0.3795	0.1307	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-14-ETA-3	2	1	10.04	11.52	0.3840	0.1306	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-15-ETA-4	2	1	10.14	11.60	0.3858	0.1305	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-11-ETA-1	2	2	9.582	11.26	0.3763	0.1308	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-13-ETA-2	2	2	9.713	11.30	0.3780	0.1312	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-14-ETA-3	2	2	10.12	11.71	0.3897	0.1305	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-15-ETA-4	2	2	9.878	11.43	0.3963	0.1303	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-11-ETA-1	3	3	10.57	12.07	0.4168	0.1298	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-12-ETA-2	3	3	10.33	11.78	0.4041	0.1300	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-14-ETA-3	3	3	10.60	12.02	0.4170	0.1295	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-15-ETA-4	3	3	10.58	11.97	0.4124	0.1298	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-11-ETA-1	3	3	10.89	12.30	0.4106	0.1303	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-12-ETA-2	3	3	10.83	12.41	0.4310	0.1300	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-14-ETA-3	3	3	10.56	12.01	0.4072	0.1306	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-15-ETA-4	3	3	10.20	11.76	0.4015	0.1316	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-11-ETA-1	4	4	10.44	12.04	0.3955	0.1300	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-12-ETA-2	4	4	10.44	12.00	0.3917	0.1303	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-14-ETA-3	4	4	9.753	11.36	0.3803	0.1310	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-15-ETA-4	4	4	10.41	11.96	0.3957	0.1301	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-11-ETA-1	4	4	8.218	9.343	0.3436	0.1318	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-13-ETA-2	4	4	7.995	8.907	0.3214	0.1333	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-14-ETA-3	4	4	8.419	9.417	0.3336	0.1328	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-15-ETA-4	4	4	8.080	8.958	0.3111	0.1328	TAB

Average	9.919	11.40	0.3817	0.1311
Standard Dev.	0.7908	0.9447	0.02802	0.001168
Coeff. of Var. [%]	7.973	8.289	7.343	0.8904
Min.	7.995	8.907	0.3111	0.1295
Max.	10.89	12.41	0.4310	0.1336
Number of Spec.	32	32	32	32



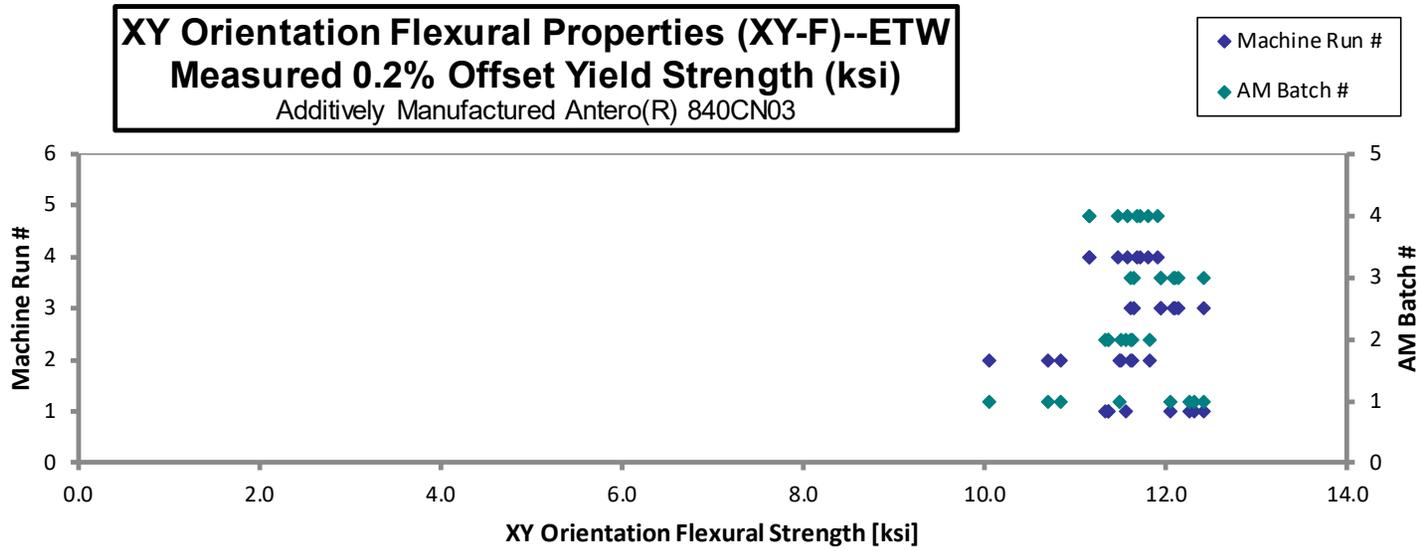


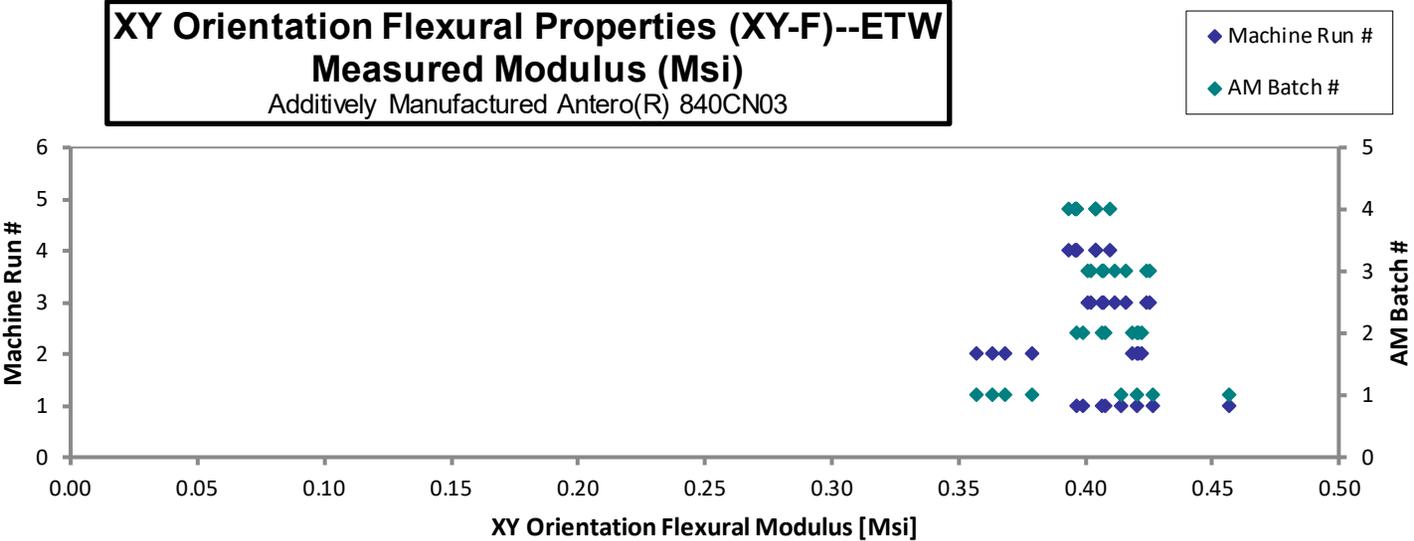
XY Orientation Flexural Properties (XY-F)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-11-ETW-1*	1	1	12.42	15.02	0.4139	0.1310	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-12-ETW-2	1	1	12.05	15.33	0.4568	0.1305	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-14-ETW-3	1	1	12.30	14.73	0.4205	0.1309	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-F-15-ETW-4	1	1	12.25	14.72	0.4264	0.1308	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-11-ETW-1*	1	2	10.70	13.16	0.3634	0.1351	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-12-ETW-2*	1	2	10.05	12.78	0.3572	0.1350	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-14-ETW-3*	1	2	11.48	13.62	0.3792	0.1338	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-F-15-ETW-4*	1	2	10.85	13.14	0.3684	0.1350	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-11-ETW-1*	2	1	11.37	13.96	0.4068	0.1315	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-12-ETW-2*	2	1	11.36	13.68	0.3965	0.1320	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-14-ETW-3*	2	1	11.34	13.93	0.3993	0.1316	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-F-15-ETW-4	2	1	11.55	14.00	0.4081	0.1313	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-11-ETW-1	2	2	11.61	14.28	0.4200	0.1308	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-13-ETW-2*	2	2	11.50	14.21	0.4187	0.1309	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-14-ETW-3*	2	2	11.63	14.34	0.4212	0.1306	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-F-15-ETW-4	2	2	11.83	14.40	0.4225	0.1309	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-11-ETW-1	3	3	12.43	15.14	0.4253	0.1302	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-12-ETW-2	3	3	12.10	14.50	0.4075	0.1313	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-14-ETW-3	3	3	12.08	14.43	0.4114	0.1313	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-F-15-ETW-4	3	3	12.13	14.53	0.4162	0.1309	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-11-ETW-1	3	3	11.95	14.78	0.4244	0.1340	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-12-ETW-2	3	3	11.95	14.50	0.4020	0.1337	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-14-ETW-3	3	3	11.64	14.24	0.4064	0.1328	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-F-15-ETW-4	3	3	11.61	14.00	0.4008	0.1335	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-11-ETW-1*	4	4	11.72	14.33	0.3960	0.1328	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-12-ETW-2	4	4	11.90	14.19	0.4041	0.1328	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-14-ETW-3	4	4	11.47	13.92	0.3931	0.1329	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-F-15-ETW-4	4	4	11.69	13.87	0.3962	0.1330	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-11-ETW-1	4	4	11.58	13.72	0.4038	0.1320	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-13-ETW-2	4	4	11.15	13.38	0.4039	0.1317	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-14-ETW-3	4	4	11.80	13.87	0.4094	0.1313	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-F-15-ETW-4	4	4	11.16	13.41	0.3968	0.1319	TAB

*Coupons failed after 5% was achieved

Average	11.65	14.13	0.4055	0.1321
Standard Dev.	0.5096	0.5923	0.01962	0.001421
Coeff. of Var. [%]	4.376	4.192	4.839	1.075
Min.	10.05	12.78	0.3572	0.1302
Max.	12.43	15.33	0.4568	0.1351
Number of Spec.	32	32	32	32





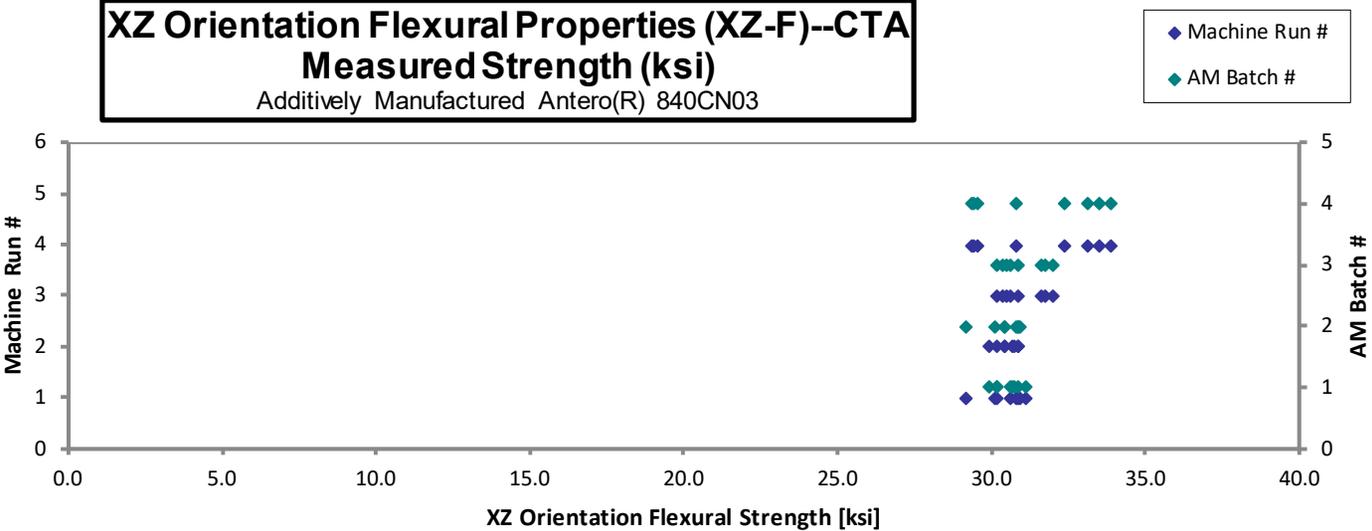
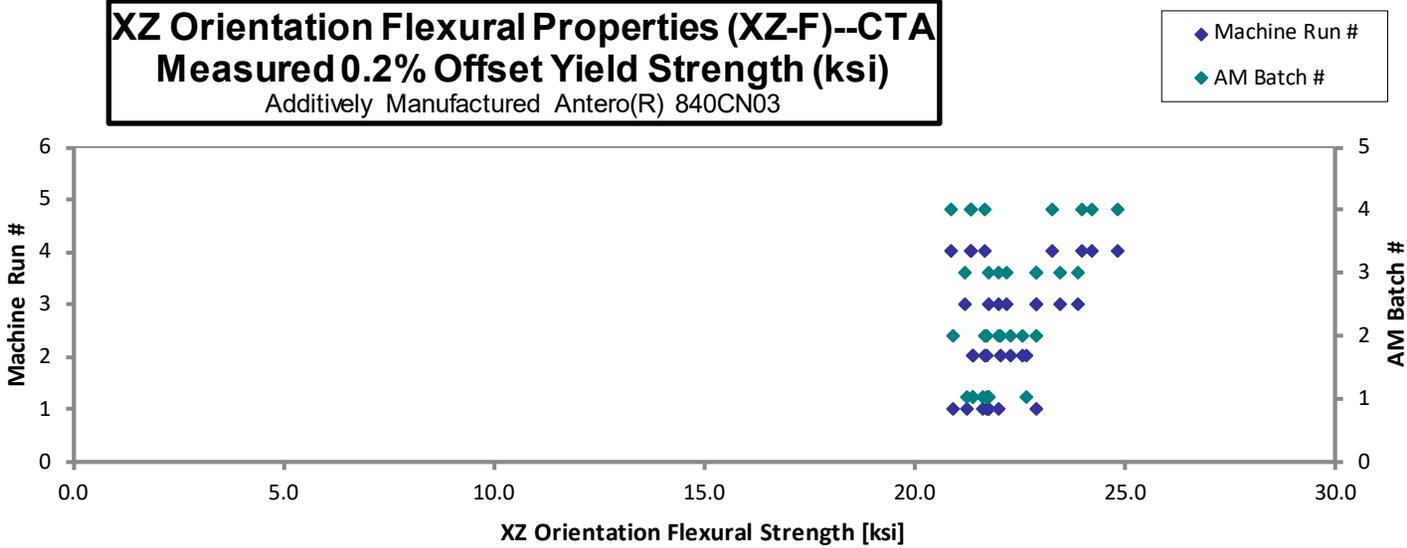
4.10 XZ Flex Proc. B Properties (XZ-F)

XZ Orientation Flexural Properties (XZ-F)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

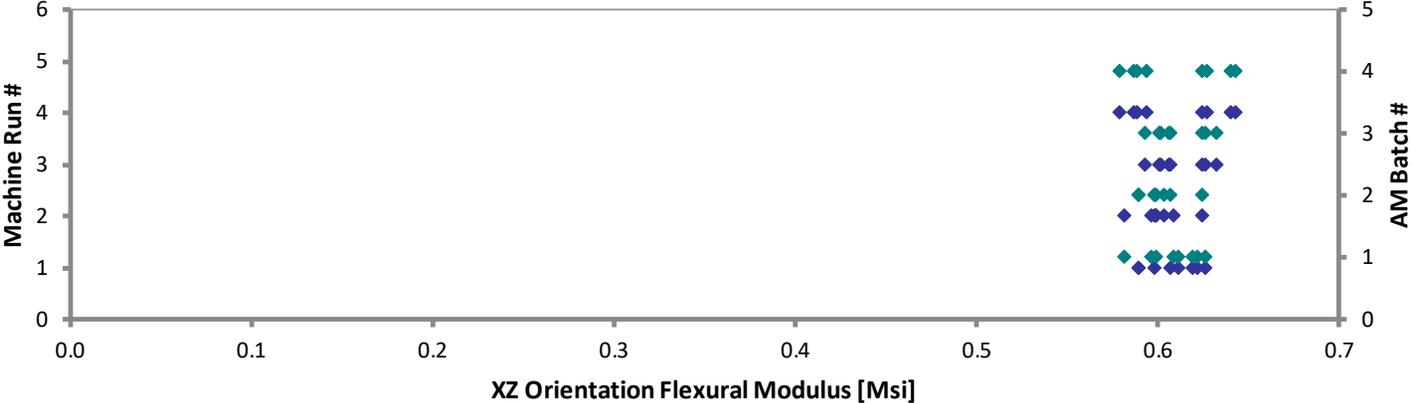
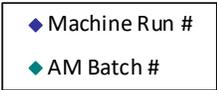
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksi]*	Modulus [Msj]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-11-CTA-1	1	1	21.23	30.89	0.6221	0.1226	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-12-CTA-2	1	1	21.76	31.14	0.6189	0.1226	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-14-CTA-3	1	1	21.63	30.17	0.6110	0.1232	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-15-CTA-4	1	1	21.75	30.61	0.6260	0.1225	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-11-CTA-1	1	2	21.73	30.77	0.6087	0.1237	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-13-CTA-2	1	2	21.40	30.15	0.5987	0.1237	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-14-CTA-3	1	2	21.40	29.96	0.5814	0.1249	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-15-CTA-4	1	2	22.67	30.67	0.5961	0.1240	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-11-CTA-1	2	1	21.72	30.10	0.5890	0.1245	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-12-CTA-2	2	1	22.00	30.83	0.5890	0.1242	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-14-CTA-3	2	1	22.91	30.95	0.6067	0.1234	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-15-CTA-4	2	1	20.94	29.21	0.5982	0.1237	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-11-CTA-1	2	2	22.29	30.89	0.5984	0.1238	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-13-CTA-2	2	2	22.57	30.45	0.5992	0.1236	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-14-CTA-3	2	2	21.68	30.86	0.6247	0.1236	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-15-CTA-4	2	2	22.06	30.45	0.6031	0.1234	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-11-CTA-1	3	3	22.91	30.86	0.6057	0.1232	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-12-CTA-2	3	3	21.76	30.15	0.6004	0.1233	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-14-CTA-3	3	3	21.19	30.38	0.6012	0.1238	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-15-CTA-4	3	3	22.18	30.49	0.5930	0.1239	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-11-CTA-1	3	3	22.00	30.65	0.6071	0.1223	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-12-CTA-2	3	3	23.89	31.61	0.6258	0.1224	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-14-CTA-3	3	3	23.49	31.73	0.6245	0.1226	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-15-CTA-4	3	3	22.90	31.99	0.6322	0.1227	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-11-CTA-1	4	4	24.84	33.53	0.6274	0.1230	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-12-CTA-2	4	4	24.00	33.88	0.6429	0.1219	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-14-CTA-3	4	4	24.22	33.11	0.6400	0.1222	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-15-CTA-4	4	4	23.30	32.37	0.6247	0.1231	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-11-CTA-1	4	4	21.67	30.81	0.5940	0.1238	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-13-CTA-2	4	4	21.35	29.58	0.5789	0.1237	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-14-CTA-3	4	4	21.33	29.38	0.5864	0.1236	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-15-CTA-4	4	4	20.85	29.45	0.5886	0.1235	TAB, CAT

*All coupons failed after 5% was achieved

Average	22.24	30.88	0.6076	0.1233
Standard Dev.	1.016	1.116	0.01719	0.0006943
Coeff. of Var. [%]	4.568	3.613	2.830	0.5630
Min.	20.85	29.21	0.5789	0.1219
Max.	24.84	33.88	0.6429	0.1249
Number of Spec.	32	32	32	32



XZ Orientation Flexural Properties (XZ-F)--CTA
Measured Modulus (Msi)
Additively Manufactured Antero(R) 840CN03

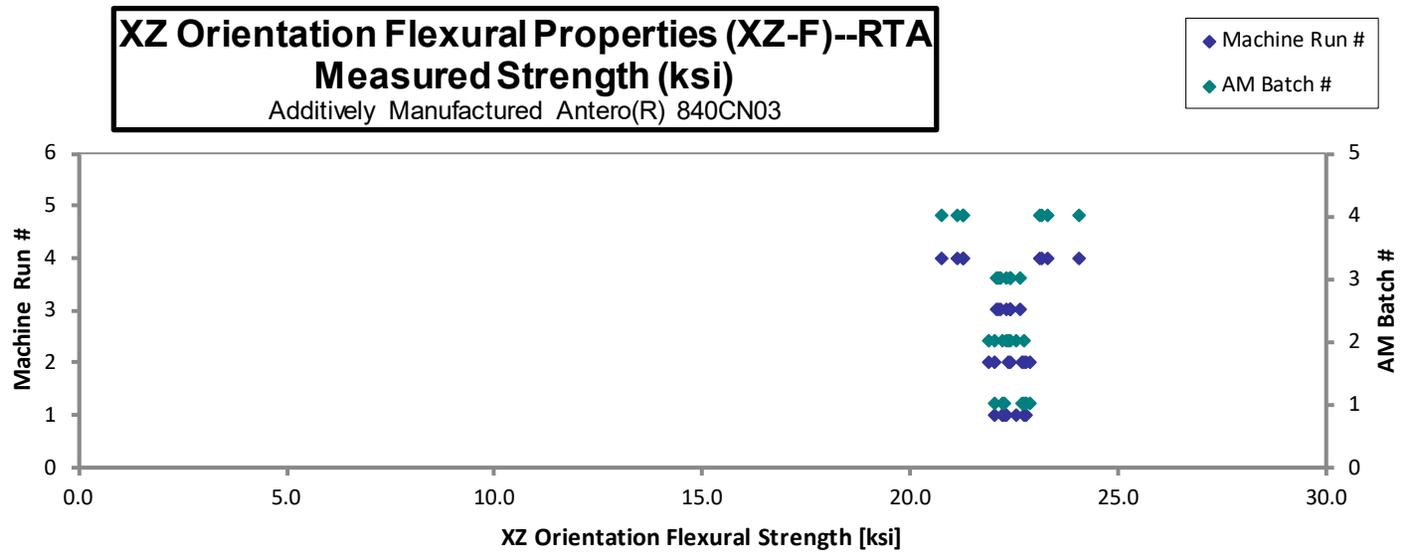
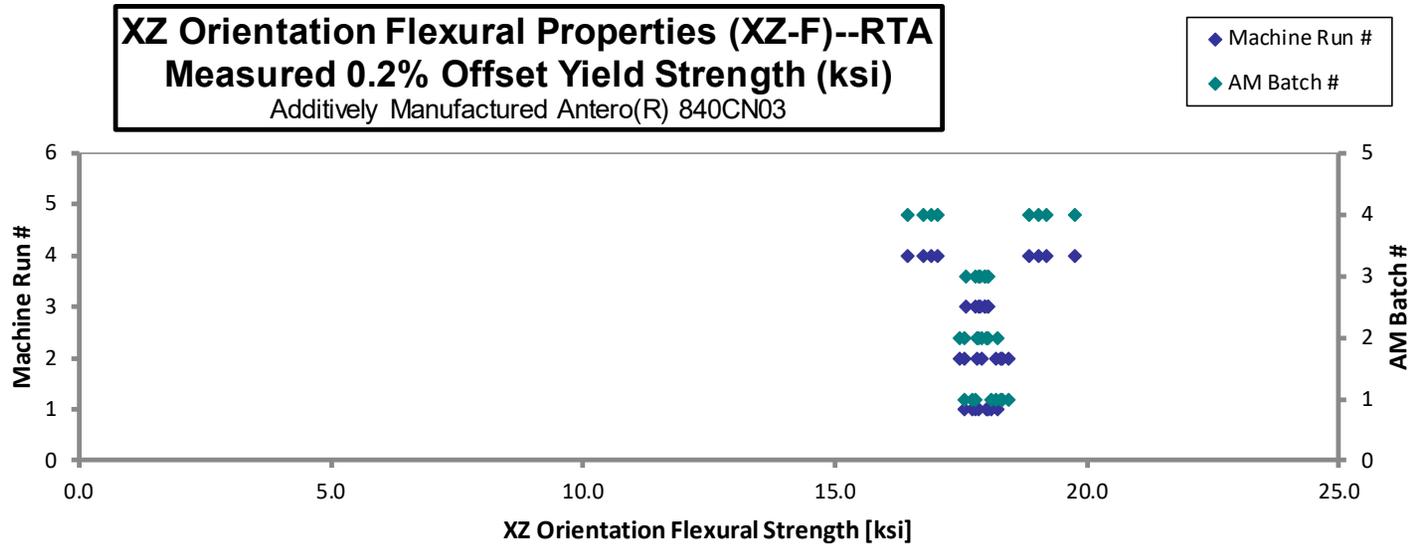


XZ Orientation Flexural Properties (XZ-F)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksi]*	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-11-RTA-1	1	1	18.11	22.79	0.5590	0.1226	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-12-RTA-2	1	1	17.58	22.07	0.5391	0.1237	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-14-RTA-3	1	1	17.74	22.28	0.5438	0.1230	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-15-RTA-4	1	1	17.78	22.24	0.5444	0.1228	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-11-RTA-1	1	2	18.43	22.90	0.5547	0.1242	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-13-RTA-2	1	2	18.31	22.82	0.5583	0.1238	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-14-RTA-3	1	2	18.19	22.77	0.5513	0.1245	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-15-RTA-4	1	2	18.28	22.74	0.5525	0.1243	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-11-RTA-1	2	1	18.04	22.55	0.5486	0.1231	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-12-RTA-2	2	1	17.86	22.23	0.5398	0.1237	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-14-RTA-3	2	1	18.22	22.78	0.5574	0.1227	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-15-RTA-4	2	1	18.00	22.34	0.5435	0.1235	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-11-RTA-1	2	2	17.48	21.92	0.5307	0.1246	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-13-RTA-2	2	2	17.90	22.44	0.5480	0.1231	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-14-RTA-3	2	2	17.83	22.38	0.5457	0.1237	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-15-RTA-4	2	2	17.57	22.04	0.5324	0.1244	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-11-RTA-1	3	3	17.98	22.41	0.5488	0.1233	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-12-RTA-2	3	3	18.05	22.44	0.5448	0.1232	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-14-RTA-3	3	3	18.03	22.18	0.5403	0.1234	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-15-RTA-4	3	3	17.61	22.16	0.5407	0.1239	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-11-RTA-1	3	3	17.84	22.67	0.5466	0.1243	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-12-RTA-2	3	3	17.98	22.41	0.5429	0.1239	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-14-RTA-3	3	3	17.80	22.11	0.5348	0.1246	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-15-RTA-4	3	3	17.90	22.34	0.5440	0.1239	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-11-RTA-1	4	4	19.76	24.08	0.5770	0.1216	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-12-RTA-2	4	4	19.05	23.19	0.5649	0.1228	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-14-RTA-3	4	4	19.19	23.12	0.5617	0.1228	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-15-RTA-4	4	4	18.87	23.32	0.5776	0.1222	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-11-RTA-1	4	4	16.77	21.15	0.5208	0.1250	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-13-RTA-2	4	4	16.90	21.28	0.5192	0.1248	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-14-RTA-3	4	4	17.04	21.27	0.5170	0.1248	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-15-RTA-4	4	4	16.44	20.76	0.5020	0.1260	TAB, CAT

*All coupons failed after 5% was achieved

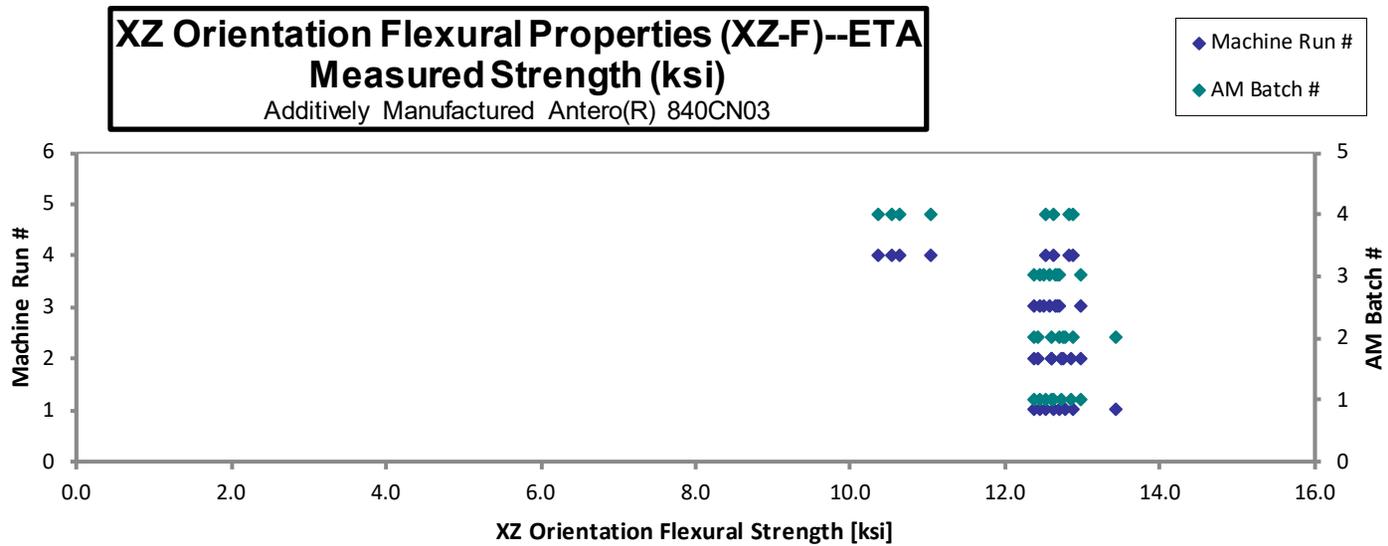
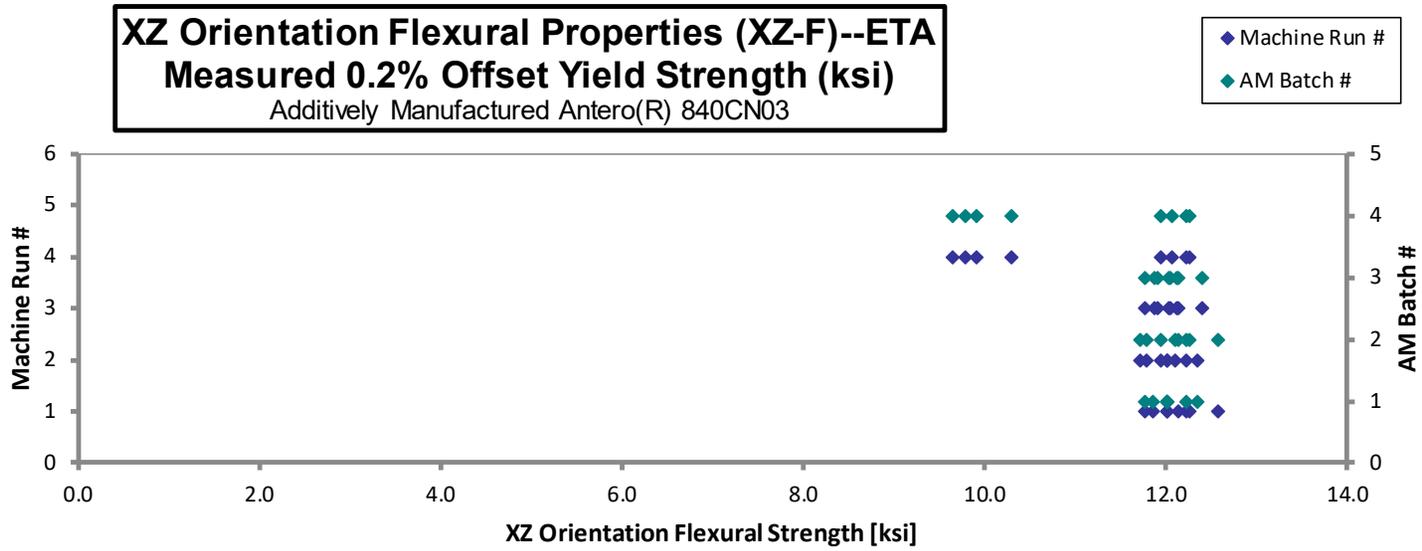
Average	17.95	22.38	0.5448	0.1237
Standard Dev.	0.6692	0.6572	0.01605	0.0009264
Coeff. of Var. [%]	3.727	2.936	2.946	0.7490
Min.	16.44	20.76	0.5020	0.1216
Max.	19.76	24.08	0.5776	0.1260
Number of Spec.	32	32	32	32

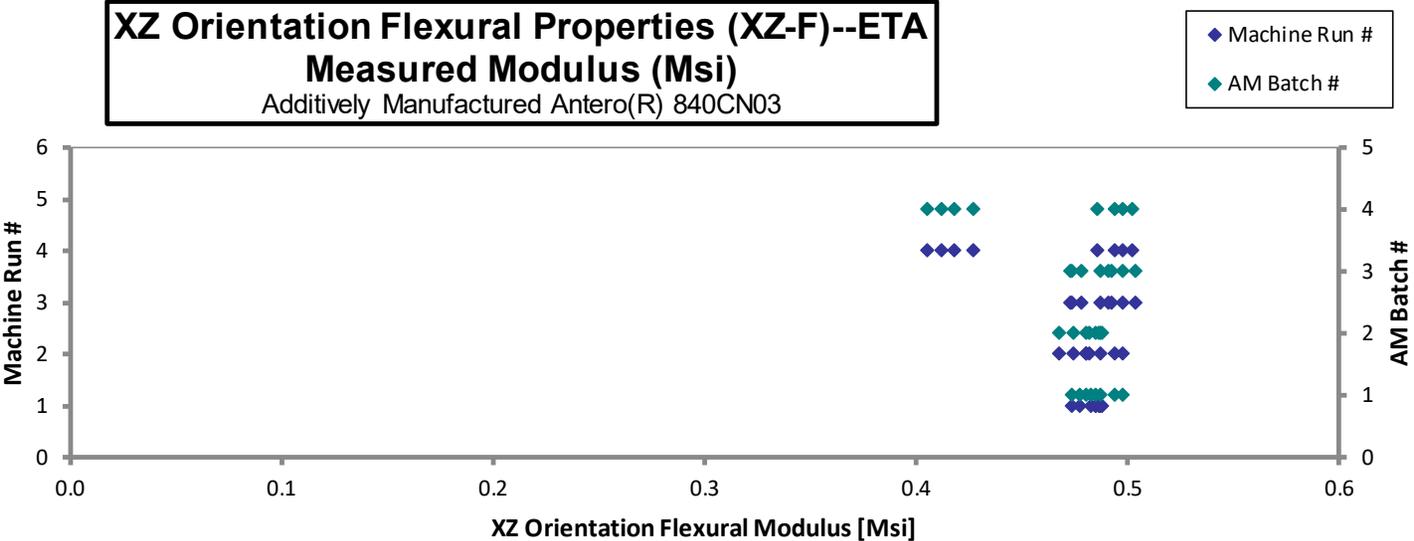


XZ Orientation Flexural Properties (XZ-F)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-11-ETA-1	1	1	12.01	12.63	0.4828	0.1226	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-12-ETA-2	1	1	11.77	12.38	0.4733	0.1231	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-14-ETA-3	1	1	12.02	12.52	0.4851	0.1220	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-15-ETA-4	1	1	11.86	12.46	0.4773	0.1226	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-11-ETA-1	1	2	12.23	12.85	0.4980	0.1239	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-13-ETA-2	1	2	12.02	12.59	0.4870	0.1251	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-14-ETA-3	1	2	12.35	12.99	0.4936	0.1243	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-15-ETA-4	1	2	12.02	12.72	0.4805	0.1254	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-11-ETA-1	2	1	12.57	13.42	0.4878	0.1227	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-12-ETA-2	2	1	12.13	12.69	0.4851	0.1226	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-14-ETA-3	2	1	12.27	12.87	0.4864	0.1226	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-15-ETA-4	2	1	12.23	12.78	0.4871	0.1228	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-11-ETA-1	2	2	12.11	12.75	0.4801	0.1249	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-13-ETA-2	2	2	11.79	12.42	0.4677	0.1257	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-14-ETA-3	2	2	11.95	12.61	0.4818	0.1245	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-15-ETA-4	2	2	11.71	12.37	0.4742	0.1249	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-11-ETA-1	3	3	12.05	12.65	0.4906	0.1234	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-12-ETA-2	3	3	11.77	12.36	0.4733	0.1243	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-14-ETA-3	3	3	11.88	12.49	0.4780	0.1239	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-15-ETA-4	3	3	11.90	12.46	0.4731	0.1244	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-11-ETA-1	3	3	12.40	12.98	0.5039	0.1223	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-12-ETA-2	3	3	12.03	12.58	0.4871	0.1234	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-14-ETA-3	3	3	12.14	12.68	0.4924	0.1229	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-15-ETA-4	3	3	12.12	12.70	0.4974	0.1225	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-11-ETA-1	4	4	12.23	12.82	0.4977	0.1226	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-12-ETA-2	4	4	12.27	12.88	0.5024	0.1222	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-14-ETA-3	4	4	11.94	12.51	0.4859	0.1236	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-15-ETA-4	4	4	12.07	12.63	0.4939	0.1227	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-11-ETA-1	4	4	9.910	10.63	0.4176	0.1248	CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-13-ETA-2	4	4	9.644	10.35	0.4055	0.1258	CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-14-ETA-3	4	4	10.29	11.03	0.4271	0.1244	CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-15-ETA-4	4	4	9.790	10.53	0.4122	0.1246	CAT

Average	11.80	12.42	0.4771	0.1237
Standard Dev.	0.7548	0.7227	0.02534	0.001121
Coeff. of Var. [%]	6.399	5.820	5.312	0.9063
Min.	9.644	10.35	0.4055	0.1220
Max.	12.57	13.42	0.5039	0.1258
Number of Spec.	32	32	32	32

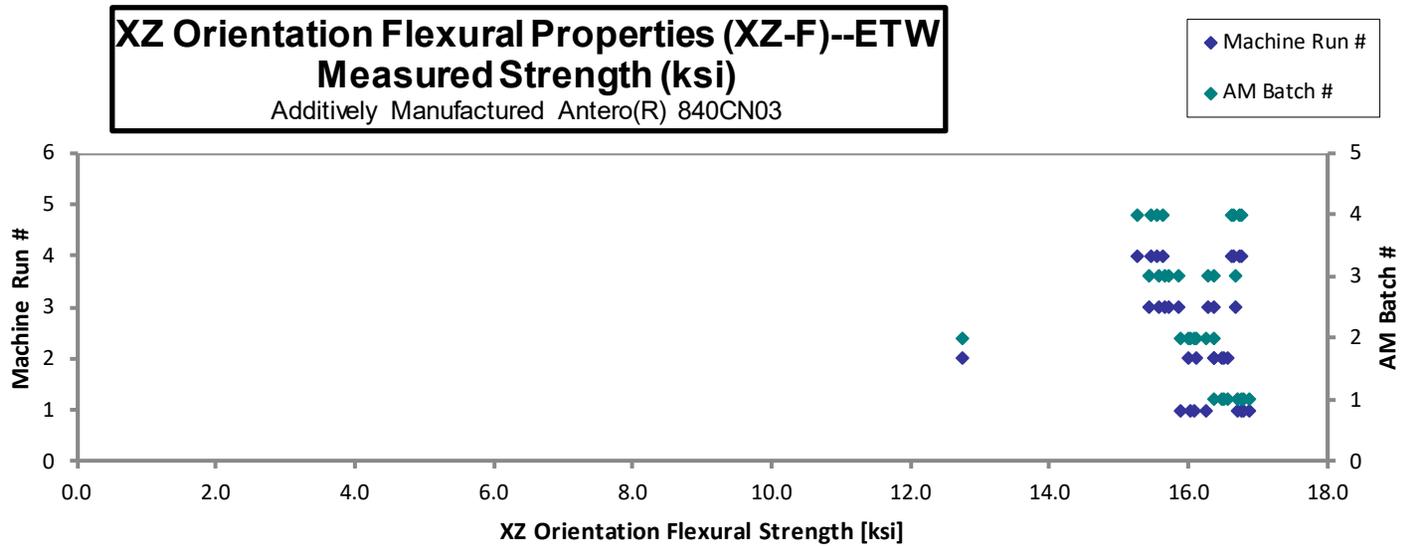
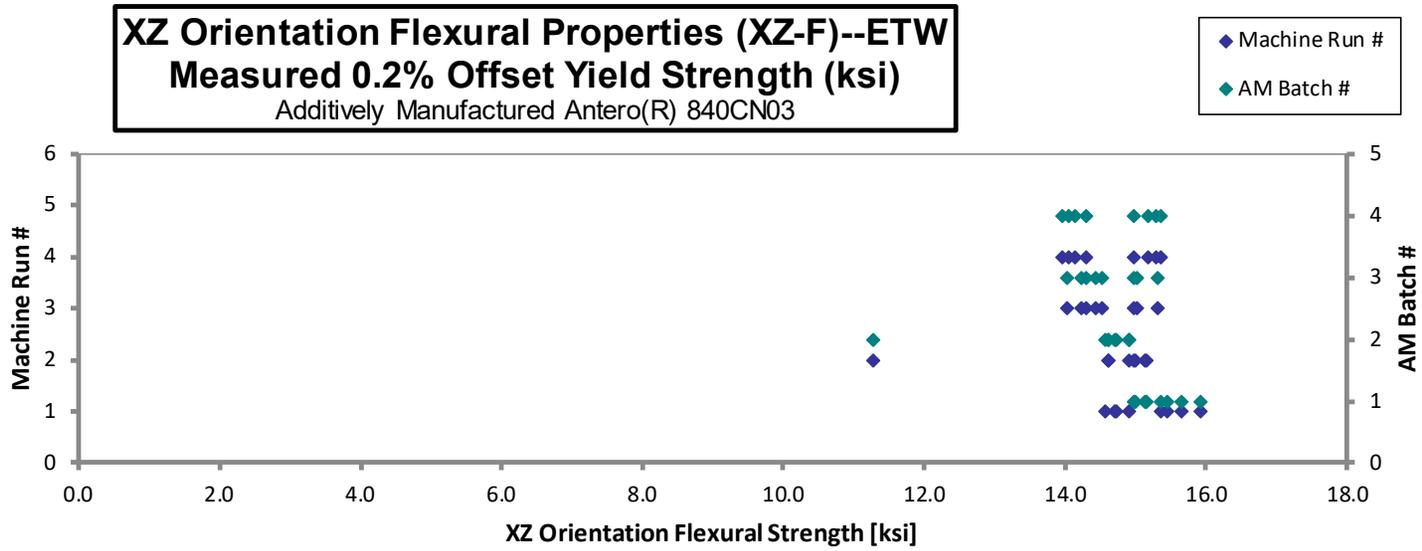


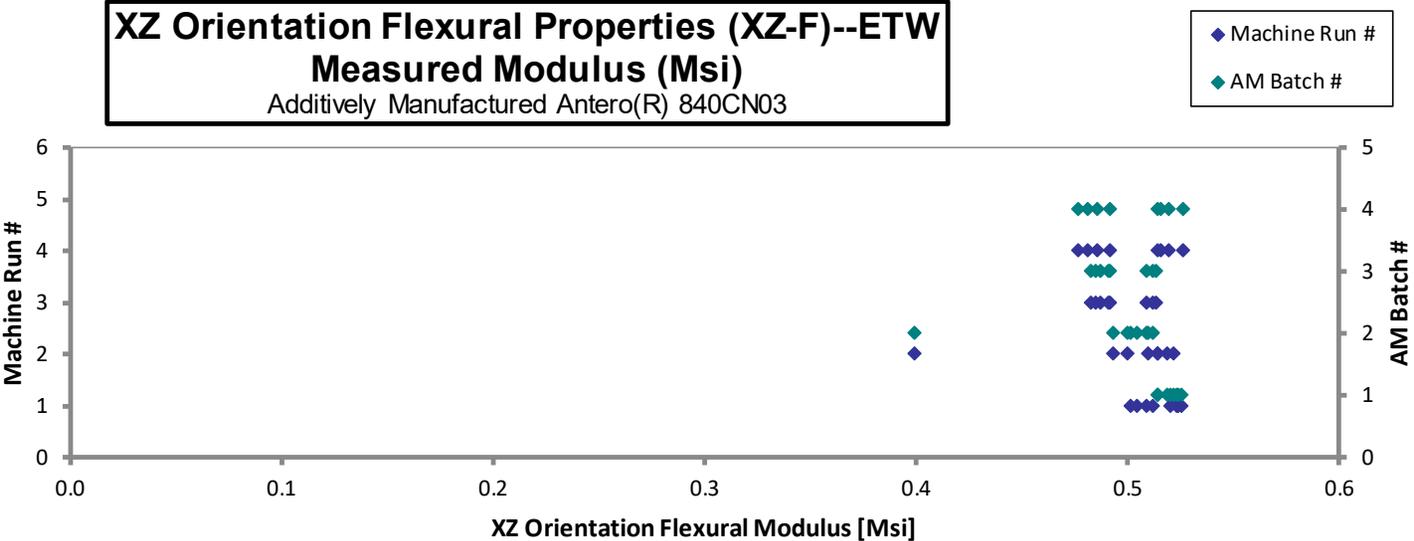


XZ Orientation Flexural Properties (XZ-F)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-11-ETW-1	1	1	15.66	16.88	0.5231	0.1234	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-12-ETW-2	1	1	15.44	16.73	0.5201	0.1234	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-14-ETW-3	1	1	15.93	16.78	0.5239	0.1229	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-F-15-ETW-4	1	1	15.36	16.80	0.5256	0.1226	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-11-ETW-1	1	2	15.14	16.52	0.5219	0.1245	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-12-ETW-2	1	2	14.97	16.39	0.5142	0.1243	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-14-ETW-3	1	2	15.15	16.58	0.5138	0.1245	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-F-15-ETW-4	1	2	15.01	16.49	0.5186	0.1245	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-11-ETW-1	2	1	14.72	16.11	0.5041	0.1243	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-12-ETW-2	2	1	14.69	16.05	0.5089	0.1238	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-14-ETW-3	2	1	14.90	16.27	0.5122	0.1239	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-F-15-ETW-4	2	1	14.56	15.91	0.5015	0.1246	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-11-ETW-1	2	2	14.62	16.03	0.4934	0.1245	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-13-ETW-2	2	2	11.28	12.75	0.3993	0.1223	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-14-ETW-3	2	2	14.90	16.38	0.5095	0.1237	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-F-15-ETW-4	2	2	14.62	16.12	0.4997	0.1241	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-11-ETW-1	3	3	15.03	16.39	0.5134	0.1234	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-12-ETW-2	3	3	14.98	16.31	0.5089	0.1230	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-14-ETW-3	3	3	14.42	15.74	0.4915	0.1246	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-F-15-ETW-4	3	3	15.31	16.71	0.5119	0.1227	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-11-ETW-1	3	3	14.52	15.86	0.4907	0.1250	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-12-ETW-2	3	3	14.22	15.58	0.4872	0.1252	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-14-ETW-3	3	3	14.03	15.43	0.4825	0.1256	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-F-15-ETW-4	3	3	14.31	15.66	0.4845	0.1253	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-11-ETW-1	4	4	14.98	16.68	0.5197	0.1228	CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-12-ETW-2	4	4	15.36	16.78	0.5153	0.1225	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-14-ETW-3	4	4	15.28	16.74	0.5259	0.1225	CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-F-15-ETW-4	4	4	15.18	16.63	0.5138	0.1226	CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-11-ETW-1	4	4	14.06	15.55	0.4814	0.1249	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-13-ETW-2	4	4	14.15	15.47	0.4854	0.1249	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-14-ETW-3	4	4	13.96	15.29	0.4763	0.1252	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-F-15-ETW-4	4	4	14.29	15.66	0.4913	0.1241	TAB

Average	14.72	16.10	0.5022	0.1239
Standard Dev.	0.7989	0.7747	0.02390	0.0009726
Coeff. of Var. [%]	5.427	4.811	4.759	0.7848
Min.	11.28	12.75	0.3993	0.1223
Max.	15.93	16.88	0.5259	0.1256
Number of Spec.	32	32	32	32





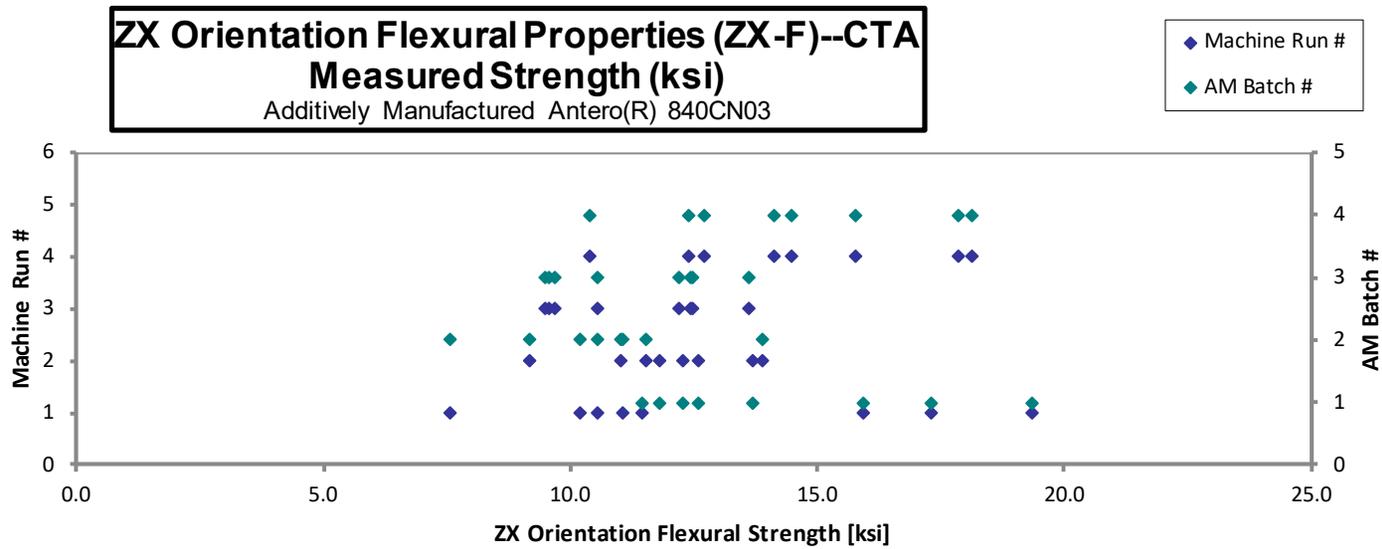
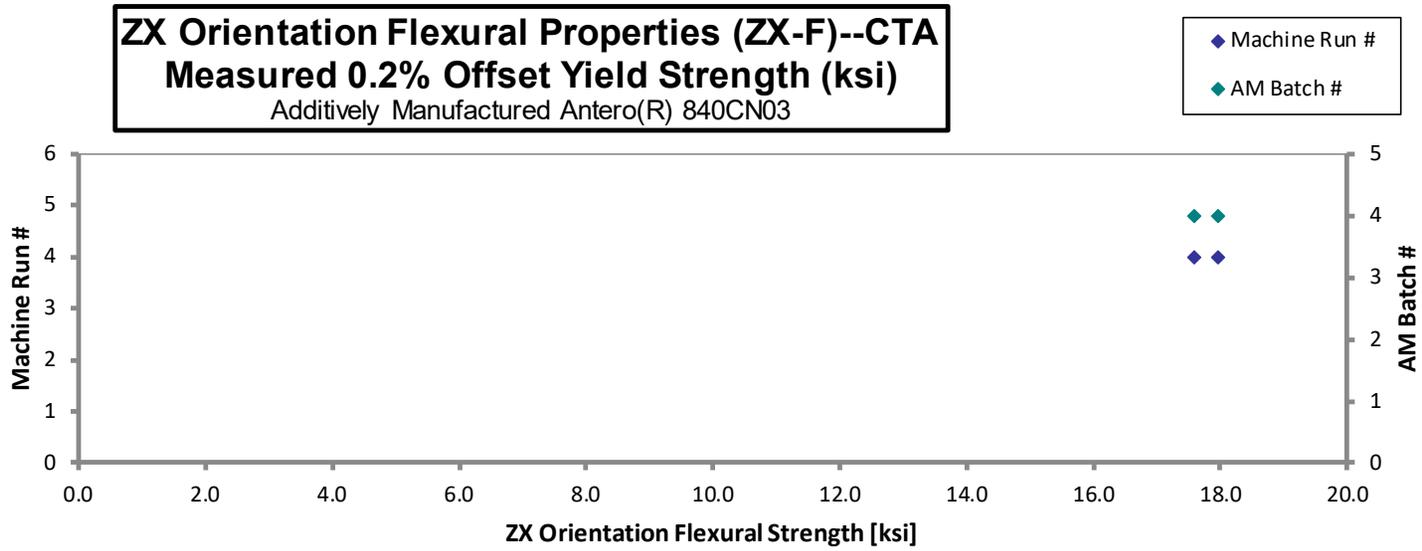
4.11 ZX Flex Proc. B Properties (ZX-F)

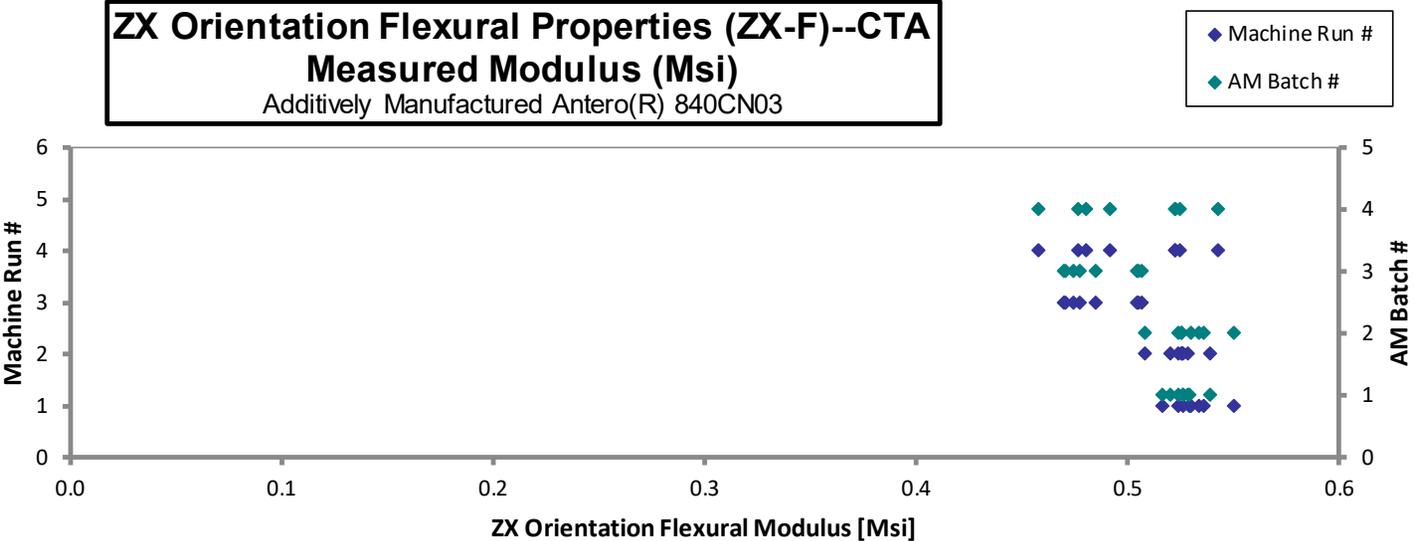
ZX Orientation Flexural Properties (ZX-F)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]*	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-11-CTA-1	1	1		17.30	0.5242	0.1217	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-12-CTA-2	1	1		15.91	0.5166	0.1203	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-14-CTA-3	1	1		19.34	0.5296	0.1195	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-15-CTA-4	1	1		11.46	0.5260	0.1207	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-11-CTA-1	1	2		12.27	0.5393	0.1222	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-13-CTA-2	1	2		12.58	0.5283	0.1216	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-14-CTA-3	1	2		13.66	0.5199	0.1214	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-15-CTA-4	1	2		11.78	0.5264	0.1217	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-11-CTA-1	2	1		10.52	0.5361	0.1217	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-12-CTA-2	2	1		10.20	0.5298	0.1216	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-14-CTA-3	2	1		11.06	0.5503	0.1226	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-15-CTA-4	2	1		7.56	0.5340	0.1220	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-11-CTA-1	2	2		9.18	0.5258	0.1217	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-13-CTA-2	2	2		11.51	0.5251	0.1217	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-14-CTA-3	2	2		13.87	0.5240	0.1218	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-15-CTA-4	2	2		11.00	0.5080	0.1215	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-11-CTA-1	3	3		13.59	0.5064	0.1226	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-12-CTA-2	3	3		12.18	0.5055	0.1225	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-14-CTA-3	3	3		12.46	0.4847	0.1228	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-15-CTA-4	3	3		12.44	0.5043	0.1224	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-11-CTA-1	3	3		9.56	0.4744	0.1248	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-12-CTA-2	3	3		9.65	0.4705	0.1239	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-14-CTA-3	3	3		10.54	0.4696	0.1239	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-15-CTA-4	3	3		9.48	0.4772	0.1236	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-11-CTA-1	4	4		14.12	0.5426	0.1218	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-12-CTA-2	4	4		12.39	0.5227	0.1221	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-14-CTA-3	4	4		10.37	0.5243	0.1216	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-15-CTA-4	4	4		12.69	0.5223	0.1217	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-11-CTA-1	4	4	17.95	18.12	0.4801	0.1233	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-13-CTA-2	4	4	17.60	17.86	0.4915	0.1233	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-14-CTA-3	4	4		15.78	0.4575	0.1245	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-15-CTA-4	4	4		14.46	0.4768	0.1229	TAB, CAT

*0.2% yield is not reported as specimen failed prior to obtaining 0.2% strain, except BLU-D-M6-ZX-F-11-CTA-1 and BLU-D-M6-ZX-F-13-CTA-2

Average	17.78	12.65	0.5111	0.1222
Standard Dev.	0.2497	2.833	0.02494	0.001140
Coeff. of Var. [%]	1.405	22.39	4.880	0.9323
Min.	17.60	7.556	0.4575	0.1195
Max.	17.95	19.34	0.5503	0.1248
Number of Spec.	2	32	32	32



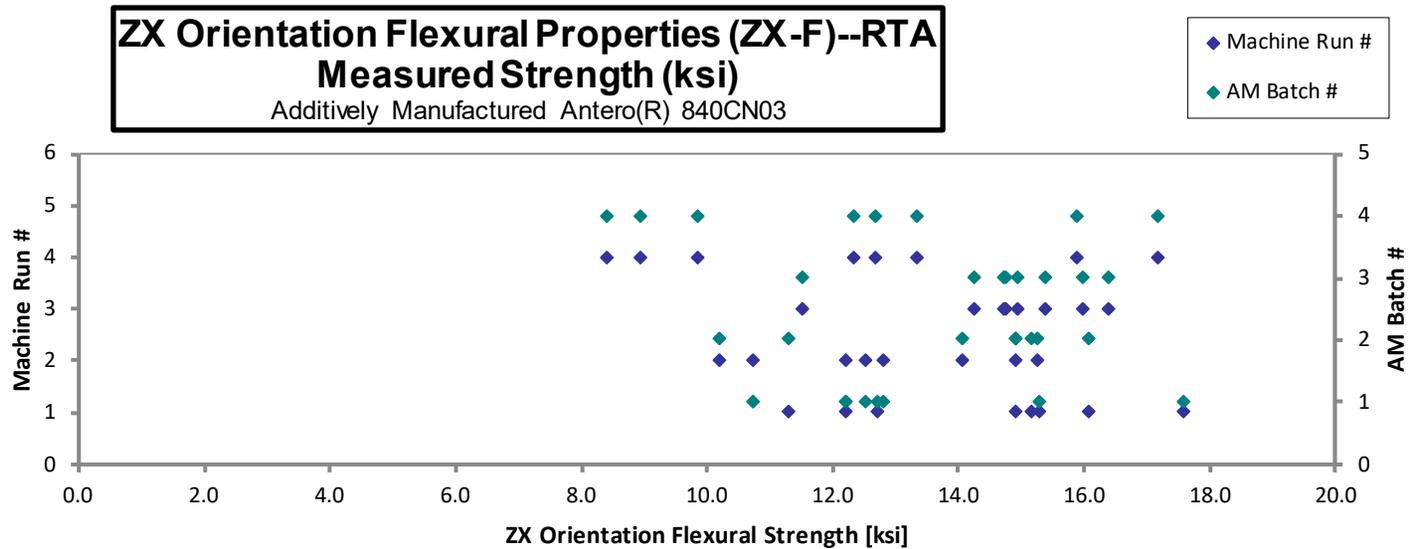
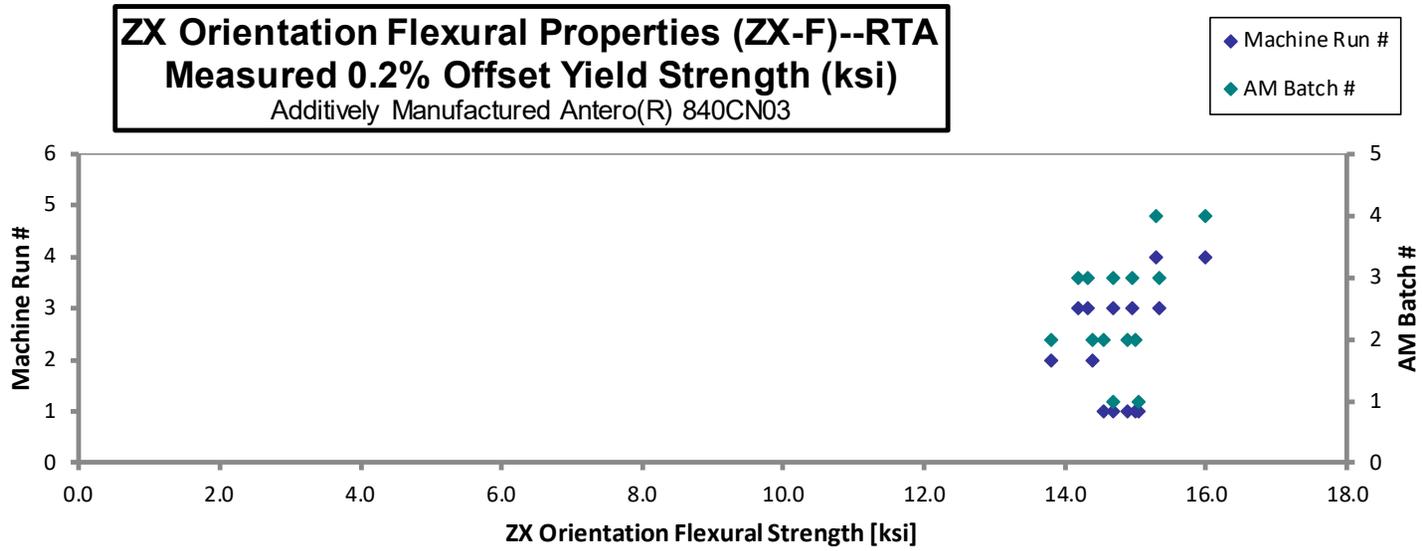


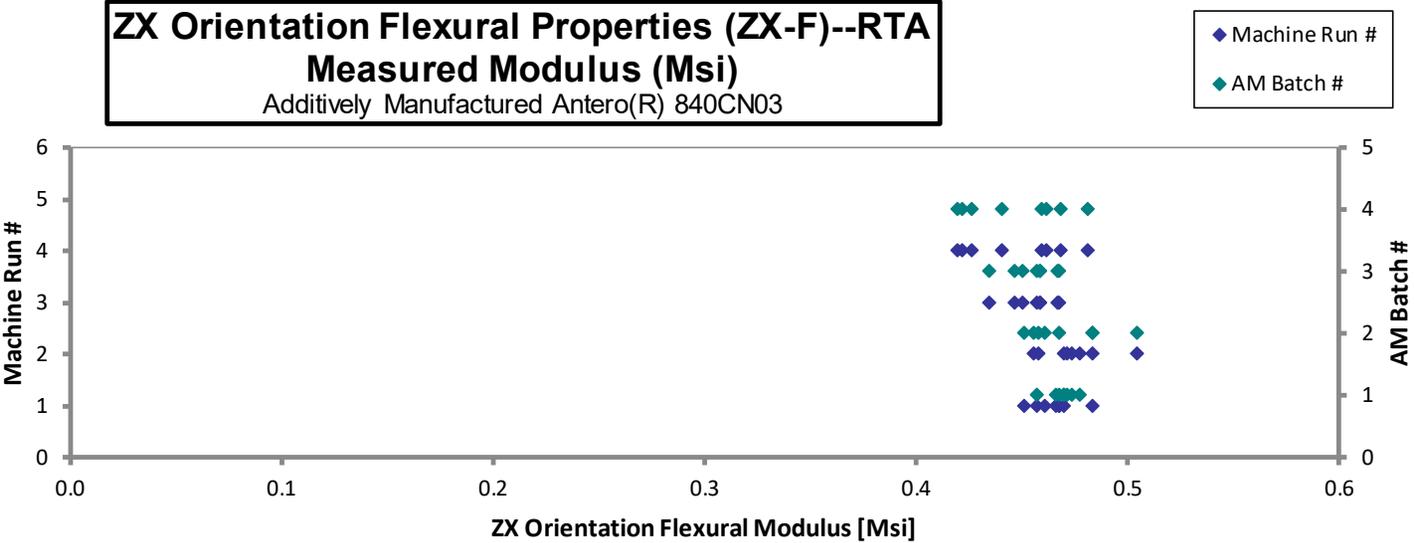
ZX Orientation Flexural Properties (ZX-F)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-11-RTA-1	1	1	14.67	15.30	0.4675	0.1221	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-12-RTA-2	1	1	15.05	17.59	0.4570	0.1212	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-14-RTA-3*	1	1		12.71	0.4700	0.1202	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-15-RTA-4*	1	1		12.21	0.4663	0.1206	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-11-RTA-1*	1	2		12.53	0.4696	0.1229	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-13-RTA-2*	1	2		12.23	0.4775	0.1223	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-14-RTA-3*	1	2		12.80	0.4735	0.1214	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-15-RTA-4*	1	2		10.73	0.4713	0.1222	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-11-RTA-1	2	1	14.89	14.90	0.4510	0.1209	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-12-RTA-2*	2	1		11.31	0.4610	0.1200	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-14-RTA-3	2	1	14.55	15.16	0.4677	0.1217	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-15-RTA-4	2	1	15.00	16.08	0.4830	0.1204	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-11-RTA-1*	2	2		14.92	0.4833	0.1202	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-13-RTA-2	2	2	13.80	14.08	0.4575	0.1207	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-14-RTA-3	2	2	14.38	15.25	0.5044	0.1202	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-15-RTA-4*	2	2		10.19	0.4553	0.1215	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-11-RTA-1	3	3	14.18	14.24	0.4468	0.1232	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-12-RTA-2*	3	3		14.74	0.4582	0.1226	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-14-RTA-3*	3	3		11.52	0.4506	0.1215	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-15-RTA-4	3	3	14.94	15.39	0.4584	0.1219	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-11-RTA-1	3	3	14.32	15.97	0.4347	0.1233	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-12-RTA-2*	3	3		14.94	0.4667	0.1209	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-14-RTA-3	3	3	14.69	14.74	0.4678	0.1216	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-15-RTA-4	3	3	15.33	16.39	0.4568	0.1214	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-11-RTA-1*	4	4		12.35	0.4811	0.1223	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-12-RTA-2	4	4	15.99	17.18	0.4681	0.1215	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-14-RTA-3*	4	4		12.67	0.4612	0.1212	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-15-RTA-4	4	4	15.29	15.90	0.4590	0.1215	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-11-RTA-1*	4	4		8.40	0.4219	0.1237	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-13-RTA-2*	4	4		8.93	0.4194	0.1238	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-14-RTA-3*	4	4		13.34	0.4404	0.1231	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-15-RTA-4*	4	4		9.87	0.4262	0.1232	TAB, CAT

*0.2% yield is not reported as specimen failed prior to obtaining 0.2% strain

Average	14.79	13.58	0.4604	0.1217
Standard Dev.	0.5516	2.372	0.01822	0.001087
Coeff. of Var. [%]	3.729	17.46	3.957	0.8927
Min.	13.80	8.402	0.4194	0.1200
Max.	15.99	17.59	0.5044	0.1238
Number of Spec.	14	32	32	32

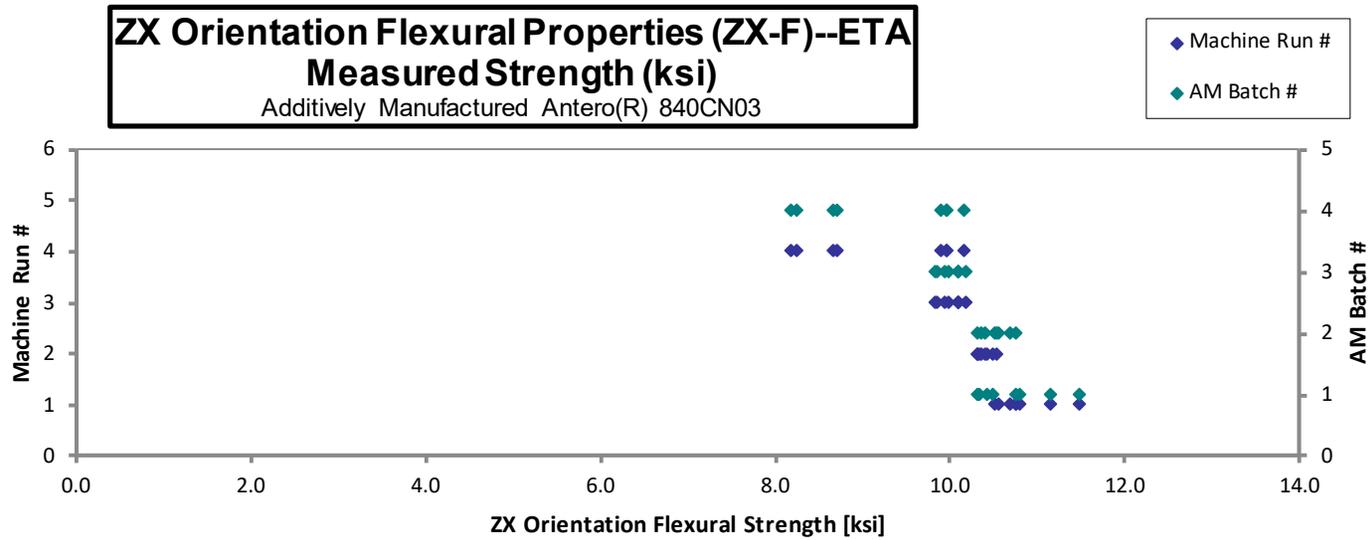
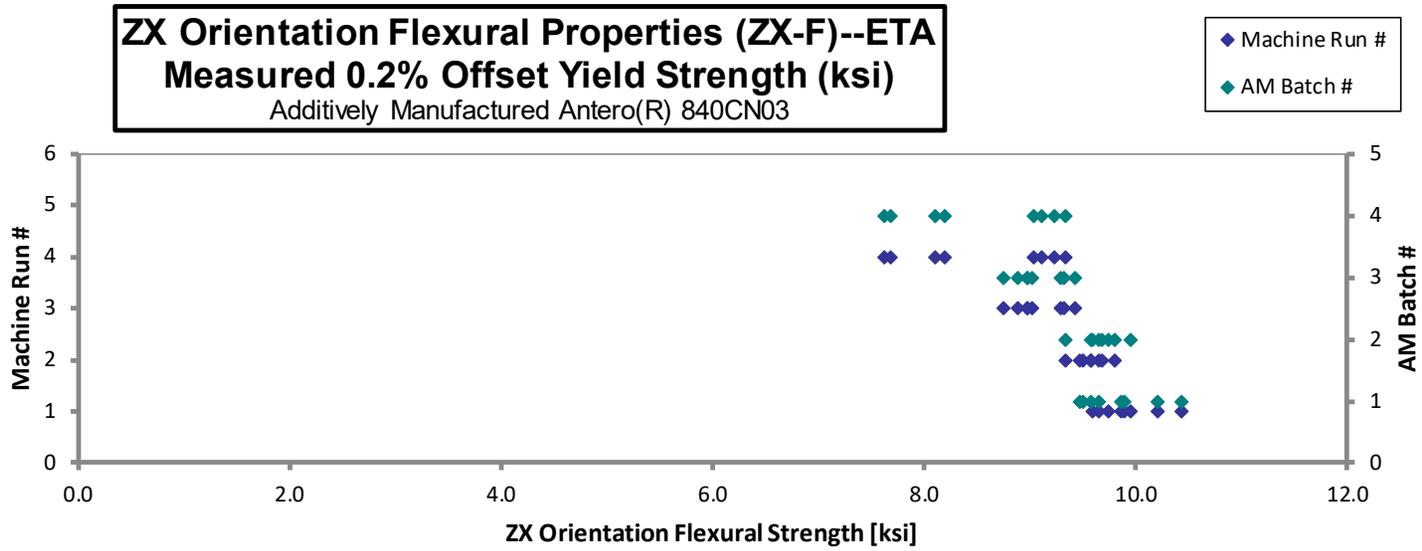


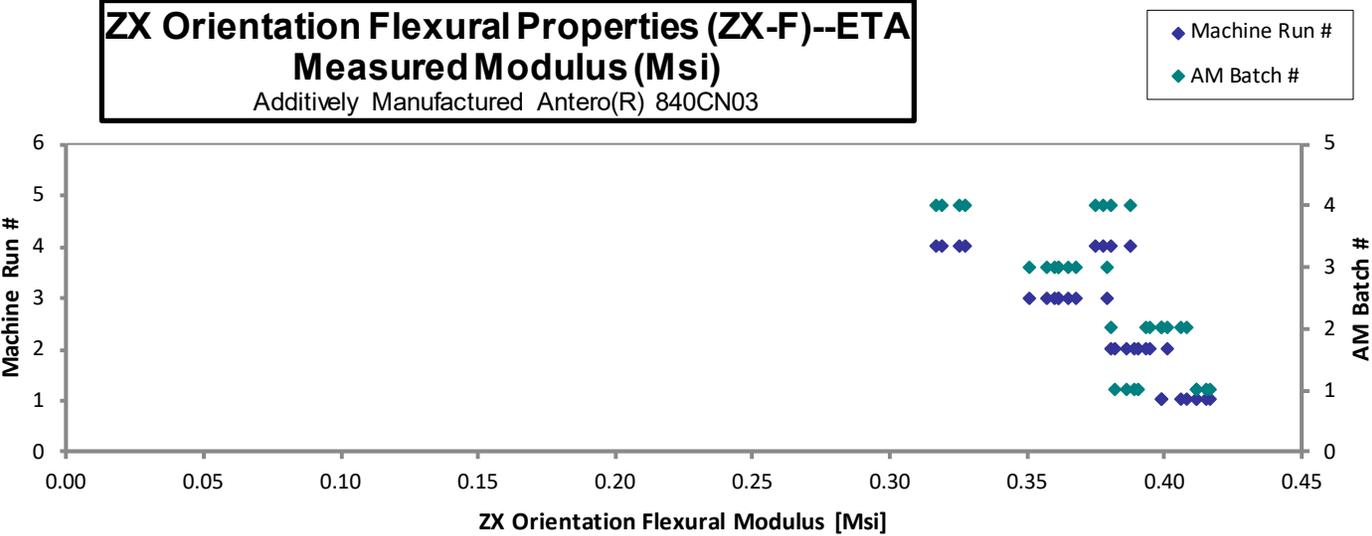


ZX Orientation Flexural Properties (ZX-F)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-11-ETA-1	1	1	10.44	11.47	0.4163	0.1203	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-12-ETA-2	1	1	10.20	11.16	0.4113	0.1203	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-14-ETA-3	1	1	9.893	10.76	0.4114	0.1205	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-15-ETA-4	1	1	9.861	10.80	0.4153	0.1206	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-11-ETA-1	1	2	9.651	10.48	0.3859	0.1229	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-13-ETA-2	1	2	9.577	10.33	0.3901	0.1218	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-14-ETA-3	1	2	9.500	10.41	0.3891	0.1210	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-15-ETA-4	1	2	9.470	10.30	0.3820	0.1221	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-11-ETA-1	2	1	9.951	10.76	0.4080	0.1212	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-12-ETA-2	2	1	9.739	10.55	0.4063	0.1214	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-14-ETA-3	2	1	9.651	10.68	0.3989	0.1219	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-15-ETA-4	2	1	9.594	10.52	0.3988	0.1216	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-11-ETA-1	2	2	9.571	10.35	0.3930	0.1220	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-13-ETA-2	2	2	9.335	10.30	0.3943	0.1219	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-14-ETA-3	2	2	9.806	10.54	0.4011	0.1220	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-15-ETA-4	2	2	9.684	10.39	0.3803	0.1214	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-11-ETA-1	3	3	9.294	10.10	0.3573	0.1235	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-12-ETA-2	3	3	9.323	10.09	0.3646	0.1226	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-14-ETA-3	3	3	8.979	9.833	0.3509	0.1232	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-15-ETA-4	3	3	9.429	10.17	0.3792	0.1214	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-11-ETA-1	3	3	8.751	9.858	0.3611	0.1254	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-12-ETA-2	3	3	8.888	9.982	0.3611	0.1249	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-14-ETA-3	3	3	8.976	9.930	0.3600	0.1242	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-15-ETA-4	3	3	9.027	10.09	0.3679	0.1245	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-11-ETA-1	4	4	9.113	9.961	0.3749	0.1225	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-12-ETA-2	4	4	9.333	10.16	0.3875	0.1220	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-14-ETA-3	4	4	9.042	9.904	0.3803	0.1217	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-15-ETA-4	4	4	9.238	9.966	0.3777	0.1218	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-11-ETA-1	4	4	8.102	8.654	0.3271	0.1235	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-13-ETA-2	4	4	7.677	8.235	0.3166	0.1232	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-14-ETA-3	4	4	8.195	8.707	0.3252	0.1228	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-15-ETA-4	4	4	7.623	8.180	0.3188	0.1233	TAB

Average	9.279	10.11	0.3779	0.1223
Standard Dev.	0.6556	0.7458	0.02790	0.001299
Coeff. of Var. [%]	7.065	7.374	7.383	1.062
Min.	7.623	8.180	0.3166	0.1203
Max.	10.44	11.47	0.4163	0.1254
Number of Spec.	32	32	32	32

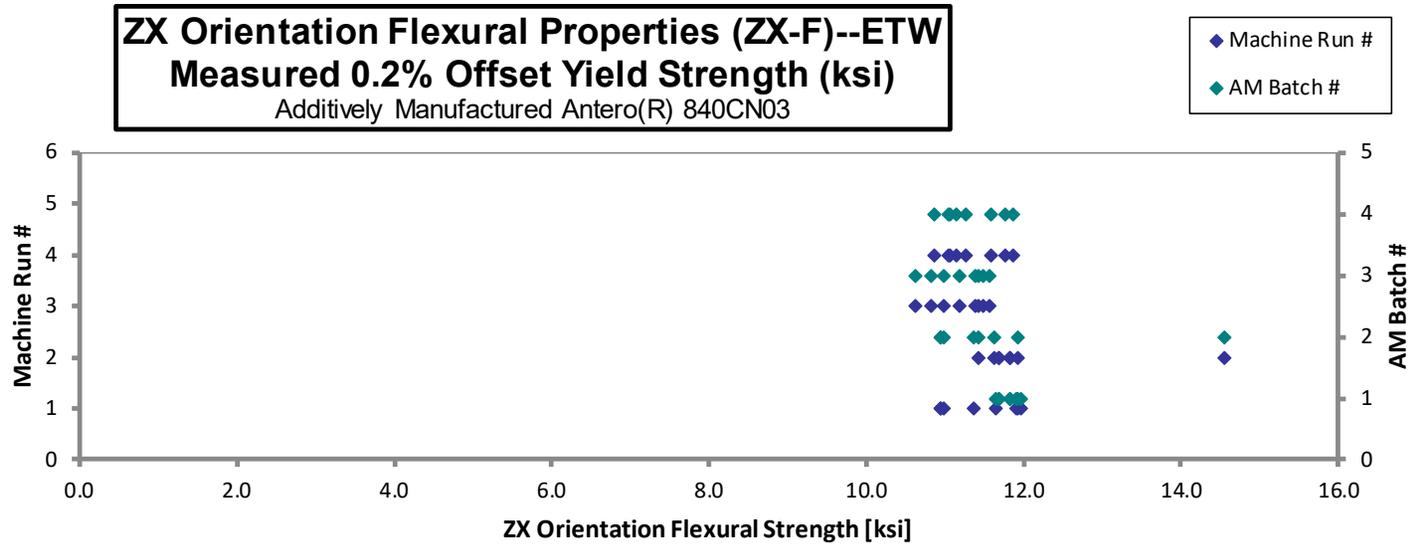


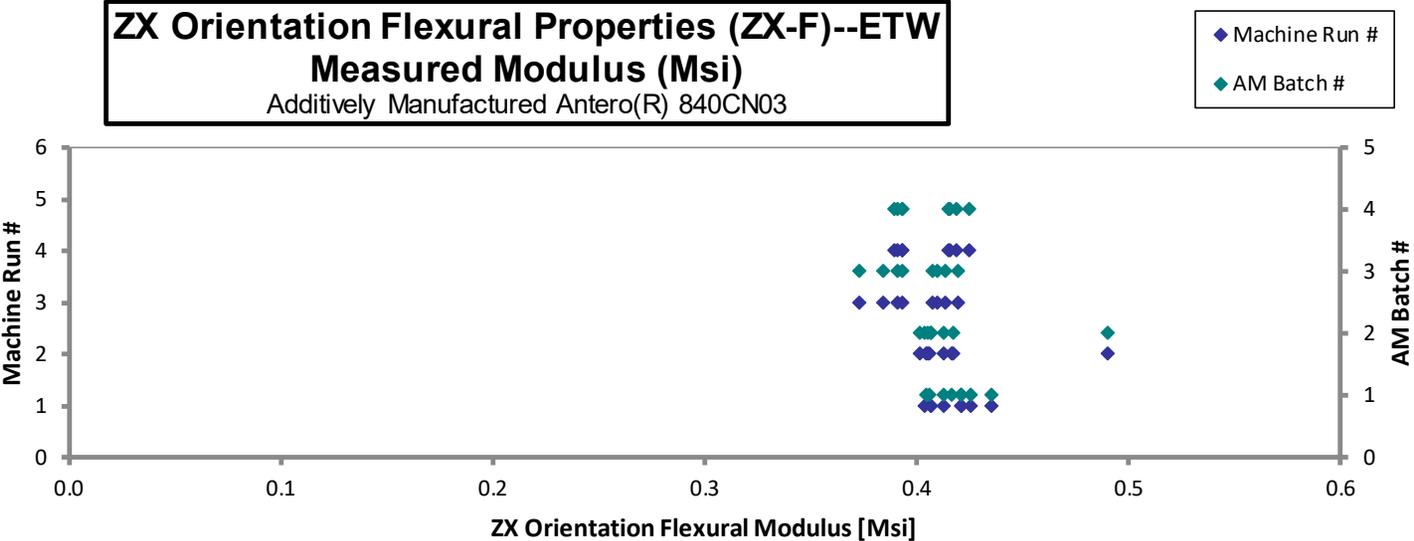


ZX Orientation Flexural Properties (ZX-F)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-11-ETW-1	1	1	11.93	13.56	0.4352	0.1213	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-12-ETW-2	1	1	11.96	13.43	0.4208	0.1210	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-14-ETW-3	1	1	11.64	13.38	0.4251	0.1204	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-F-15-ETW-4	1	1	11.90	13.39	0.4208	0.1211	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-11-ETW-1	1	2	11.83	13.20	0.4042	0.1237	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-12-ETW-2	1	2	11.69	12.52	0.4129	0.1229	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-14-ETW-3	1	2	11.68	13.00	0.4161	0.1218	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-F-15-ETW-4	1	2	11.83	13.06	0.4061	0.1224	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-11-ETW-1	2	1	10.94	11.67	0.4065	0.1223	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-12-ETW-2	2	1	10.93	12.18	0.4033	0.1226	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-14-ETW-3	2	1	11.36	12.57	0.4123	0.1226	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-F-15-ETW-4	2	1	10.98	12.09	0.4065	0.1222	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-11-ETW-1	2	2	11.63	12.73	0.4170	0.1223	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-13-ETW-2	2	2	14.56	15.95	0.4901	0.1248	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-14-ETW-3	2	2	11.92	13.18	0.4053	0.1234	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-F-15-ETW-4	2	2	11.42	12.53	0.4011	0.1223	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-11-ETW-1	3	3	11.57	12.95	0.4197	0.1228	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-12-ETW-2	3	3	11.48	12.86	0.4131	0.1222	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-14-ETW-3	3	3	11.38	12.63	0.4095	0.1217	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-F-15-ETW-4	3	3	11.42	12.61	0.4071	0.1216	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-11-ETW-1	3	3	11.19	12.59	0.3933	0.1249	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-12-ETW-2	3	3	10.99	12.38	0.3843	0.1244	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-14-ETW-3	3	3	10.63	12.07	0.3729	0.1249	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-F-15-ETW-4	3	3	10.83	12.28	0.3911	0.1241	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-11-ETW-1	4	4	11.27	12.69	0.4150	0.1227	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-12-ETW-2	4	4	11.76	13.10	0.4249	0.1209	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-14-ETW-3	4	4	11.59	12.99	0.4155	0.1209	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-F-15-ETW-4	4	4	11.86	13.08	0.4189	0.1205	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-11-ETW-1	4	4	11.05	12.53	0.3933	0.1239	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-13-ETW-2	4	4	11.15	12.66	0.3894	0.1239	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-14-ETW-3	4	4	10.86	12.49	0.3934	0.1232	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-F-15-ETW-4	4	4	11.07	12.62	0.3906	0.1233	TAB

Average	11.51	12.84	0.4099	0.1226
Standard Dev.	0.6748	0.7154	0.01994	0.001286
Coeff. of Var. [%]	5.863	5.571	4.865	1.049
Min.	10.63	11.67	0.3729	0.1204
Max.	14.56	15.95	0.4901	0.1249
Number of Spec.	32	32	32	32





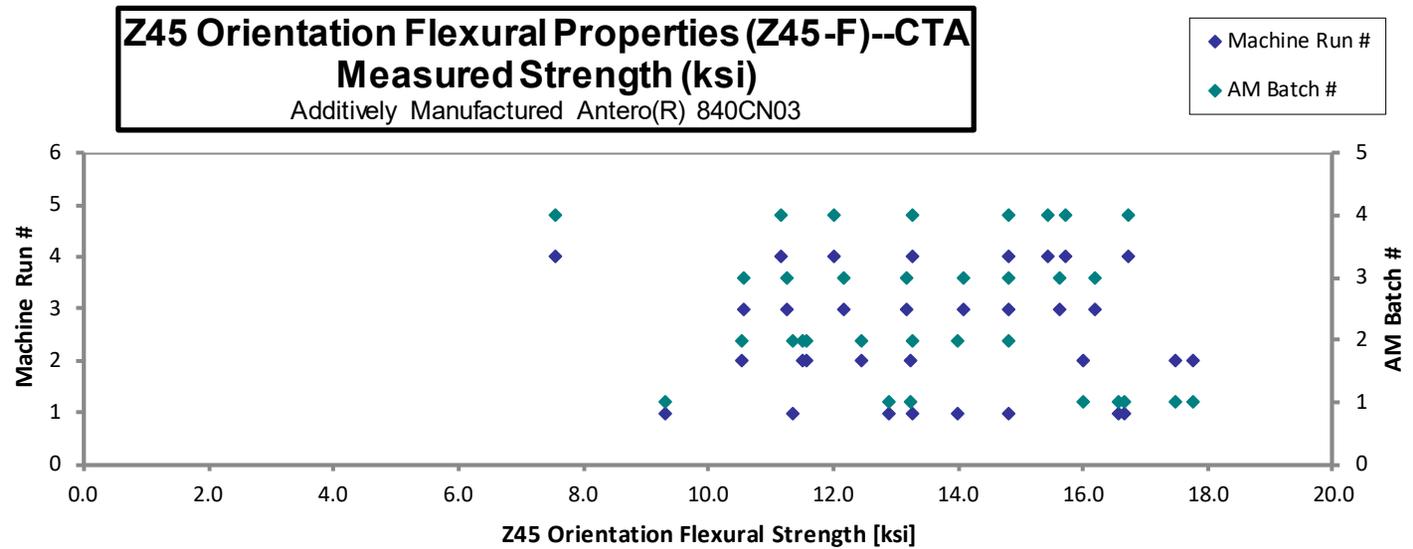
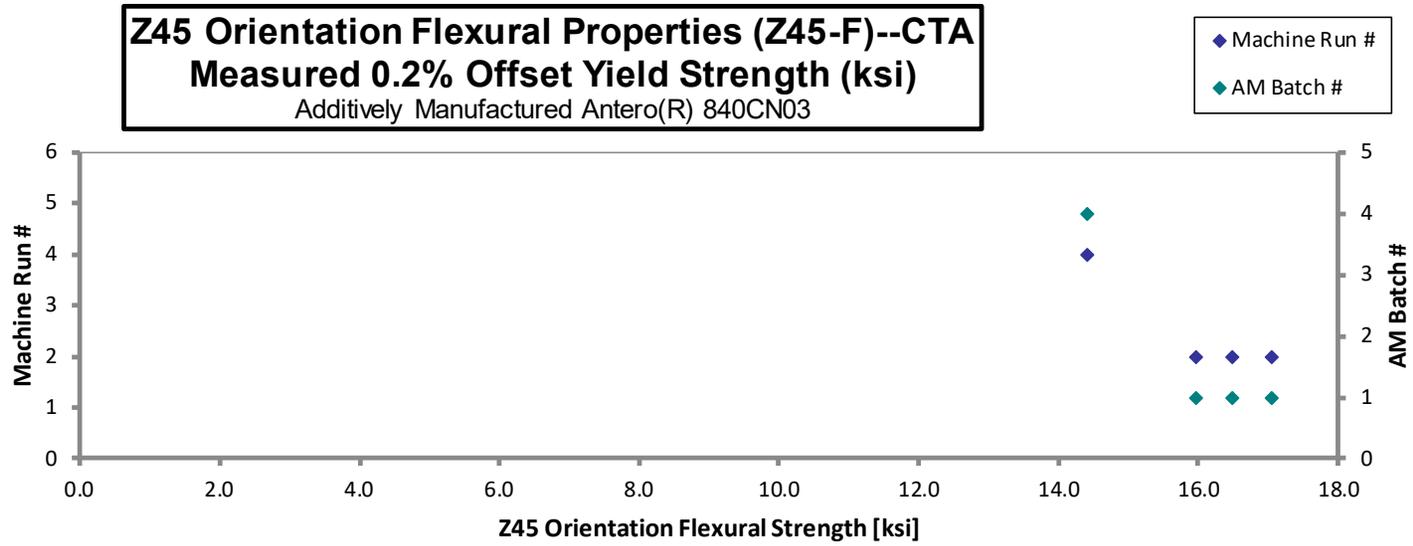
4.12 Z45 Flex Proc. B Properties (Z45-F)

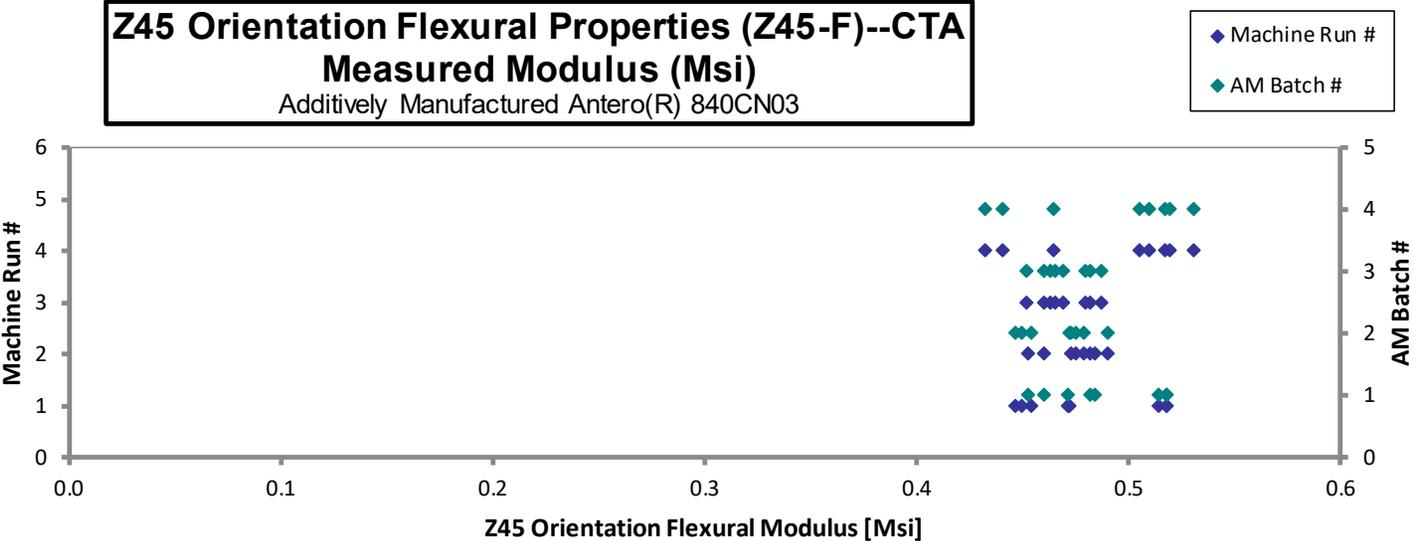
Z45 Orientation Flexural Properties (Z45-F)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-11-CTA-1*	1	1		16.56	0.4716	0.1205	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-12-CTA-2*	1	1		16.67	0.5181	0.1203	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-14-CTA-3*	1	1		9.331	0.5143	0.1201	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-15-CTA-4*	1	1		12.89	0.5178	0.1201	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-11-CTA-1	1	2	15.97	16.01	0.4843	0.1230	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-13-CTA-2	1	2	16.49	17.49	0.4818	0.1220	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-14-CTA-3	1	2	17.04	17.76	0.4601	0.1225	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-15-CTA-4*	1	2		13.24	0.4524	0.1228	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-11-CTA-1*	2	1		13.29	0.4462	0.1211	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-12-CTA-2*	2	1		14.81	0.4538	0.1209	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-14-CTA-3*	2	1		11.37	0.4492	0.1210	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-15-CTA-4*	2	1		14.01	0.4722	0.1214	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-11-CTA-1*	2	2		12.47	0.4729	0.1220	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-13-CTA-2*	2	2		11.57	0.4748	0.1218	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-14-CTA-3*	2	2		11.50	0.4787	0.1220	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-15-CTA-4*	2	2		10.53	0.4899	0.1219	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-11-CTA-1*	3	3		12.18	0.4820	0.1227	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-12-CTA-2*	3	3		11.27	0.4874	0.1219	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-14-CTA-3*	3	3		15.63	0.4691	0.1228	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-15-CTA-4*	3	3		10.56	0.4631	0.1220	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-11-CTA-1*	3	3		16.21	0.4656	0.1227	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-12-CTA-2*	3	3		13.19	0.4795	0.1239	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-14-CTA-3*	3	3		14.82	0.4601	0.1236	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-15-CTA-4*	3	3		14.09	0.4517	0.1230	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-11-CTA-1*	4	4		15.74	0.5052	0.1221	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-12-CTA-2*	4	4		14.83	0.5171	0.1212	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-14-CTA-3*	4	4		11.18	0.5198	0.1209	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-15-CTA-4*	4	4		7.555	0.5099	0.1210	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-11-CTA-1	4	4	14.40	16.73	0.5309	0.1216	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-13-CTA-2*	4	4		15.43	0.4647	0.1215	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-14-CTA-3*	4	4		13.29	0.4321	0.1218	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-15-CTA-4*	4	4		12.03	0.4403	0.1216	TAB, CAT

*0.2% yield is not reported as specimen failed prior to obtaining 0.2% strain

Average	15.98	13.57	0.4786	0.1218
Standard Dev.	1.135	2.507	0.02622	0.0009576
Coeff. of Var. [%]	7.105	18.48	5.478	0.7863
Min.	14.40	7.555	0.4321	0.1201
Max.	17.04	17.76	0.5309	0.1239
Number of Spec.	4	32	32	32





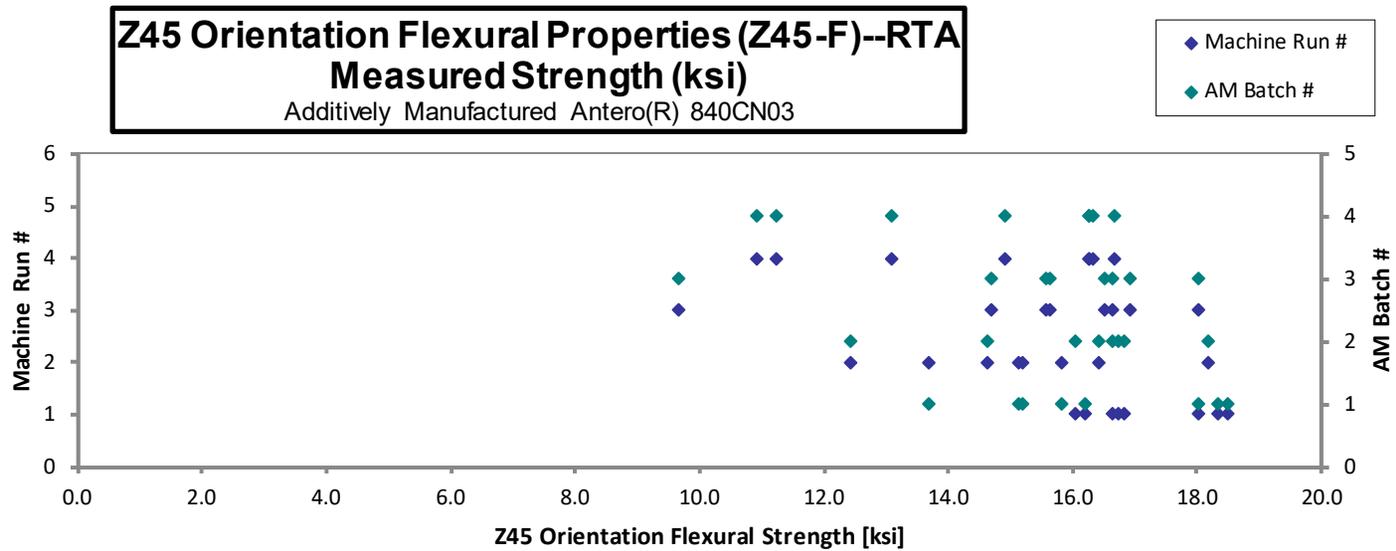
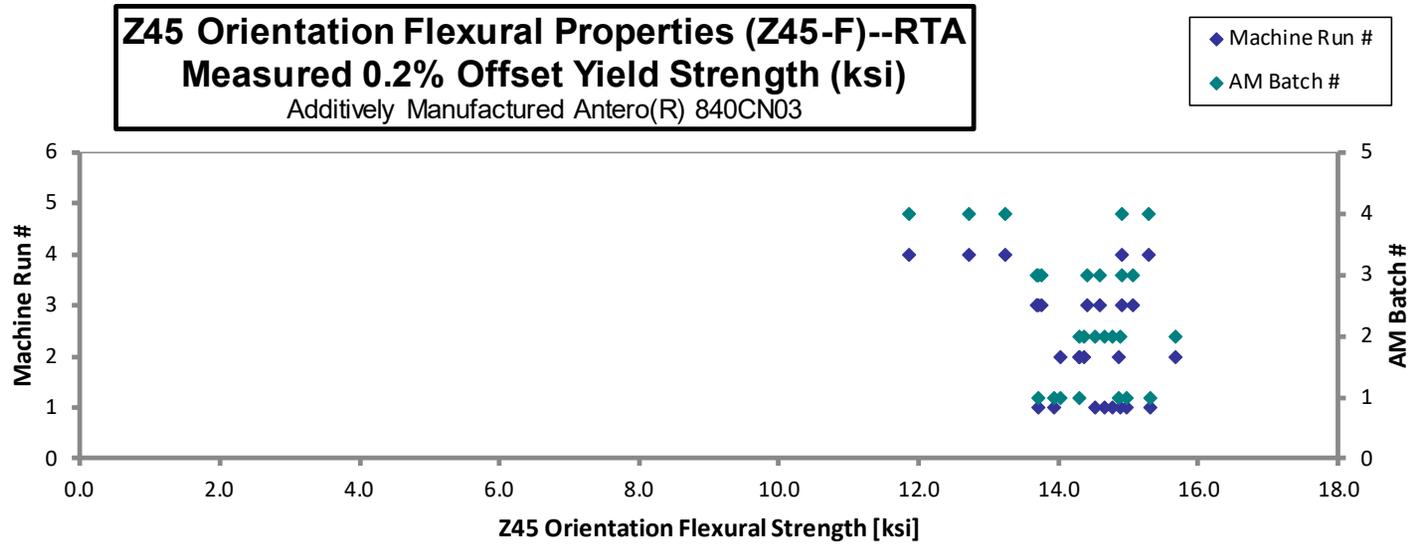
Z45 Orientation Flexural Properties (Z45-F)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

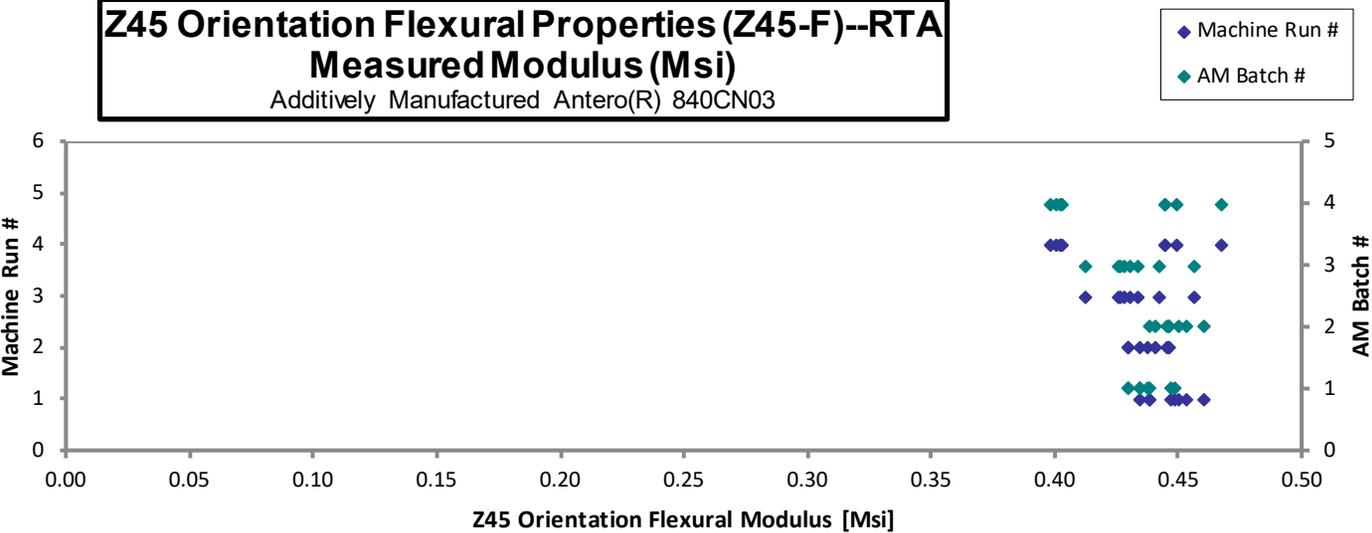
Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksj]	Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-11-RTA-1**	1	1	13.93	18.02	0.4474	0.1218	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-12-RTA-2**	1	1	14.97	18.35	0.4341	0.1217	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-14-RTA-3**	1	1	15.30	18.50	0.4381	0.1214	TAB, CAT
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-15-RTA-4	1	1	13.71	16.22	0.4487	0.1207	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-11-RTA-1	1	2	14.86	15.20	0.4342	0.1225	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-13-RTA-2	1	2	14.29	15.15	0.4295	0.1230	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-14-RTA-3	1	2	14.04	15.85	0.4300	0.1227	TAB, CAT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-15-RTA-4*	1	2	13.68	13.68	0.4373	0.1227	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-11-RTA-1	2	1	14.53	16.06	0.4532	0.1211	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-12-RTA-2	2	1	14.77	16.83	0.4601	0.1208	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-14-RTA-3	2	1	14.88	16.76	0.4388	0.1210	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-15-RTA-4	2	1	14.65	16.66	0.4499	0.1211	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-11-RTA-1**	2	2	14.29	18.18	0.4455	0.1218	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-13-RTA-2*	2	2		12.45	0.4461	0.1207	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-14-RTA-3	2	2	15.67	16.44	0.4408	0.1212	TAB, CAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-15-RTA-4	2	2	14.37	14.65	0.4464	0.1208	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-11-RTA-1	3	3	13.70	14.71	0.4260	0.1223	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-12-RTA-2	3	3	13.76	15.66	0.4285	0.1218	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-14-RTA-3	3	3	13.70	16.51	0.4427	0.1221	TAB, CAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-15-RTA-4*	3	3		9.66	0.4304	0.1219	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-11-RTA-1	3	3	14.90	16.93	0.4567	0.1231	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-12-RTA-2	3	3	15.06	15.59	0.4122	0.1240	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-14-RTA-3	3	3	14.41	16.64	0.4269	0.1240	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-15-RTA-4**	3	3	14.60	18.04	0.4339	0.1240	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-11-RTA-1	4	4	14.90	16.26	0.4445	0.1215	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-12-RTA-2	4	4	15.30	16.69	0.4497	0.1213	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-14-RTA-3*	4	4		13.11	0.4679	0.1211	TAB, CAT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-15-RTA-4*	4	4		10.93	0.4445	0.1214	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-11-RTA-1**	4	4	12.73	16.28	0.4006	0.1232	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-13-RTA-2**	4	4	13.24	16.34	0.4023	0.1223	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-14-RTA-3	4	4	11.87	14.91	0.4029	0.1232	TAB, CAT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-15-RTA-4*	4	4		11.24	0.3979	0.1224	TAB, CAT

*0.2% yield is not reported as specimen failed prior to obtaining 0.2% strain

**Coupons failed after 5% was achieved

Average	14.32	15.58	0.4359	0.1220
Standard Dev.	0.8449	2.159	0.01739	0.0009961
Coeff. of Var. [%]	5.899	13.86	3.990	0.8164
Min.	11.87	9.657	0.3979	0.1207
Max.	15.67	18.50	0.4679	0.1240
Number of Spec.	26	32	32	32

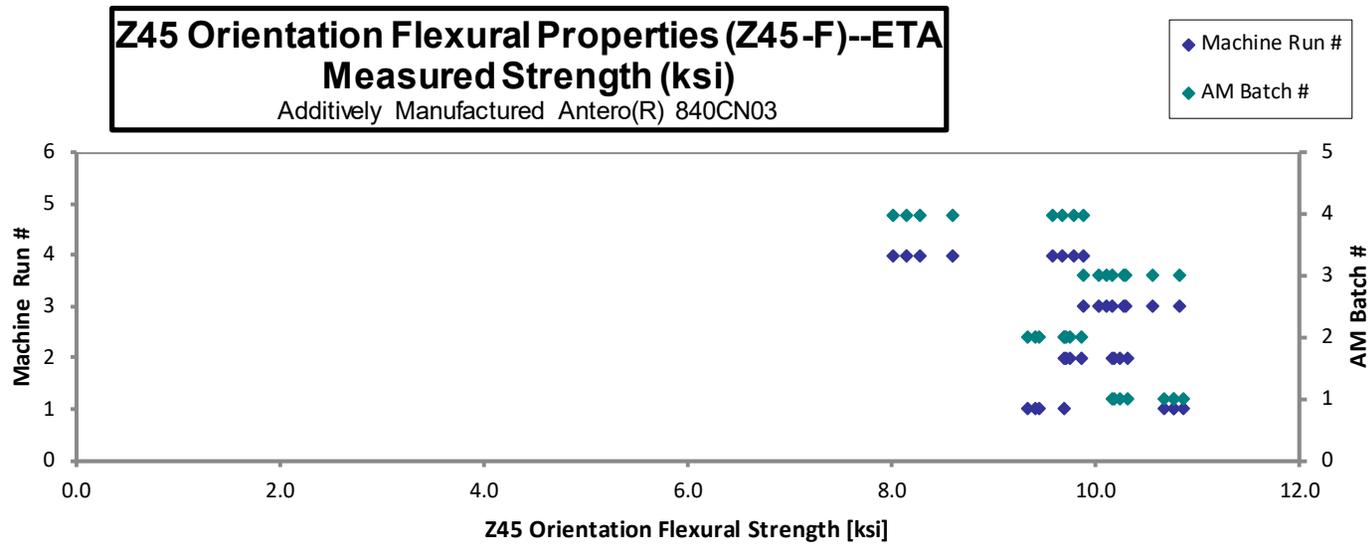
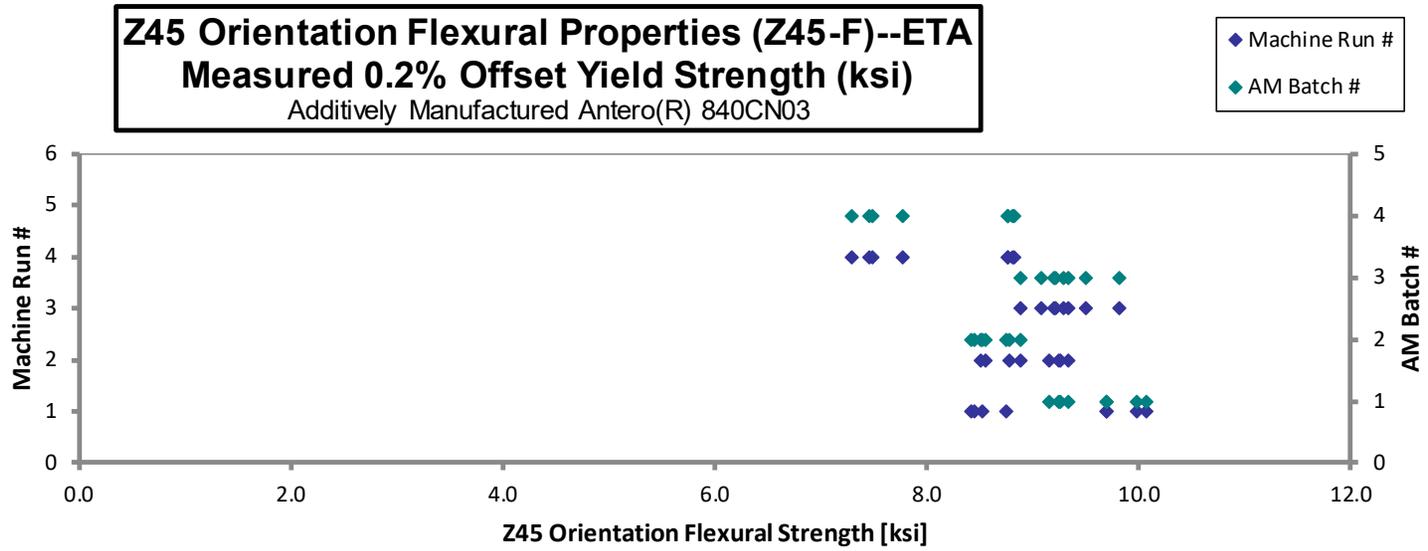


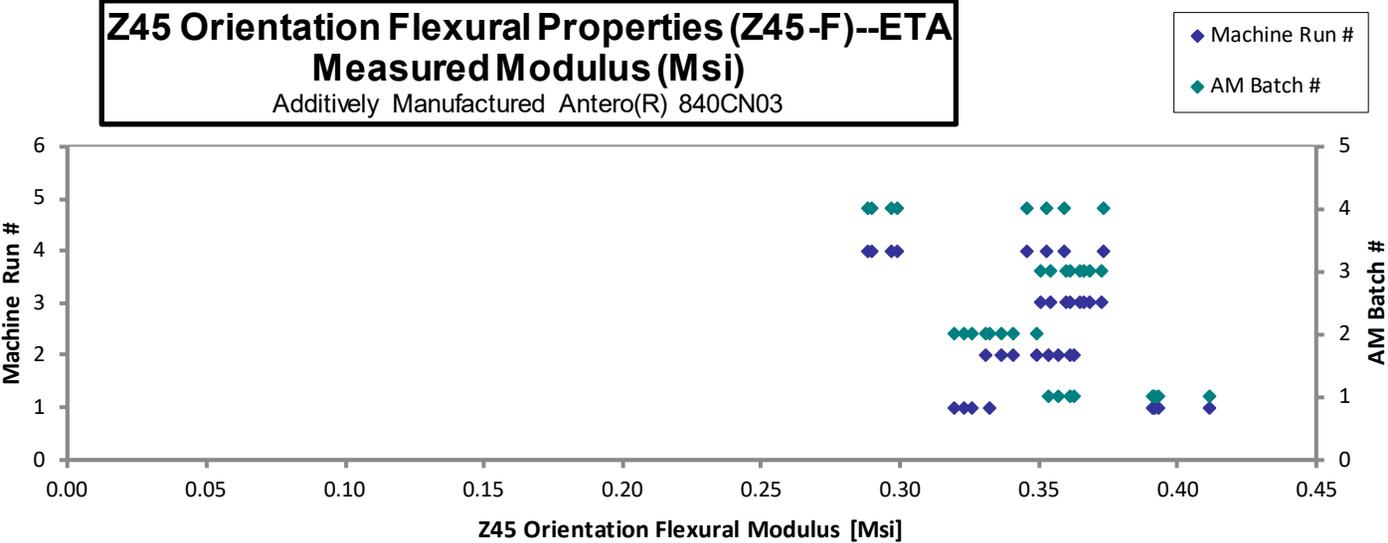


Z45 Orientation Flexural Properties (Z45-F)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksi]	Modulus [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-11-ETA-1	1	1	9.704	10.76	0.4113	0.1210	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-12-ETA-2	1	1	9.702	10.67	0.3914	0.1213	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-14-ETA-3	1	1	9.984	10.85	0.3909	0.1207	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-15-ETA-4	1	1	10.08	10.77	0.3932	0.1213	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-11-ETA-1	1	2	9.163	10.24	0.3624	0.1239	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-13-ETA-2	1	2	9.253	10.16	0.3567	0.1234	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-14-ETA-3	1	2	9.267	10.18	0.3536	0.1227	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-15-ETA-4	1	2	9.340	10.31	0.3610	0.1232	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-11-ETA-1	2	1	8.451	9.403	0.3194	0.1243	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-12-ETA-2	2	1	8.748	9.678	0.3319	0.1232	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-14-ETA-3	2	1	8.425	9.331	0.3229	0.1246	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-15-ETA-4	2	1	8.527	9.442	0.3261	0.1243	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-11-ETA-1	2	2	8.787	9.703	0.3305	0.1226	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-13-ETA-2	2	2	8.551	9.677	0.3362	0.1221	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-14-ETA-3	2	2	8.879	9.856	0.3409	0.1214	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-15-ETA-4	2	2	8.502	9.736	0.3495	0.1226	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-11-ETA-1	3	3	9.822	10.81	0.3610	0.1227	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-12-ETA-2	3	3	9.495	10.55	0.3600	0.1224	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-14-ETA-3	3	3	9.285	10.29	0.3541	0.1225	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-15-ETA-4	3	3	9.343	10.28	0.3660	0.1224	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-11-ETA-1	3	3	8.889	9.871	0.3509	0.1229	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-12-ETA-2	3	3	9.074	10.03	0.3649	0.1225	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-14-ETA-3	3	3	9.195	10.15	0.3726	0.1222	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-15-ETA-4	3	3	9.212	10.11	0.3686	0.1219	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-11-ETA-1	4	4	8.826	9.785	0.3459	0.1222	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-12-ETA-2	4	4	8.765	9.569	0.3530	0.1224	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-14-ETA-3	4	4	8.813	9.869	0.3736	0.1214	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-15-ETA-4	4	4	8.766	9.665	0.3591	0.1228	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-11-ETA-1	4	4	7.454	8.274	0.2966	0.1233	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-13-ETA-2	4	4	7.481	8.143	0.2880	0.1239	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-14-ETA-3	4	4	7.768	8.586	0.2986	0.1226	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-15-ETA-4	4	4	7.292	8.012	0.2897	0.1231	TAB

Average	8.901	9.837	0.3494	0.1226
Standard Dev.	0.6967	0.7436	0.02992	0.0009623
Coeff. of Var. [%]	7.827	7.559	8.564	0.7848
Min.	7.292	8.012	0.2880	0.1207
Max.	10.08	10.85	0.4113	0.1246
Number of Spec.	32	32	32	32

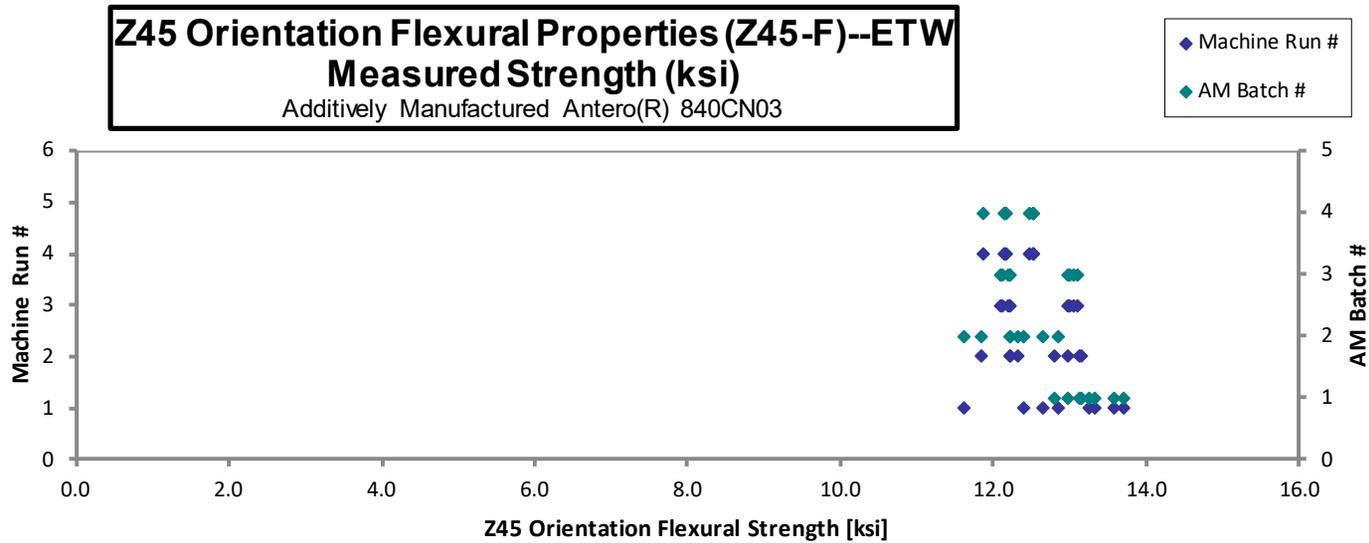
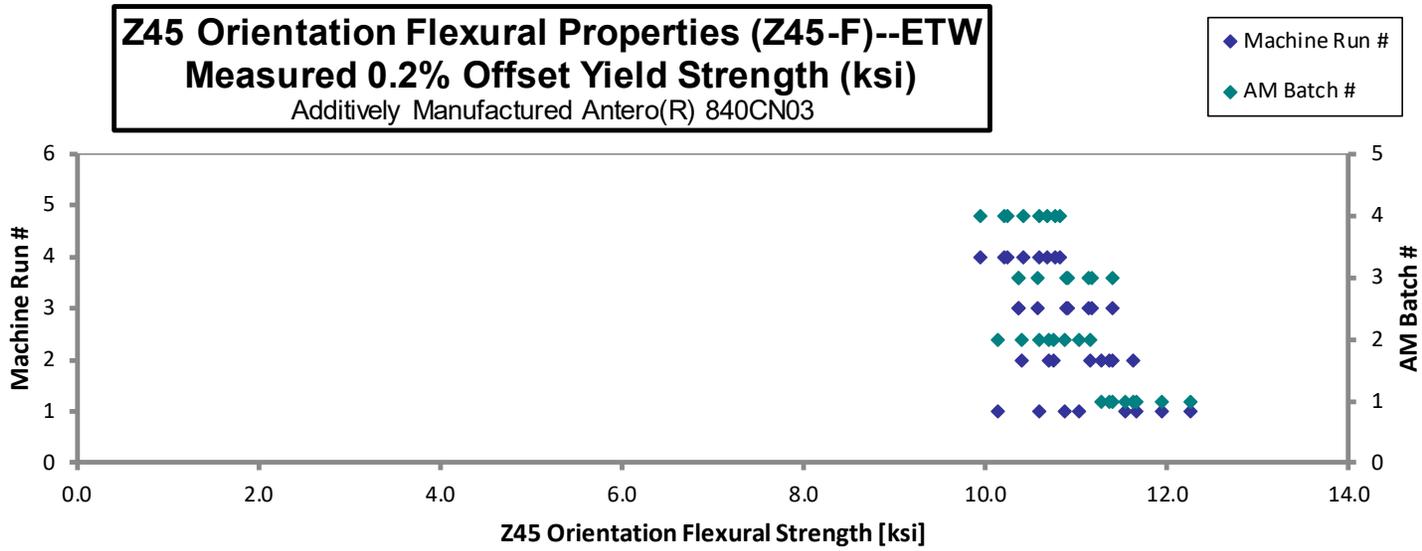


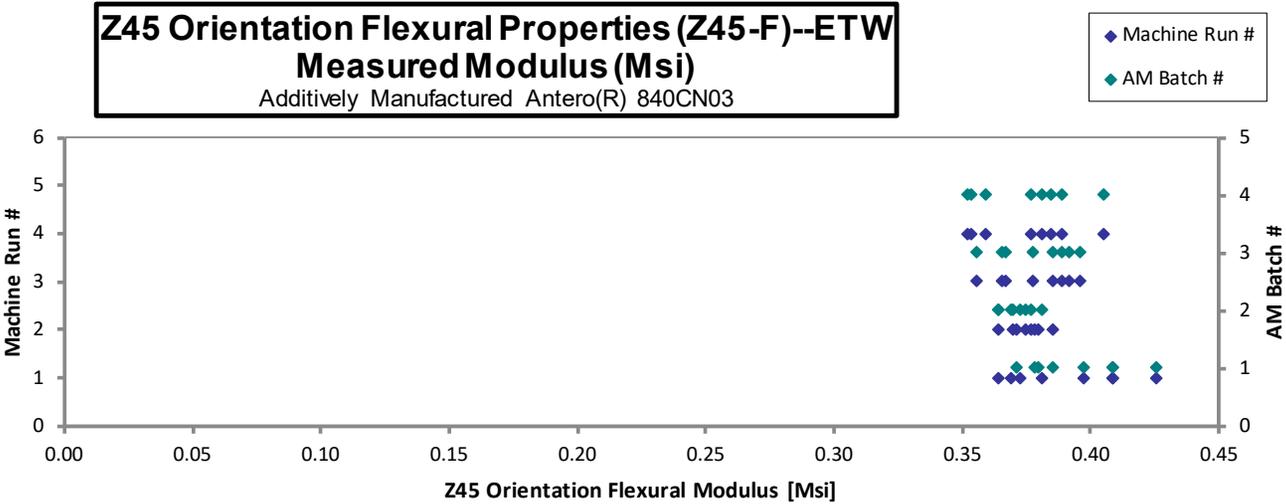


Z45 Orientation Flexural Properties (Z45-F)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	0.2% Offset Yield Strength [ksi]	Flexural Strength [ksi]	Modulus [Ms]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-11-ETW-1	1	1	11.66	13.27	0.4256	0.1215	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-12-ETW-2	1	1	11.95	13.59	0.3973	0.1216	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-14-ETW-3	1	1	12.27	13.73	0.4088	0.1213	TAB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-F-15-ETW-4	1	1	11.55	13.35	0.4088	0.1218	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-11-ETW-1	1	2	11.63	13.15	0.3850	0.1234	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-12-ETW-2	1	2	11.37	12.98	0.3799	0.1227	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-14-ETW-3	1	2	11.28	12.80	0.3708	0.1225	TAB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-F-15-ETW-4	1	2	11.39	13.17	0.3784	0.1234	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-11-ETW-1	2	1	11.03	12.86	0.3811	0.1229	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-12-ETW-2	2	1	10.87	12.66	0.3728	0.1233	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-14-ETW-3	2	1	10.14	11.62	0.3640	0.1244	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-F-15-ETW-4	2	1	10.59	12.41	0.3693	0.1235	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-11-ETW-1	2	2	10.76	12.33	0.3769	0.1225	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-13-ETW-2	2	2	10.70	12.22	0.3697	0.1224	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-14-ETW-3	2	2	10.41	11.85	0.3750	0.1236	TAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-F-15-ETW-4	2	2	11.16	12.22	0.3641	0.1231	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-11-ETW-1	3	3	11.41	13.06	0.3853	0.1236	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-12-ETW-2	3	3	10.91	13.01	0.3888	0.1237	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-14-ETW-3	3	3	11.18	12.99	0.3920	0.1228	TAB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-F-15-ETW-4	3	3	11.13	13.12	0.3959	0.1226	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-11-ETW-1	3	3	10.36	12.10	0.3656	0.1258	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-12-ETW-2	3	3	10.36	12.21	0.3670	0.1254	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-14-ETW-3	3	3	10.89	12.22	0.3553	0.1250	TAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-F-15-ETW-4	3	3	10.57	12.14	0.3775	0.1255	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-11-ETW-1	4	4	10.59	12.53	0.4049	0.1229	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-12-ETW-2	4	4	10.76	12.49	0.3887	0.1224	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-14-ETW-3	4	4	10.82	12.54	0.3845	0.1224	TAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-F-15-ETW-4	4	4	10.67	12.53	0.3813	0.1224	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-11-ETW-1	4	4	10.24	12.14	0.3592	0.1239	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-13-ETW-2	4	4	10.42	12.18	0.3533	0.1230	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-14-ETW-3	4	4	10.21	11.87	0.3520	0.1232	TAB
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-F-15-ETW-4	4	4	9.951	12.17	0.3769	0.1237	TAB

Average	10.91	12.61	0.3799	0.1232
Standard Dev.	0.5521	0.5313	0.01716	0.001111
Coef. of Var. [%]	5.059	4.213	4.516	0.9018
Min.	9.951	11.62	0.3520	0.1213
Max.	12.27	13.73	0.4256	0.1258
Number of Spec.	32	32	32	32





4.13XY Rail Shear In-Plane Shear Properties (XY-RS)

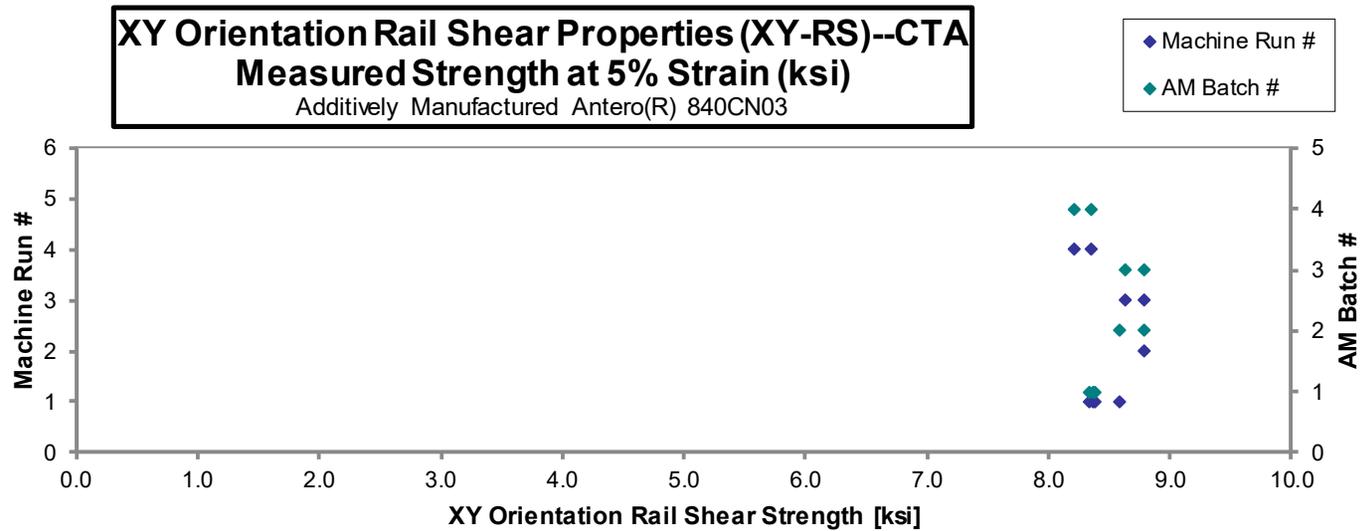
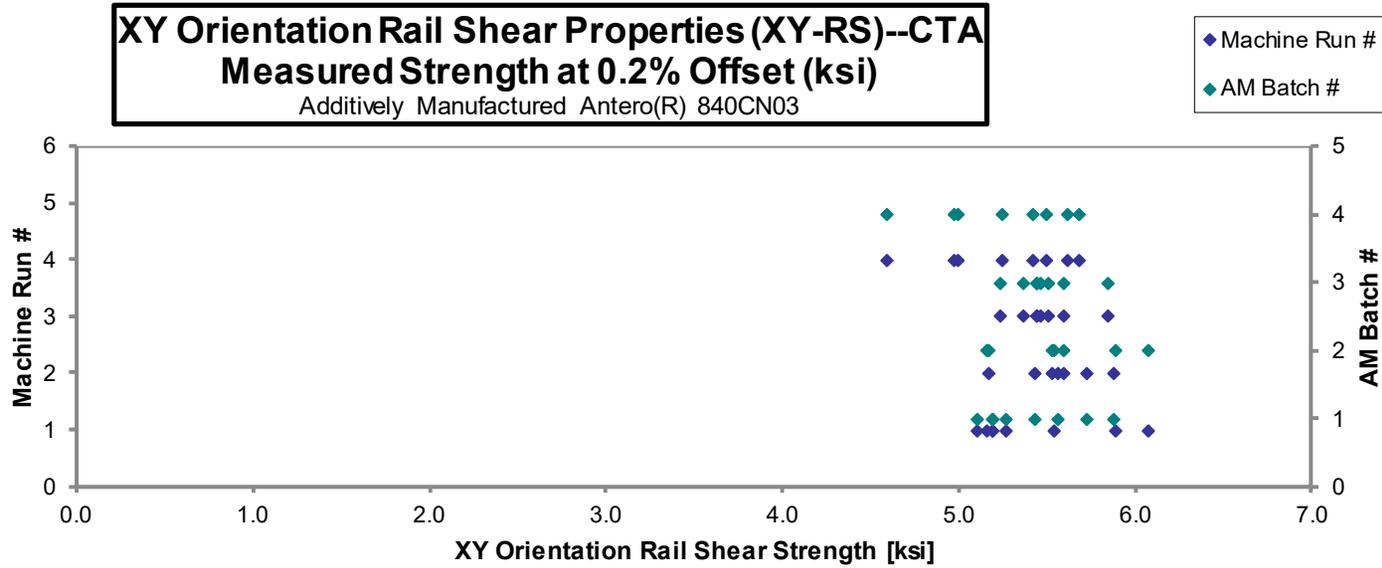
XY Orientation Rail Shear Properties (XY-RS)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

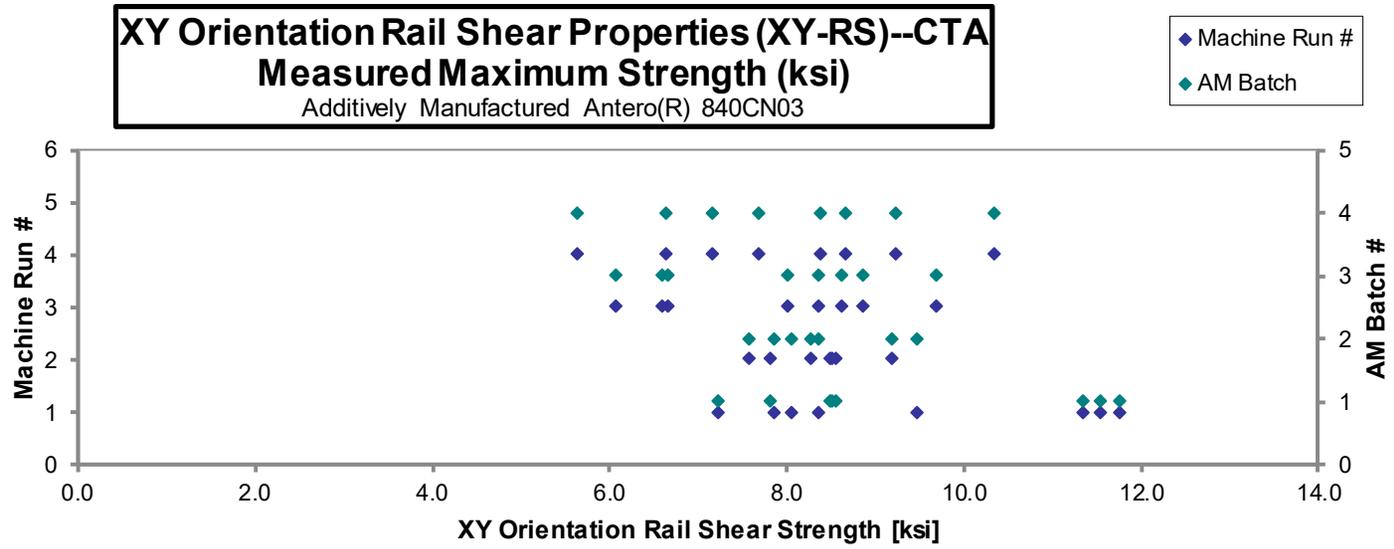
Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-11-CTA-1	1	1	5.193	8.387	11.77	0.2010	0.1325	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-12-CTA-2	1	1	5.105	8.339	11.54	0.2009	0.1339	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-14-CTA-3*	1	1	5.271		7.225	0.2152	0.1330	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-15-CTA-4	1	1	5.194	8.370	11.34	0.2005	0.1326	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-11-CTA-1*	1	2	5.883		7.822	0.2357	0.1315	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-13-CTA-2*	1	2	5.732		8.483	0.2327	0.1322	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-14-CTA-3*	1	2	5.433		8.502	0.2225	0.1321	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-15-CTA-4*	1	2	5.567		8.553	0.2255	0.1324	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-11-CTA-1*	2	1	6.075		8.367	0.2315	0.1318	M(V,A)GN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-12-CTA-2*	2	1	5.886		8.061	0.2290	0.1327	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-14-CTA-3*	2	1	5.541		7.848	0.2188	0.1328	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-15-CTA-4	2	1	5.162	8.586	9.481	0.2067	0.1364	M(V,A)GN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-11-CTA-1**	2	2					0.1331	
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-13-CTA-2*	2	2	5.527		7.576	0.2198	0.1334	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-14-CTA-3*	2	2	5.598		8.267	0.2254	0.1365	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-15-CTA-4	2	2	5.168	8.791	9.191	0.2147	0.1359	M(V,A)GN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-11-CTA-1*	3	3	5.447		8.619	0.2104	0.1294	AGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-12-CTA-2*	3	3	5.602		8.353	0.2209	0.1297	AGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-14-CTA-3	3	3	5.233	8.630	8.866	0.2065	0.1309	AGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-15-CTA-4	3	3	5.364	8.797	9.683	0.2118	0.1294	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-11-CTA-1*	3	3	5.442		6.668	0.2120	0.1320	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-12-CTA-2*	3	3	5.462		6.071	0.2067	0.1324	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-14-CTA-3*	3	3	5.505		8.018	0.2035	0.1319	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-15-CTA-4*	3	3	5.848		6.598	0.2088	0.1321	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-11-CTA-1*	4	4	5.686		6.627	0.2122	0.1316	AGN, ANA
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-12-CTA-2	4	4	5.251	8.355	10.34	0.1984	0.1324	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-14-CTA-3*	4	4	5.622		8.658	0.2048	0.1316	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-15-CTA-4*	4	4	5.502		8.372	0.2033	0.1315	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-11-CTA-1*	4	4	5.425		7.150	0.2188	0.1301	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-13-CTA-2	4	4	4.599	8.209	9.225	0.2027	0.1306	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-14-CTA-3*	4	4	4.992		7.673	0.2051	0.1294	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-15-CTA-4*	4	4	4.979		5.640	0.2113	0.1298	AGN

*Coupons fail prior to achieving 5% Shear Strength

**NIA-B-M3R2-XY-RS-11-CTA-1 was damaged during installation. Coupon was not tested

Average	5.429	8.496	8.406	0.2135	0.1321
Standard Dev.	0.3083	0.2116	1.478	0.01051	0.001823
Coeff. of Var. [%]	5.679	2.491	17.59	4.923	1.380
Min.	4.599	8.209	5.640	0.1984	0.1294
Max.	6.075	8.797	11.77	0.2357	0.1365
Number of Spec.	31	9	31	31	32





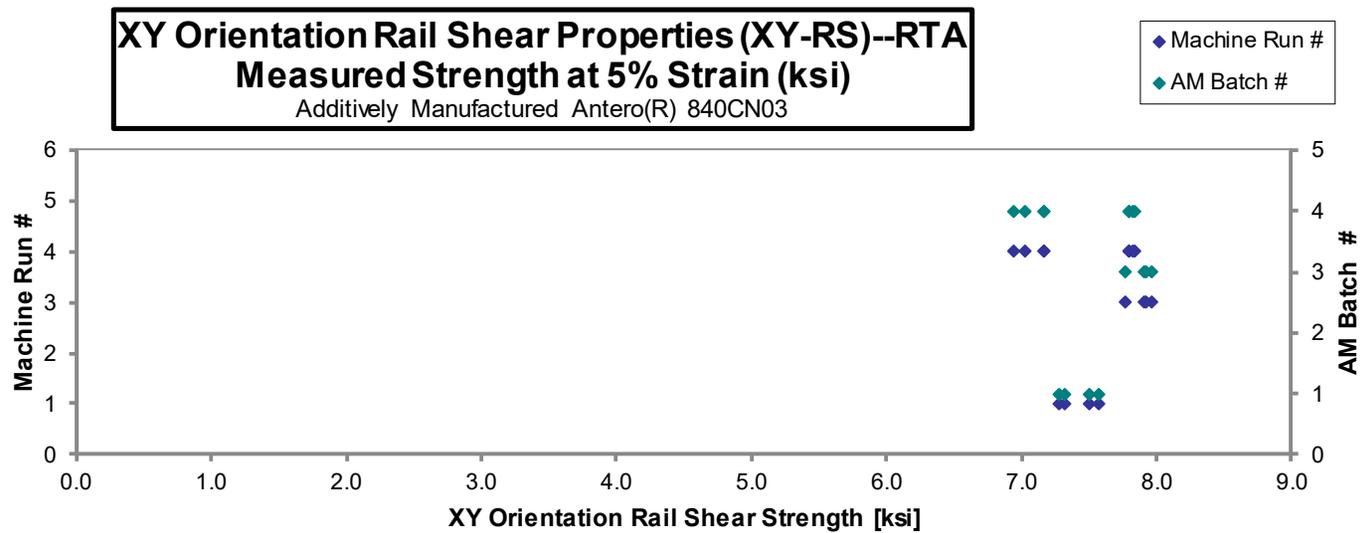
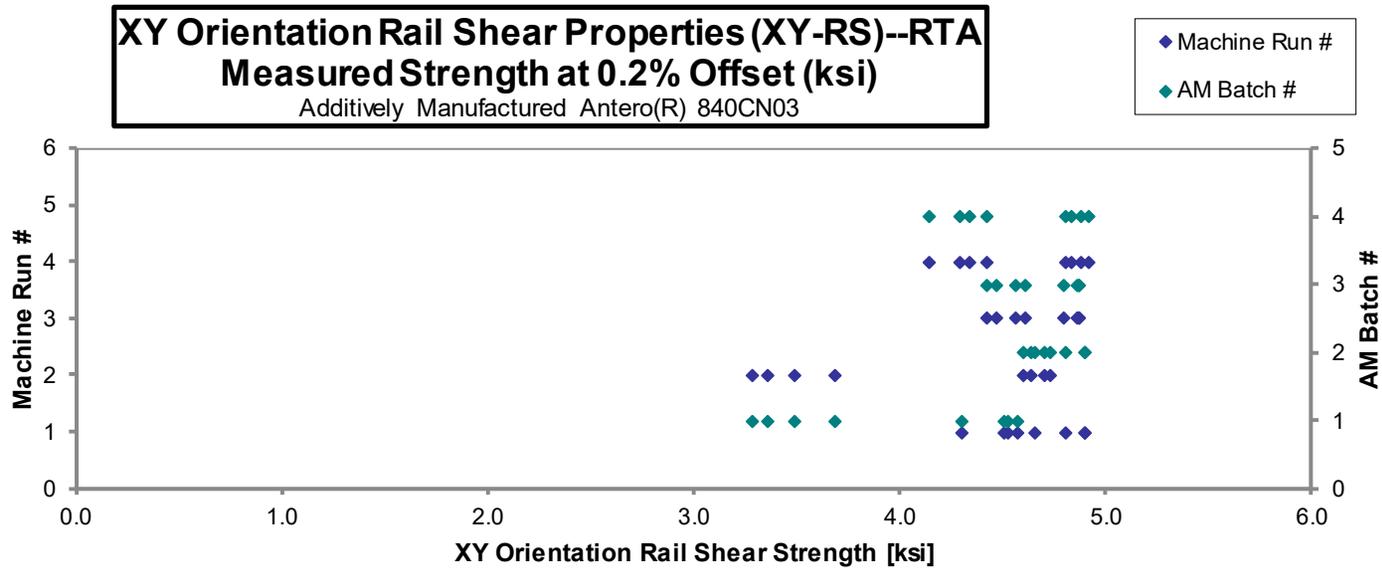
XY Orientation Rail Shear Properties (XY-RS)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

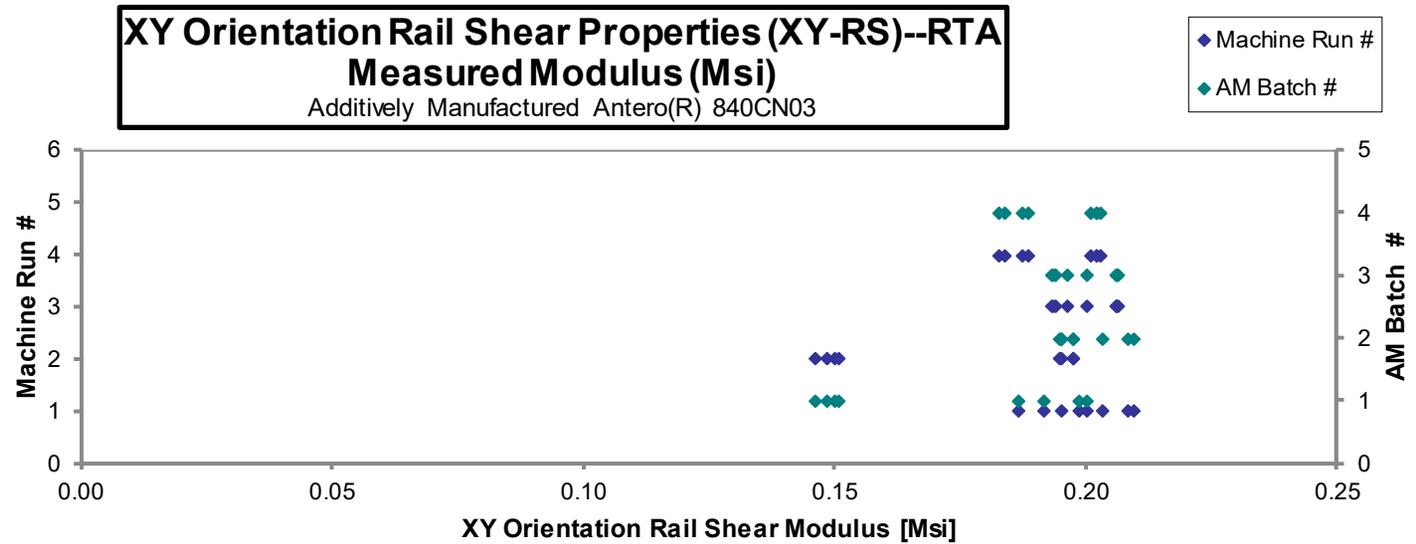
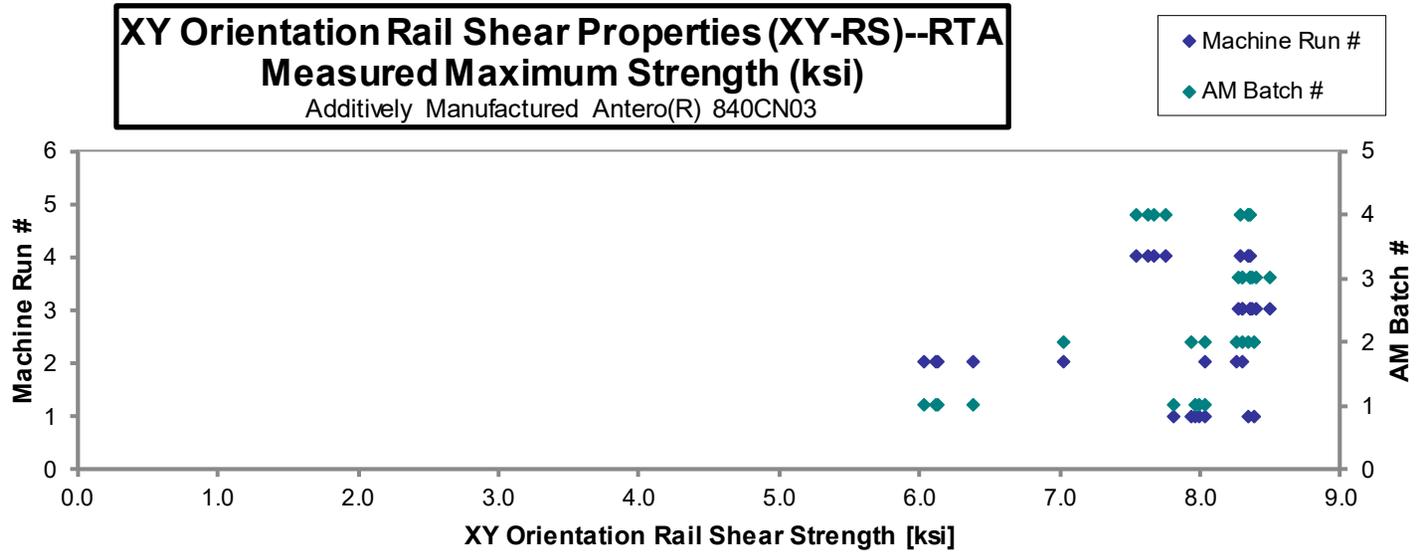
Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-11-RTA-1	1	1	4.577	7.577	8.040	0.2003	0.1307	M(V,A)GN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-12-RTA-2	1	1	4.506	7.324	7.996	0.1865	0.1312	M(V,A)GN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-14-RTA-3	1	1	4.299	7.275	7.818	0.1918	0.1323	M(V,A)GN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-15-RTA-4	1	1	4.525	7.502	7.966	0.1987	0.1310	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-11-RTA-1*	1	2	3.357		6.112	0.1483	0.1755	VGN, ANA
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-13-RTA-2*	1	2	3.281		6.031	0.1462	0.1755	VGN, ANA
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-14-RTA-3*	1	2	3.489		6.377	0.1500	0.1755	VGN, ANA
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-15-RTA-4*	1	2	3.686		6.126	0.1508	0.1755	ANA, AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-11-RTA-1*	2	1	4.808		8.349	0.2033	0.1304	VGN, AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-12-RTA-2*	2	1	4.904		8.390	0.2085	0.1305	VGN, AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-14-RTA-3*	2	1	4.900		7.939	0.2095	0.1304	VGN, AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-15-RTA-4**	2	1	4.655			0.1952	0.1307	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-11-RTA-1*	2	2	4.641		8.297	0.1976	0.1310	VGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-13-RTA-2*	2	2	4.598		8.257	0.1948	0.1326	VGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-14-RTA-3*	2	2	4.735		7.022	0.1953	0.1314	ANA, AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-15-RTA-4*	2	2	4.700		8.035	0.1974	0.1322	AGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-11-RTA-1*	3	3	4.560		8.395	0.1941	0.1296	VGN, AGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-12-RTA-2*	3	3	4.606		8.305	0.1962	0.1305	VGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-14-RTA-3*	3	3	4.428		8.270	0.1934	0.1312	VGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-15-RTA-4*	3	3	4.472		8.303	0.1937	0.1305	VGN, ANA
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-11-RTA-1	3	3	4.874	7.971	8.501	0.2066	0.1302	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-12-RTA-2	3	3	4.858	7.909	8.371	0.2061	0.1301	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-14-RTA-3	3	3	4.798	7.767	8.365	0.2002	0.1310	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-15-RTA-4	3	3	4.874	7.928	8.353	0.2061	0.1298	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-11-RTA-1	4	4	4.834	7.794	8.345	0.2009	0.1306	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-12-RTA-2	4	4	4.915	7.844	8.342	0.2023	0.1302	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-14-RTA-3	4	4	4.883	7.800	8.288	0.2021	0.1310	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-15-RTA-4	4	4	4.810	7.828	8.358	0.2029	0.1302	M(V,A)GN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-11-RTA-1	4	4	4.293	7.033	7.669	0.1826	0.1337	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-13-RTA-2	4	4	4.421	7.167	7.549	0.1875	0.1353	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-14-RTA-3	4	4	4.140	6.948	7.635	0.1839	0.1349	M(V,A)GN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-15-RTA-4	4	4	4.342	7.168	7.755	0.1887	0.1348	AGN

*Coupons fail prior to achieving 5% Shear Strength

**Max Strength not reported because the coupon had an unacceptable failure mode

Average	4.493	7.552	7.857	0.1913	0.1369
Standard Dev.	0.4521	0.3496	0.7392	0.01768	0.01490
Coeff. of Var. [%]	10.06	4.630	9.409	9.243	10.89
Min.	3.281	6.948	6.031	0.1462	0.1296
Max.	4.915	7.971	8.501	0.2095	0.1755
Number of Spec.	32	16	31	32	32

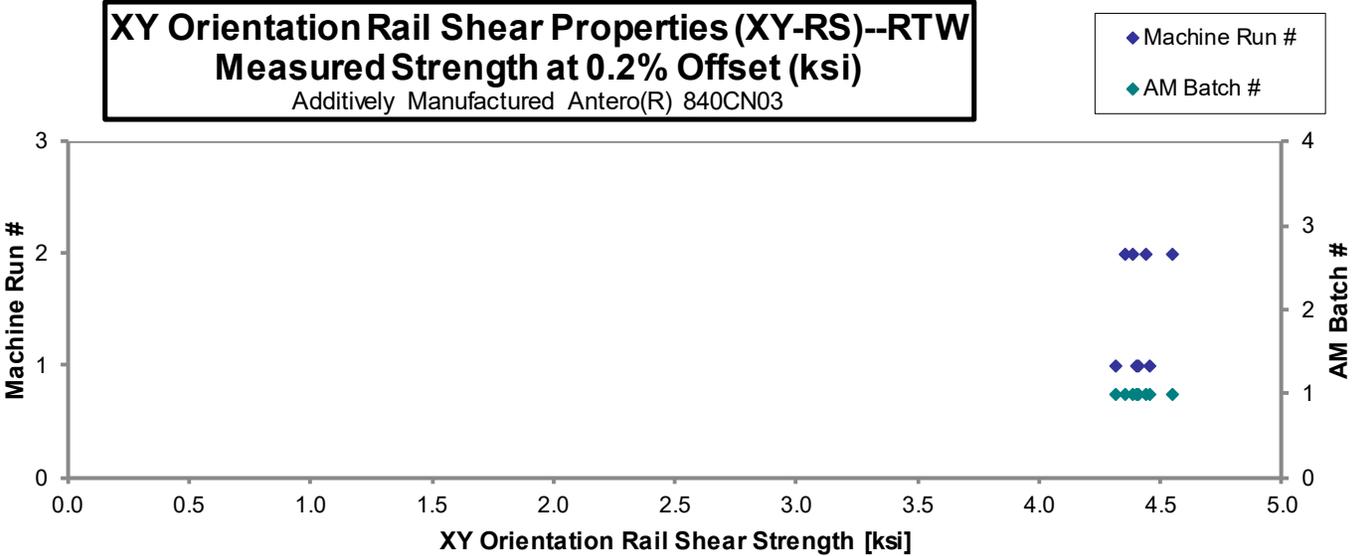


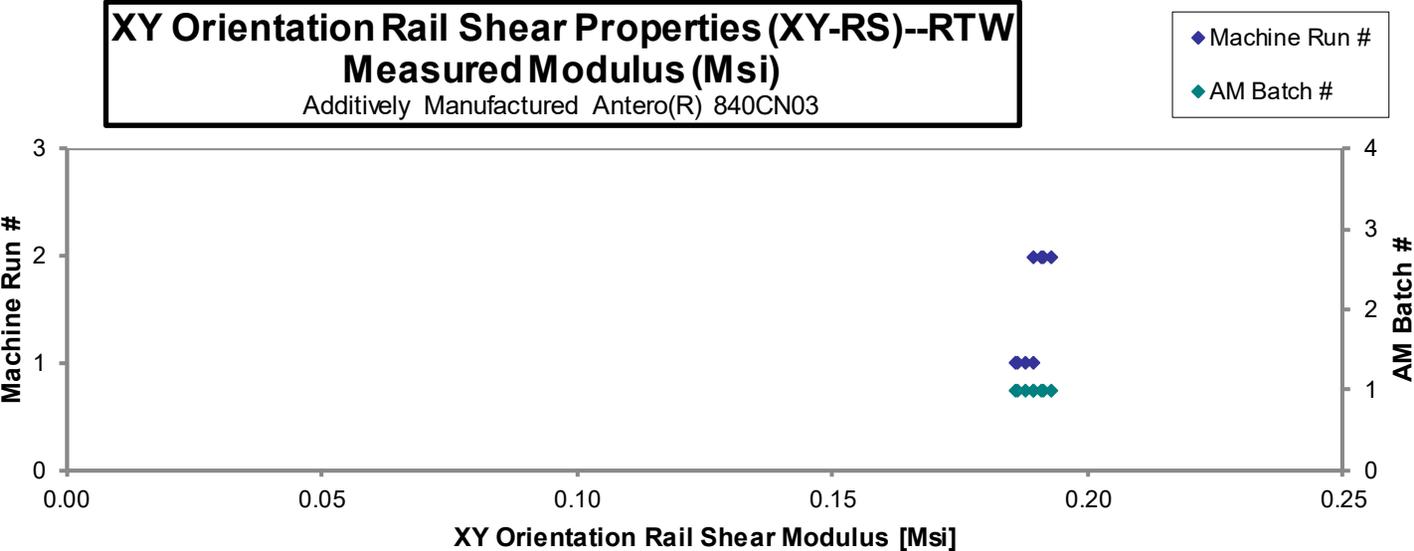
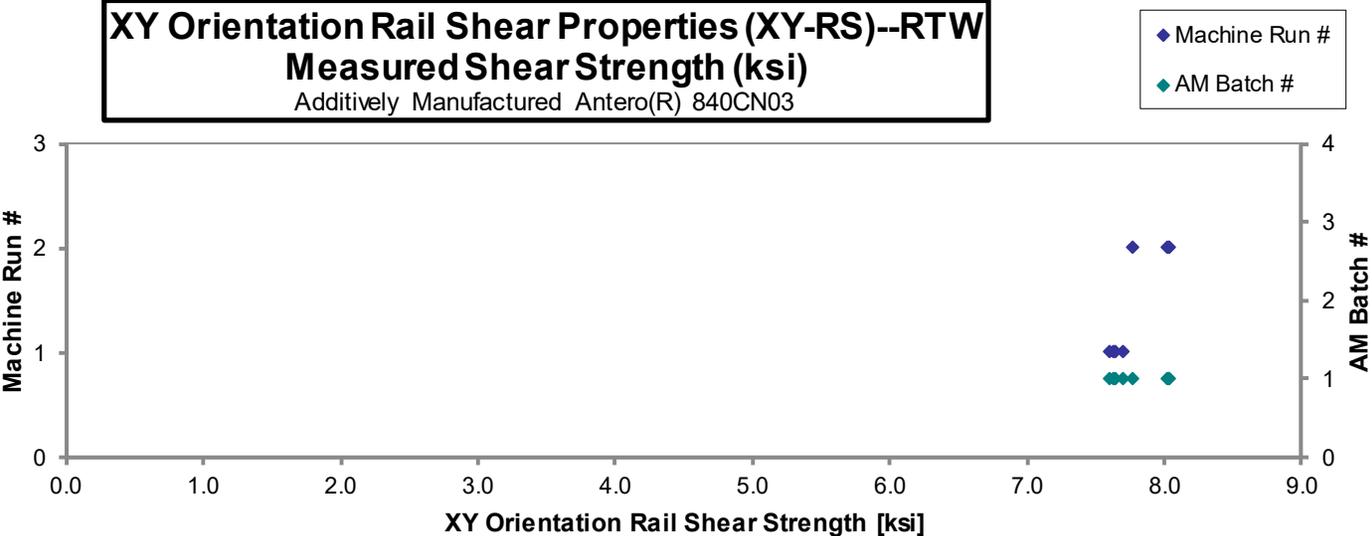


XY Orientation Rail Shear Properties (XY-RS)--RTW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-11-RTW-1	1	1	4.401	7.175	7.626	0.1877	0.1316	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-12-RTW-2	1	1	4.453	7.249	7.703	0.1892	0.1316	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-14-RTW-3	1	1	4.411	7.106	7.642	0.1858	0.1323	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-15-RTW-4	1	1	4.319	7.118	7.601	0.1861	0.1332	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-11-RTW-1	1	2	4.550	7.375	8.028	0.1908	0.1313	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-12-RTW-2	1	2	4.383	7.345	8.041	0.1914	0.1313	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-14-RTW-3	1	2	4.359	6.995	7.767	0.1928	0.1307	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-15-RTW-4	1	2	4.445	7.287	8.042	0.1893	0.1309	M(V,A)GN

Average	4.415	7.206	7.806	0.1891	0.1316
Standard Dev.	0.06974	0.1307	0.1976	0.002493	0.0007908
Coeff. of Var. [%]	1.579	1.814	2.531	1.318	0.6009
Min.	4.319	6.995	7.601	0.1858	0.1307
Max.	4.550	7.375	8.042	0.1928	0.1332
Number of Spec.	8	8	8	8	8



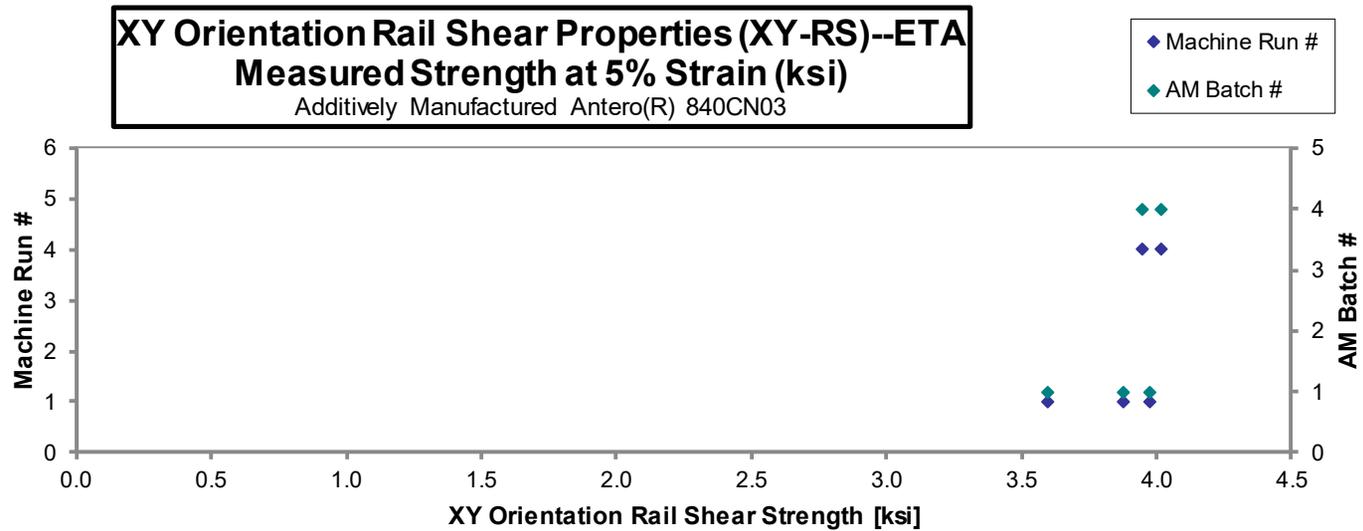
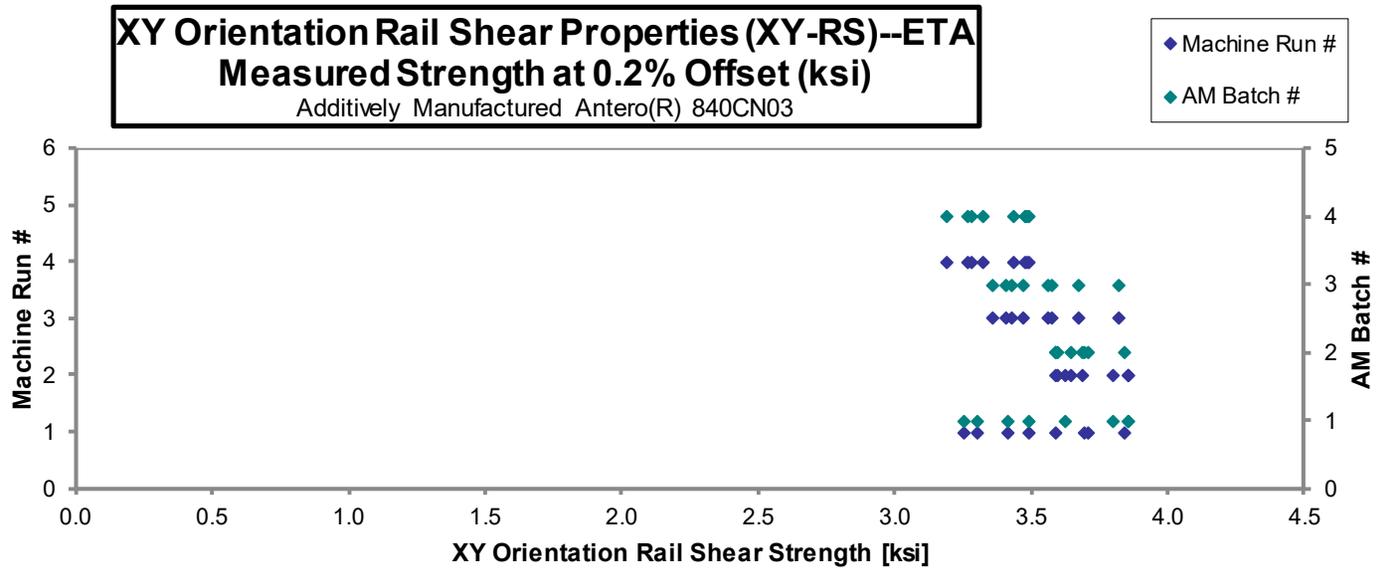


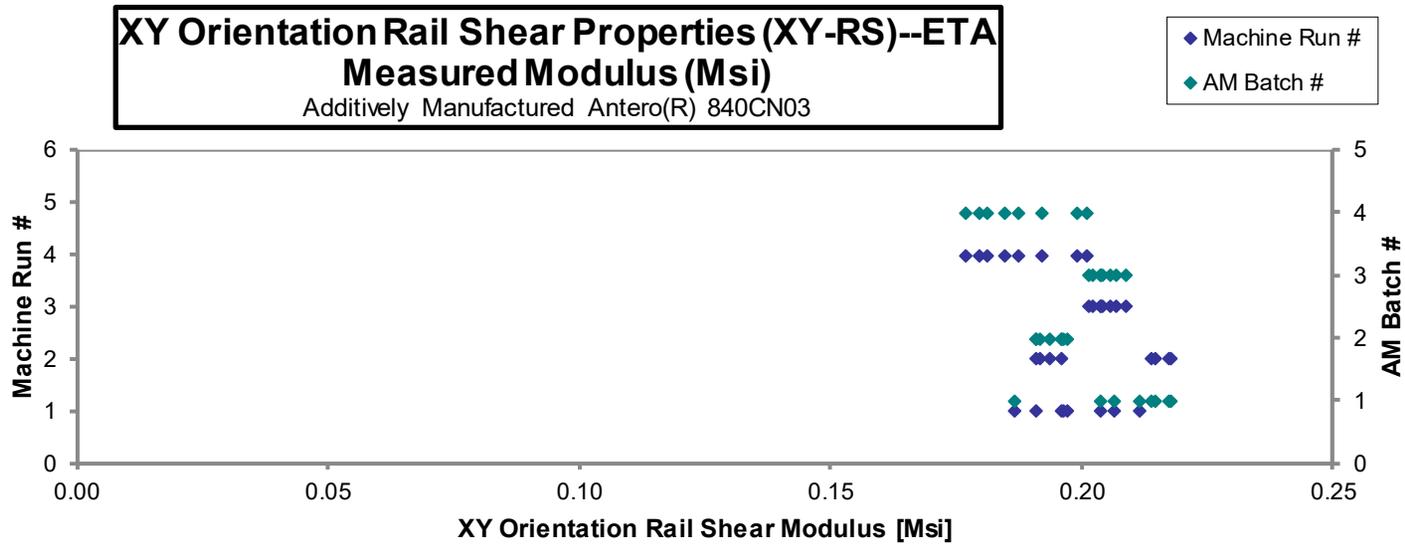
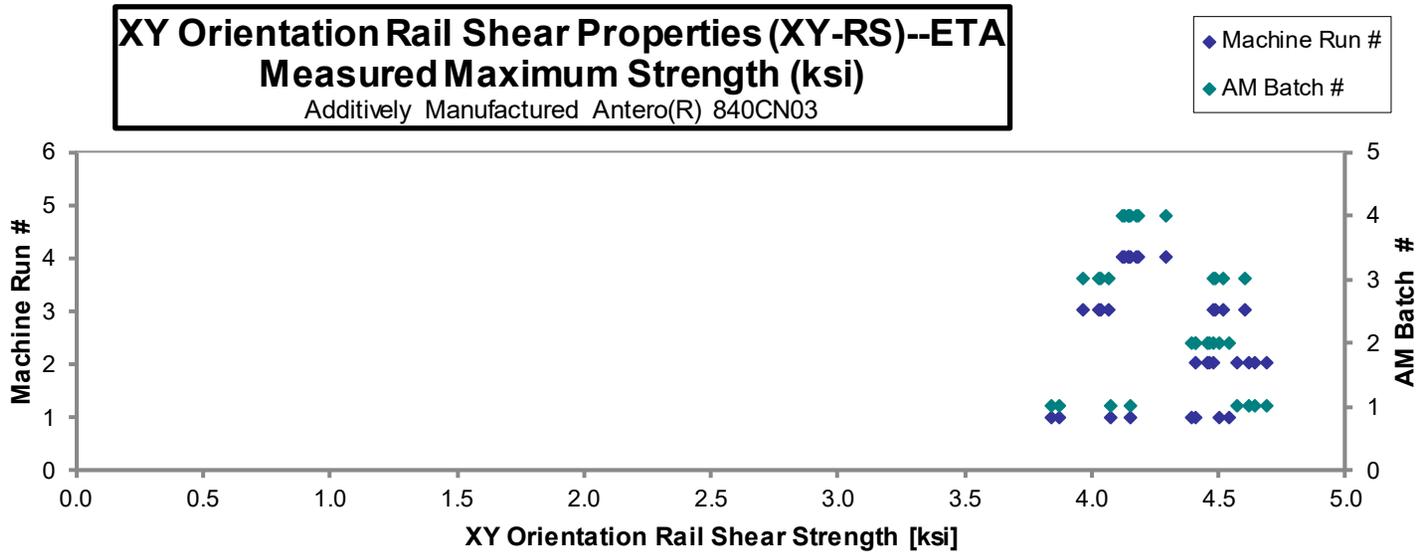
XY Orientation Rail Shear Properties (XY-RS)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-11-ETA-1*	1	1	3.253		3.873	0.2037	0.1318	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-12-ETA-2	1	1	3.304	3.601	3.841	0.2063	0.1319	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-14-ETA-3	1	1	3.412	3.879	4.078	0.2116	0.1316	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-15-ETA-4	1	1	3.491	3.973	4.154	0.1867	0.1309	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-11-ETA-1*	1	2	3.860		4.647	0.2137	0.1309	VGN, ANA
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-13-ETA-2*	1	2	3.856		4.691	0.2173	0.1308	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-14-ETA-3*	1	2	3.802		4.620	0.2176	0.1304	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-15-ETA-4*	1	2	3.627		4.574	0.2148	0.1310	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-11-ETA-1*	2	1	3.696		4.408	0.1959	0.1316	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-12-ETA-2*	2	1	3.588		4.394	0.1907	0.1345	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-14-ETA-3*	2	1	3.707		4.539	0.1963	0.1314	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-15-ETA-4*	2	1	3.840		4.503	0.1972	0.1312	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-11-ETA-1*	2	2	3.692		4.411	0.1919	0.1316	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-13-ETA-2*	2	2	3.647		4.478	0.1908	0.1313	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-14-ETA-3*	2	2	3.594		4.465	0.1960	0.1313	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-15-ETA-4*	2	2	3.597		4.459	0.1936	0.1314	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-11-ETA-1*	3	3	3.822		4.603	0.2039	0.1300	VGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-12-ETA-2*	3	3	3.674		4.516	0.2059	0.1304	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-14-ETA-3*	3	3	3.563		4.488	0.2021	0.1315	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-15-ETA-4*	3	3	3.575		4.482	0.2068	0.1312	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-11-ETA-1*	3	3	3.362		4.068	0.2088	0.1309	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-12-ETA-2*	3	3	3.472		4.030	0.2015	0.1309	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-14-ETA-3*	3	3	3.427		3.966	0.2043	0.1318	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-15-ETA-4*	3	3	3.406		4.039	0.2036	0.1315	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-11-ETA-1*	4	4	3.488		4.157	0.1919	0.1316	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-12-ETA-2	4	4	3.482	3.945	4.132	0.1874	0.1322	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-14-ETA-3*	4	4	3.438		4.178	0.1811	0.1326	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-15-ETA-4	4	4	3.491	4.015	4.182	0.1849	0.1323	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-11-ETA-1*	4	4	3.326		4.295	0.1990	0.1300	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-13-ETA-2*	4	4	3.266		4.125	0.1797	0.1313	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-14-ETA-3*	4	4	3.191		4.147	0.1767	0.1301	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-15-ETA-4*	4	4	3.279		4.148	0.2009	0.1304	VGN

*Coupons fail prior to achieving 5% Shear Strength

Average	3.538	3.883	4.303	0.1988	0.1313
Standard Dev.	0.1898	0.1652	0.2409	0.01084	0.0008578
Coeff. of Var. [%]	5.363	4.254	5.598	5.452	0.6533
Min.	3.191	3.601	3.841	0.1767	0.1300
Max.	3.860	4.015	4.691	0.2176	0.1345
Number of Spec.	32	5	32	32	32



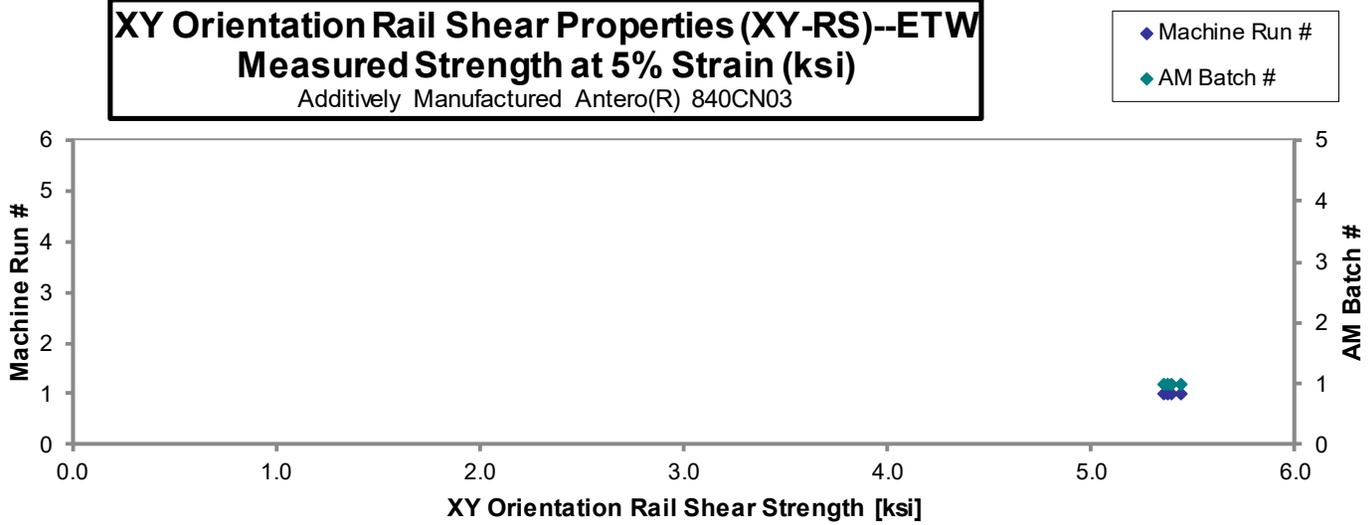
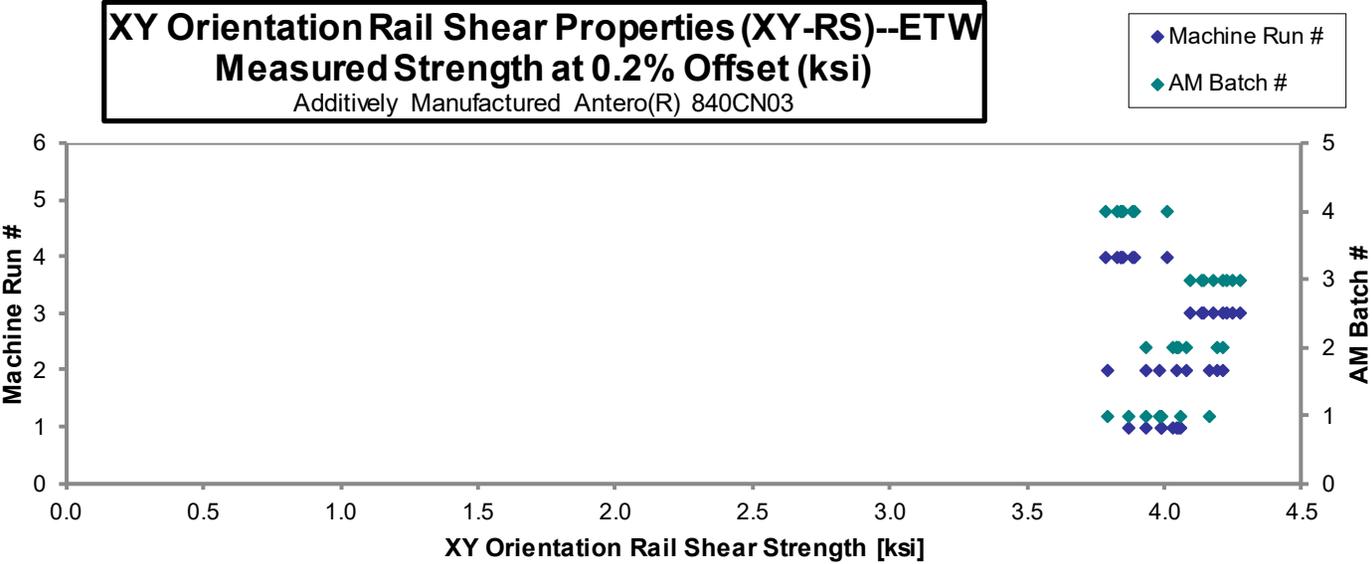


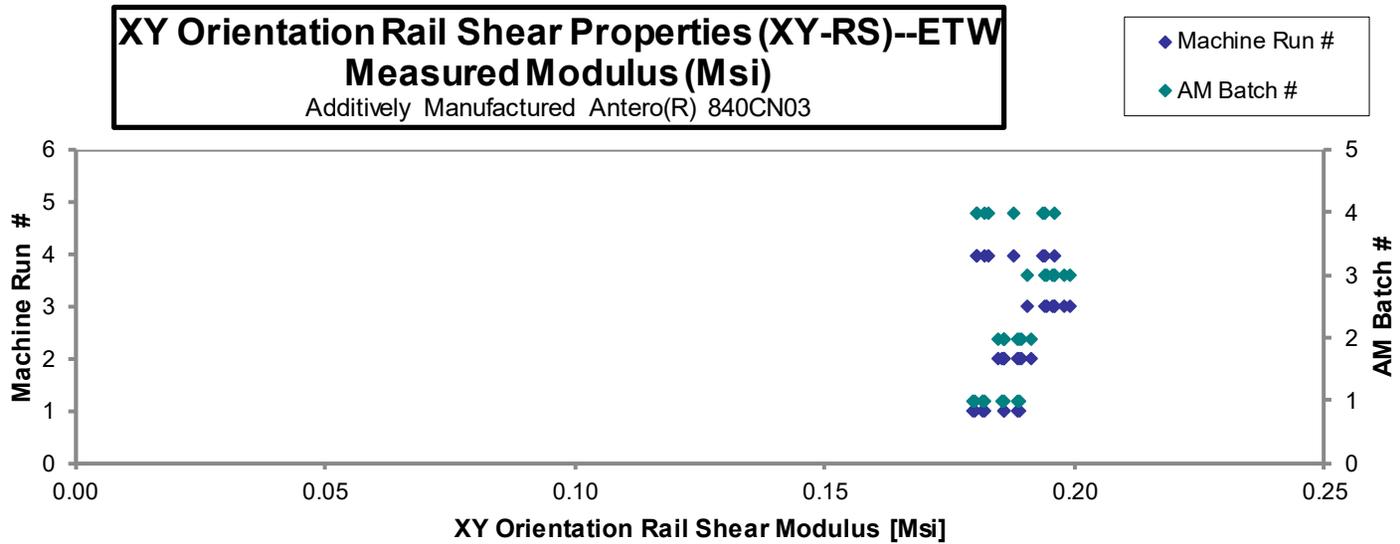
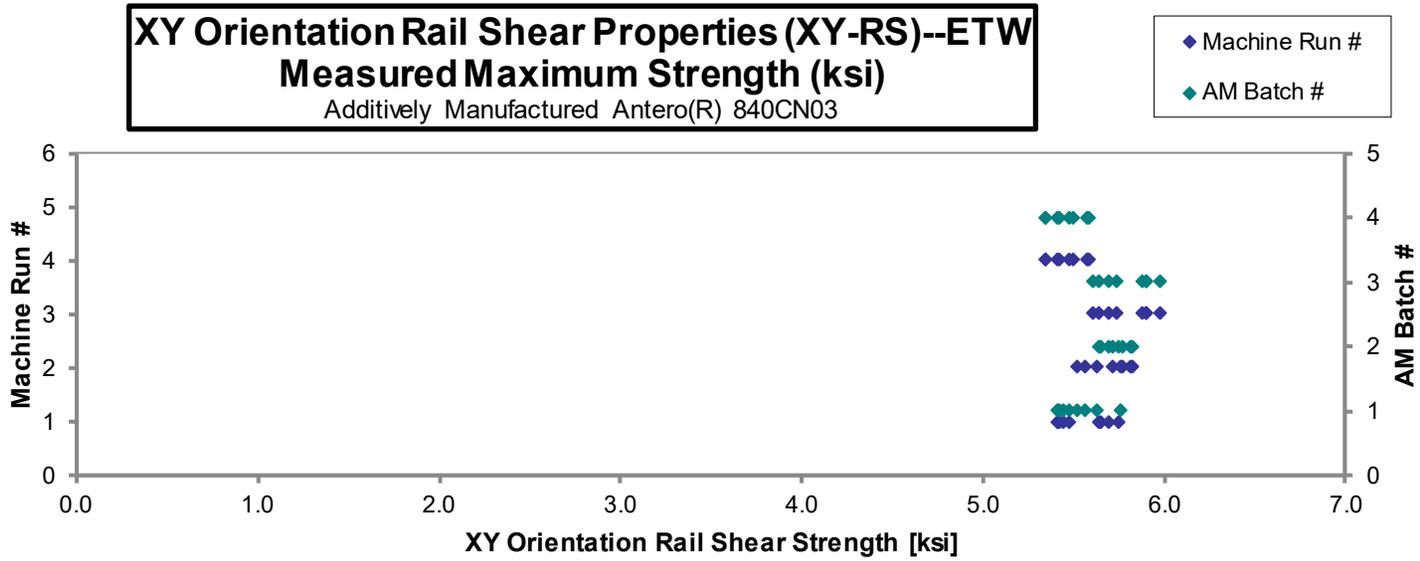
XY Orientation Rail Shear Properties (XY-RS)--ETW Strength & Modulus Additively Manufactured Antero(R) 840CN03
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Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksij]	Shear Strength at 5% Strain [ksij]	Maximum Shear Strength [ksij]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-11-ETW-1	1	1	4.060	5.394	5.440	0.1818	0.1322	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-12-ETW-2	1	1	3.988	5.357	5.411	0.1815	0.1324	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-14-ETW-3	1	1	3.872	5.380	5.419	0.1797	0.1329	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-RS-15-ETW-4	1	1	3.992	5.441	5.479	0.1800	0.1327	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-11-ETW-1*	1	2	3.983		5.629	0.1860	0.1321	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-12-ETW-2*	1	2	3.932		5.561	0.1887	0.1314	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-14-ETW-3*	1	2	4.166		5.757	0.1888	0.1311	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-RS-15-ETW-4*	1	2	3.797		5.522	0.1853	0.1313	M(V,A)GN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-11-ETW-1*	2	1	4.054		5.753	0.1884	0.1283	VGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-12-ETW-2*	2	1	4.034		5.645	0.1888	0.1310	VGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-14-ETW-3*	2	1	3.935		5.656	0.1859	0.1302	VGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-RS-15-ETW-4*	2	1	4.043		5.693	0.1859	0.1295	VGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-11-ETW-1*	2	2	4.080		5.819	0.1895	0.1297	VGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-13-ETW-2*	2	2	4.194		5.766	0.1859	0.1315	VGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-14-ETW-3*	2	2	4.216		5.828	0.1912	0.1292	VGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-RS-15-ETW-4*	2	2	4.048		5.718	0.1846	0.1316	VGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-11-ETW-1*	3	3	4.250		5.883	0.1939	0.1296	VGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-12-ETW-2*	3	3	4.138		5.899	0.1960	0.1295	VGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-14-ETW-3*	3	3	4.278		5.975	0.1992	0.1293	VGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-RS-15-ETW-4*	3	3	4.146		5.906	0.1943	0.1297	VGN, ANA
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-11-ETW-1*	3	3	4.230		5.736	0.1906	0.1310	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-12-ETW-2*	3	3	4.177		5.700	0.1955	0.1311	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-14-ETW-3*	3	3	4.095		5.604	0.1958	0.1318	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-RS-15-ETW-4*	3	3	4.215		5.638	0.1980	0.1310	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-11-ETW-1*	4	4	4.011		5.581	0.1959	0.1315	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-12-ETW-2*	4	4	3.843		5.349	0.1937	0.1324	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-14-ETW-3*	4	4	3.785		5.344	0.1880	0.1321	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-RS-15-ETW-4*	4	4	3.887		5.412	0.1941	0.1321	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-11-ETW-1*	4	4	3.843		5.501	0.1806	0.1316	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-13-ETW-2*	4	4	3.890		5.572	0.1804	0.1309	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-14-ETW-3*	4	4	3.847		5.476	0.1826	0.1311	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-RS-15-ETW-4*	4	4	3.826		5.421	0.1820	0.1311	VGN

*Coupons fail prior to achieving 5% Shear Strength

Average	4.027	5.393	5.628	0.1885	0.1310
Standard Dev.	0.1468	0.03571	0.1752	0.005827	0.001157
Coeff. of Var. [%]	3.645	0.6622	3.113	3.091	0.8828
Min.	3.785	5.357	5.344	0.1797	0.1283
Max.	4.278	5.441	5.975	0.1992	0.1329
Number of Spec.	32	4	32	32	32





4.14 XZ Rail Shear In-Plane Shear Properties (XZ-RS)

XZ Orientation Rail Shear Properties (XZ-RS)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

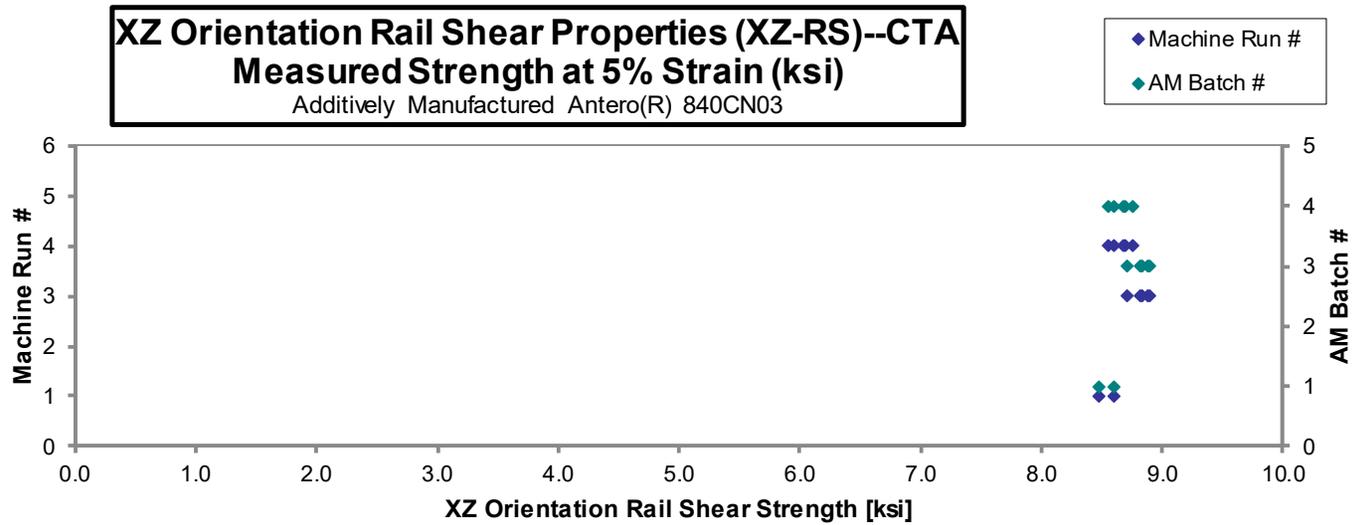
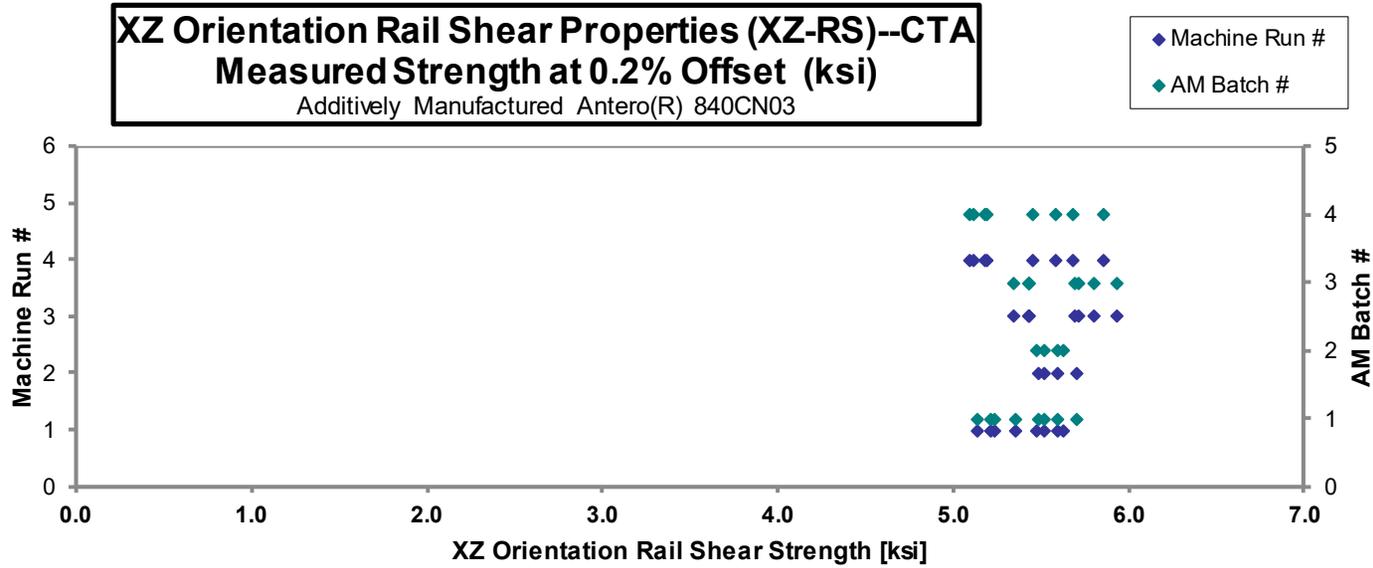
Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-11-CTA-1	1	1	5.139	8.603	9.833	0.2105	0.1306	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-12-CTA-2*	1	1	5.361		8.048	0.2067	0.1313	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-14-CTA-3	1	1	5.240	8.478	9.512	0.2057	0.1318	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-15-CTA-4*	1	1	5.212		7.720	0.2080	0.1315	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-11-CTA-1*	1	2	5.600		6.279	0.2195	0.1300	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-13-CTA-2*	1	2	5.709		8.125	0.2205	0.1293	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-14-CTA-3*	1	2	5.525		7.179	0.2188	0.1298	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-15-CTA-4*	1	2	5.483		6.738	0.2206	0.1303	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-11-CTA-1*	2	1	5.471		8.859	0.2204	0.1277	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-12-CTA-2*	2	1	5.633		7.904	0.2300	0.1276	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-14-CTA-3*	2	1	5.523		6.912	0.2227	0.1275	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-15-CTA-4*	2	1	5.593		6.973	0.2215	0.1277	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-11-CTA-1**/***	2	2				0.2207	0.1280	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-13-CTA-2**/***	2	2				0.2184	0.1278	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-14-CTA-3**/***	2	2				0.2218	0.1278	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-15-CTA-4**/***	2	2				0.2197	0.1281	ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-11-CTA-1	3	3	5.345	8.828	9.067	0.2154	0.1301	AGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-12-CTA-2	3	3	5.435	8.842	9.285	0.2144	0.1288	AGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-14-CTA-3*	3	3	5.437		7.744	0.2115	0.1296	AGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-15-CTA-4	3	3	5.689	8.884	9.229	0.2125	0.1283	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-11-CTA-1*	3	3	5.935		8.936	0.2132	0.1272	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-12-CTA-2*	3	3	5.809		8.871	0.2101	0.1279	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-14-CTA-3	3	3	5.712	8.902	9.777	0.2101	0.1275	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-15-CTA-4	3	3	5.430	8.710	9.565	0.2085	0.1272	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-11-CTA-1	4	4	5.684	8.687	9.088	0.2056	0.1306	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-12-CTA-2	4	4	5.856	8.760	9.925	0.2041	0.1308	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-14-CTA-3	4	4	5.587	8.699	9.699	0.2054	0.1297	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-15-CTA-4	4	4	5.450	8.599	9.597	0.2033	0.1305	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-11-CTA-1	4	4	5.120	8.556	8.996	0.2167	0.1279	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-13-CTA-2*	4	4	5.182		7.306	0.2122	0.1276	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-14-CTA-3*	4	4	5.189		7.801	0.2148	0.1267	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-15-CTA-4*	4	4	5.098		7.802	0.2116	0.1278	AGN

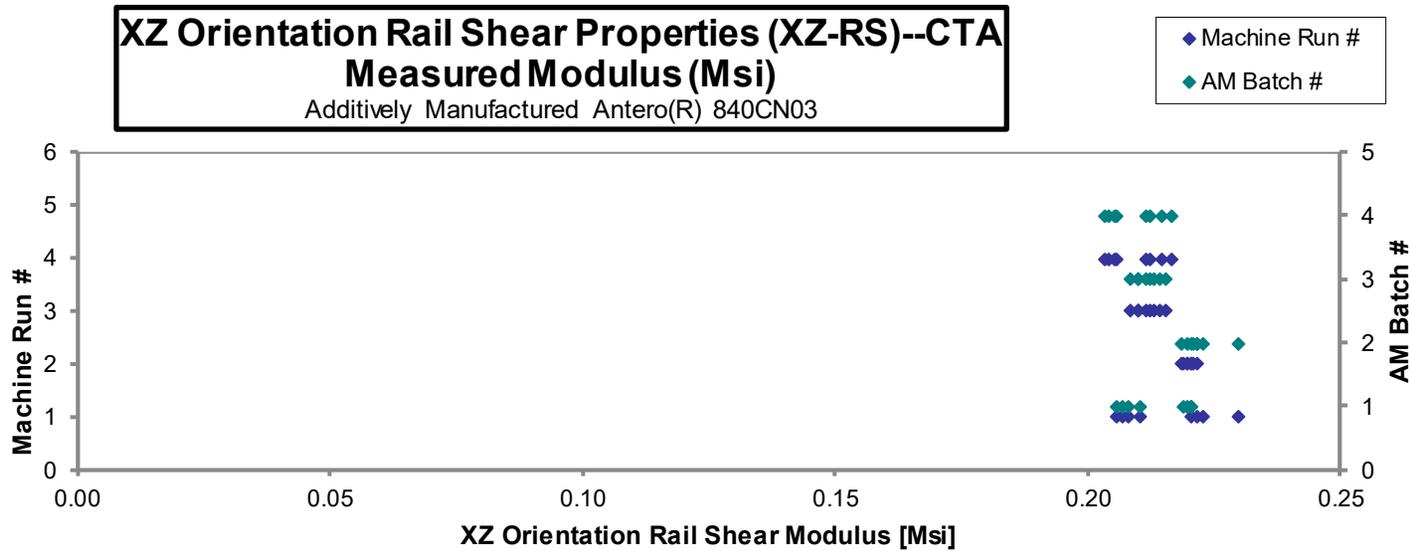
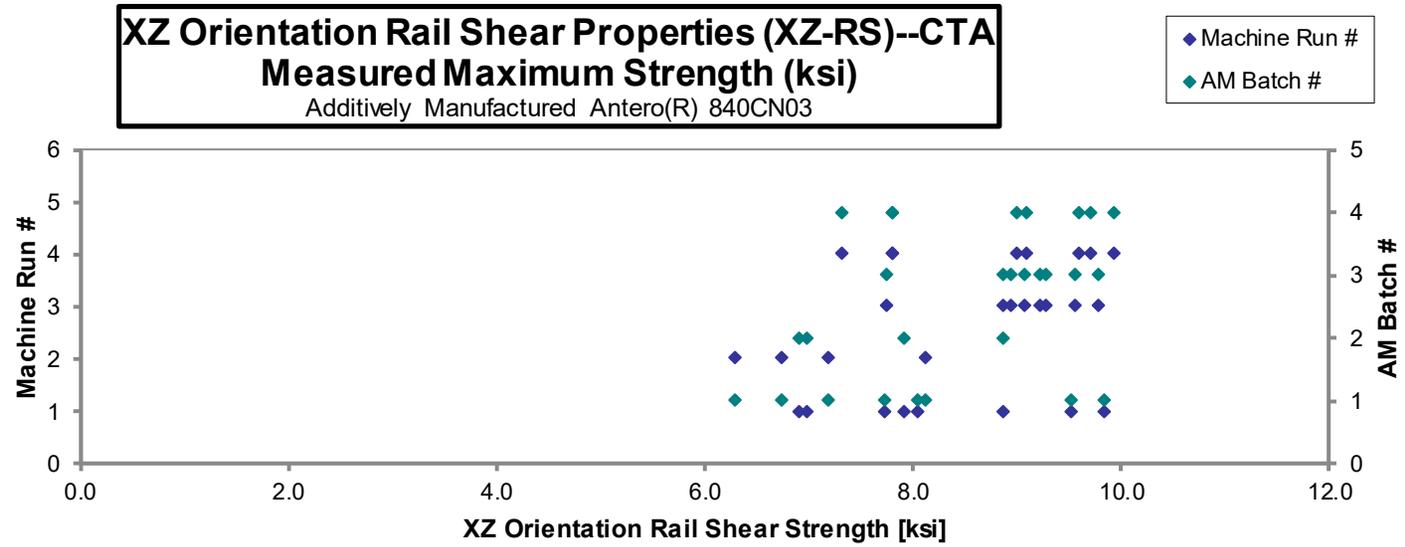
*Coupons fail prior to achieving 5% Shear Strength

**Coupons fail prior to achieving 0.2% Shear Strength

***Max Strength not reported because the coupon had an unacceptable failure mode

Average	5.480	8.712	8.456	0.2142	0.1289
Standard Dev.	0.2317	0.1358	1.082	0.006578	0.001479
Coeff. of Var. [%]	4.227	1.559	12.80	3.070	1.147
Min.	5.098	8.478	6.279	0.2033	0.1267
Max.	5.935	8.902	9.925	0.2300	0.1318
Number of Spec.	28	12	28	32	32





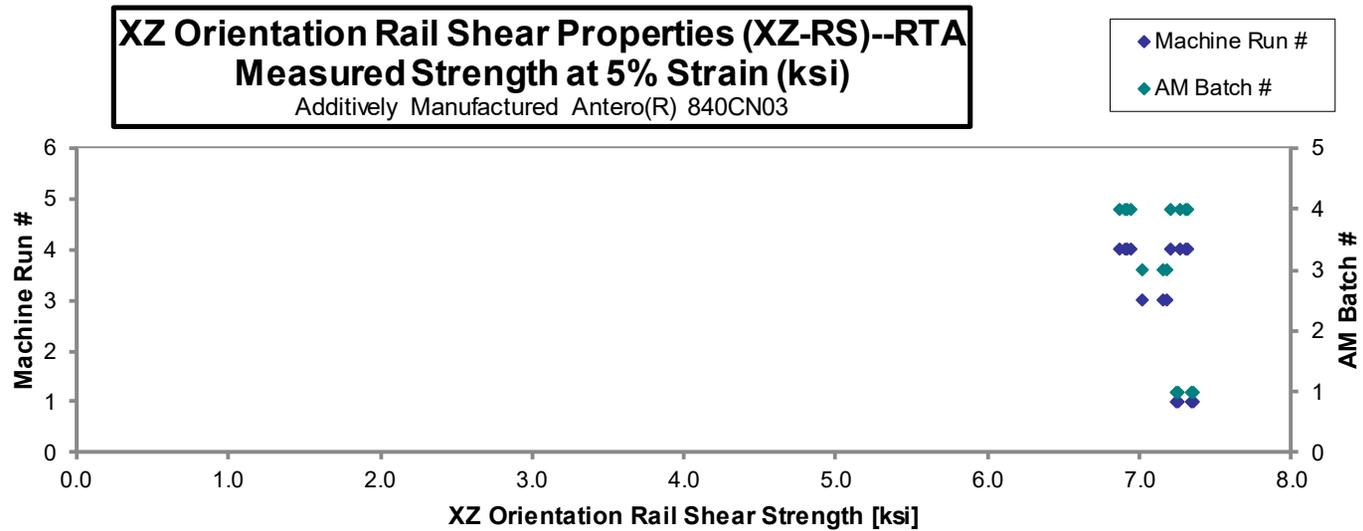
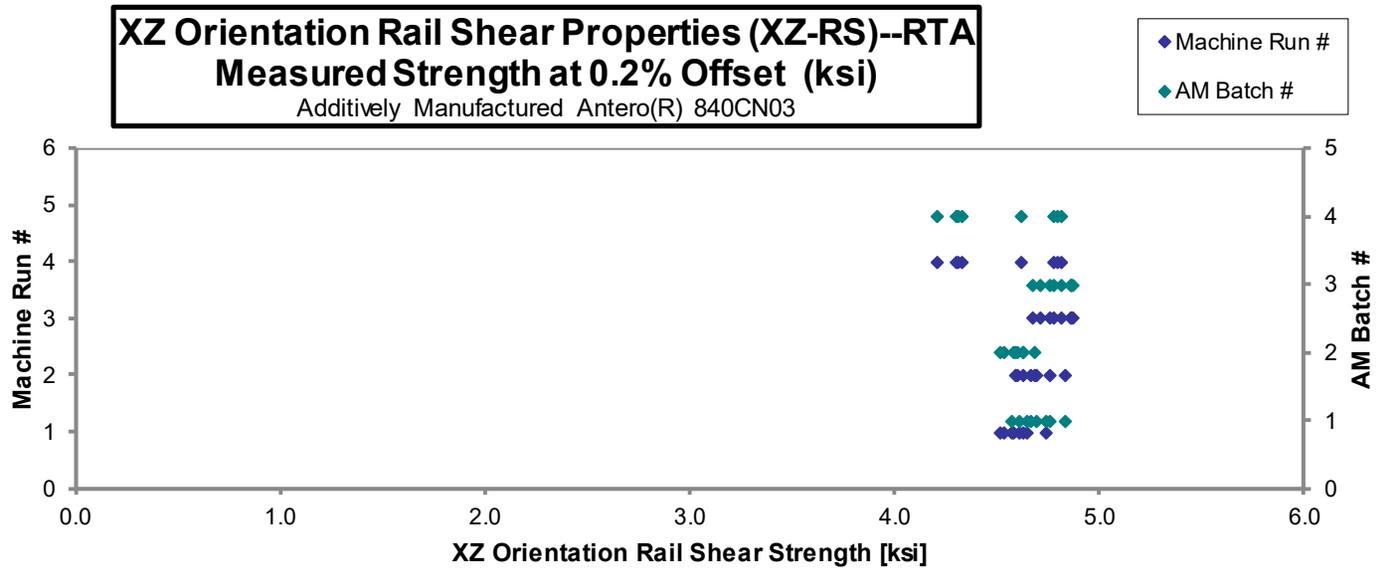
XZ Orientation Rail Shear Properties (XZ-RS)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

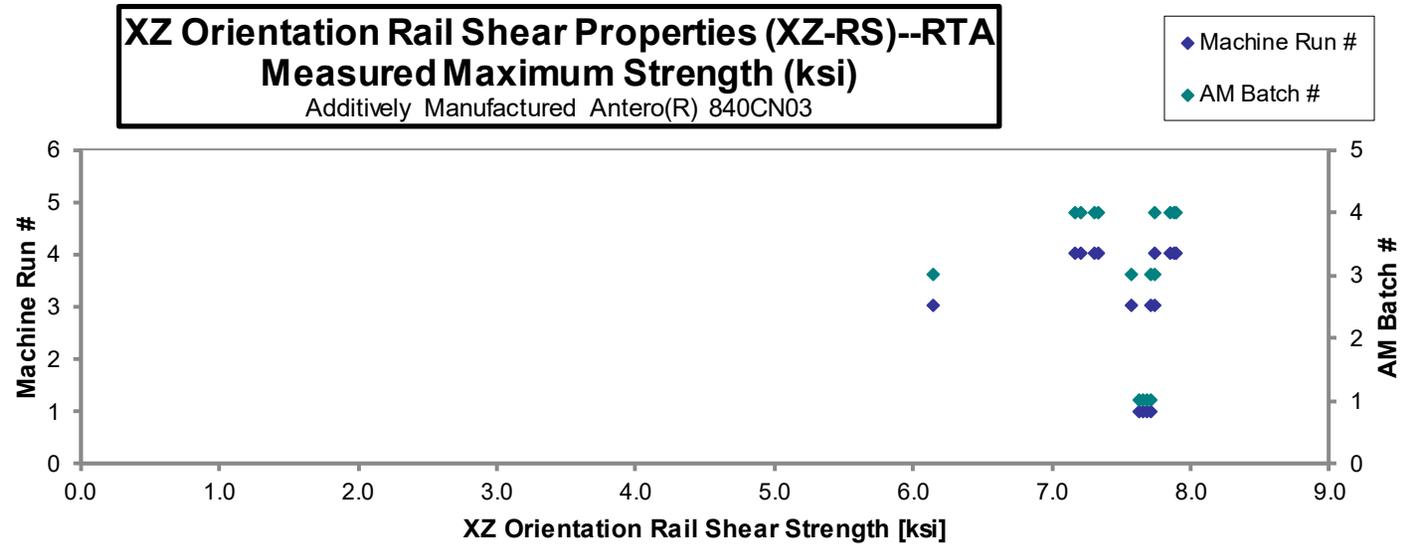
Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-11-RTA-1	1	1	4.608	7.243	7.686	0.1928	0.1294	AGN, ANA
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-12-RTA-2	1	1	4.572	7.254	7.659	0.1908	0.1302	M(V,A)GN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-14-RTA-3	1	1	4.646	7.342	7.626	0.1945	0.1292	M(V,A)GN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-15-RTA-4	1	1	4.740	7.349	7.720	0.1929	0.1286	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-11-RTA-1**	1	2	4.690			0.1965	0.1299	ANA
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-13-RTA-2**	1	2	4.834			0.1980	0.1305	ANA
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-14-RTA-3**	1	2	4.665			0.2000	0.1294	ANA
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-15-RTA-4**	1	2	4.758			0.1987	0.1303	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-11-RTA-1**	2	1	4.627			0.1953	0.1294	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-12-RTA-2**	2	1	4.534			0.1933	0.1298	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-14-RTA-3**	2	1	4.585			0.1931	0.1302	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-15-RTA-4**	2	1	4.517			0.1925	0.1302	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-11-RTA-1**	2	2	4.683			0.1963	0.1303	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-13-RTA-2**	2	2	4.631			0.1937	0.1300	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-14-RTA-3**	2	2	4.588			0.1937	0.1307	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-15-RTA-4**	2	2	4.597			0.1921	0.1312	ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-11-RTA-1**	3	3	4.859			0.1979	0.1280	ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-12-RTA-2**	3	3	4.870			0.1979	0.1278	ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-14-RTA-3**	3	3	4.709			0.1992	0.1281	ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-15-RTA-4**	3	3	4.864			0.1991	0.1277	ANA
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-11-RTA-1	3	3	4.671	7.024	7.571	0.1800	0.1322	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-12-RTA-2*	3	3	4.820		6.148	0.1817	0.1317	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-14-RTA-3	3	3	4.762	7.181	7.748	0.1817	0.1309	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-15-RTA-4	3	3	4.780	7.162	7.716	0.1819	0.1309	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-11-RTA-1	4	4	4.621	7.203	7.748	0.1883	0.1297	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-12-RTA-2	4	4	4.782	7.268	7.848	0.1854	0.1290	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-14-RTA-3	4	4	4.812	7.318	7.879	0.1842	0.1290	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-15-RTA-4	4	4	4.793	7.300	7.900	0.1838	0.1286	M(V,A)GN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-11-RTA-1	4	4	4.211	6.871	7.339	0.1859	0.1290	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-13-RTA-2	4	4	4.325	6.914	7.166	0.1860	0.1298	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-14-RTA-3	4	4	4.298	6.945	7.310	0.1881	0.1290	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-15-RTA-4	4	4	4.307	6.906	7.212	0.1861	0.1297	AGN

*Coupons fail prior to achieving 5% Shear Strength

**Max Strength not reported because the coupon had an unacceptable failure mode

Average	4.649	7.152	7.517	0.1913	0.1297
Standard Dev.	0.1715	0.1724	0.4322	0.006053	0.001094
Coeff. of Var. [%]	3.690	2.410	5.750	3.164	0.8436
Min.	4.211	6.871	6.148	0.1800	0.1277
Max.	4.870	7.349	7.900	0.2000	0.1322
Number of Spec.	32	15	16	32	32

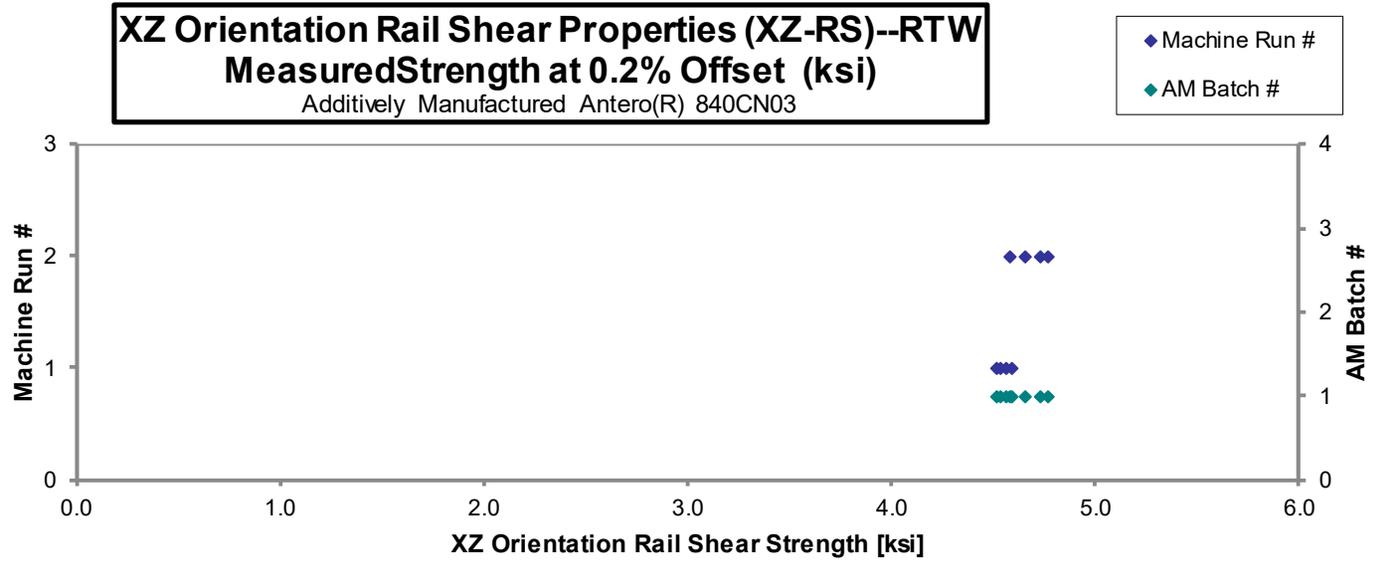


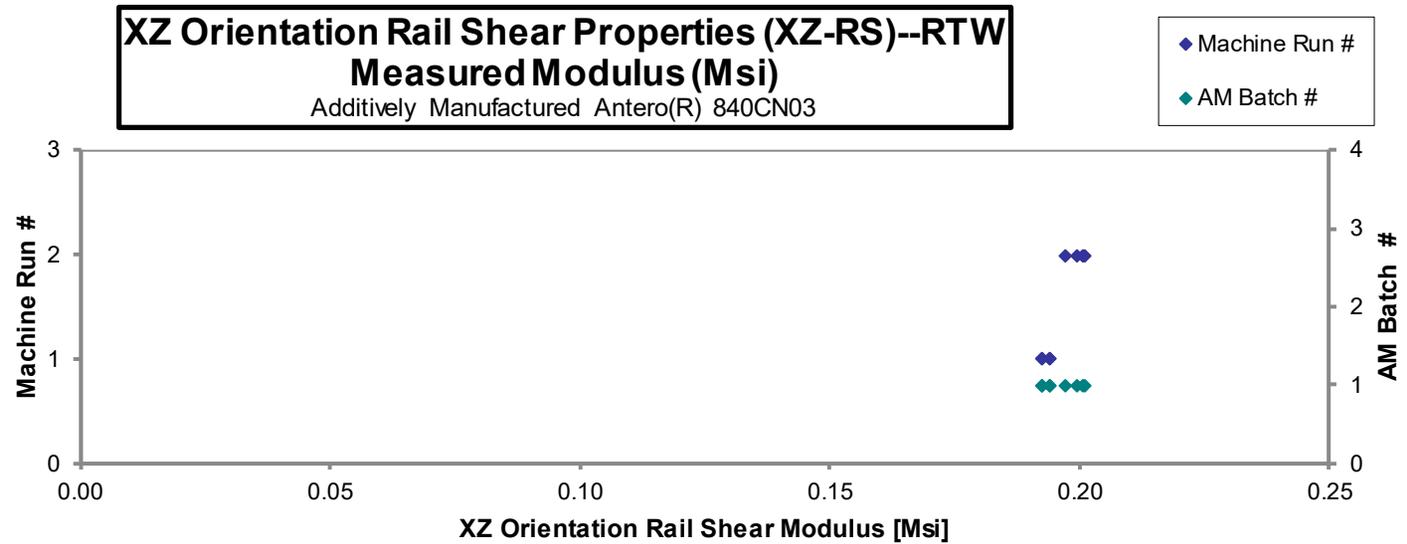
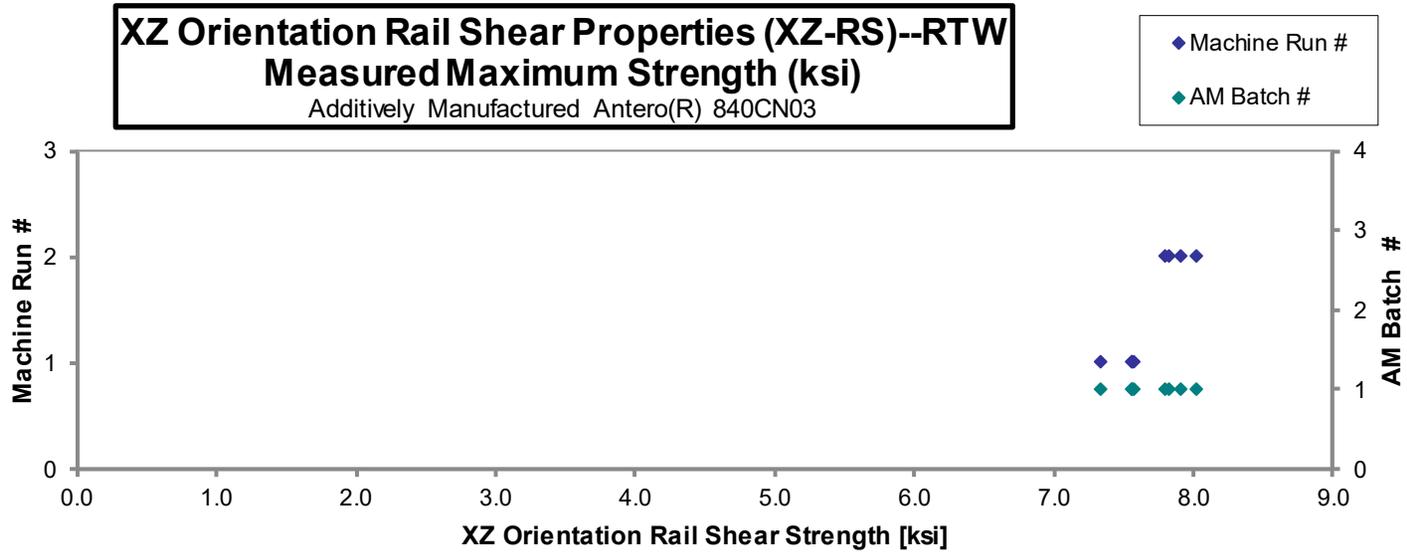


XZ Orientation Rail Shear Properties (XZ-RS)--RTW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-11-RTW-1	1	1	4.561	7.050	7.336	0.1925	0.1302	M(V,A)GN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-12-RTW-2	1	1	4.535	7.182	7.565	0.1939	0.1295	M(V,A)GN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-14-RTW-3	1	1	4.513	7.149	7.556	0.1924	0.1295	M(V,A)GN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-15-RTW-4	1	1	4.592	7.174	7.578	0.1942	0.1287	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-11-RTW-1	1	2	4.769	7.422	7.824	0.1970	0.1293	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-12-RTW-2	1	2	4.652	7.506	7.903	0.1995	0.1286	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-14-RTW-3	1	2	4.581	7.446	7.795	0.2009	0.1282	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-15-RTW-4	1	2	4.731	7.574	8.026	0.2008	0.1285	M(V,A)GN

Average	4.617	7.313	7.698	0.1964	0.1291
Standard Dev.	0.09272	0.1955	0.2261	0.003622	0.0006791
Coeff. of Var. [%]	2.008	2.674	2.937	1.844	0.5262
Min.	4.513	7.050	7.336	0.1924	0.1282
Max.	4.769	7.574	8.026	0.2009	0.1302
Number of Spec.	8	8	8	8	8



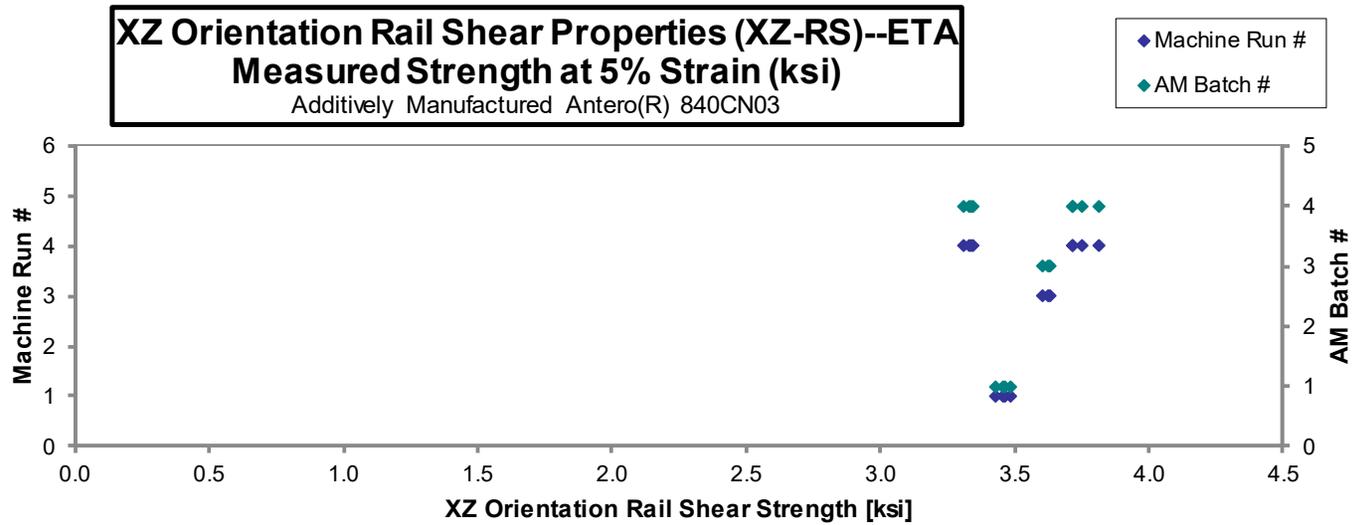
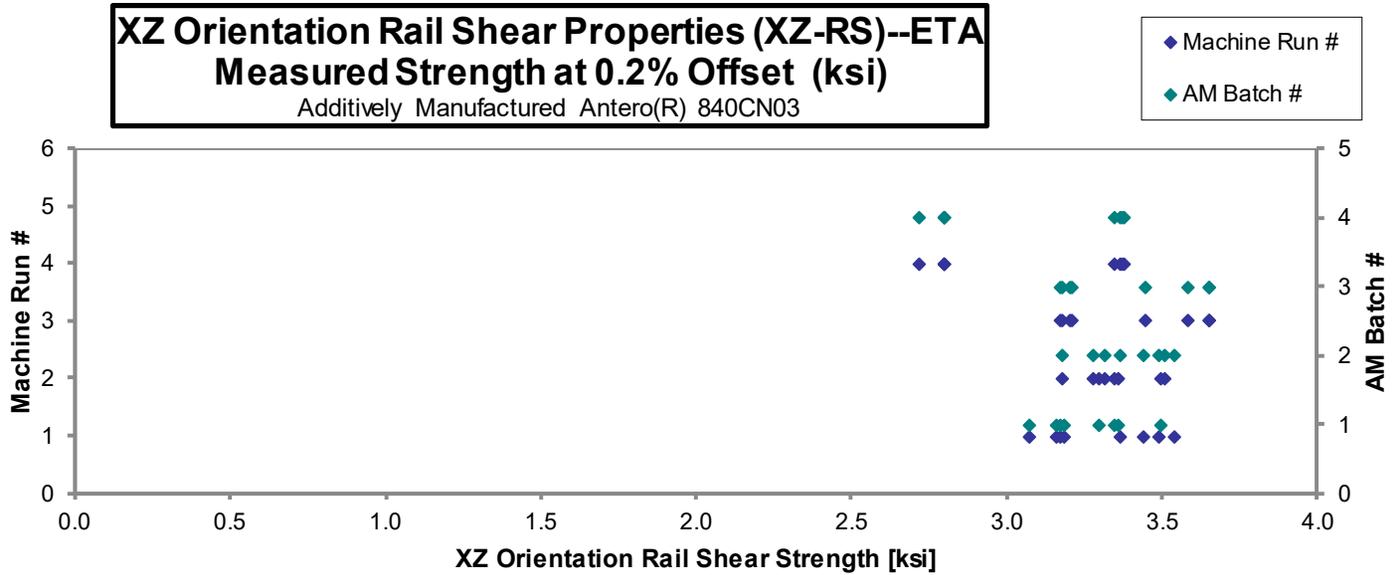


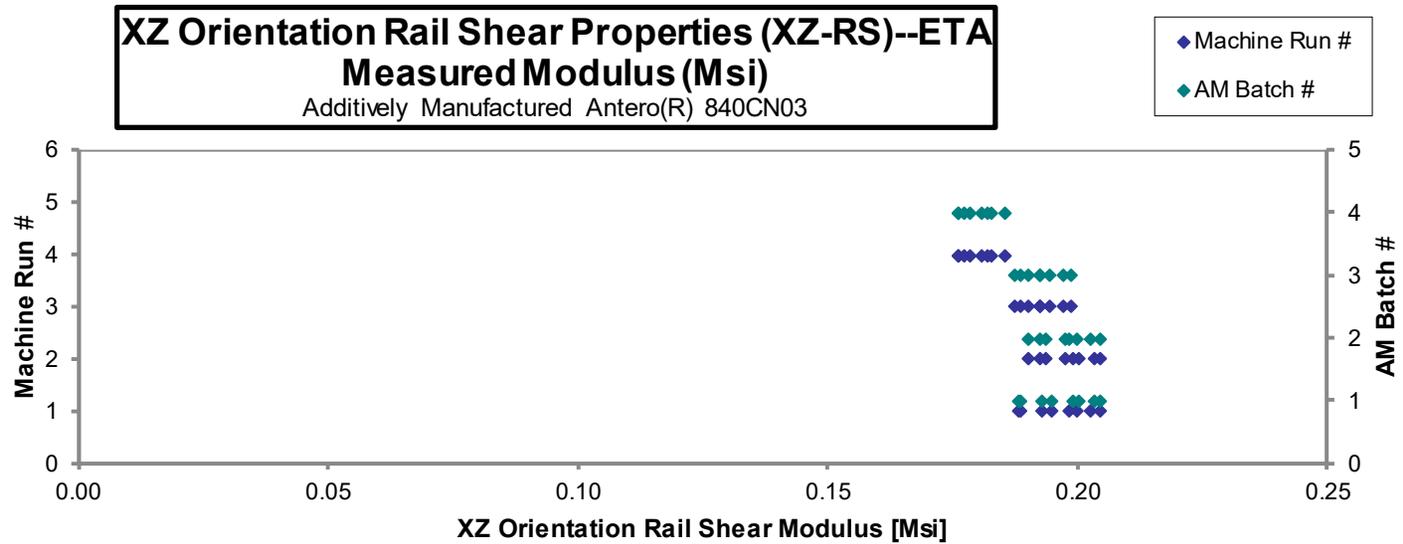
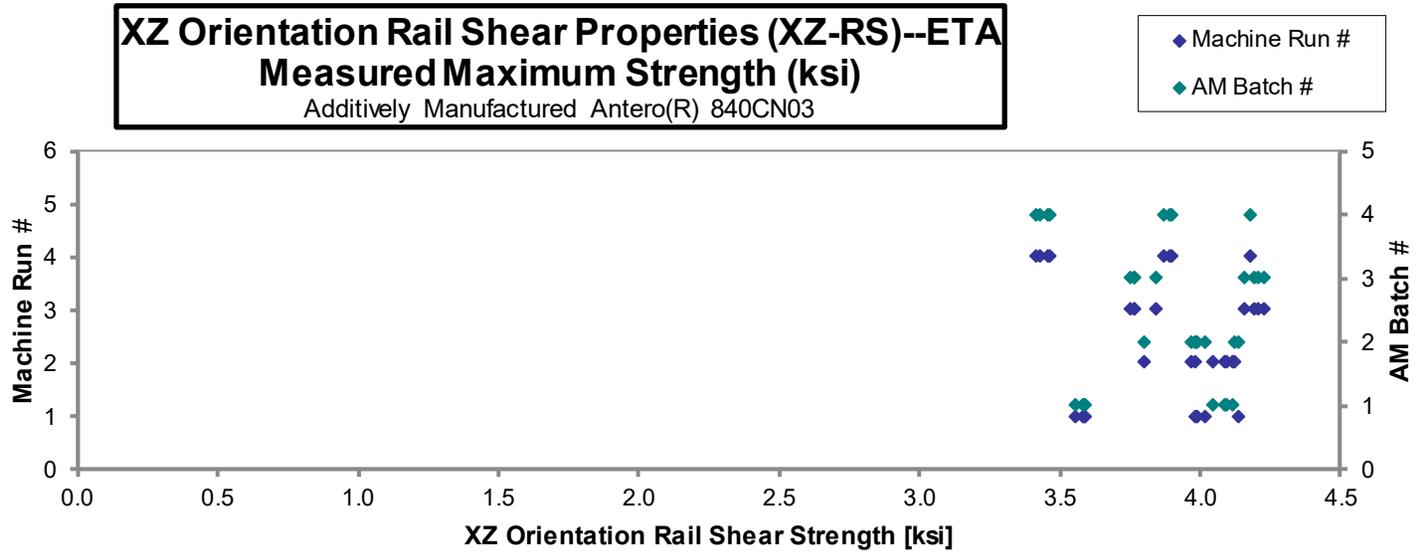
XZ Orientation Rail Shear Properties (XZ-RS)--ETA Strength & Modulus Additively Manufactured Antero(R) 840CN03
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Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Ms]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-11-ETA-1	1	1	3.073	3.429	3.553	0.1883	0.1300	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-12-ETA-2	1	1	3.187	3.461	3.581	0.1948	0.1296	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-14-ETA-3	1	1	3.175	3.485	3.593	0.1886	0.1298	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-15-ETA-4	1	1	3.158	3.467	3.584	0.1927	0.1297	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-11-ETA-1*	1	2	3.360		4.096	0.1990	0.1311	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-13-ETA-2*	1	2	3.495		4.118	0.2047	0.1311	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-14-ETA-3*	1	2	3.345		4.085	0.2003	0.1308	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-15-ETA-4*	1	2	3.295		4.046	0.2036	0.1309	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-11-ETA-1*	2	1	3.492		3.980	0.2026	0.1285	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-12-ETA-2*	2	1	3.538		4.134	0.1985	0.1276	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-14-ETA-3*	2	1	3.441		4.018	0.2045	0.1279	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-15-ETA-4*	2	1	3.364		3.989	0.2000	0.1284	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-11-ETA-1*	2	2	3.512		4.124	0.1903	0.1288	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-13-ETA-2*	2	2	3.177		3.803	0.1926	0.1292	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-14-ETA-3*	2	2	3.278		3.969	0.1935	0.1289	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-15-ETA-4*	2	2	3.313		3.981	0.1977	0.1287	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-11-ETA-1*	3	3	3.652		4.196	0.1925	0.1285	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-12-ETA-2*	3	3	3.652		4.226	0.1986	0.1284	VGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-14-ETA-3*	3	3	3.445		4.157	0.1946	0.1280	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-15-ETA-4*	3	3	3.586		4.209	0.1970	0.1282	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-11-ETA-1	3	3	3.202	3.608	3.768	0.1903	0.1284	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-12-ETA-2	3	3	3.173	3.631	3.750	0.1875	0.1300	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-14-ETA-3	3	3	3.208	3.623	3.846	0.1923	0.1303	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-15-ETA-4*	3	3	3.179		3.766	0.1887	0.1304	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-11-ETA-1	4	4	3.364	3.812	4.176	0.1821	0.1305	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-12-ETA-2	4	4	3.378	3.718	3.891	0.1783	0.1301	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-14-ETA-3	4	4	3.374	3.715	3.868	0.1772	0.1303	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-15-ETA-4	4	4	3.348	3.751	3.901	0.1763	0.1302	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-11-ETA-1	4	4	2.718	3.309	3.417	0.1763	0.1286	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-13-ETA-2	4	4	2.801	3.335	3.461	0.1809	0.1297	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-14-ETA-3	4	4	2.799	3.341	3.461	0.1854	0.1282	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-15-ETA-4	4	4	2.798	3.345	3.432	0.1827	0.1288	VGN

*Coupons fail prior to achieving 5% Shear Strength

Average	3.277	3.535	3.881	0.1916	0.1294
Standard Dev.	0.2419	0.1693	0.2560	0.008456	0.001031
Coeff. of Var. [%]	7.382	4.789	6.596	4.413	0.7972
Min.	2.718	3.309	3.417	0.1763	0.1276
Max.	3.652	3.812	4.226	0.2047	0.1311
Number of Spec.	32	15	32	32	32



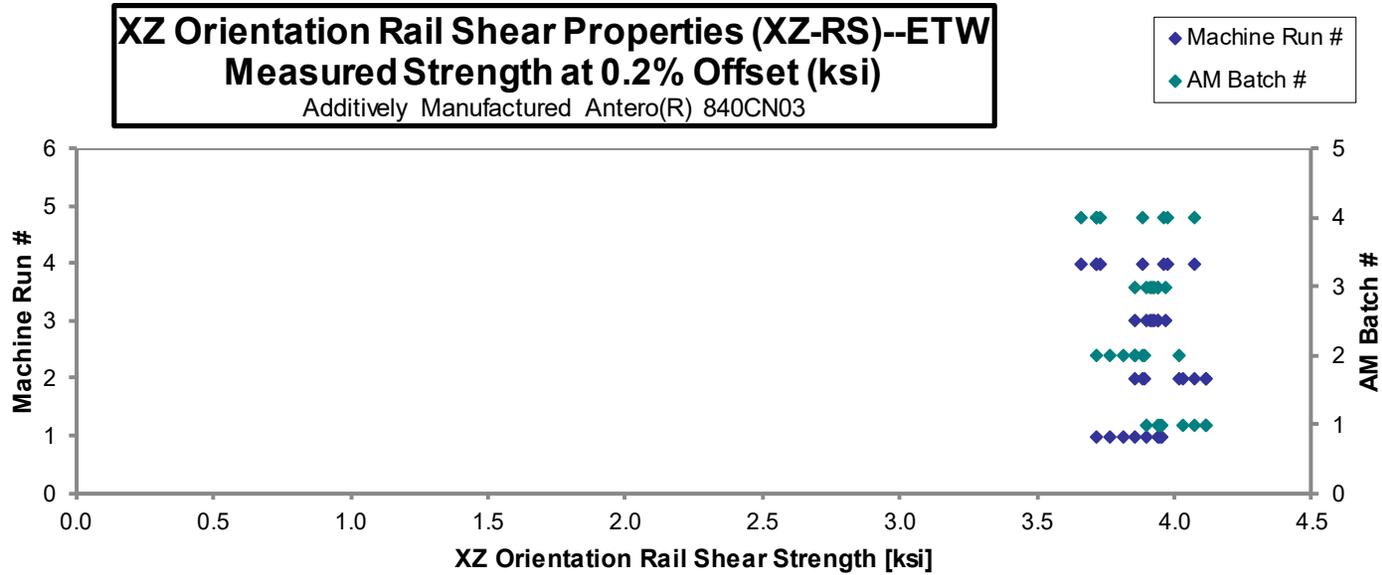


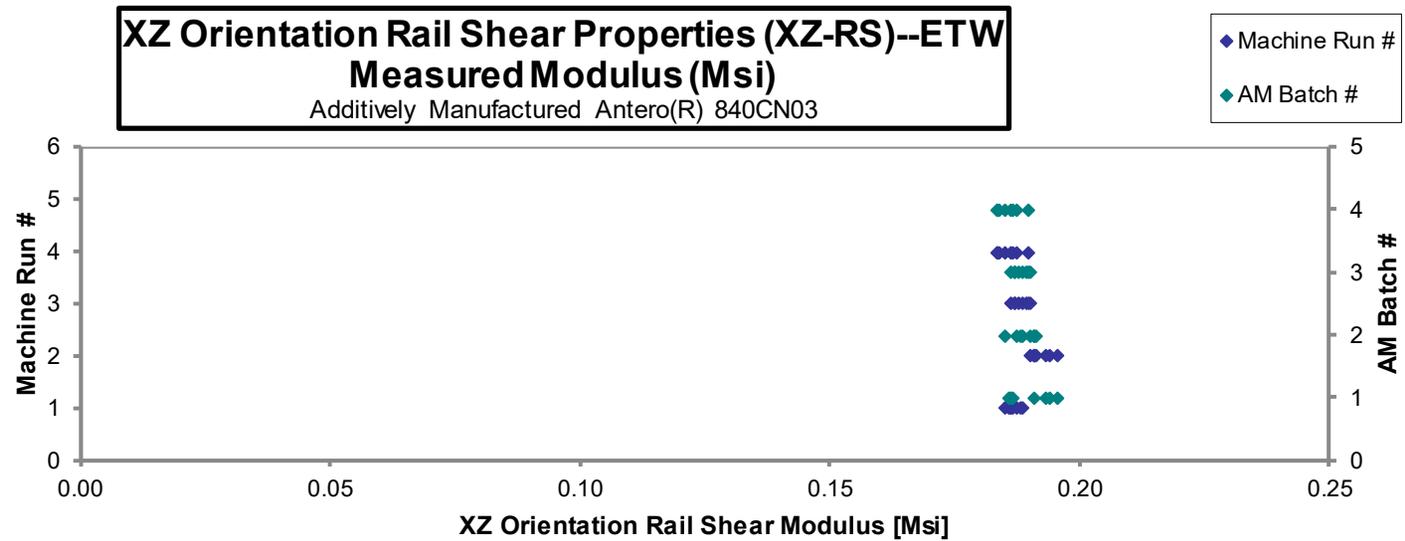
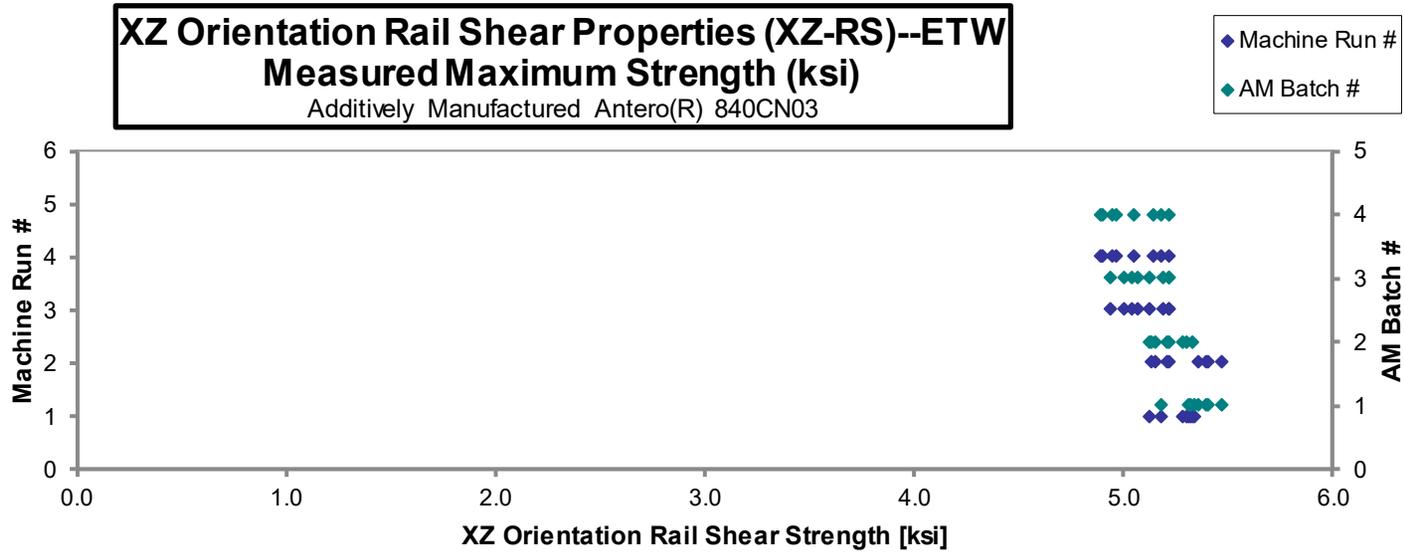
XZ Orientation Rail Shear Properties (XZ-RS)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-11-ETW-1	1	1	3.939	4.959	5.309	0.1868	0.1297	ANA, VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-12-ETW-2	1	1	3.955	5.059	5.181	0.1864	0.1295	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-14-ETW-3	1	1	3.947	5.035	5.343	0.1863	0.1295	ANA, VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-RS-15-ETW-4	1	1	3.898	4.972	5.322	0.1857	0.1294	ANA, VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-11-ETW-1*	1	2	4.116		5.358	0.1931	0.1296	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-12-ETW-2*	1	2	4.114		5.397	0.1939	0.1294	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-14-ETW-3*	1	2	4.075		5.474	0.1956	0.1289	M(V,A)GN
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-RS-15-ETW-4*	1	2	4.034		5.400	0.1908	0.1293	M(V,A)GN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-11-ETW-1	2	1	3.814	5.040	5.300	0.1886	0.1297	M(V,A)GN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-12-ETW-2	2	1	3.854	5.050	5.325	0.1882	0.1292	M(V,A)GN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-14-ETW-3	2	1	3.717	4.814	5.126	0.1850	0.1296	M(V,A)GN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-RS-15-ETW-4	2	1	3.766	4.977	5.280	0.1875	0.1293	M(V,A)GN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-11-ETW-1*	2	2	3.857		5.130	0.1911	0.1284	M(V,A)GN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-13-ETW-2*	2	2	3.895		5.151	0.1901	0.1284	M(V,A)GN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-14-ETW-3*	2	2	3.886		5.208	0.1912	0.1285	M(V,A)GN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-RS-15-ETW-4*	2	2	4.018		5.218	0.1910	0.1280	M(V,A)GN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-11-ETW-1*	3	3	3.901		5.188	0.1879	0.1284	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-12-ETW-2*	3	3	3.967		5.218	0.1895	0.1282	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-14-ETW-3*	3	3	3.913		5.125	0.1900	0.1279	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-RS-15-ETW-4*	3	3	3.918		5.216	0.1887	0.1279	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-11-ETW-1*	3	3	3.929		5.071	0.1897	0.1293	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-12-ETW-2*	3	3	3.941		5.040	0.1870	0.1296	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-14-ETW-3*	3	3	3.859		4.935	0.1863	0.1296	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-RS-15-ETW-4*	3	3	3.940		5.006	0.1870	0.1299	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-11-ETW-1*	4	4	3.882		5.052	0.1833	0.1314	HGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-12-ETW-2*	4	4	4.075		5.216	0.1835	0.1303	HGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-14-ETW-3*	4	4	3.974		5.180	0.1863	0.1303	HGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-RS-15-ETW-4*	4	4	3.963		5.145	0.1899	0.1298	HGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-11-ETW-1*	4	4	3.659		4.896	0.1850	0.1283	M(H,V)GN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-13-ETW-2*	4	4	3.720		4.950	0.1838	0.1298	M(H,V)GN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-14-ETW-3*	4	4	3.719		4.893	0.1873	0.1290	M(H,V)GN
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-RS-15-ETW-4*	4	4	3.728		4.963	0.1868	0.1291	M(H,V)GN

*Coupons fail prior to achieving 5% Shear Strength

Average	3.905	4.988	5.176	0.1882	0.1292
Standard Dev.	0.1175	0.08037	0.154	0.002956	0.0007865
Coeff. of Var. [%]	3.010	1.611	2.983	1.570	0.6087
Min.	3.659	4.814	4.893	0.1833	0.1279
Max.	4.116	5.059	5.474	0.1956	0.1314
Number of Spec.	32	8	32	32	32





4.15ZX Rail Shear In-Plane Shear Properties (ZX-RS)

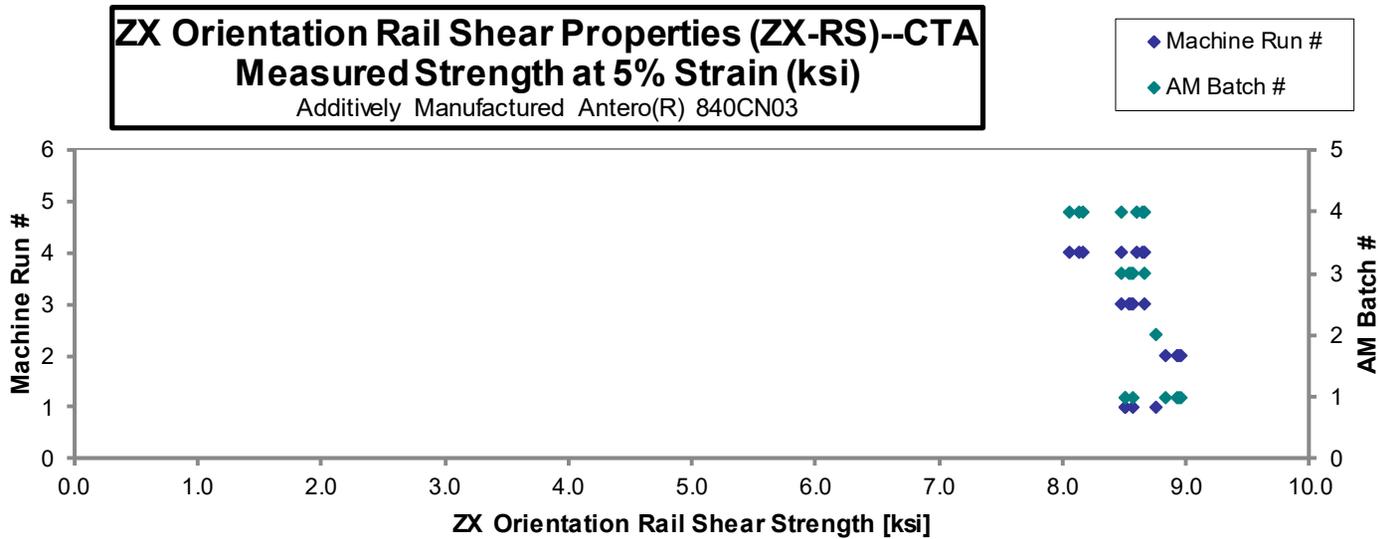
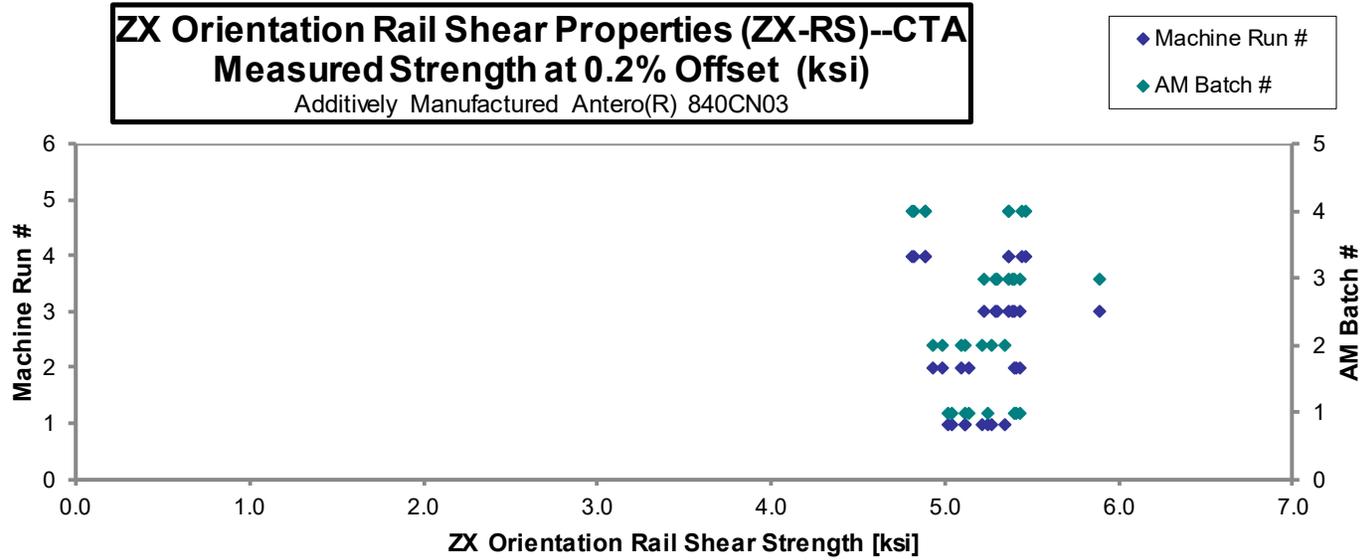
ZX Orientation Rail Shear Properties (ZX-RS)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

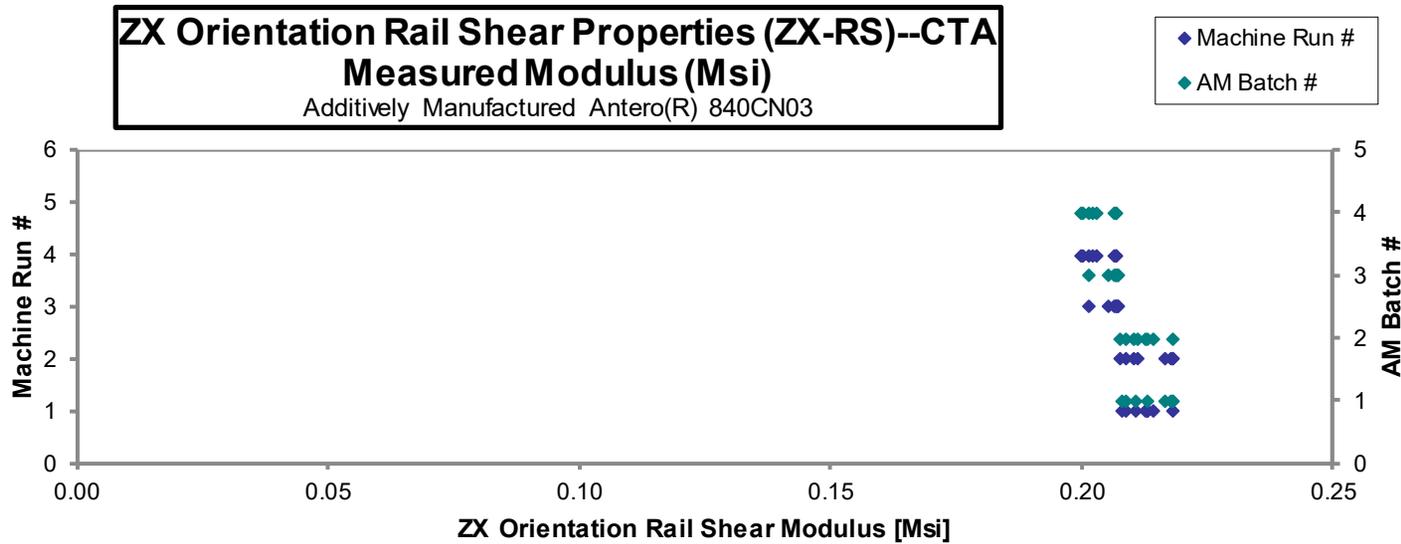
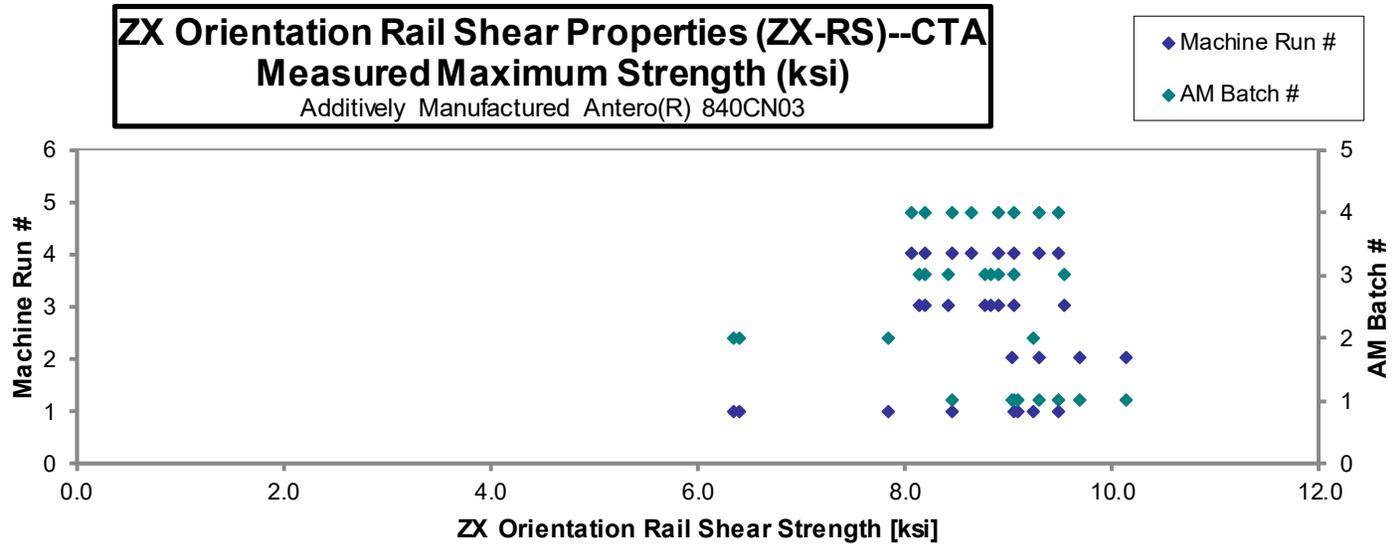
Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-11-CTA-1*	1	1	5.036		8.462	0.2131	0.1277	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-12-CTA-2	1	1	5.253	8.565	9.479	0.2081	0.1278	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-14-CTA-3	1	1	5.017	8.514	9.060	0.2107	0.1281	AGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-15-CTA-4	1	1	5.112	8.503	9.092	0.2090	0.1272	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-11-CTA-1	1	2	5.428	8.941	9.696	0.2166	0.1286	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-13-CTA-2	1	2	5.409	8.955	9.039	0.2182	0.1285	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-14-CTA-3	1	2	5.398	8.929	10.14	0.2183	0.1275	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-15-CTA-4	1	2	5.141	8.830	9.292	0.2179	0.1285	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-11-CTA-1*	2	1	5.265		7.845	0.2145	0.1256	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-12-CTA-2	2	1	5.115	8.759	9.240	0.2180	0.1260	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-14-CTA-3*	2	1	5.343		6.403	0.2132	0.1266	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-15-CTA-4*	2	1	5.212		6.350	0.2127	0.1271	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-11-CTA-1**	2	2	4.991			0.2102	0.1277	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-13-CTA-2**	2	2	4.933			0.2076	0.1276	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-14-CTA-3**	2	2	5.100			0.2088	0.1286	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-15-CTA-4**	2	2				0.2112	0.1283	AGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-11-CTA-1	3	3	5.301	8.553	9.542	0.2071	0.1296	AGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-12-CTA-2*	3	3	5.429		8.419	0.2066	0.1289	AGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-14-CTA-3*	3	3	5.401		8.198	0.2070	0.1286	AGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-15-CTA-4	3	3	5.372	8.564	8.832	0.2071	0.1286	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-11-CTA-1	3	3	5.887	8.657	8.779	0.2069	0.1301	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-12-CTA-2	3	3	5.230	8.540	8.903	0.2052	0.1297	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-14-CTA-3*	3	3	5.296		8.145	0.2072	0.1286	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-15-CTA-4	3	3	5.385	8.475	9.055	0.2015	0.1287	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-11-CTA-1	4	4	5.443	8.662	8.907	0.2066	0.1288	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-12-CTA-2	4	4	5.465	8.652	9.487	0.2067	0.1275	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-14-CTA-3	4	4	5.368	8.598	8.639	0.2069	0.1279	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-15-CTA-4	4	4	5.372	8.471	9.044	0.2020	0.1276	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-11-CTA-1	4	4	4.884	8.168	9.291	0.2004	0.1302	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-13-CTA-2	4	4	4.888	8.132	8.184	0.2015	0.1290	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-14-CTA-3	4	4	4.815	8.058	8.451	0.1998	0.1279	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-15-CTA-4*	4	4	4.820		8.055	0.2030	0.1280	AGN

*Coupons fail prior to achieving 5% Shear Strength

**Coupons had a print defect at the notch section, hence data isn't reported

Average	5.229	8.576	8.715	0.2089	0.1282
Standard Dev.	0.2356	0.2497	0.854	0.005360	0.001048
Coeff. of Var. [%]	4.506	2.912	9.80	2.566	0.8180
Min.	4.815	8.058	6.350	0.1998	0.1256
Max.	5.887	8.955	10.14	0.2183	0.1302
Number of Spec.	31	20	28	32	32





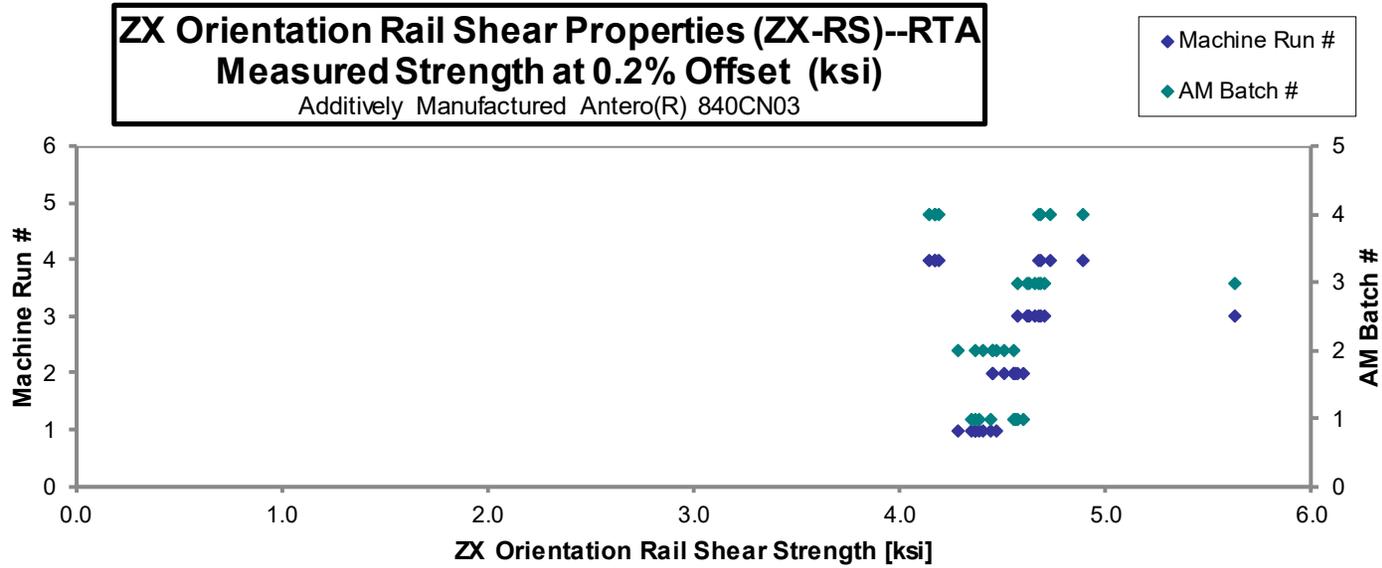
ZX Orientation Rail Shear Properties (ZX-RS)--RTA Strength & Modulus Additively Manufactured Antero(R) 840CN03
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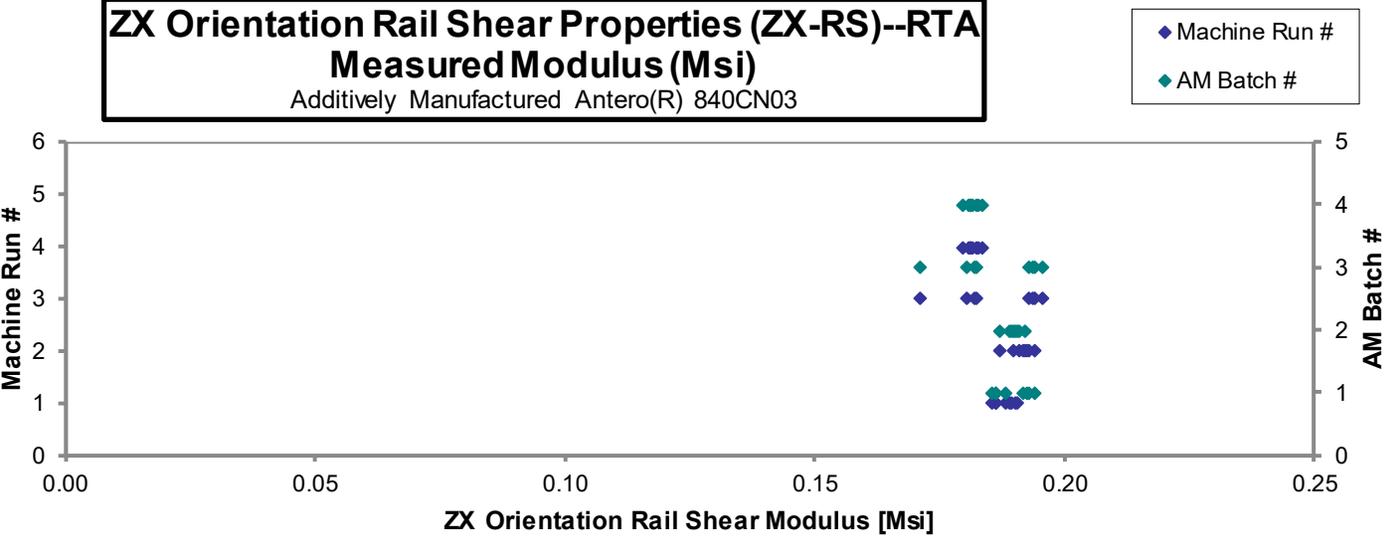
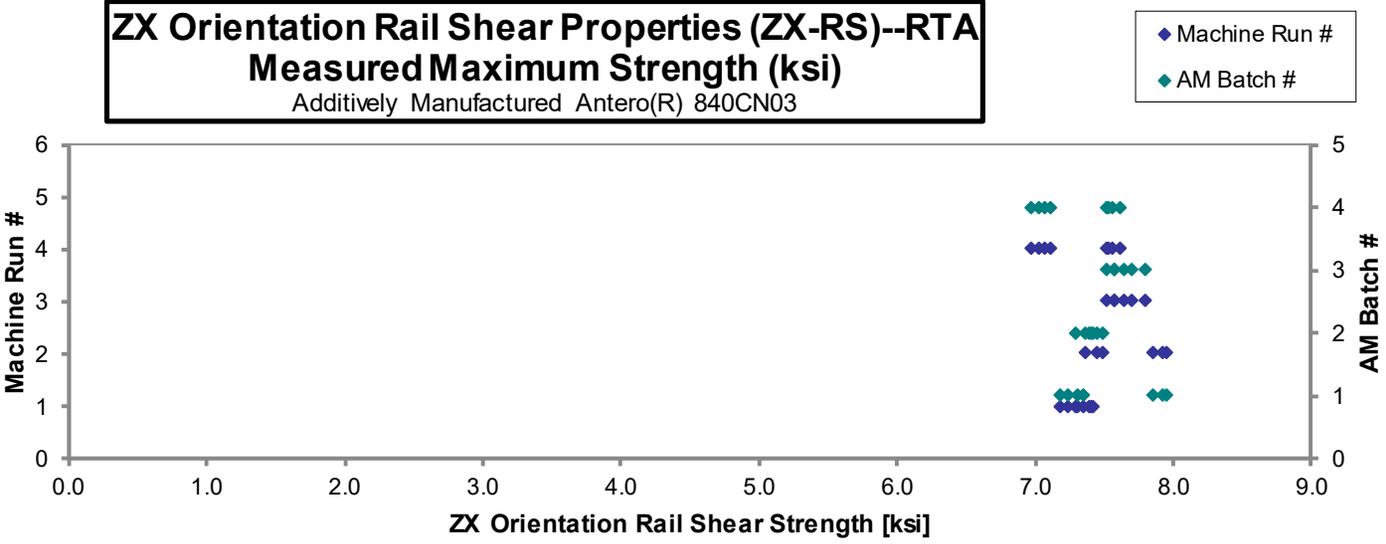
Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-11-RTA-1	1	1	4.365	6.949	7.238	0.1864	0.1304	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-12-RTA-2	1	1	4.389	7.027	7.312	0.1863	0.1295	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-14-RTA-3	1	1	4.446	7.080	7.355	0.1883	0.1290	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-15-RTA-4	1	1	4.351	6.921	7.181	0.1856	0.1304	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-11-RTA-1*	1	2	4.571		7.959	0.1942	0.1282	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-13-RTA-2*	1	2	4.598		7.924	0.1925	0.1280	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-14-RTA-3*	1	2	4.566		7.850	0.1928	0.1273	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-15-RTA-4**	1	2	4.550			0.1916	0.1284	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-11-RTA-1*	2	1	4.470		7.411	0.1901	0.1274	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-12-RTA-2*	2	1	4.401		7.386	0.1892	0.1275	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-14-RTA-3*	2	1	4.363		7.415	0.1904	0.1277	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-15-RTA-4*	2	1	4.283		7.288	0.1891	0.1279	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-11-RTA-1*	2	2	4.559		7.486	0.1919	0.1284	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-13-RTA-2*	2	2	4.505		7.442	0.1909	0.1278	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-14-RTA-3**	2	2	4.450			0.1870	0.1301	ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-15-RTA-4*	2	2	4.453		7.370	0.1896	0.1289	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-11-RTA-1*	3	3	4.569		7.693	0.1939	0.1284	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-12-RTA-2*	3	3	4.702		7.801	0.1936	0.1278	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-14-RTA-3**	3	3	4.620			0.1927	0.1276	ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-15-RTA-4**	3	3	4.685			0.1954	0.1266	ANA
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-11-RTA-1	3	3	4.654	7.123	7.575	0.1822	0.1291	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-12-RTA-2	3	3	5.624	7.171	7.643	0.1711	0.1280	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-14-RTA-3	3	3	4.625	7.145	7.576	0.1820	0.1278	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-15-RTA-4	3	3	4.678	7.091	7.523	0.1805	0.1286	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-11-RTA-1	4	4	4.886	7.117	7.525	0.1795	0.1273	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-12-RTA-2	4	4	4.729	7.154	7.563	0.1810	0.1269	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-14-RTA-3	4	4	4.688	7.169	7.519	0.1829	0.1272	M(V,A)GN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-15-RTA-4	4	4	4.678	7.180	7.619	0.1824	0.1271	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-11-RTA-1	4	4	4.171	6.700	7.028	0.1815	0.1291	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-13-RTA-2	4	4	4.173	6.728	7.065	0.1813	0.1289	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-14-RTA-3	4	4	4.145	6.660	6.976	0.1811	0.1283	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-15-RTA-4	4	4	4.189	6.764	7.105	0.1837	0.1277	VGN

*Coupons fail prior to achieving 5% Shear Strength

**Max Strength not reported because the coupon had an unacceptable failure mode

Average	4.535	6.999	7.458	0.1869	0.1282
Standard Dev.	0.2698	0.1868	0.2586	0.005659	0.0009735
Coeff. of Var. [%]	5.950	2.669	3.467	3.028	0.7593
Min.	4.145	6.660	6.976	0.1711	0.1266
Max.	5.624	7.180	7.959	0.1954	0.1304
Number of Spec.	32	16	28	32	32

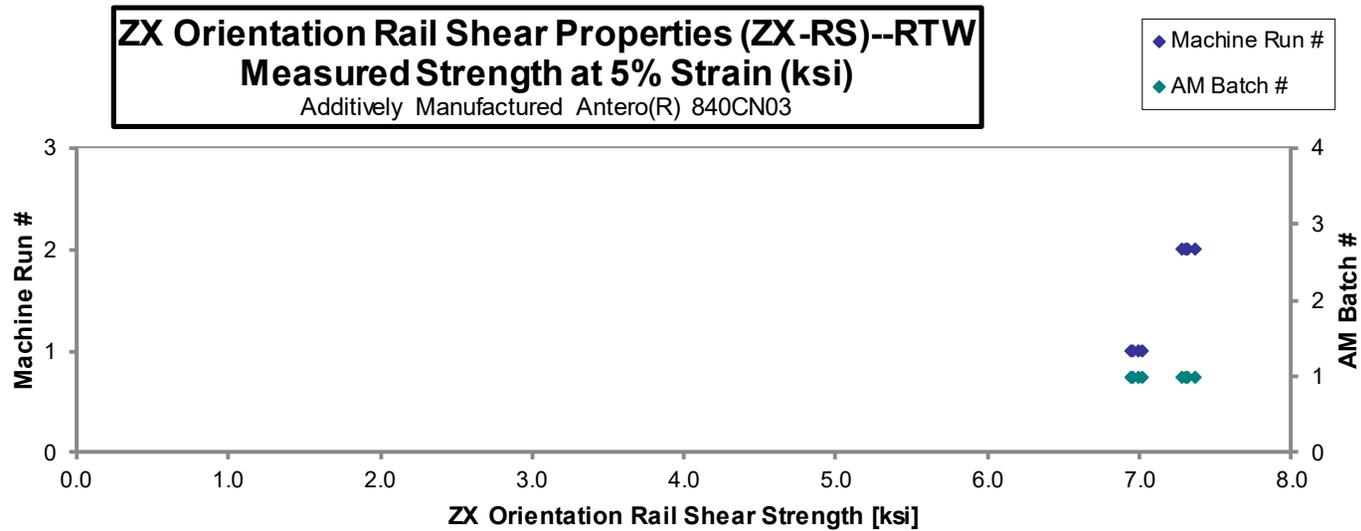
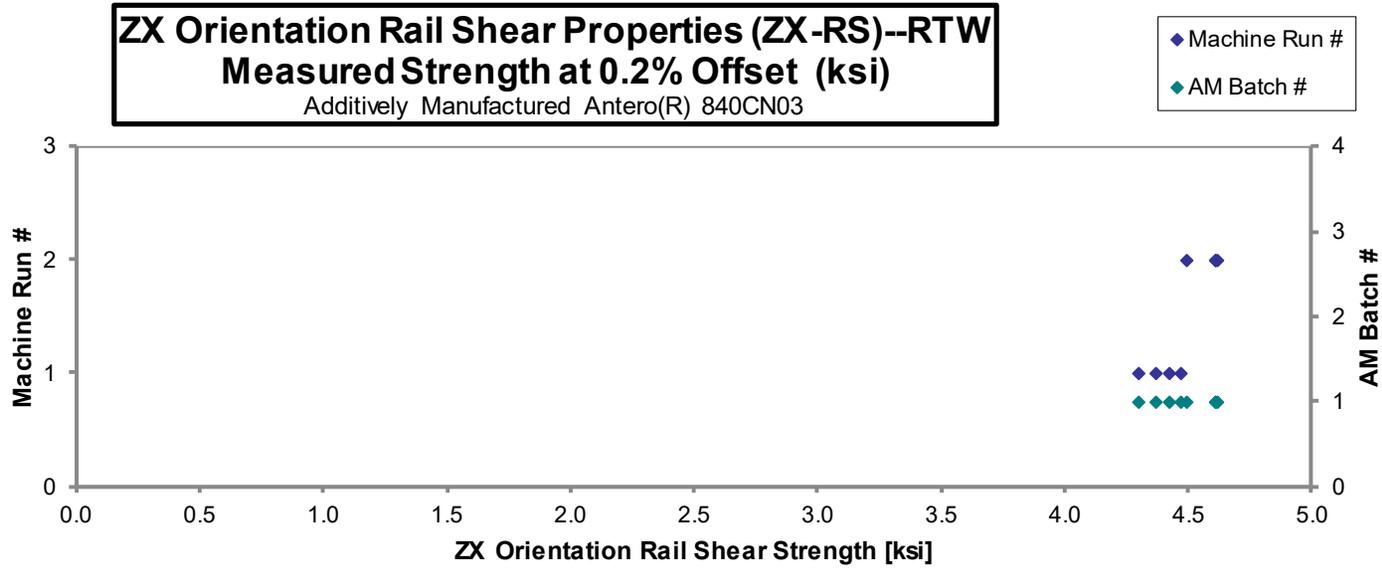


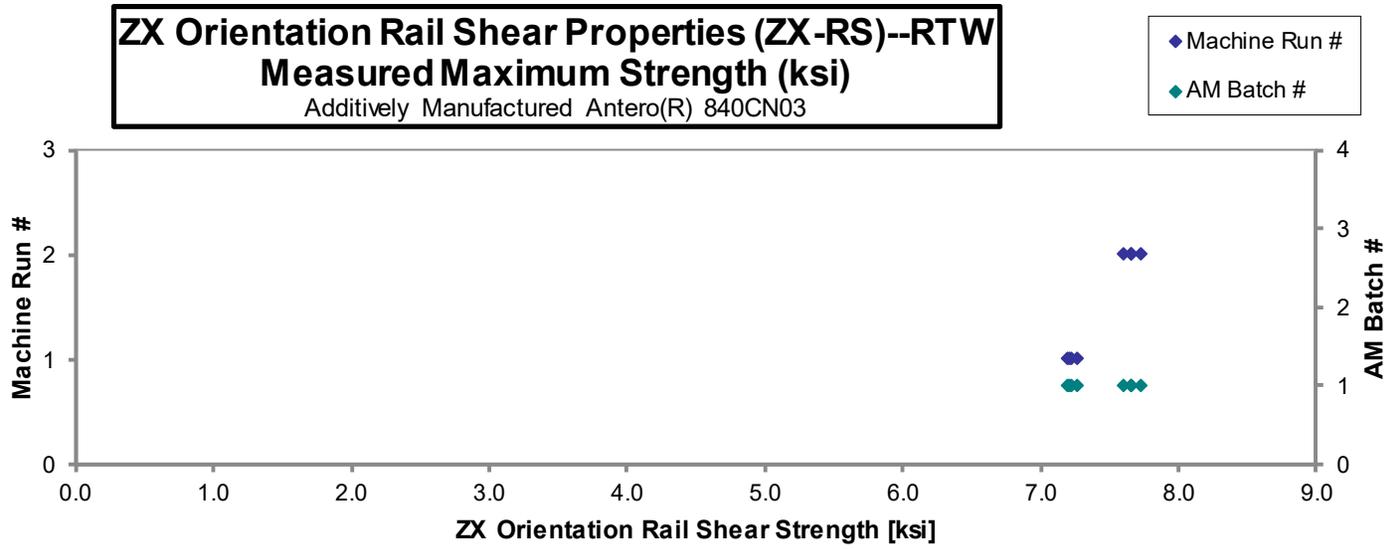


ZX Orientation Rail Shear Properties (ZX-RS)--RTW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-11-RTW-1	1	1	4.474	6.962	7.193	0.1914	0.1276	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-12-RTW-2	1	1	4.426	7.018	7.271	0.1906	0.1282	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-14-RTW-3	1	1	4.373	6.941	7.209	0.1883	0.1295	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-15-RTW-4	1	1	4.298	6.993	7.225	0.1950	0.1271	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-11-RTW-1	1	2	4.612	7.311	7.658	0.1950	0.1278	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-12-RTW-2	1	2	4.611	7.367	7.732	0.1951	0.1274	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-14-RTW-3	1	2	4.496	7.283	7.605	0.1968	0.1265	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-15-RTW-4	1	2	4.618	7.316	7.663	0.1954	0.1274	VGN

Average	4.489	7.149	7.445	0.1934	0.1277
Standard Dev.	0.1202	0.1847	0.2386	0.002963	0.0008820
Coeff. of Var. [%]	2.679	2.583	3.205	1.532	0.6907
Min.	4.298	6.941	7.193	0.1883	0.1265
Max.	4.618	7.367	7.732	0.1968	0.1295
Number of Spec.	8	8	8	8	8



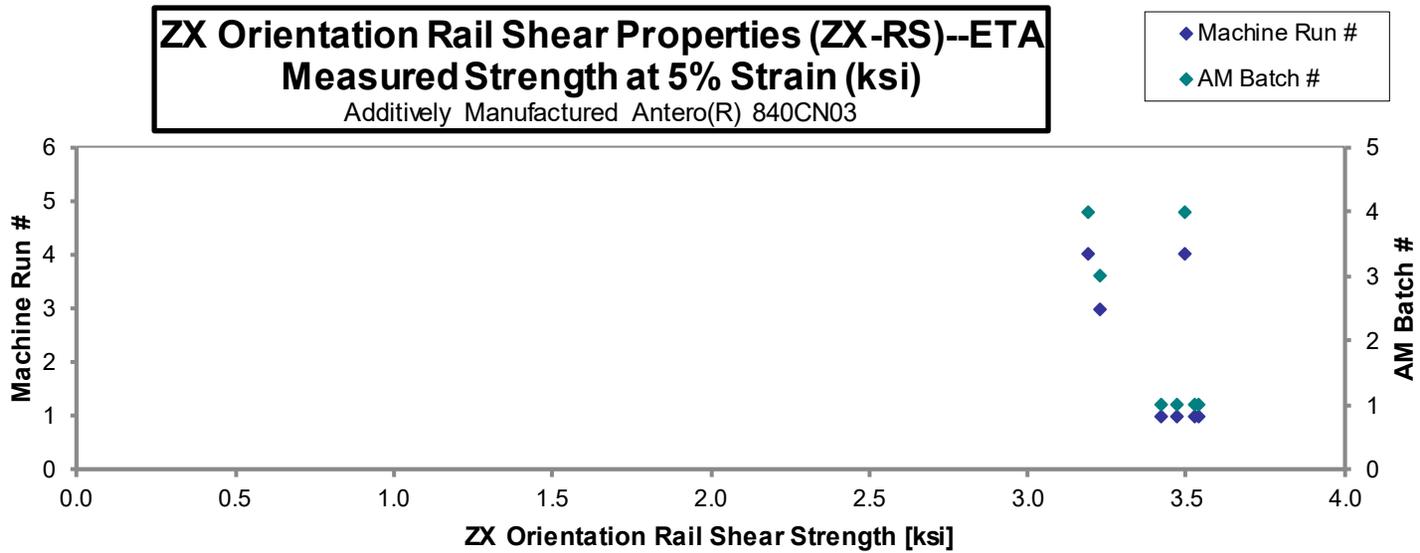
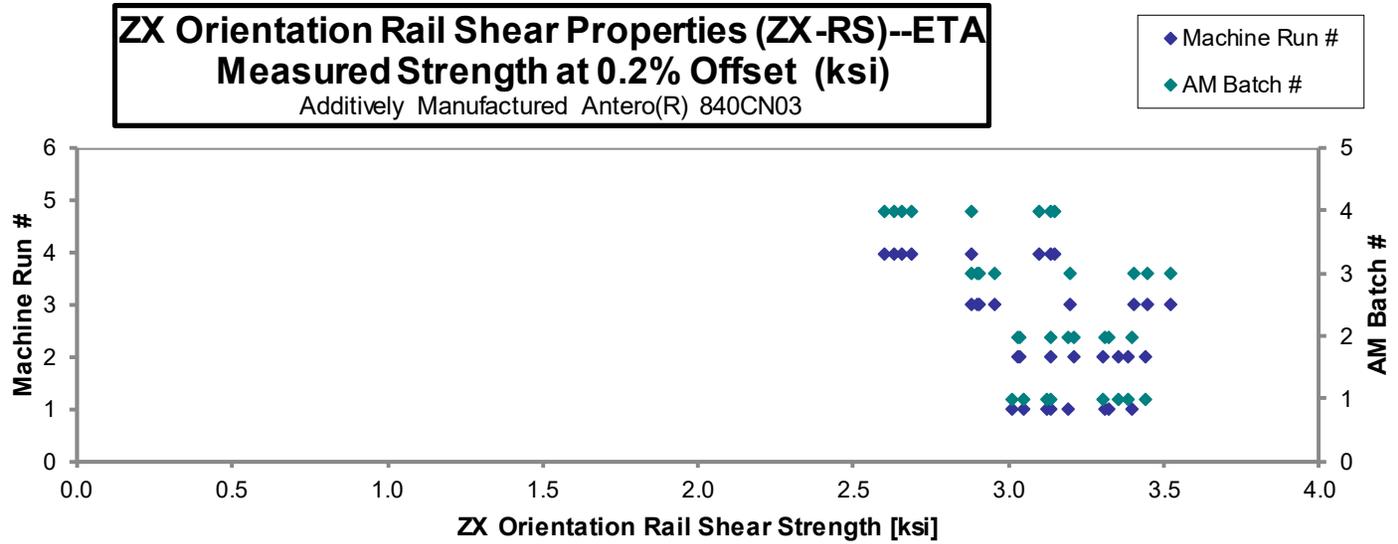


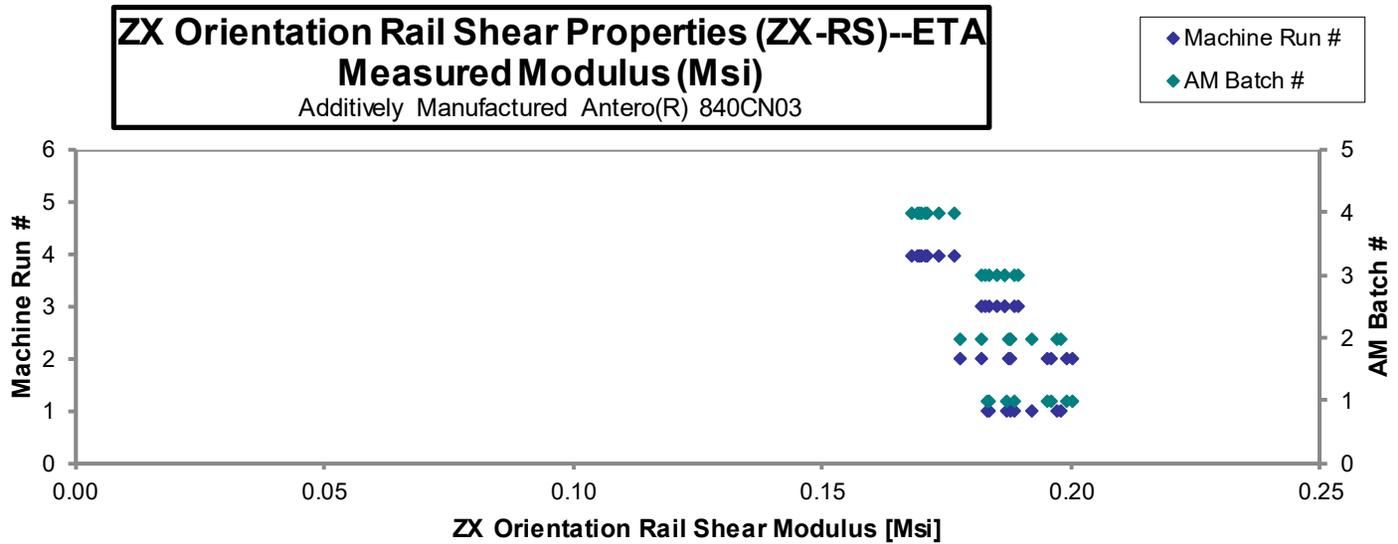
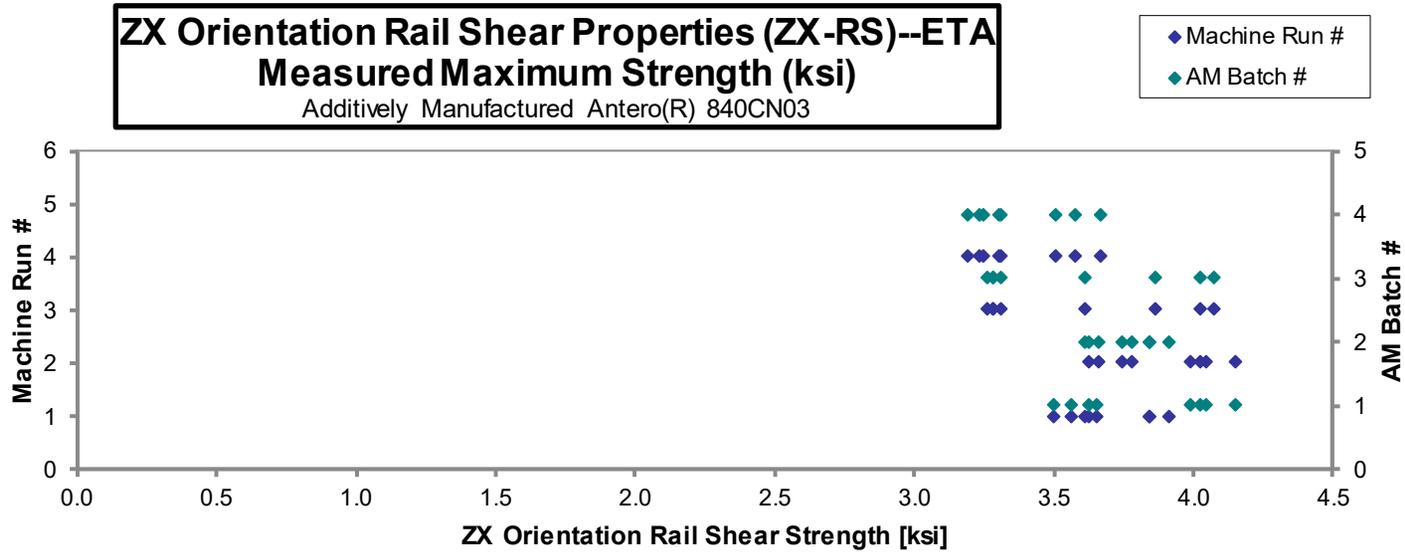
ZX Orientation Rail Shear Properties (ZX-RS)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-11-ETA-1	1	1	3.009	3.420	3.501	0.1871	0.1281	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-12-ETA-2	1	1	3.048	3.472	3.560	0.1836	0.1296	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-14-ETA-3	1	1	3.124	3.527	3.656	0.1886	0.1281	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-15-ETA-4	1	1	3.138	3.538	3.627	0.1833	0.1277	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-11-ETA-1*	1	2	3.388		4.024	0.1961	0.1287	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-13-ETA-2*	1	2	3.439		4.148	0.2004	0.1284	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-14-ETA-3*	1	2	3.354		4.047	0.1952	0.1277	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-15-ETA-4*	1	2	3.301		3.992	0.1993	0.1288	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-11-ETA-1*	2	1	3.323		3.844	0.1922	0.1273	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-12-ETA-2*	2	1	3.310		3.845	0.1970	0.1264	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-14-ETA-3*	2	1	3.399		3.916	0.1981	0.1274	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-15-ETA-4*	2	1	3.191		3.612	0.1877	0.1277	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-11-ETA-1*	2	2	3.213		3.783	0.1873	0.1281	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-13-ETA-2*	2	2	3.037		3.629	0.1777	0.1296	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-14-ETA-3*	2	2	3.136		3.747	0.1880	0.1290	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-15-ETA-4*	2	2	3.027		3.662	0.1818	0.1295	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-11-ETA-1*	3	3	3.446		4.026	0.1888	0.1282	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-12-ETA-2*	3	3	3.198		3.609	0.1851	0.1284	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-14-ETA-3*	3	3	3.403		3.863	0.1893	0.1273	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-15-ETA-4*	3	3	3.521		4.076	0.1868	0.1280	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-11-ETA-1*	3	3	2.897		3.282	0.1833	0.1301	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-12-ETA-2*	3	3	2.907		3.264	0.1865	0.1303	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-14-ETA-3*	3	3	2.955		3.309	0.1820	0.1295	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-15-ETA-4	3	3	2.881	3.228	3.284	0.1829	0.1297	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-11-ETA-1	4	4	2.883	3.191	3.305	0.1678	0.1301	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-12-ETA-2*	4	4	3.134		3.671	0.1734	0.1289	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-14-ETA-3	4	4	3.149	3.493	3.573	0.1711	0.1296	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-15-ETA-4*	4	4	3.101		3.506	0.1766	0.1285	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-11-ETA-1*	4	4	2.601		3.233	0.1690	0.1289	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-13-ETA-2*	4	4	2.654		3.247	0.1698	0.1291	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-14-ETA-3*	4	4	2.632		3.191	0.1708	0.1288	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-15-ETA-4*	4	4	2.684		3.311	0.1695	0.1275	VGN

*Coupons fail prior to achieving 5% Shear Strength

Average	3.109	3.410	3.636	0.1842	0.1286
Standard Dev.	0.2517	0.1426	0.2882	0.009501	0.0009582
Coeff. of Var. [%]	8.096	4.181	7.928	5.156	0.7453
Min.	2.601	3.191	3.191	0.1678	0.1264
Max.	3.521	3.538	4.148	0.2004	0.1303
Number of Spec.	32	7	32	32	32



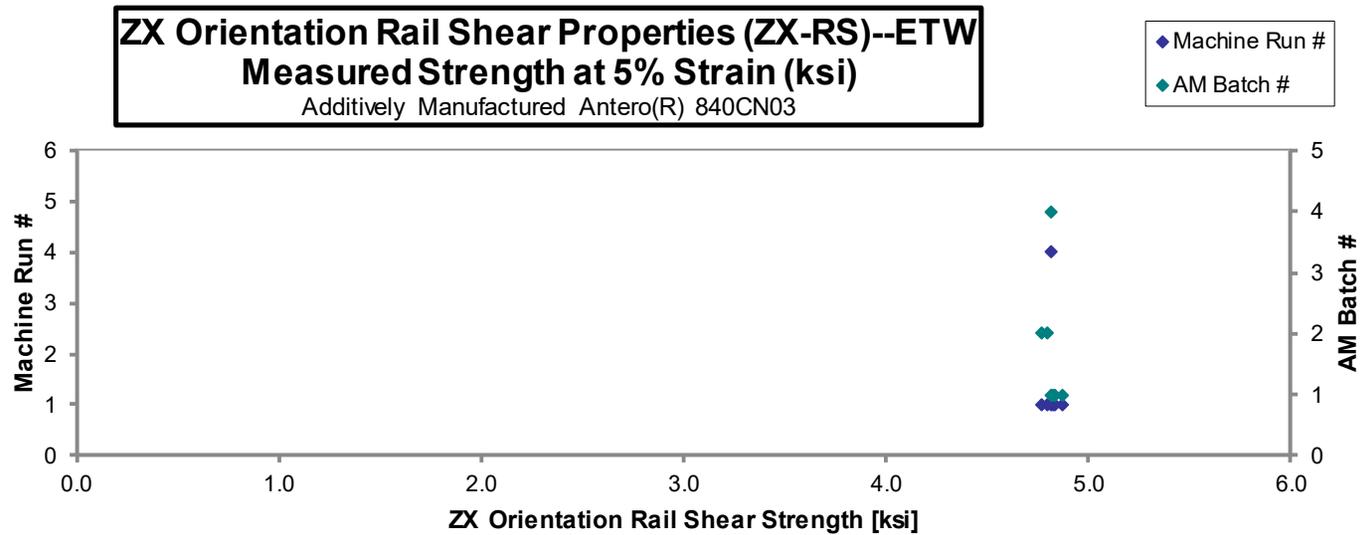
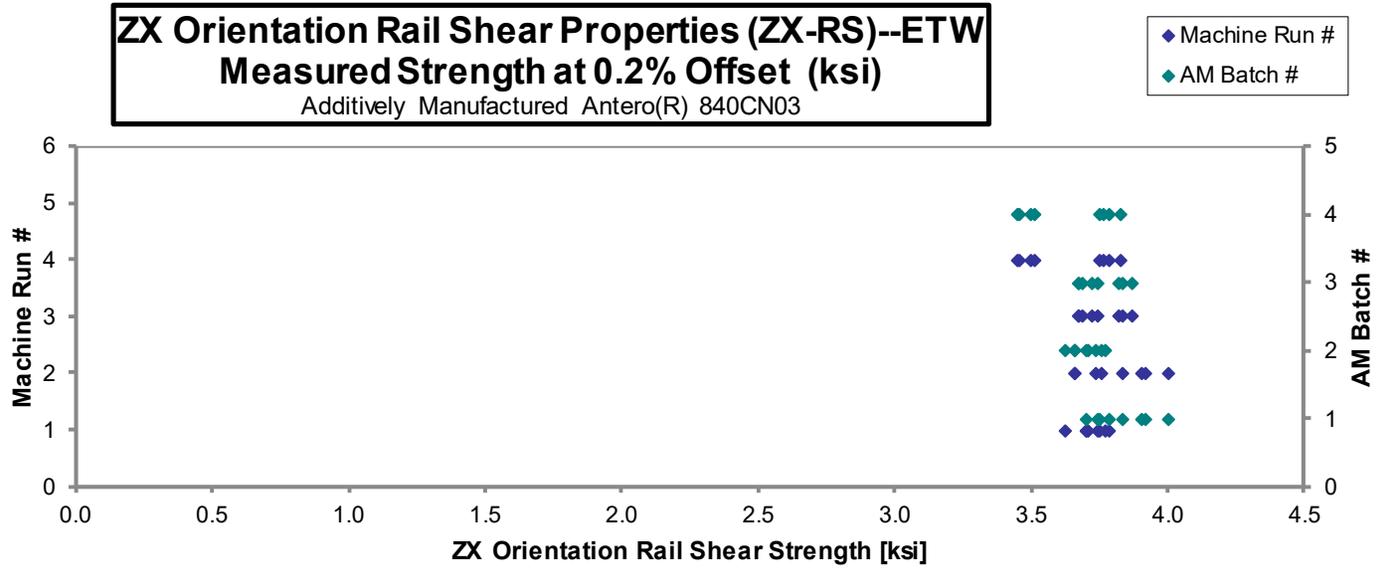


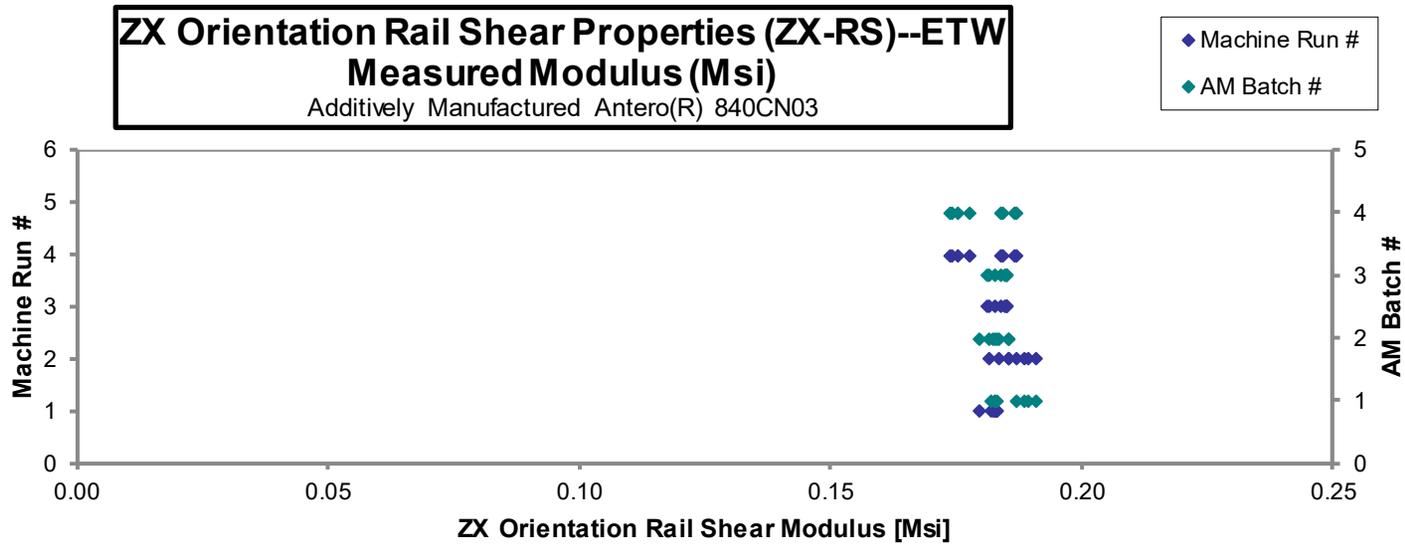
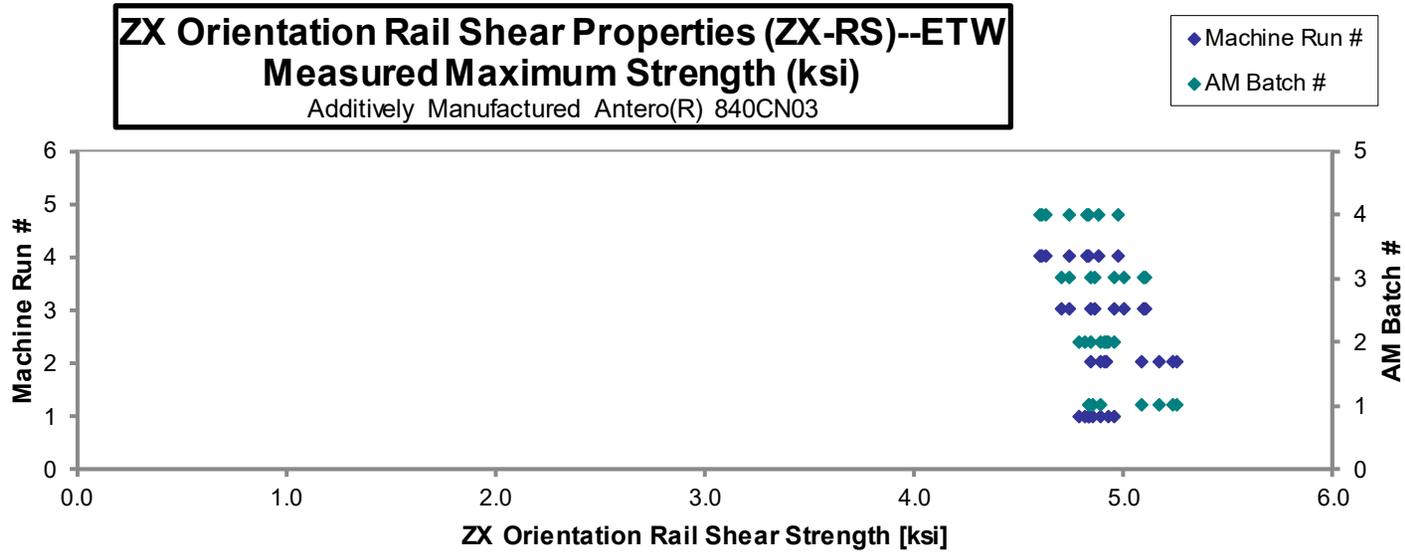
ZX Orientation Rail Shear Properties (ZX-RS)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-11-ETW-1	1	1	3.787	4.821	4.831	0.1832	0.1291	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-12-ETW-2	1	1	3.750	4.820	4.835	0.1828	0.1283	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-14-ETW-3	1	1	3.704	4.839	4.855	0.1827	0.1283	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-RS-15-ETW-4	1	1	3.744	4.875	4.887	0.1819	0.1283	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-11-ETW-1*	1	2	4.001		5.256	0.1886	0.1275	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-12-ETW-2*	1	2	3.908		5.239	0.1893	0.1270	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-14-ETW-3*	1	2	3.922		5.170	0.1910	0.1265	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-RS-15-ETW-4*	1	2	3.834		5.089	0.1872	0.1278	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-11-ETW-1	2	1	3.713	4.799	4.813	0.1796	0.1269	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-12-ETW-2*	2	1	3.700		4.925	0.1822	0.1273	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-14-ETW-3*	2	1	3.775		4.959	0.1827	0.1269	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-RS-15-ETW-4	2	1	3.628	4.769	4.792	0.1832	0.1264	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-11-ETW-1*	2	2	3.735		4.889	0.1854	0.1278	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-13-ETW-2*	2	2	3.661		4.844	0.1816	0.1263	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-14-ETW-3*	2	2	3.762		4.920	0.1835	0.1264	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-RS-15-ETW-4*	2	2	3.663		4.912	0.1854	0.1263	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-11-ETW-1*	3	3	3.743		4.958	0.1850	0.1273	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-12-ETW-2*	3	3	3.837		5.109	0.1851	0.1279	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-14-ETW-3*	3	3	3.823		5.000	0.1848	0.1281	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-RS-15-ETW-4*	3	3	3.874		5.099	0.1852	0.1278	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-11-ETW-1*	3	3	3.725		4.862	0.1841	0.1295	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-12-ETW-2*	3	3	3.690		4.743	0.1827	0.1293	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-14-ETW-3*	3	3	3.675		4.843	0.1816	0.1293	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-RS-15-ETW-4*	3	3	3.674		4.701	0.1810	0.1296	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-11-ETW-1*	4	4	3.827		4.974	0.1843	0.1288	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-12-ETW-2*	4	4	3.769		4.823	0.1838	0.1288	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-14-ETW-3	4	4	3.752	4.819	4.837	0.1865	0.1283	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-RS-15-ETW-4*	4	4	3.785		4.877	0.1872	0.1279	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-11-ETW-1*	4	4	3.450		4.609	0.1743	0.1323	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-13-ETW-2*	4	4	3.497		4.632	0.1738	0.1319	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-14-ETW-3*	4	4	3.460		4.605	0.1753	0.1316	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-RS-15-ETW-4*	4	4	3.515		4.737	0.1778	0.1299	VGN

*Coupons fail prior to achieving 5% Shear Strength

Average	3.731	4.820	4.894	0.1832	0.1283
Standard Dev.	0.1266	0.03265	0.1646	0.003928	0.001573
Coeff. of Var. [%]	3.393	0.677	3.363	2.144	1.226
Min.	3.450	4.769	4.605	0.1738	0.1263
Max.	4.001	4.875	5.256	0.1910	0.1323
Number of Spec.	32	7	32	32	32





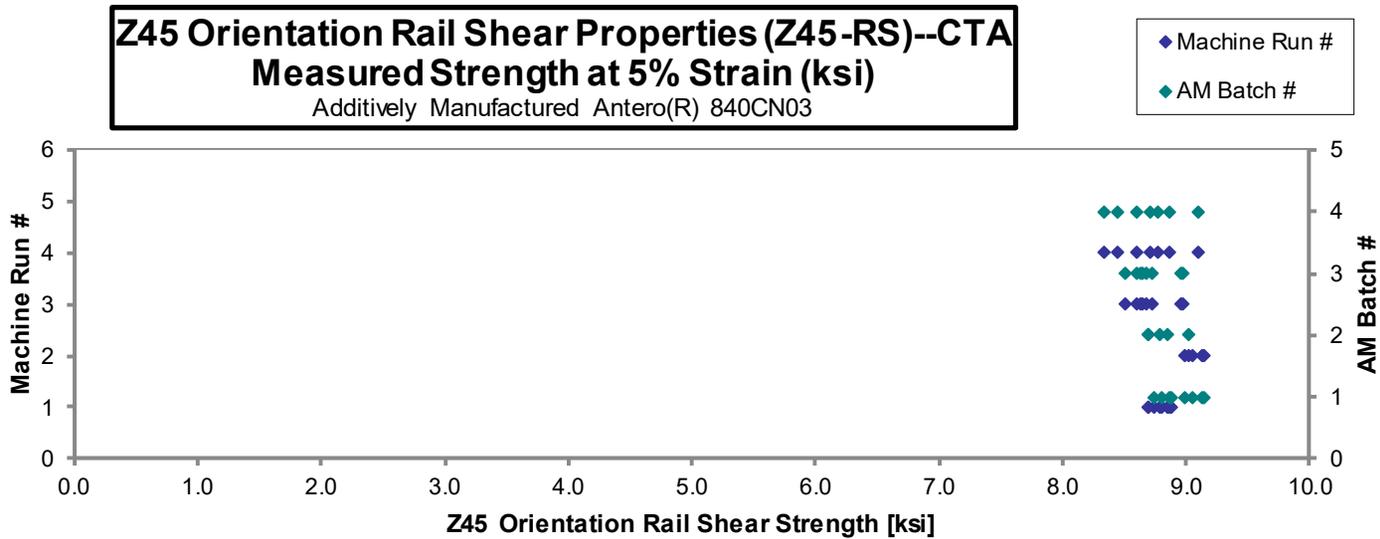
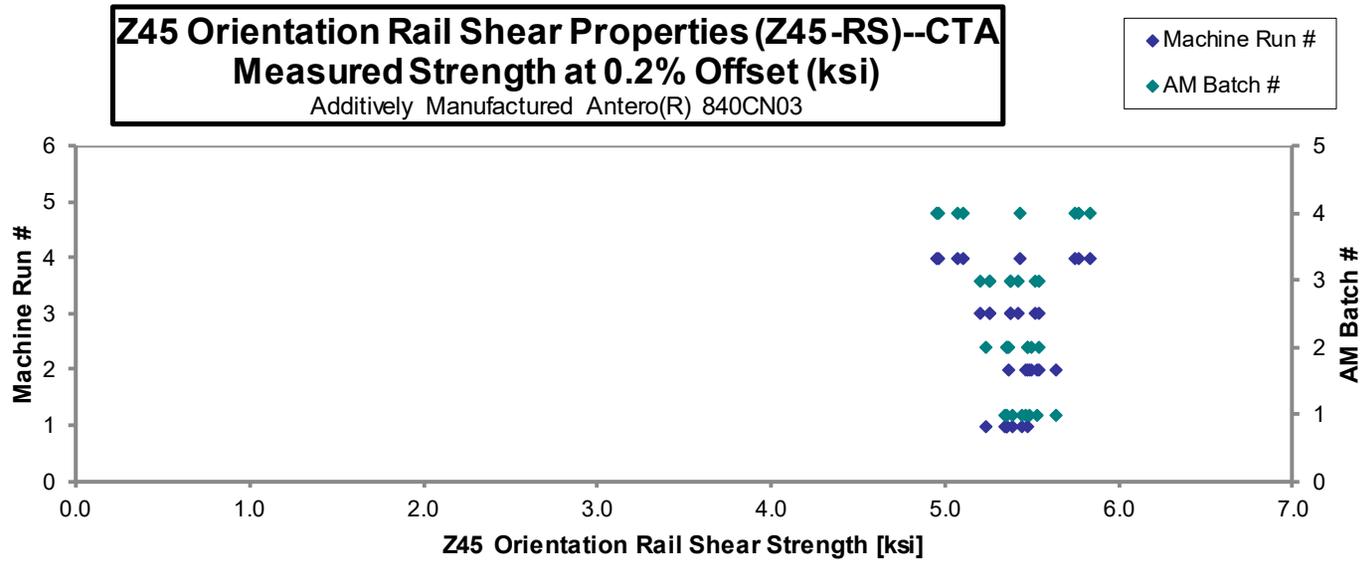
4.16 Z45 Rail Shear In-Plane Shear Properties (Z45-RS)

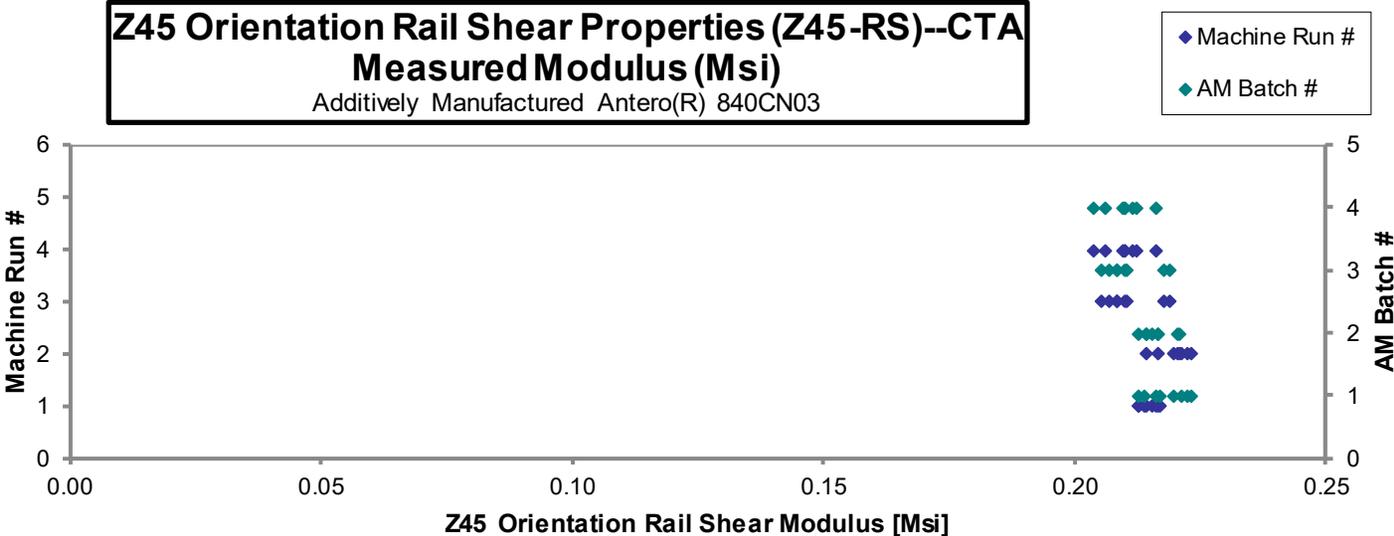
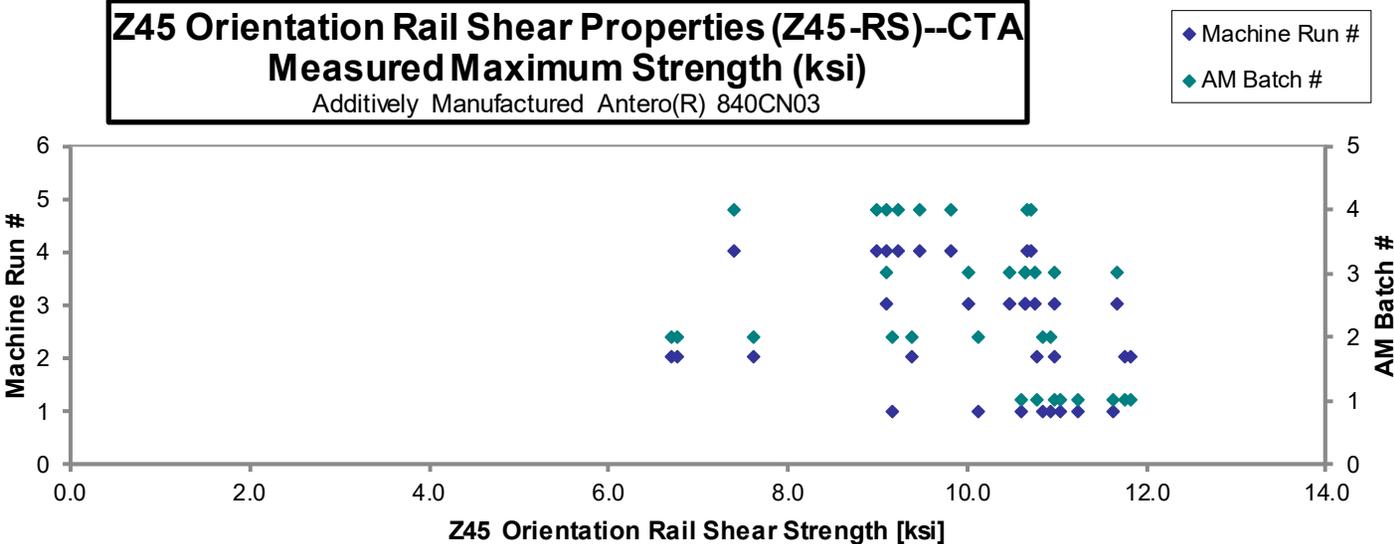
Z45 Orientation Rail Shear Properties (Z45-RS)--CTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msj]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-11-CTA-1	1	1	5.356	8.739	11.63	0.2128	0.1279	AGN, ANA
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-12-CTA-2	1	1	5.442	8.866	11.04	0.2161	0.1276	AGN, ANA
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-14-CTA-3	1	1	5.345	8.888	11.24	0.2169	0.1277	AGN, ANA
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-15-CTA-4	1	1	5.386	8.802	10.61	0.2140	0.1276	AGN, ANA
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-11-CTA-1	1	2	5.640	9.134	11.83	0.2233	0.1286	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-13-CTA-2	1	2	5.529	9.144	10.78	0.2224	0.1305	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-14-CTA-3	1	2	5.485	8.987	10.98	0.2197	0.1287	AGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-15-CTA-4	1	2	5.461	9.060	11.76	0.2215	0.1282	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-11-CTA-1	2	1	5.356	8.703	10.93	0.2126	0.1289	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-12-CTA-2	2	1	5.355	8.796	9.173	0.2156	0.1305	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-14-CTA-3	2	1	5.478	8.844	10.12	0.2165	0.1300	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-15-CTA-4	2	1	5.242	8.698	10.84	0.2142	0.1299	AGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-11-CTA-1*	2	2	5.501		6.760	0.2165	0.1298	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-13-CTA-2*	2	2	5.538		7.624	0.2207	0.1289	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-14-CTA-3*	2	2	5.370		6.708	0.2142	0.1291	AGN, ANA
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-15-CTA-4	2	2	5.475	9.019	9.393	0.2205	0.1291	AGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-11-CTA-1	3	3	5.541	8.965	10.47	0.2178	0.1286	AGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-12-CTA-2	3	3	5.383	8.981	10.97	0.2189	0.1281	M(V,A)GN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-14-CTA-3	3	3	5.256	8.633	10.75	0.2101	0.1291	AGN, ANA
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-15-CTA-4	3	3	5.254	8.604	10.64	0.2104	0.1295	AGN, ANA
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-11-CTA-1	3	3	5.523	8.686	10.03	0.2084	0.1295	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-12-CTA-2	3	3	5.376	8.645	9.110	0.2069	0.1307	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-14-CTA-3	3	3	5.426	8.727	10.65	0.2084	0.1309	AGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-15-CTA-4	3	3	5.204	8.508	11.68	0.2054	0.1298	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-11-CTA-1	4	4	5.840	8.714	9.233	0.2038	0.1310	AGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-12-CTA-2	4	4	5.746	8.873	8.985	0.2098	0.1304	AGN, ANA
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-14-CTA-3	4	4	5.771	9.096	9.469	0.2161	0.1289	AGN, ANA
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-15-CTA-4	4	4	5.438	8.779	10.67	0.2096	0.1304	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-11-CTA-1	4	4	4.960	8.336	10.71	0.2059	0.1294	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-13-CTA-2	4	4	5.068	8.599	9.101	0.2123	0.1288	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-14-CTA-3	4	4	4.958	8.448	9.823	0.2099	0.1287	AGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-15-CTA-4*	4	4	5.111		7.398	0.2116	0.1291	AGN

*Coupons fail prior to achieving 5% Shear Strength

Average	5.400	8.795	10.03	0.2138	0.1292
Standard Dev.	0.2059	0.2067	1.390	0.005239	0.0009771
Coeff. of Var. [%]	3.813	2.350	13.85	2.450	0.7561
Min.	4.958	8.336	6.708	0.2038	0.1276
Max.	5.840	9.144	11.83	0.2233	0.1310
Number of Spec.	32	28	32	32	32



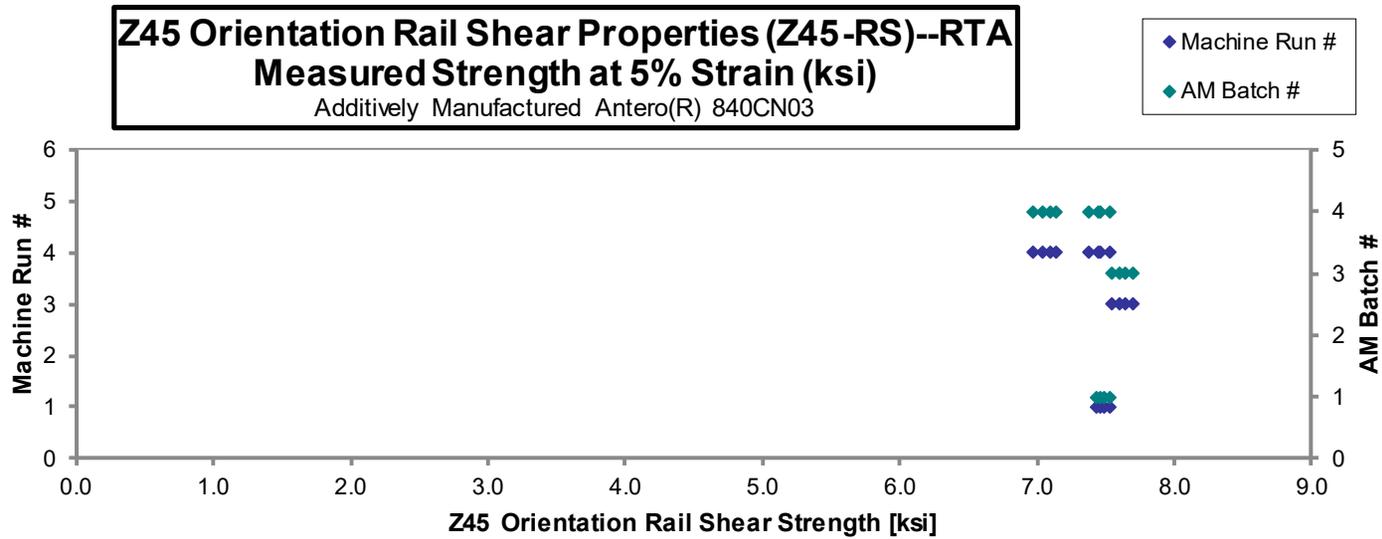
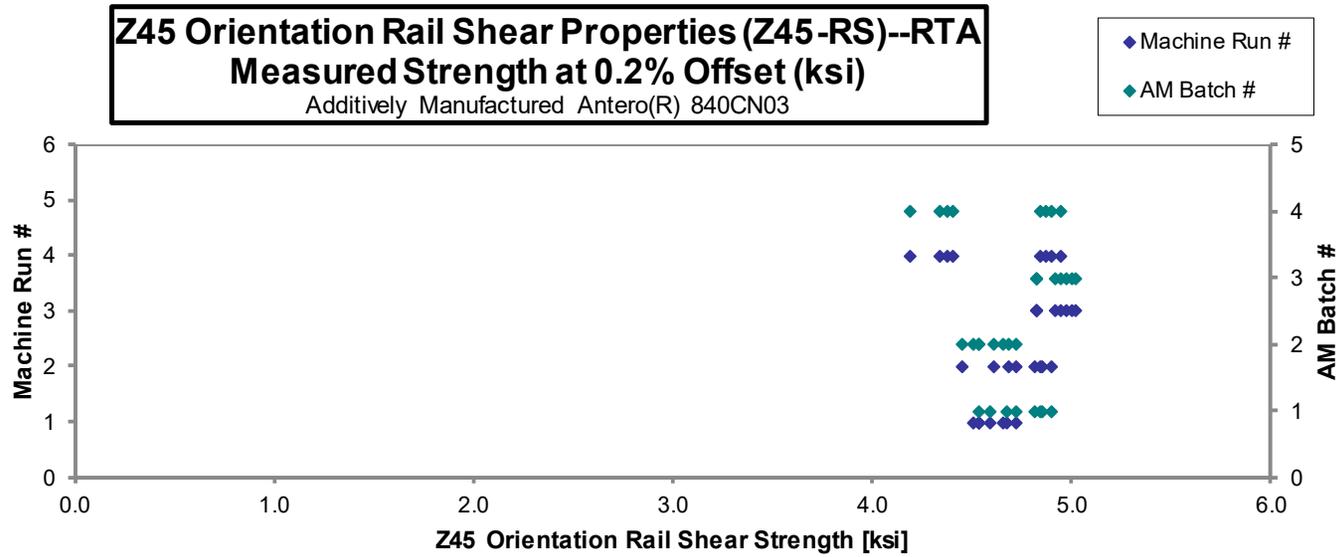


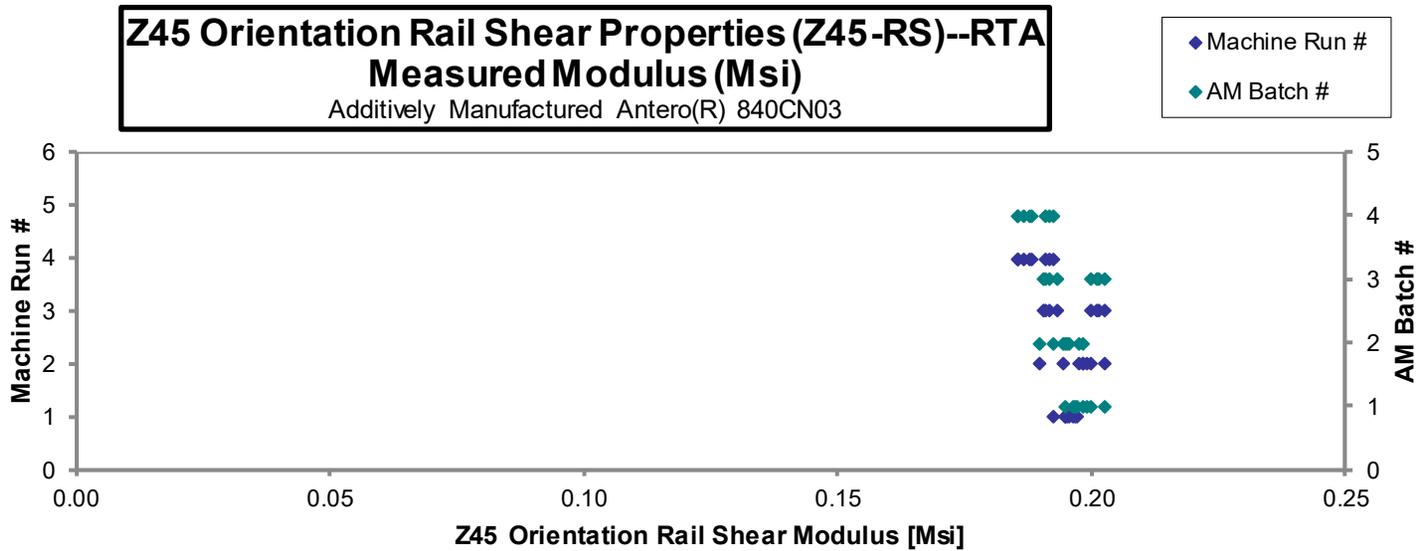
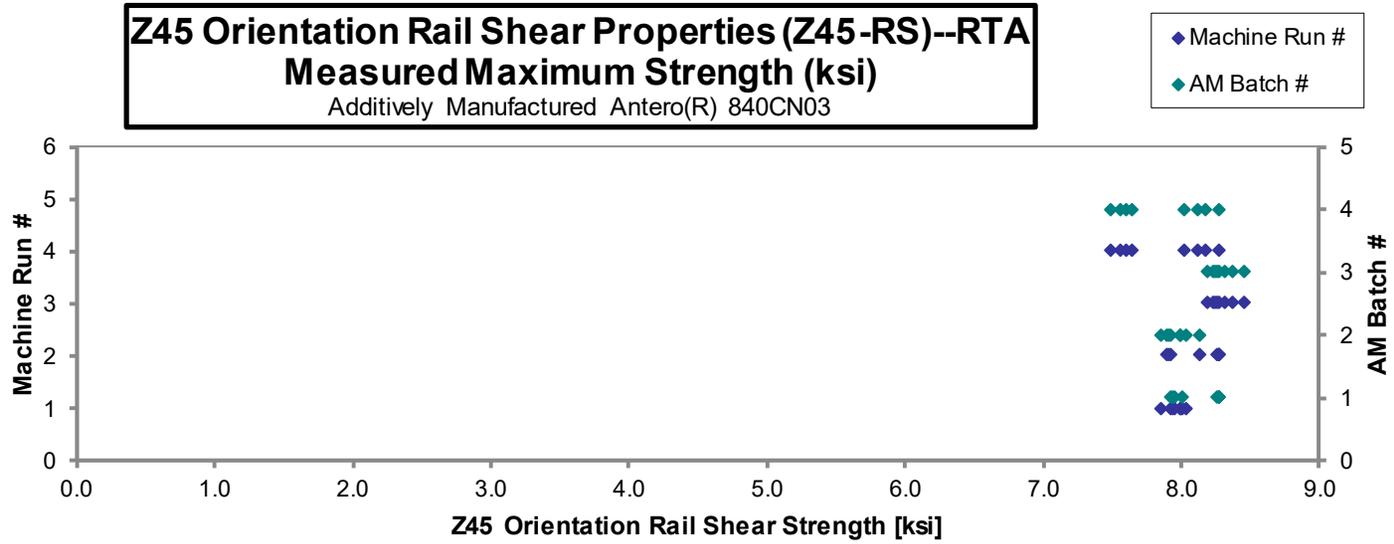
Z45 Orientation Rail Shear Properties (Z45-RS)--RTA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-11-RTA-1	1	1	4.595	7.440	7.942	0.1950	0.1283	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-12-RTA-2	1	1	4.718	7.538	8.009	0.1965	0.1283	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-14-RTA-3	1	1	4.533	7.458	7.956	0.1970	0.1283	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-15-RTA-4	1	1	4.680	7.491	7.924	0.1968	0.1283	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-11-RTA-1*	1	2	4.814		8.270	0.2026	0.1286	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-13-RTA-2*	1	2	4.852		8.275	0.1998	0.1287	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-14-RTA-3*	1	2	4.898		8.280	0.1984	0.1291	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-15-RTA-4*	1	2	4.845		8.263	0.1989	0.1290	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-11-RTA-1*	2	1	4.533		7.999	0.1956	0.1296	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-12-RTA-2*	2	1	4.536		8.039	0.1948	0.1295	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-14-RTA-3*	2	1	4.504		7.856	0.1925	0.1294	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-15-RTA-4*	2	1	4.656		7.990	0.1953	0.1300	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-11-RTA-1*	2	2	4.719		8.137	0.1983	0.1283	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-13-RTA-2*	2	2	4.687		7.921	0.1899	0.1290	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-14-RTA-3*	2	2	4.447		7.911	0.1943	0.1284	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-15-RTA-4*	2	2	4.614		7.891	0.1974	0.1294	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-11-RTA-1*	3	3	4.951		8.265	0.2010	0.1274	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-12-RTA-2*	3	3	4.920		8.278	0.2025	0.1268	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-14-RTA-3*	3	3	4.824		8.232	0.2013	0.1268	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-15-RTA-4*	3	3	4.823		8.184	0.1998	0.1270	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-11-RTA-1	3	3	4.821	7.541	8.311	0.1904	0.1262	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-12-RTA-2	3	3	5.006	7.706	8.460	0.1933	0.1258	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-14-RTA-3	3	3	4.973	7.602	8.253	0.1911	0.1269	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-15-RTA-4	3	3	5.025	7.651	8.378	0.1915	0.1267	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-11-RTA-1	4	4	4.841	7.372	8.029	0.1856	0.1289	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-12-RTA-2	4	4	4.869	7.442	8.169	0.1856	0.1285	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-14-RTA-3	4	4	4.902	7.528	8.273	0.1879	0.1275	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-15-RTA-4	4	4	4.944	7.466	8.125	0.1866	0.1289	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-11-RTA-1	4	4	4.338	6.971	7.484	0.1881	0.1293	VGN, ANA
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-13-RTA-2	4	4	4.403	7.144	7.647	0.1915	0.1283	M(V,A)GN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-14-RTA-3	4	4	4.186	7.038	7.560	0.1924	0.1271	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-15-RTA-4	4	4	4.375	7.097	7.597	0.1908	0.1278	VGN

*Coupons fail prior to achieving 5% Shear Strength

Average	4.713	7.405	8.060	0.1945	0.1282
Standard Dev.	0.2174	0.2228	0.2462	0.004908	0.001072
Coeff. of Var. [%]	4.612	3.009	3.054	2.524	0.8364
Min.	4.186	6.971	7.484	0.1856	0.1258
Max.	5.025	7.706	8.460	0.2026	0.1300
Number of Spec.	32	16	32	32	32

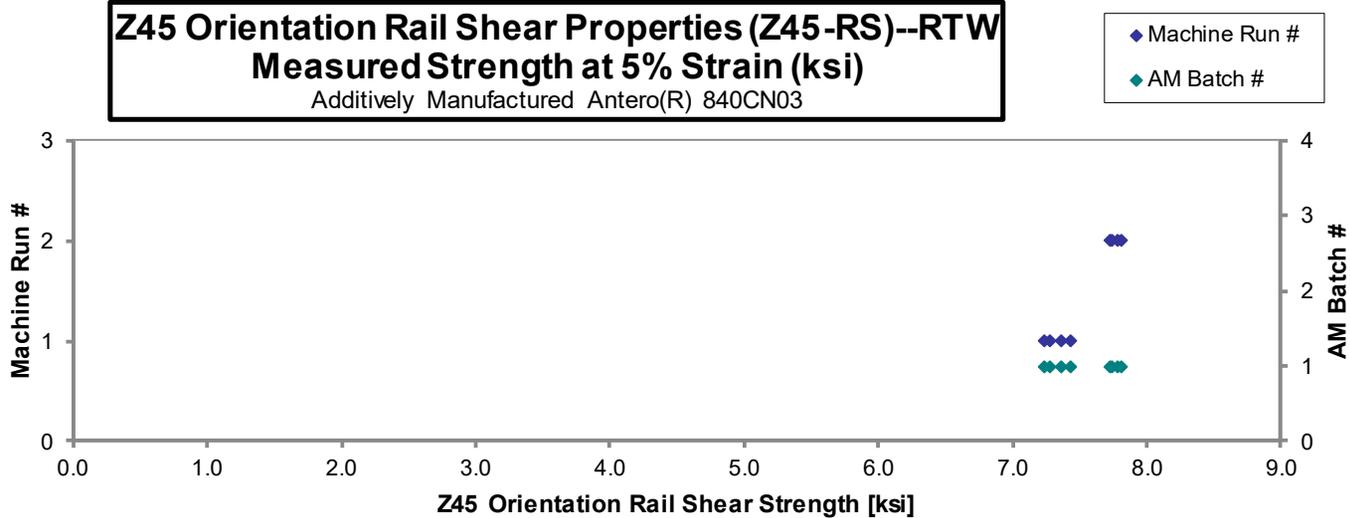
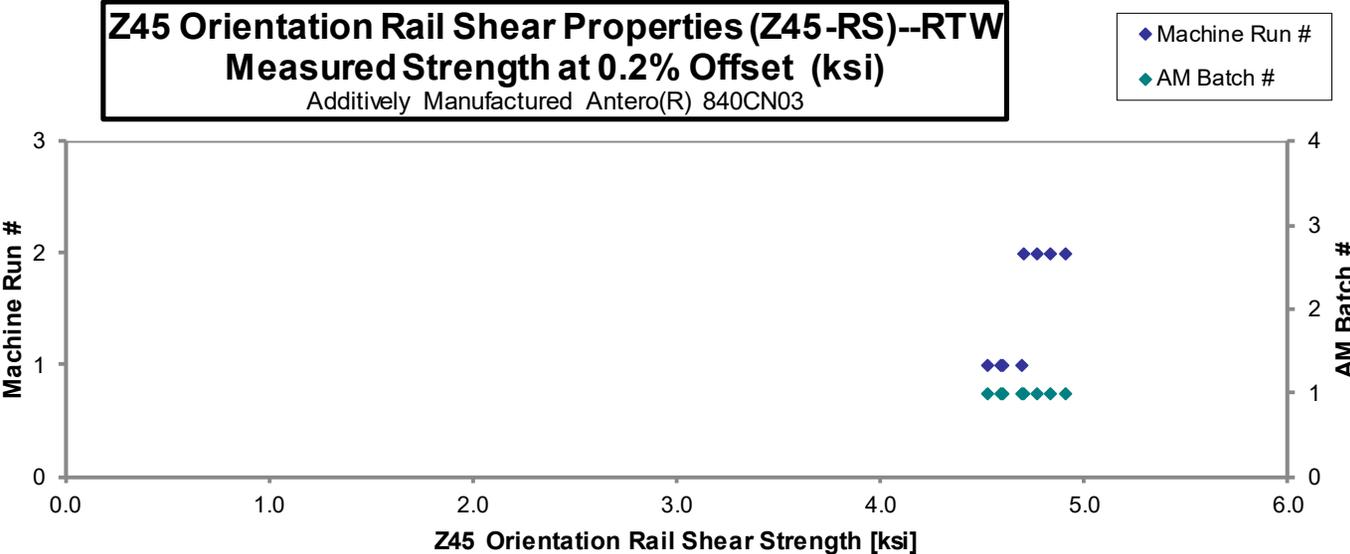




Z45 Orientation Rail Shear Properties (Z45-RS)--RTW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-11-RTW-1	1	1	4.524	7.240	7.643	0.1938	0.1287	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-12-RTW-2	1	1	4.605	7.363	7.782	0.1959	0.1290	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-14-RTW-3	1	1	4.693	7.429	7.839	0.1970	0.1283	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-15-RTW-4	1	1	4.596	7.273	7.695	0.1942	0.1294	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-11-RTW-1	1	2	4.699	7.723	8.187	0.2059	0.1278	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-12-RTW-2	1	2	4.836	7.783	8.250	0.2043	0.1273	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-14-RTW-3	1	2	4.912	7.807	8.276	0.2051	0.1264	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-15-RTW-4	1	2	4.767	7.747	8.196	0.2058	0.1267	VGN

Average	4.704	7.545	7.984	0.2003	0.1279
Standard Dev.	0.1301	0.2422	0.2680	0.005496	0.001088
Coeff. of Var. [%]	2.766	3.210	3.356	2.745	0.8507
Min.	4.524	7.240	7.643	0.1938	0.1264
Max.	4.912	7.807	8.276	0.2059	0.1294
Number of Spec.	8	8	8	8	8

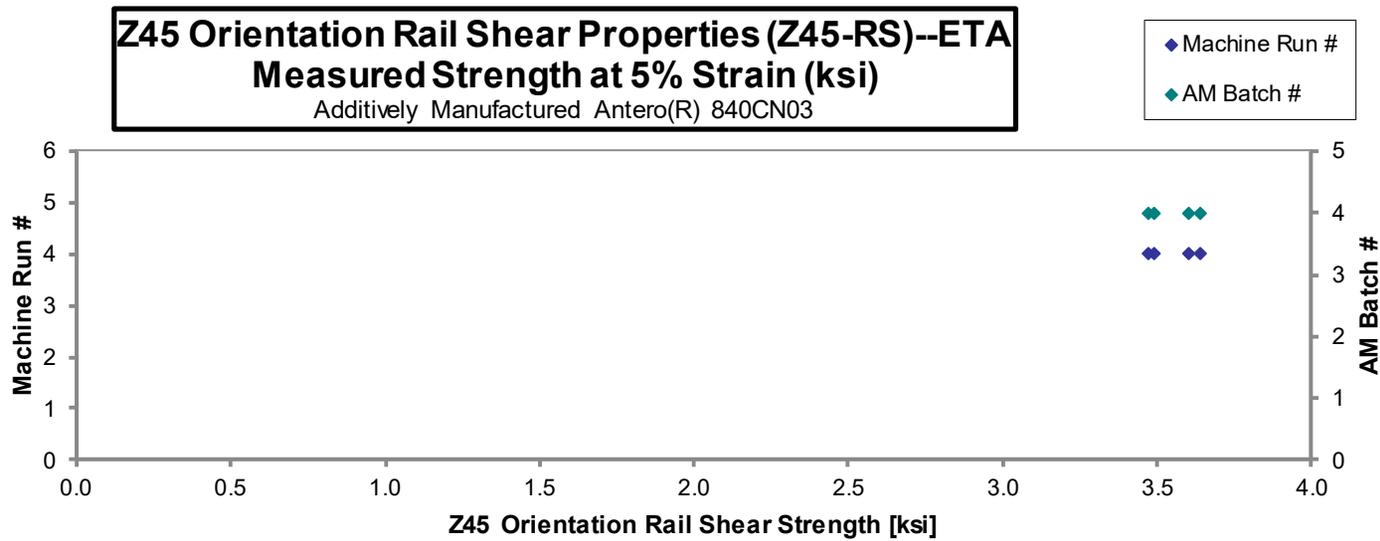
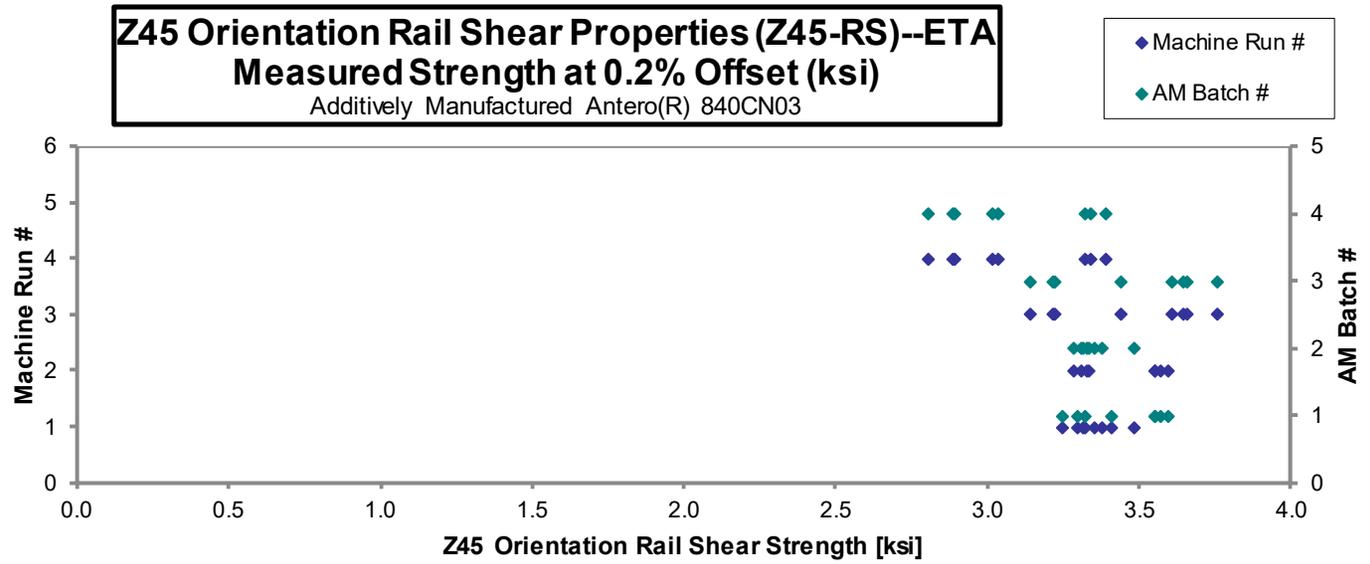


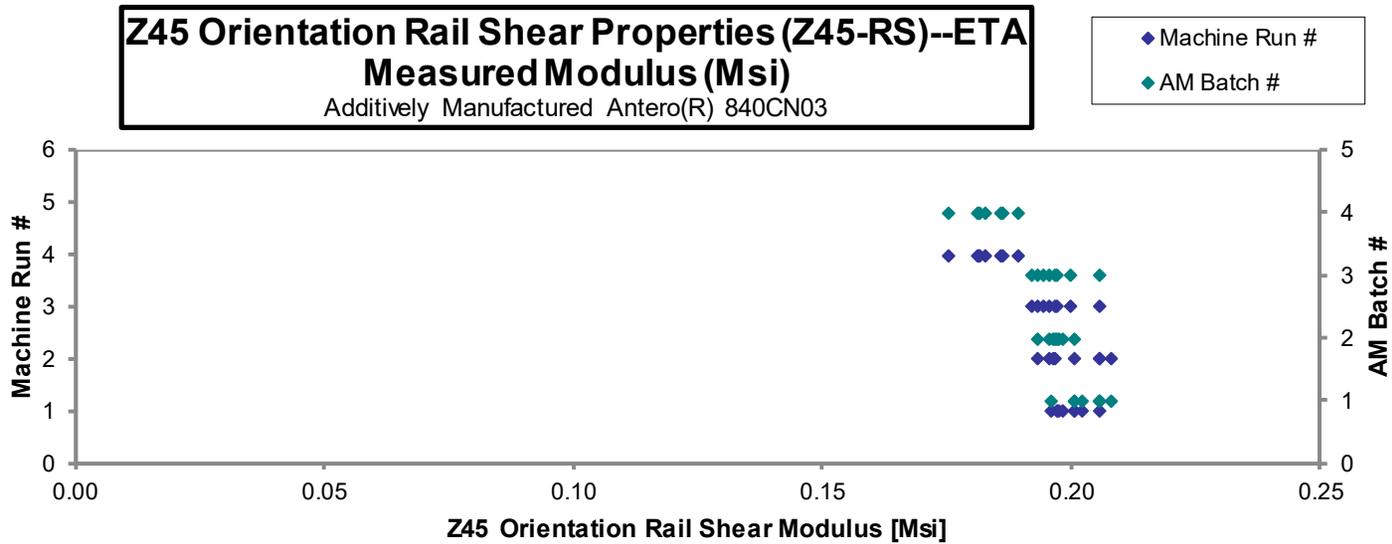
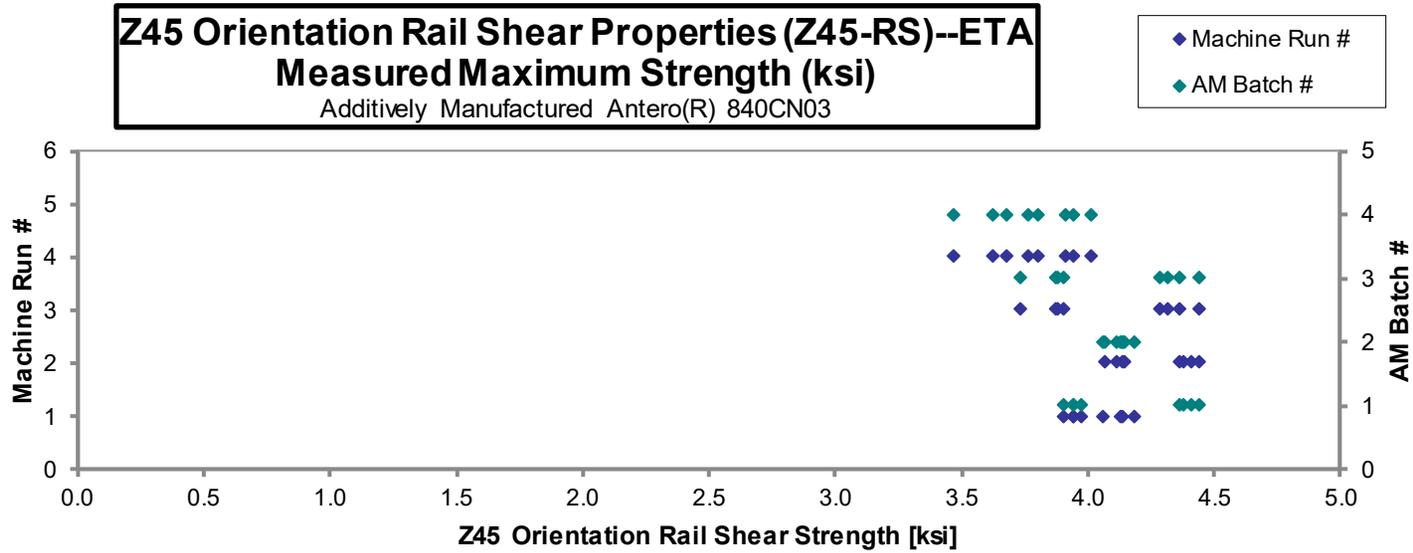
Z45 Orientation Rail Shear Properties (Z45-RS)--ETA
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-11-ETA-1*	1	1	3.248		3.944	0.1958	0.1277	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-12-ETA-2*	1	1	3.320		3.943	0.2007	0.1280	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-14-ETA-3*	1	1	3.411		3.975	0.2056	0.1281	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-15-ETA-4*	1	1	3.296		3.906	0.2020	0.1293	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-11-ETA-1*	1	2	3.599		4.364	0.2007	0.1290	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-13-ETA-2*	1	2	3.556		4.380	0.2057	0.1294	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-14-ETA-3*	1	2	3.551		4.411	0.2058	0.1293	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-15-ETA-4*	1	2	3.572		4.441	0.2079	0.1292	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-11-ETA-1*	2	1	3.484		4.181	0.1974	0.1277	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-12-ETA-2*	2	1	3.377		4.129	0.2006	0.1296	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-14-ETA-3*	2	1	3.315		4.059	0.1971	0.1298	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-15-ETA-4*	2	1	3.356		4.140	0.1982	0.1292	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-11-ETA-1*	2	2	3.332		4.140	0.1965	0.1305	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-13-ETA-2*	2	2	3.311		4.070	0.1932	0.1305	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-14-ETA-3*	2	2	3.333		4.148	0.1958	0.1290	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-15-ETA-4*	2	2	3.287		4.114	0.1968	0.1295	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-11-ETA-1*	3	3	3.657		4.313	0.1933	0.1278	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-12-ETA-2*	3	3	3.756		4.439	0.1997	0.1279	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-14-ETA-3*	3	3	3.610		4.286	0.1970	0.1275	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-15-ETA-4*	3	3	3.649		4.364	0.1956	0.1274	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-11-ETA-1*	3	3	3.440		3.902	0.2056	0.1302	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-12-ETA-2*	3	3	3.218		3.879	0.1968	0.1304	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-14-ETA-3*	3	3	3.221		3.870	0.1945	0.1296	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-15-ETA-4*	3	3	3.145		3.735	0.1922	0.1304	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-11-ETA-1*	4	4	3.389		3.946	0.1817	0.1305	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-12-ETA-2*	4	4	3.341		4.015	0.1859	0.1291	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-14-ETA-3*	4	4	3.037		3.468	0.1755	0.1298	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-15-ETA-4*	4	4	3.323		3.910	0.1814	0.1298	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-11-ETA-1	4	4	2.803	3.469	3.627	0.1816	0.1281	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-13-ETA-2	4	4	3.015	3.643	3.801	0.1894	0.1291	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-14-ETA-3	4	4	2.889	3.603	3.762	0.1827	0.1267	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-15-ETA-4	4	4	2.890	3.489	3.677	0.1861	0.1290	VGN

*Coupons fail prior to achieving 5% Shear Strength

Average	3.335	3.551	4.042	0.1950	0.1290
Standard Dev.	0.2319	0.08485	0.2530	0.008250	0.001053
Coeff. of Var. [%]	6.951	2.390	6.260	4.231	0.8162
Min.	2.803	3.469	3.468	0.1755	0.1267
Max.	3.756	3.643	4.441	0.2079	0.1305
Number of Spec.	32	4	32	32	32



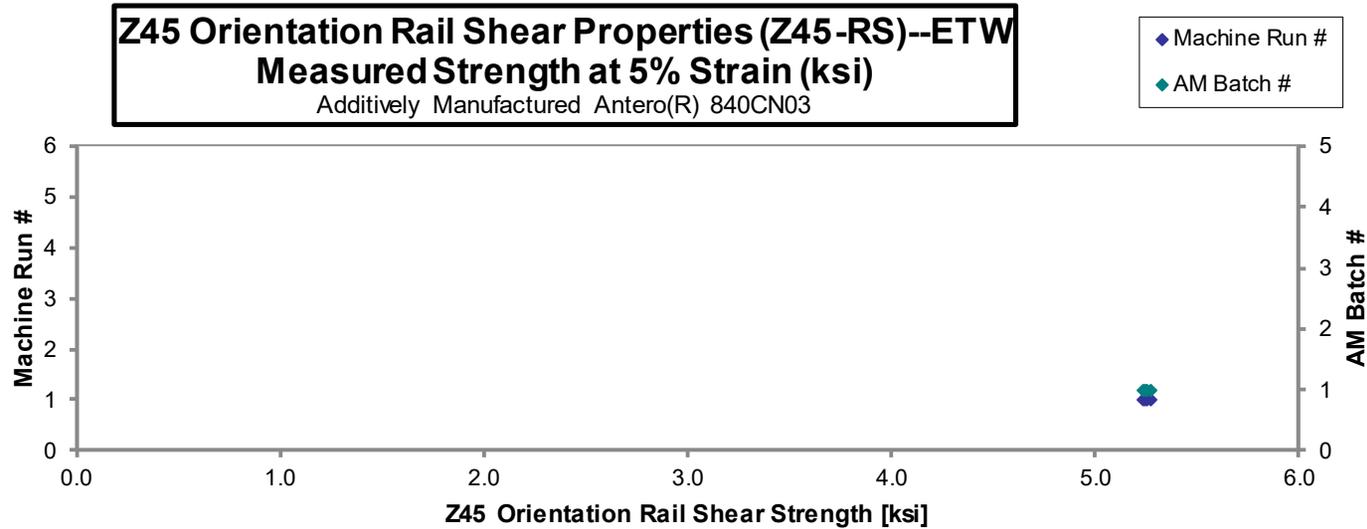
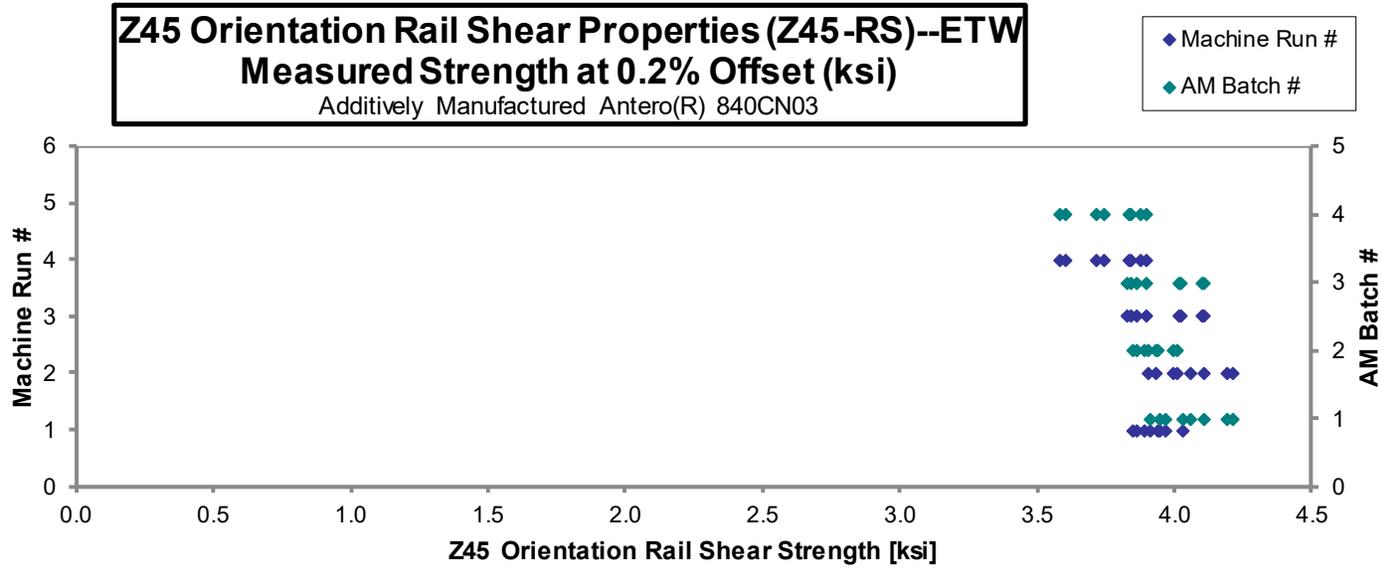


Z45 Orientation Rail Shear Properties (Z45-RS)--ETW
Strength & Modulus
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Shear Strength at 0.2% Offset [ksi]	Shear Strength at 5% Strain [ksi]	Maximum Shear Strength [ksi]	Shear Modulus [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-11-ETW-1	1	1	3.949	5.276	5.317	0.1913	0.1294	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-12-ETW-2	1	1	4.035	5.254	5.310	0.1885	0.1294	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-14-ETW-3	1	1	3.971	5.233	5.292	0.1894	0.1293	VGN
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-RS-15-ETW-4	1	1	3.914	5.244	5.299	0.1899	0.1287	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-11-ETW-1*	1	2	4.192		5.735	0.1986	0.1276	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-12-ETW-2*	1	2	4.215		5.629	0.1960	0.1277	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-14-ETW-3*	1	2	4.107		5.648	0.2012	0.1272	VGN
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-RS-15-ETW-4*	1	2	4.063		5.687	0.1978	0.1274	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-11-ETW-1*	2	1	3.847		5.502	0.1936	0.1267	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-12-ETW-2*	2	1	3.889		5.501	0.1947	0.1263	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-14-ETW-3*	2	1	3.867		5.491	0.1931	0.1264	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-RS-15-ETW-4*	2	1	3.939		5.478	0.1948	0.1260	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-11-ETW-1*	2	2	3.903		5.499	0.1937	0.1258	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-13-ETW-2*	2	2	4.012		5.558	0.1941	0.1258	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-14-ETW-3*	2	2	3.937		5.566	0.1954	0.1260	VGN
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-RS-15-ETW-4*	2	2	4.000		5.571	0.1959	0.1262	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-11-ETW-1*	3	3	4.029		5.529	0.1938	0.1280	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-12-ETW-2*	3	3	4.111		5.614	0.1956	0.1262	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-14-ETW-3*	3	3	4.103		5.585	0.1930	0.1274	VGN
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-RS-15-ETW-4*	3	3	4.018		5.604	0.1918	0.1274	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-11-ETW-1*	3	3	3.864		5.189	0.1867	0.1303	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-12-ETW-2*	3	3	3.829		5.210	0.1898	0.1305	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-14-ETW-3*	3	3	3.843		5.246	0.1885	0.1301	VGN
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-RS-15-ETW-4*	3	3	3.902		5.282	0.1911	0.1296	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-11-ETW-1*	4	4	3.833		5.308	0.1943	0.1288	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-12-ETW-2*	4	4	3.843		5.213	0.1916	0.1287	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-14-ETW-3*	4	4	3.876		5.224	0.1906	0.1285	VGN
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-RS-15-ETW-4*	4	4	3.897		5.315	0.1916	0.1295	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-11-ETW-1*	4	4	3.587		5.005	0.1853	0.1306	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-13-ETW-2*	4	4	3.606		4.816	0.1848	0.1313	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-14-ETW-3*	4	4	3.718		5.097	0.1816	0.1307	VGN
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-RS-15-ETW-4*	4	4	3.748		5.205	0.1890	0.1292	VGN

*Coupons fail prior to achieving 5% Shear Strength

Average	3.926	5.252	5.391	0.1921	0.1282
Standard Dev.	0.1460	0.01803	0.2152	0.004165	0.001670
Coeff. of Var. [%]	3.718	0.3433	3.991	2.168	1.302
Min.	3.587	5.233	4.816	0.1816	0.1258
Max.	4.215	5.276	5.735	0.2012	0.1313
Number of Spec.	32	4	32	32	32



4.17 XY Open-Hole Tension Properties (XY-OHT)

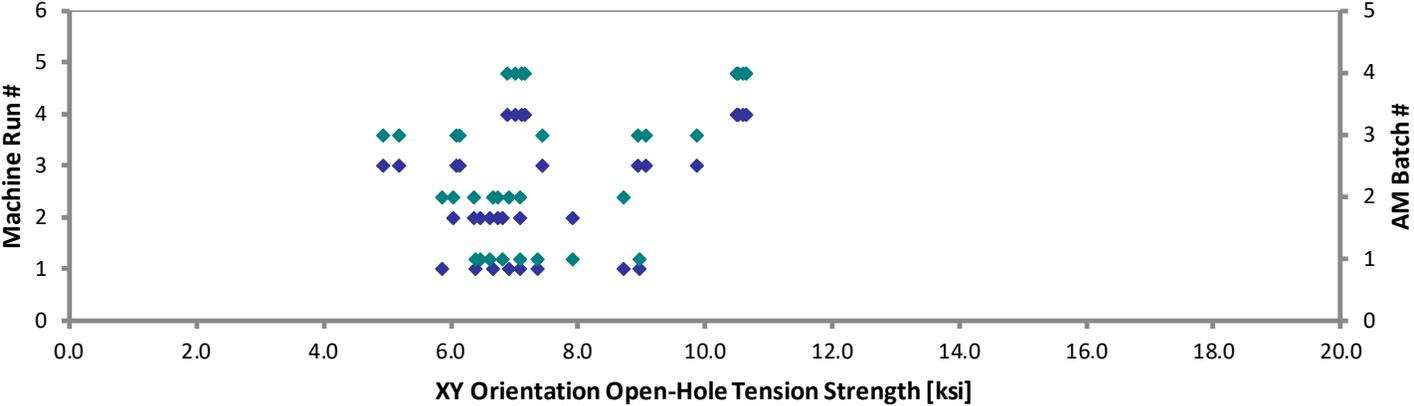
**XY Orientation Open-Hole Tension Properties (XY-OHT)--CTA
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-11-CTA-1	1	1	8.978	0.1304	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-12-CTA-2	1	1	7.376	0.1304	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-14-CTA-3	1	1	6.374	0.1309	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-15-CTA-4	1	1	7.084	0.1301	AGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-11-CTA-1	1	2	6.802	0.1323	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-13-CTA-2	1	2	6.472	0.1319	AGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-14-CTA-3	1	2	6.606	0.1320	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-15-CTA-4	1	2	7.923	0.1311	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-11-CTA-1	2	1	6.922	0.1325	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-12-CTA-2	2	1	8.729	0.1317	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-14-CTA-3	2	1	6.655	0.1321	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-15-CTA-4	2	1	5.868	0.1319	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-11-CTA-1	2	2	7.099	0.1322	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-13-CTA-2	2	2	6.747	0.1356	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-14-CTA-3	2	2	6.047	0.1322	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-15-CTA-4	2	2	6.374	0.1348	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-11-CTA-1	3	3	6.135	0.1309	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-12-CTA-2	3	3	6.082	0.1307	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-14-CTA-3	3	3	4.943	0.1308	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-15-CTA-4	3	3	5.180	0.1311	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-11-CTA-1	3	3	7.435	0.1292	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-12-CTA-2	3	3	8.950	0.1283	AGM, AGT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-14-CTA-3	3	3	9.076	0.1294	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-15-CTA-4	3	3	9.859	0.1289	AGM, LGT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-11-CTA-1	4	4	10.49	0.1316	AGM, LGB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-12-CTA-2	4	4	10.53	0.1307	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-14-CTA-3	4	4	10.64	0.1305	AGM, AWB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-15-CTA-4	4	4	10.59	0.1312	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-11-CTA-1	4	4	7.125	0.1296	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-13-CTA-2	4	4	7.026	0.1281	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-14-CTA-3	4	4	7.169	0.1295	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-15-CTA-4	4	4	6.893	0.1288	AGM

Average	7.505	0.1310
Standard Dev.	1.604	0.001637
Coeff. of Var. [%]	21.37	1.250
Min.	4.943	0.1281
Max.	10.64	0.1356
Number of Spec.	32	32

XY Orientation Open-Hole Tension Properties (XY-OHT)--CTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03

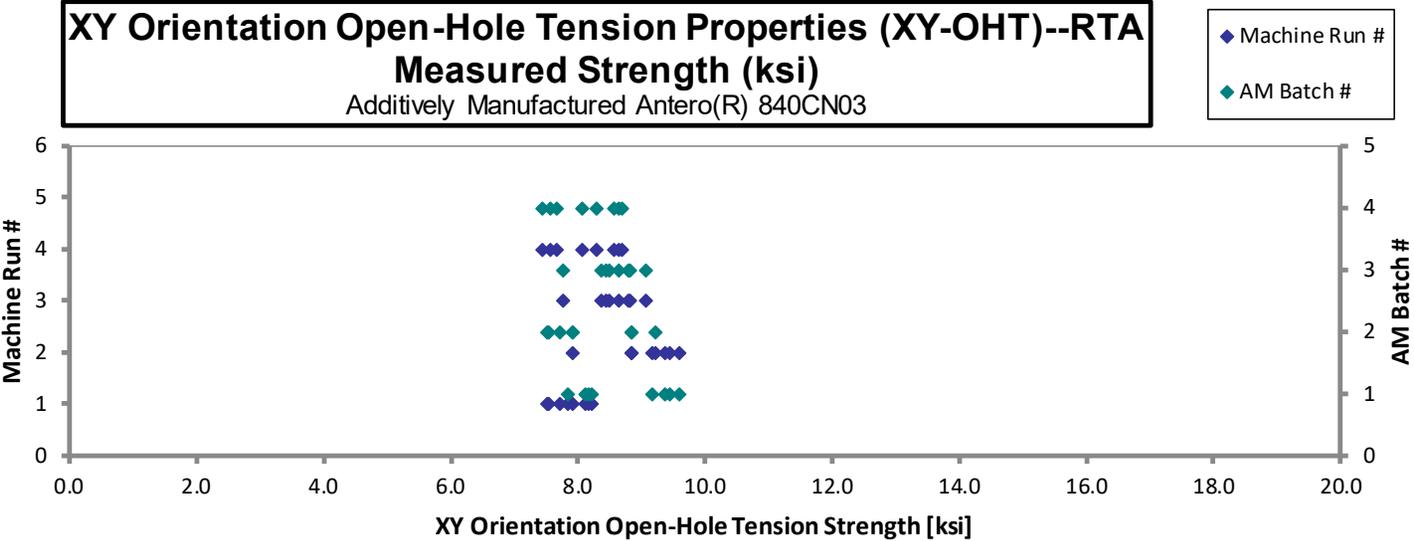
- ◆ Machine Run #
- ◆ AM Batch #



**XY Orientation Open-Hole Tension Properties (XY-OHT)--RTA
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-11-RTA-1	1	1	8.221	0.1322	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-12-RTA-2	1	1	8.114	0.1323	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-14-RTA-3	1	1	7.842	0.1323	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-15-RTA-4	1	1	8.154	0.1324	M(A,L)GM, AWB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-11-RTA-1	1	2	9.177	0.1300	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-13-RTA-2	1	2	9.606	0.1288	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-14-RTA-3	1	2	9.372	0.1298	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-15-RTA-4	1	2	9.440	0.1304	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-11-RTA-1	2	1	7.517	0.1308	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-12-RTA-2	2	1	7.549	0.1304	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-14-RTA-3	2	1	7.916	0.1305	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-15-RTA-4	2	1	7.719	0.1303	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-11-RTA-1	2	2	9.210	0.1291	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-13-RTA-2	2	2	8.834	0.1296	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-14-RTA-3	2	2	7.918	0.1297	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-15-RTA-4	2	2	8.850	0.1294	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-11-RTA-1	3	3	8.487	0.1315	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-12-RTA-2	3	3	8.443	0.1309	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-14-RTA-3	3	3	7.757	0.1320	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-15-RTA-4	3	3	8.365	0.1313	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-11-RTA-1	3	3	8.821	0.1280	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-12-RTA-2	3	3	8.783	0.1269	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-14-RTA-3	3	3	8.636	0.1269	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-15-RTA-4	3	3	9.079	0.1274	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-11-RTA-1	4	4	8.699	0.1314	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-12-RTA-2	4	4	8.635	0.1310	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-14-RTA-3	4	4	8.286	0.1314	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-15-RTA-4	4	4	8.565	0.1318	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-11-RTA-1	4	4	7.670	0.1304	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-13-RTA-2	4	4	7.450	0.1295	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-14-RTA-3	4	4	8.062	0.1293	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-15-RTA-4	4	4	7.557	0.1292	M(A,L)GM

Average	8.398	0.1302
Standard Dev.	0.6160	0.001530
Coeff. of Var. [%]	7.335	1.175
Min.	7.450	0.1269
Max.	9.606	0.1324
Number of Spec.	32	32



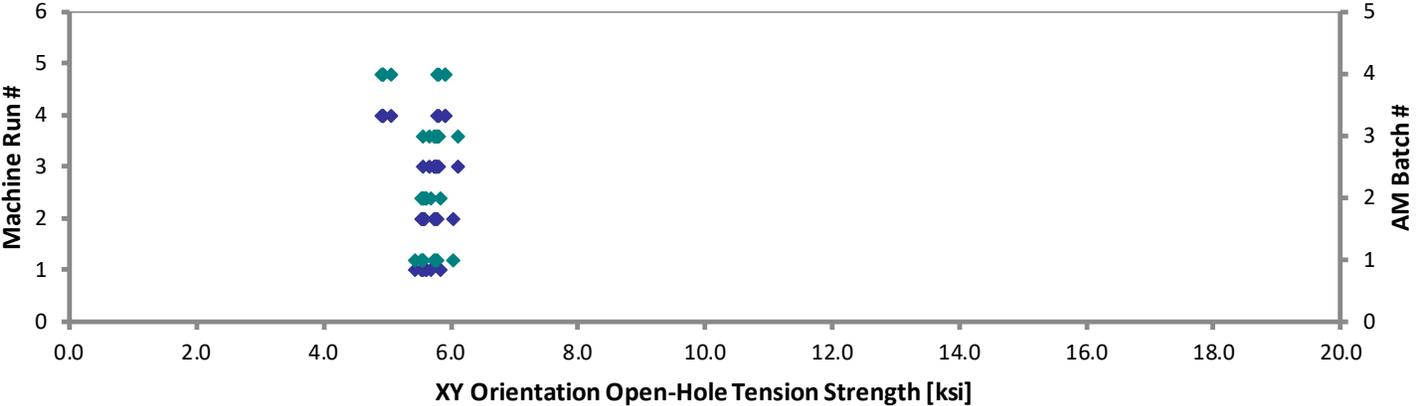
**XY Orientation Open-Hole Tension Properties (XY-OHT)--ETW
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-11-ETW-1	1	1	5.522	0.1312	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-12-ETW-2	1	1	5.566	0.1300	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-14-ETW-3	1	1	5.442	0.1304	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-OHT-15-ETW-4	1	1	5.572	0.1308	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-11-ETW-1	1	2	6.026	0.1308	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-12-ETW-2	1	2	5.797	0.1311	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-14-ETW-3	1	2	5.739	0.1312	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-OHT-15-ETW-4	1	2	5.766	0.1310	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-11-ETW-1	2	1	5.621	0.1339	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-12-ETW-2	2	1	5.597	0.1331	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-14-ETW-3	2	1	5.827	0.1333	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-OHT-15-ETW-4	2	1	5.689	0.1322	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-11-ETW-1	2	2	5.550	0.1328	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-13-ETW-2	2	2	5.531	0.1313	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-14-ETW-3	2	2	5.553	0.1325	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-OHT-15-ETW-4	2	2	5.586	0.1311	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-11-ETW-1	3	3	5.803	0.1316	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-12-ETW-2	3	3	5.653	0.1309	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-14-ETW-3	3	3	5.753	0.1307	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-OHT-15-ETW-4	3	3	5.548	0.1320	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-11-ETW-1	3	3	6.108	0.1309	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-12-ETW-2	3	3	5.766	0.1310	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-14-ETW-3	3	3	5.730	0.1310	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-OHT-15-ETW-4	3	3	5.776	0.1315	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-11-ETW-1	4	4	5.921	0.1319	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-12-ETW-2	4	4	5.911	0.1317	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-14-ETW-3	4	4	5.797	0.1320	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-OHT-15-ETW-4	4	4	5.823	0.1323	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-11-ETW-1	4	4	4.896	0.1288	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-13-ETW-2	4	4	4.932	0.1301	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-14-ETW-3	4	4	5.062	0.1294	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-OHT-15-ETW-4	4	4	4.942	0.1292	M(A,L)GM

Average	5.619	0.1313
Standard Dev.	0.2959	0.001153
Coeff. of Var. [%]	5.266	0.8781
Min.	4.896	0.1288
Max.	6.108	0.1339
Number of Spec.	32	32

XY Orientation Open-Hole Tension Properties (XY-OHT)--ETW
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03

- ◆ Machine Run #
- ◆ AM Batch #



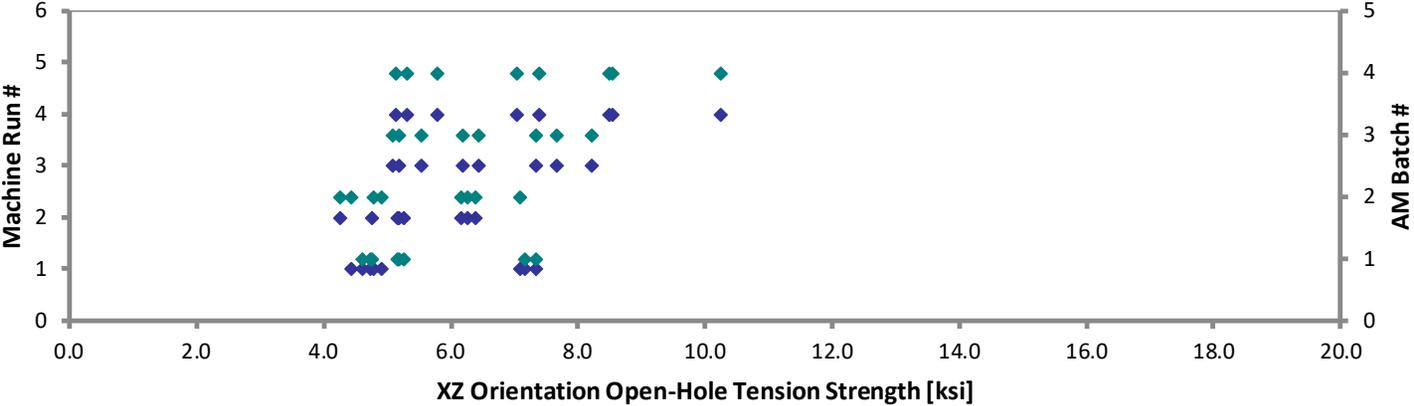
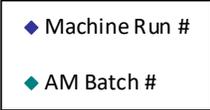
4.18 XZ Open-Hole Tension Properties (XZ-OHT)

XZ Orientation Open-Hole Tension Properties (XZ-OHT)--CTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-11-CTA-1	1	1	7.165	0.1282	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-12-CTA-2	1	1	4.729	0.1282	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-14-CTA-3	1	1	7.336	0.1283	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-15-CTA-4	1	1	4.601	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-11-CTA-1	1	2	5.253	0.1285	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-13-CTA-2	1	2	5.176	0.1291	AGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-14-CTA-3	1	2	5.161	0.1287	AGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-15-CTA-4	1	2	4.748	0.1291	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-11-CTA-1	2	1	4.788	0.1277	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-12-CTA-2	2	1	7.089	0.1274	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-14-CTA-3	2	1	4.426	0.1280	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-15-CTA-4	2	1	4.916	0.1278	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-11-CTA-1	2	2	6.381	0.1289	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-13-CTA-2	2	2	6.150	0.1289	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-14-CTA-3	2	2	4.247	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-15-CTA-4	2	2	6.269	0.1275	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-11-CTA-1	3	3	5.179	0.1289	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-12-CTA-2	3	3	5.538	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-14-CTA-3	3	3	5.094	0.1292	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-15-CTA-4	3	3	6.177	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-11-CTA-1	3	3	8.223	0.1294	AGM, AGT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-12-CTA-2	3	3	6.430	0.1288	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-13-CTA-3	3	3	7.347	0.1296	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-14-CTA-4	3	3	7.656	0.1290	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-11-CTA-1	4	4	10.26	0.1275	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-12-CTA-2	4	4	8.553	0.1277	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-14-CTA-3	4	4	8.503	0.1280	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-15-CTA-4	4	4	7.039	0.1278	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-11-CTA-1	4	4	7.387	0.1301	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-13-CTA-2	4	4	5.782	0.1296	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-14-CTA-3	4	4	5.298	0.1286	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-15-CTA-4	4	4	5.123	0.1281	M(A,L)GM

Average	6.188	0.1284
Standard Dev.	1.452	0.0006979
Coeff. of Var. [%]	23.46	0.5434
Min.	4.247	0.1274
Max.	10.26	0.1301
Number of Spec.	32	32

XZ Orientation Open-Hole Tension Properties (XZ-OHT)--CTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03

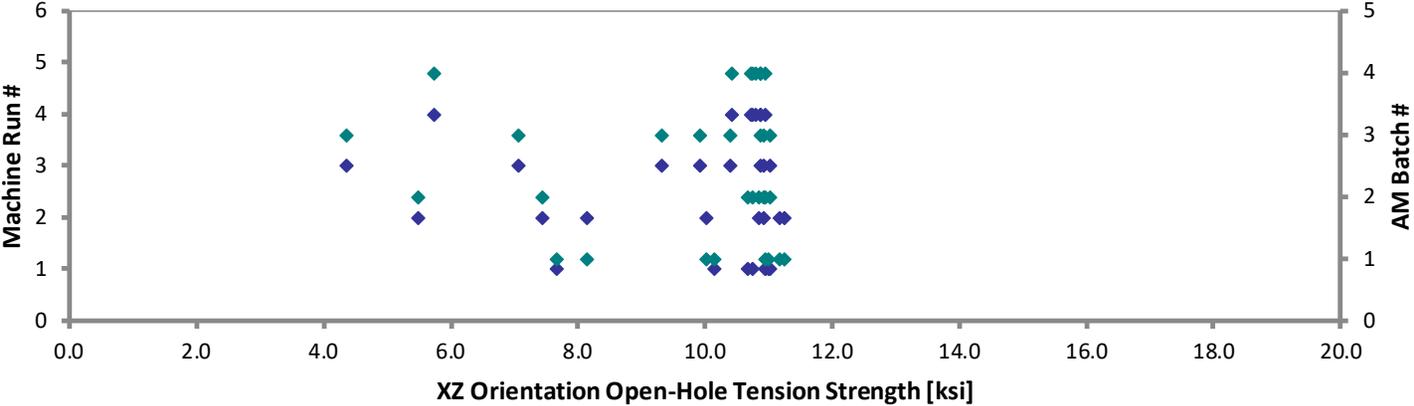
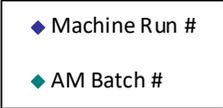


**XZ Orientation Open-Hole Tension Properties (XZ-OHT)--RTA
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-11-RTA-1	1	1	11.00	0.1293	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-12-RTA-2	1	1	10.95	0.1291	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-14-RTA-3	1	1	7.661	0.1281	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-15-RTA-4	1	1	10.15	0.1286	AGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-11-RTA-1	1	2	11.26	0.1303	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-13-RTA-2	1	2	10.01	0.1307	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-14-RTA-3	1	2	11.17	0.1306	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-15-RTA-4	1	2	8.139	0.1308	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-11-RTA-1	2	1	11.03	0.1280	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-12-RTA-2	2	1	10.68	0.1279	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-14-RTA-3	2	1	10.75	0.1287	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-15-RTA-4	2	1	10.96	0.1286	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-11-RTA-1	2	2	10.85	0.1294	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-13-RTA-2	2	2	10.92	0.1291	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-14-RTA-3	2	2	7.432	0.1303	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-15-RTA-4	2	2	5.474	0.1290	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-11-RTA-1	3	3	10.88	0.1287	M(A,L)GM, AWT, AWB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-12-RTA-2	3	3	11.02	0.1290	M(A,L)GM, AWT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-14-RTA-3	3	3	4.362	0.1289	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-15-RTA-4	3	3	7.074	0.1288	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-11-RTA-1	3	3	10.92	0.1289	M(A,L)GM, M(A,L)JW
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-12-RTA-2	3	3	9.929	0.1285	AGM, AWT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-14-RTA-3	3	3	10.40	0.1287	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-15-RTA-4	3	3	9.325	0.1291	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-11-RTA-1	4	4	10.95	0.1298	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-12-RTA-2	4	4	10.87	0.1311	M(A,L)GM, AWT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-14-RTA-3	4	4	10.42	0.1309	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-15-RTA-4	4	4	5.747	0.1313	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-11-RTA-1	4	4	10.72	0.1301	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-13-RTA-2	4	4	10.75	0.1299	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-14-RTA-3	4	4	10.87	0.1290	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-15-RTA-4	4	4	10.80	0.1294	M(A,L)GM, AWB

Average	9.797	0.1294
Standard Dev.	1.885	0.0009382
Coeff. of Var. [%]	19.25	0.7252
Min.	4.362	0.1279
Max.	11.26	0.1313
Number of Spec.	32	32

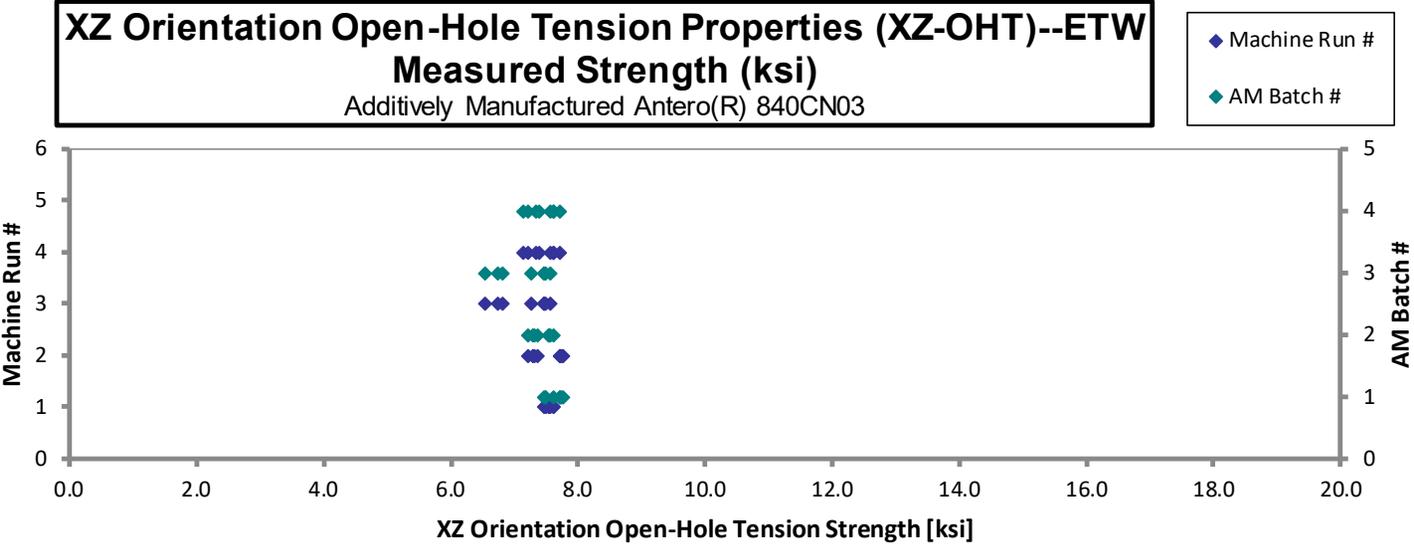
XZ Orientation Open-Hole Tension Properties (XZ-OHT)--RTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03



**XZ Orientation Open-Hole Tension Properties (XZ-OHT)--ETW
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksij]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-11-ETW-1	1	1	7.496	0.1278	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-12-ETW-2	1	1	7.473	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-14-ETW-3	1	1	7.497	0.1272	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-OHT-15-ETW-4	1	1	7.603	0.1273	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-11-ETW-1	1	2	7.712	0.1286	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-12-ETW-2	1	2	7.750	0.1287	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-14-ETW-3	1	2	7.725	0.1294	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-OHT-15-ETW-4	1	2	7.772	0.1297	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-11-ETW-1	2	1	7.547	0.1295	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-12-ETW-2	2	1	7.603	0.1286	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-14-ETW-3	2	1	7.529	0.1289	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-OHT-15-ETW-4	2	1	7.576	0.1290	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-11-ETW-1	2	2	7.314	0.1305	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-13-ETW-2	2	2	7.357	0.1290	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-14-ETW-3	2	2	7.289	0.1305	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-OHT-15-ETW-4	2	2	7.219	0.1295	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-11-ETW-1	3	3	6.816	0.1274	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-12-ETW-2	3	3	6.740	0.1280	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-14-ETW-3	3	3	7.260	0.1279	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-OHT-15-ETW-4	3	3	6.541	0.1282	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-11-ETW-1	3	3	7.555	0.1298	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-12-ETW-2	3	3	7.481	0.1310	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-14-ETW-3	3	3	7.469	0.1306	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-OHT-15-ETW-4	3	3	7.473	0.1302	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-11-ETW-1	4	4	7.716	0.1276	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-12-ETW-2	4	4	7.622	0.1287	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-14-ETW-3	4	4	7.574	0.1291	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-OHT-15-ETW-4	4	4	7.611	0.1287	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-11-ETW-1	4	4	7.135	0.1299	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-13-ETW-2	4	4	7.213	0.1295	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-14-ETW-3	4	4	7.377	0.1286	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-OHT-15-ETW-4	4	4	7.343	0.1294	LGM

Average	7.418	0.1290
Standard Dev.	0.2891	0.001003
Coeff. of Var. [%]	3.898	0.7775
Min.	6.541	0.1272
Max.	7.772	0.1310
Number of Spec.	32	32



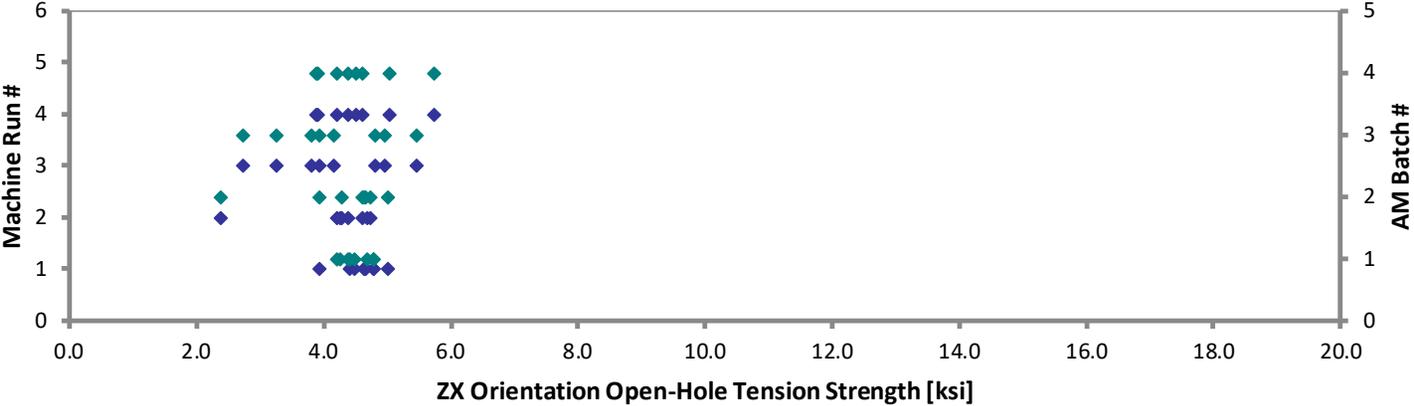
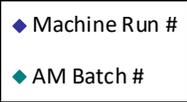
4.19 ZX Open-Hole Tension Properties (ZX-OHT)

ZX Orientation Open-Hole Tension Properties (ZX-OHT)--CTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-11-CTA-1	1	1	4.793	0.1279	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-12-CTA-2	1	1	4.402	0.1272	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-14-CTA-3	1	1	4.488	0.1276	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-15-CTA-4	1	1	4.790	0.1274	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-11-CTA-1	1	2	4.685	0.1268	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-13-CTA-2	1	2	4.249	0.1281	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-14-CTA-3	1	2	4.200	0.1279	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-15-CTA-4	1	2	4.380	0.1287	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-11-CTA-1	2	1	3.922	0.1279	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-12-CTA-2	2	1	4.669	0.1281	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-14-CTA-3	2	1	5.017	0.1280	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-15-CTA-4	2	1	4.639	0.1267	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-11-CTA-1	2	2	4.286	0.1279	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-13-CTA-2	2	2	2.369	0.1276	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-14-CTA-3	2	2	4.734	0.1278	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-15-CTA-4	2	2	4.616	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-11-CTA-1	3	3	4.163	0.1295	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-12-CTA-2	3	3	3.809	0.1290	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-14-CTA-3	3	3	3.262	0.1292	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-15-CTA-4	3	3	2.734	0.1276	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-11-CTA-1	3	3	4.955	0.1290	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-12-CTA-2	3	3	3.937	0.1289	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-14-CTA-3	3	3	5.464	0.1296	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-15-CTA-4	3	3	4.801	0.1295	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-11-CTA-1	4	4	4.391	0.1278	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-12-CTA-2	4	4	3.890	0.1275	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-14-CTA-3	4	4	4.195	0.1269	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-15-CTA-4	4	4	4.620	0.1275	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-11-CTA-1	4	4	5.735	0.1273	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-13-CTA-2	4	4	4.515	0.1261	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-14-CTA-3	4	4	5.035	0.1262	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-15-CTA-4	4	4	3.914	0.1274	LGM

Average	4.364	0.1279
Standard Dev.	0.6846	0.0009108
Coeff. of Var. [%]	15.69	0.7121
Min.	2.369	0.1261
Max.	5.735	0.1296
Number of Spec.	32	32

ZX Orientation Open-Hole Tension Properties (ZX-OHT)--CTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03

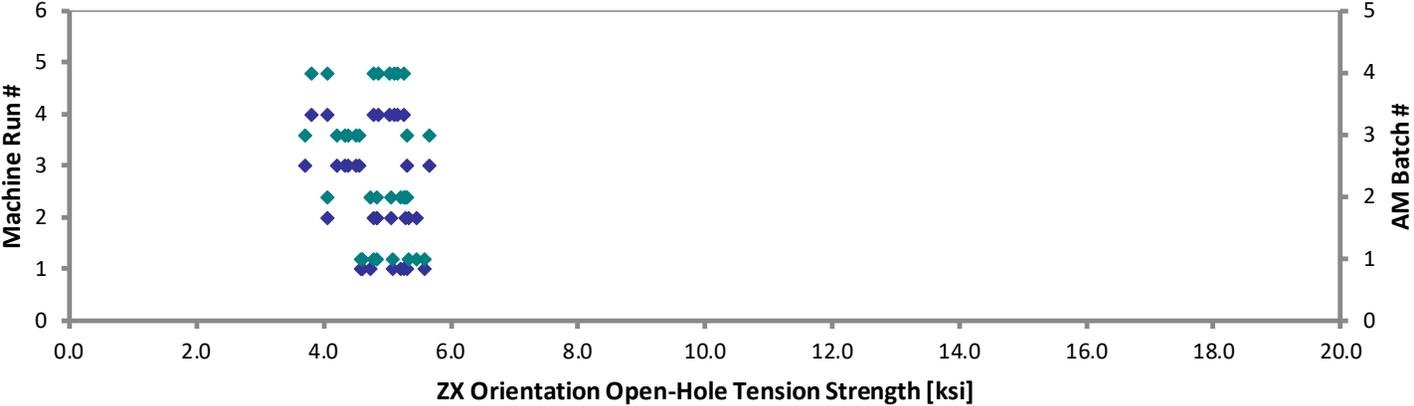
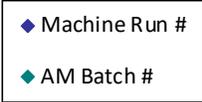


ZX Orientation Open-Hole Tension Properties (ZX-OHT)--RTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-11-RTA-1	1	1	5.093	0.1286	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-12-RTA-2	1	1	4.606	0.1286	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-14-RTA-3	1	1	5.590	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-15-RTA-4	1	1	4.571	0.1282	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-11-RTA-1	1	2	5.453	0.1288	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-13-RTA-2	1	2	4.834	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-14-RTA-3	1	2	5.345	0.1283	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-15-RTA-4	1	2	4.775	0.1292	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-11-RTA-1	2	1	4.741	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-12-RTA-2	2	1	5.207	0.1287	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-14-RTA-3	2	1	5.265	0.1278	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-15-RTA-4	2	1	5.304	0.1281	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-11-RTA-1	2	2	4.841	0.1301	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-13-RTA-2	2	2	5.288	0.1297	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-14-RTA-3	2	2	5.050	0.1296	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-15-RTA-4	2	2	4.066	0.1287	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-11-RTA-1	3	3	3.693	0.1278	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-12-RTA-2	3	3	4.208	0.1264	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-14-RTA-3	3	3	4.383	0.1269	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-15-RTA-4	3	3	4.334	0.1269	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-11-RTA-1	3	3	5.657	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-12-RTA-2	3	3	4.497	0.1285	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-14-RTA-3	3	3	4.547	0.1275	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-15-RTA-4	3	3	5.311	0.1277	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-11-RTA-1	4	4	4.860	0.1291	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-12-RTA-2	4	4	3.794	0.1292	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-14-RTA-3	4	4	4.060	0.1280	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-15-RTA-4	4	4	5.252	0.1278	M(A,L)GM, M(A,L)GT, M(A,L)GB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-11-RTA-1	4	4	5.108	0.1279	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-13-RTA-2	4	4	5.151	0.1285	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-14-RTA-3	4	4	5.033	0.1271	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-15-RTA-4	4	4	4.783	0.1271	LGM

Average	4.834	0.1282
Standard Dev.	0.5120	0.0008544
Coeff. of Var. [%]	10.59	0.6664
Min.	3.693	0.1264
Max.	5.657	0.1301
Number of Spec.	32	32

ZX Orientation Open-Hole Tension Properties (ZX-OHT)--RTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03



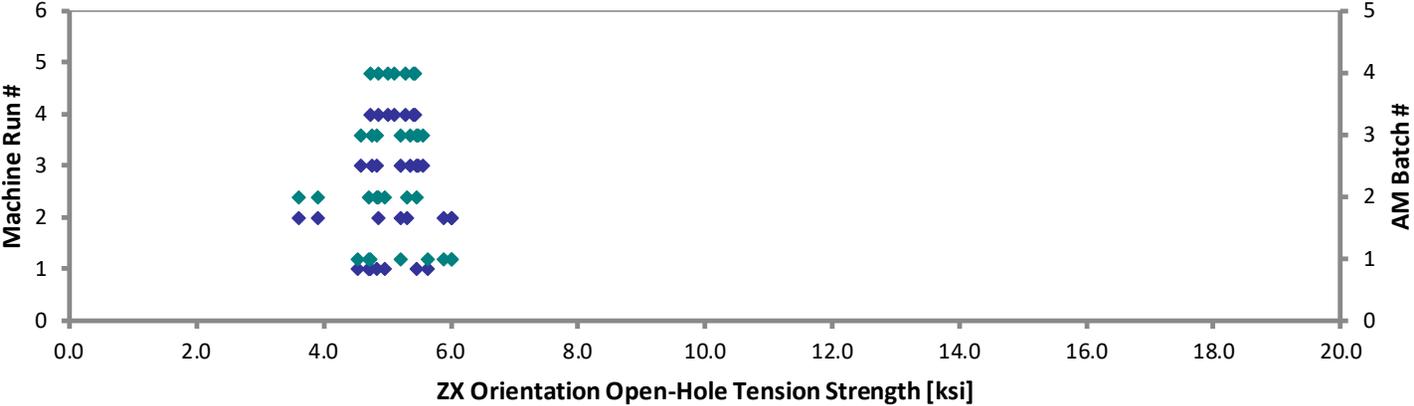
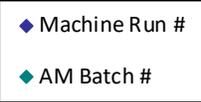
ZX Orientation Open-Hole Tension Properties (ZX-OHT)--ETW
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-11-ETW-1	1	1	5.644	0.1276	M(A,L)GM, AGT
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-12-ETW-2	1	1	4.537	0.1279	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-14-ETW-3	1	1	4.716	0.1275	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-OHT-15-ETW-4	1	1	4.738	0.1275	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-11-ETW-1	1	2	6.019	0.1265	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-12-ETW-2	1	2	6.014	0.1280	M(A,L)GM, M(A,L)GB
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-14-ETW-3	1	2	5.202	0.1272	LGM, M(A,L)GB, M(A,L)GT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-OHT-15-ETW-4	1	2	5.895	0.1300	M(A,L)GM, M(A,L)GB, M(A,L)GT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-11-ETW-1	2	1	4.696	0.1286	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-12-ETW-2	2	1	4.844	0.1289	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-14-ETW-3	2	1	5.452	0.1288	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-OHT-15-ETW-4	2	1	4.956	0.1277	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-11-ETW-1	2	2	3.901	0.1291	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-13-ETW-2	2	2	5.316	0.1284	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-14-ETW-3	2	2	3.610	0.1290	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-OHT-15-ETW-4	2	2	4.870	0.1288	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-11-ETW-1	3	3	5.468	0.1291	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-12-ETW-2	3	3	4.832	0.1276	LGM, AWB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-14-ETW-3	3	3	5.361	0.1276	LGM, AWB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-OHT-15-ETW-4	3	3	5.202	0.1277	LGM, AGT, AGB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-11-ETW-1	3	3	4.576	0.1296	LGM, M(A,L)GB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-12-ETW-2	3	3	4.755	0.1292	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-14-ETW-3	3	3	5.570	0.1277	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-OHT-15-ETW-4	3	3	5.480	0.1288	LGM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-11-ETW-1*	4	4		0.1284	
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-12-ETW-2	4	4	4.999	0.1288	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-14-ETW-3	4	4	5.277	0.1283	LGM, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-OHT-15-ETW-4	4	4	4.733	0.1294	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-11-ETW-1	4	4	5.423	0.1285	LGM, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-13-ETW-2	4	4	5.404	0.1288	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-14-ETW-3	4	4	5.097	0.1283	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-OHT-15-ETW-4	4	4	4.859	0.1286	LGM

*Coupon was damaged during installation/setup

Average	5.079	0.1284
Standard Dev.	0.5418	0.0007742
Coeff. of Var. [%]	10.67	0.6032
Min.	3.610	0.1265
Max.	6.019	0.1300
Number of Spec.	31	32

ZX Orientation Open-Hole Tension Properties (ZX-OHT)--ETW
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03



4.20 Z45 Open-Hole Tension Properties (Z45-OHT)

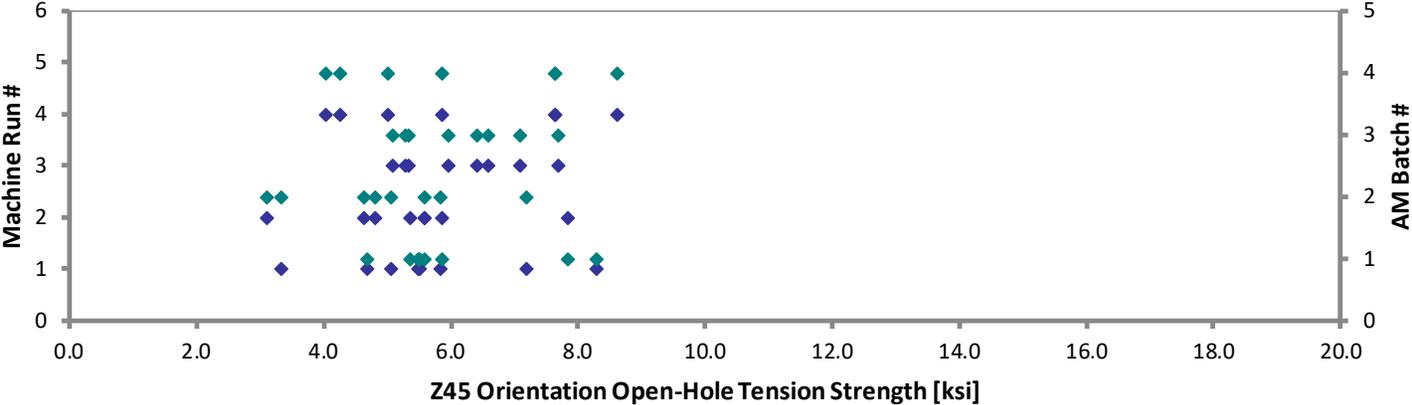
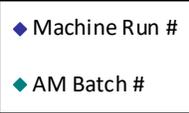
Z45 Orientation Open-Hole Tension Properties (Z45-OHT)--CTA Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-11-CTA-1	1	1	8.302	0.1293	AGM, M(A,L)GT
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-12-CTA-2	1	1	5.496	0.1280	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-14-CTA-3	1	1	4.687	0.1295	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-15-CTA-4	1	1	5.504	0.1280	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-11-CTA-1	1	2	5.358	0.1298	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-13-CTA-2	1	2	5.859	0.1292	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-14-CTA-3	1	2	5.596	0.1293	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-15-CTA-4	1	2	7.831	0.1303	AGM, M(A,L)GT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-11-CTA-1	2	1	5.826	0.1287	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-12-CTA-2	2	1	5.049	0.1293	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-14-CTA-3	2	1	3.320	0.1290	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-15-CTA-4	2	1	7.197	0.1292	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-11-CTA-1	2	2	3.092	0.1281	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-13-CTA-2	2	2	5.593	0.1287	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-14-CTA-3	2	2	4.815	0.1282	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-15-CTA-4	2	2	4.644	0.1286	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-11-CTA-1	3	3	5.322	0.1283	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-12-CTA-2	3	3	5.949	0.1285	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-14-CTA-3	3	3	5.088	0.1277	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-15-CTA-4	3	3	5.296	0.1280	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-11-CTA-1	3	3	7.095	0.1280	M(A,L)GM, M(A,L)AB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-12-CTA-2	3	3	6.409	0.1284	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-14-CTA-3	3	3	7.685	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-15-CTA-4	3	3	6.589	0.1285	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-11-CTA-1	4	4	8.610	0.1303	AGM, M(A,L)AB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-12-CTA-2	4	4	7.648	0.1300	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-14-CTA-3	4	4	7.629	0.1299	AGM, AWT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-15-CTA-4*	4	4		0.1304	LAT, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-11-CTA-1	4	4	5.006	0.1279	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-13-CTA-2	4	4	4.019	0.1283	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-14-CTA-3	4	4	4.255	0.1284	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-15-CTA-4	4	4	5.867	0.1283	LGM

*OHT strength not reported due to unacceptable failure mode

Average	5.827	0.1288
Standard Dev.	1.396	0.0007920
Coeff. of Var. [%]	23.96	0.6148
Min.	3.092	0.1277
Max.	8.610	0.1304
Number of Spec.	31	32

Z45 Orientation Open-Hole Tension Properties (Z45-OHT)--CTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03



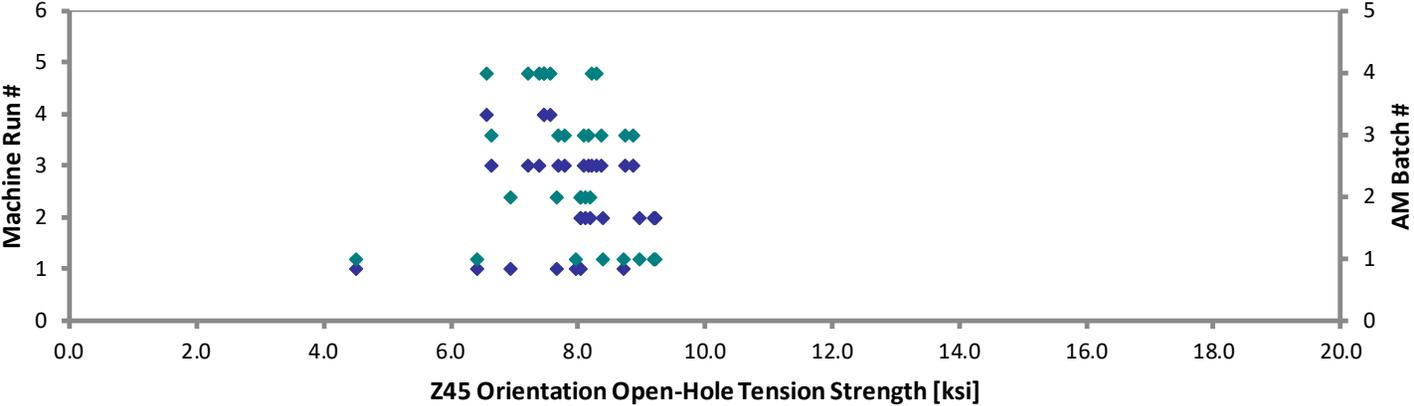
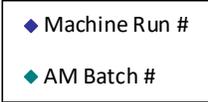
Z45 Orientation Open-Hole Tension Properties (Z45-OHT)--RTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-11-RTA-1	1	1	8.717	0.1293	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-12-RTA-2	1	1	7.977	0.1282	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-14-RTA-3	1	1	4.514	0.1288	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-15-RTA-4	1	1	6.418	0.1306	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-11-RTA-1	1	2	8.401	0.1310	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-13-RTA-2	1	2	9.199	0.1301	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-14-RTA-3	1	2	9.207	0.1311	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-15-RTA-4	1	2	8.970	0.1309	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-11-RTA-1	2	1	8.049	0.1284	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-12-RTA-2	2	1	6.928	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-14-RTA-3*	2	1		0.1289	LWB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-15-RTA-4	2	1	7.661	0.1285	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-11-RTA-1	2	2	8.126	0.1295	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-13-RTA-2	2	2	8.035	0.1305	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-14-RTA-3	2	2	8.030	0.1299	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-15-RTA-4	2	2	8.187	0.1278	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-11-RTA-1	3	3	8.377	0.1292	M(A,L)GM, AGB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-12-RTA-2	3	3	8.863	0.1284	M(A,L)GM, AGT, AGB, AWT, AWB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-14-RTA-3	3	3	8.734	0.1284	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-15-RTA-4	3	3	6.645	0.1289	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-11-RTA-1	3	3	8.158	0.1291	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-12-RTA-2	3	3	7.781	0.1285	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-14-RTA-3	3	3	8.080	0.1300	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-15-RTA-4	3	3	7.680	0.1295	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-11-RTA-1	4	3	7.206	0.1311	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-12-RTA-2	4	3	7.379	0.1311	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-14-RTA-3	4	3	8.219	0.1312	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-15-RTA-4	4	3	8.303	0.1304	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-11-RTA-1	4	4	6.561	0.1275	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-13-RTA-2	4	4	7.457	0.1282	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-14-RTA-3	4	4	7.475	0.1287	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-15-RTA-4	4	4	7.557	0.1281	M(A,L)GM

*OHT strength not reported due to unacceptable failure mode

Average	7.835	0.1294
Standard Dev.	0.9502	0.001138
Coeff. of Var. [%]	12.13	0.8800
Min.	4.514	0.1275
Max.	9.207	0.1312
Number of Spec.	31	32

Z45 Orientation Open-Hole Tension Properties (Z45-OHT)--RTA
Measured Strength (ksi)
Additively Manufactured Antero(R) 840CN03

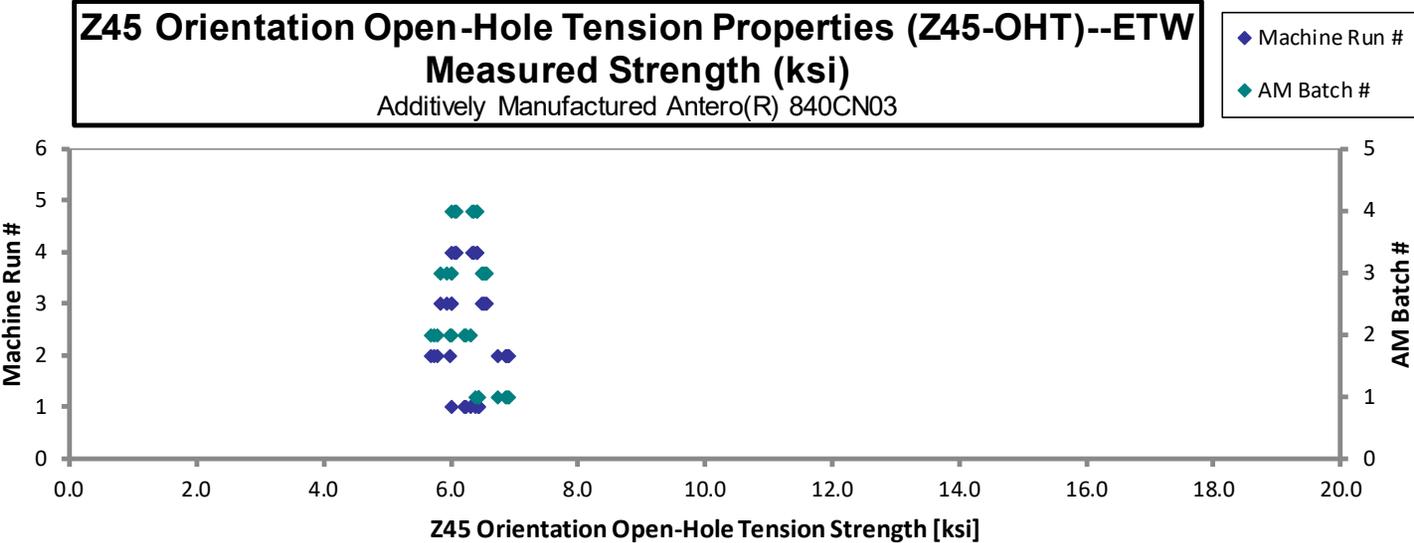


**Z45 Orientation Open-Hole Tension Properties (Z45-OHT)--ETW
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-11-ETW-1	1	1	6.384	0.1276	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-12-ETW-2	1	1	6.438	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-14-ETW-3	1	1	6.447	0.1279	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-OHT-15-ETW-4	1	1	6.436	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-11-ETW-1	1	2	6.748	0.1294	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-12-ETW-2	1	2	6.876	0.1291	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-14-ETW-3	1	2	6.874	0.1283	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-OHT-15-ETW-4	1	2	6.908	0.1295	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-11-ETW-1	2	1	6.238	0.1289	LGM, LWT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-12-ETW-2	2	1	6.317	0.1283	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-14-ETW-3	2	1	6.019	0.1280	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-OHT-15-ETW-4	2	1	6.212	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-11-ETW-1	2	2	5.789	0.1280	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-13-ETW-2	2	2	5.740	0.1284	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-14-ETW-3	2	2	5.684	0.1288	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-OHT-15-ETW-4	2	2	5.984	0.1286	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-11-ETW-1	3	3	5.936	0.1293	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-12-ETW-2	3	3	5.999	0.1289	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-14-ETW-3	3	3	5.846	0.1301	LGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-OHT-15-ETW-4	3	3	6.023	0.1299	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-11-ETW-1	3	3	6.513	0.1302	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-12-ETW-2	3	3	6.530	0.1305	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-14-ETW-3	3	3	6.558	0.1309	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-OHT-15-ETW-4	3	3	6.491	0.1312	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-11-ETW-1	4	4	6.333	0.1316	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-12-ETW-2	4	4	6.405	0.1313	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-14-ETW-3	4	4	6.422	0.1306	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-OHT-15-ETW-4	4	4	6.373	0.1306	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-11-ETW-1	4	4	6.015	0.1296	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-13-ETW-2*	4	4		0.1294	LWT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-14-ETW-3	4	4	6.051	0.1297	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-OHT-15-ETW-4	4	4	6.093	0.1309	M(A,L)GM

*OHT strength not reported due to unacceptable failure mode

Average	6.280	0.1294
Standard Dev.	0.3345	0.001154
Coeff. of Var. [%]	5.326	0.8921
Min.	5.684	0.1276
Max.	6.908	0.1316
Number of Spec.	31	32

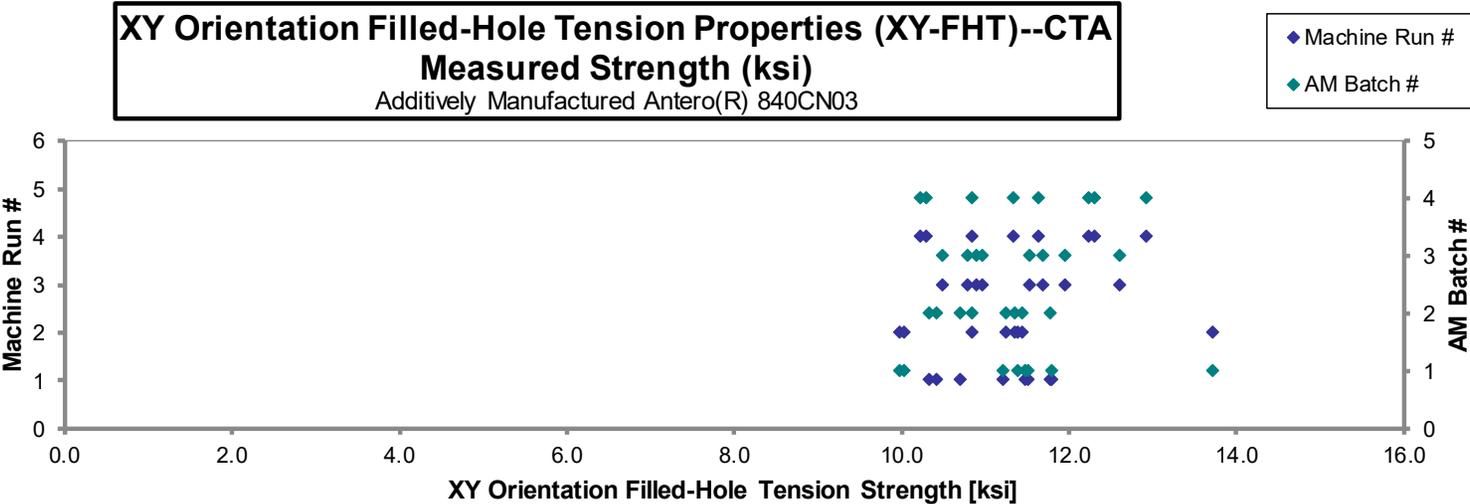


4.21 XY Filled-Hole Tension Properties (XY-FHT)

XY Orientation Filled-Hole Tension Properties (XY-FHT)--CTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-11-CTA-1	1	1	11.78	0.1313	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-12-CTA-2	1	1	11.21	0.1308	M(A,L)GM, AGT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-14-CTA-3	1	1	11.47	0.1316	AGM, LWT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-15-CTA-4	1	1	11.51	0.1311	M(A,L)GM, LWT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-11-CTA-1	1	2	10.02	0.1313	AGM, M(A,L)AT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-13-CTA-2	1	2	11.38	0.1323	M(A,L)GM, LWT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-14-CTA-3	1	2	9.970	0.1321	/(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-15-CTA-4	1	2	13.72	0.1332	M(A,L)GM, M(A,L)GB, AWT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-11-CTA-1	2	1	11.76	0.1314	AGM, LAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-12-CTA-2	2	1	10.42	0.1344	M(A,L)GM, M(A,L)AT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-14-CTA-3	2	1	10.33	0.1305	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-15-CTA-4	2	1	10.70	0.1306	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-11-CTA-1	2	2	11.43	0.1325	M(A,L)GM, AGB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-13-CTA-2	2	2	11.35	0.1313	AGM, M(A,L)WT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-14-CTA-3	2	2	10.84	0.1344	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-15-CTA-4	2	2	11.25	0.1316	AGM, LAT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-11-CTA-1	3	3	10.79	0.1313	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-12-CTA-2	3	3	10.48	0.1326	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-14-CTA-3	3	3	11.52	0.1318	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-15-CTA-4	3	3	10.89	0.1326	AGM, AGT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-11-CTA-1	3	3	11.94	0.1305	AGM, AGT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-12-CTA-2	3	3	12.61	0.1296	AGM, LAT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-14-CTA-3	3	3	10.95	0.1293	AGM, LWT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-15-CTA-4	3	3	11.68	0.1297	AGM, LWT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-11-CTA-1	4	4	12.29	0.1302	M(A,L)GM, M(A,L)WT, LAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-12-CTA-2	4	4	10.29	0.1304	/(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-14-CTA-3	4	4	12.22	0.1303	M(A,L)GM, LWT, LAB
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-15-CTA-4	4	4	12.93	0.1298	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-11-CTA-1	4	4	11.63	0.1301	AGM, M(A,L)WB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-13-CTA-2	4	4	11.32	0.1306	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-14-CTA-3	4	4	10.22	0.1305	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-15-CTA-4	4	4	10.83	0.1301	AGM, LWT, LWB

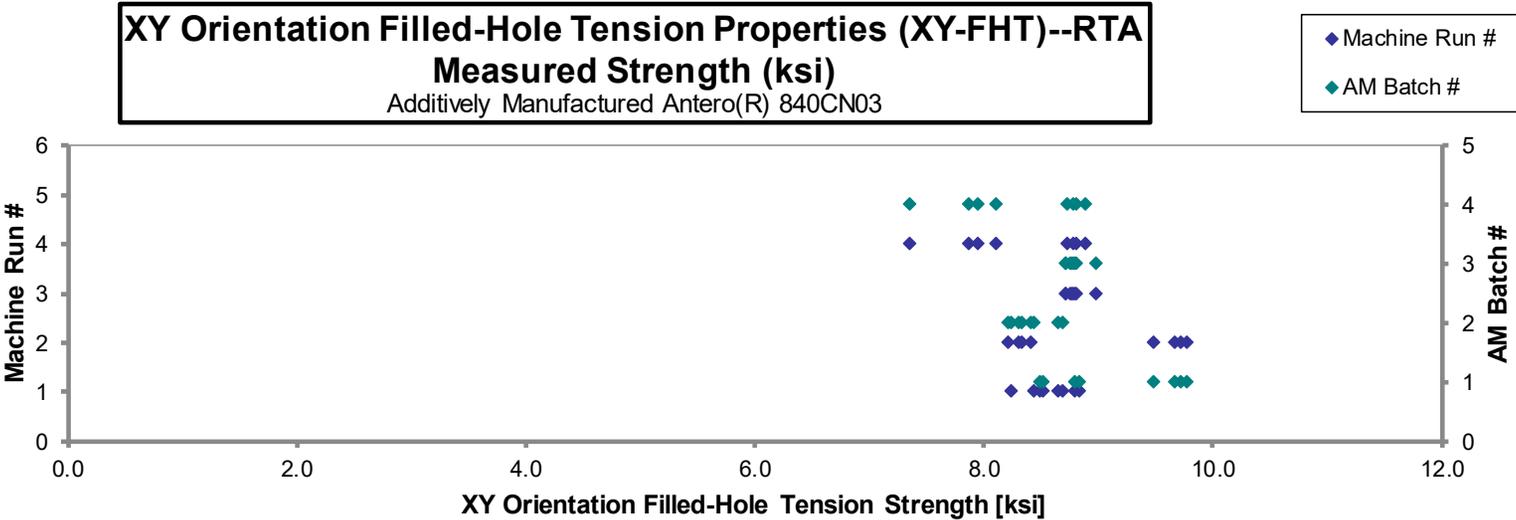
Average	11.30	0.1312
Standard Dev.	0.8544	0.001272
Coeff. of Var. [%]	7.558	0.9696
Min.	9.970	0.1293
Max.	13.72	0.1344
Number of Spec.	32	32



**XY Orientation Filled-Hole Tension Properties (XY-FHT)--RTA
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-11-RTA-1	1	1	8.834	0.1288	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-12-RTA-2	1	1	8.786	0.1297	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-14-RTA-3	1	1	8.512	0.1295	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-15-RTA-4	1	1	8.490	0.1293	AGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-11-RTA-1	1	2	9.717	0.1303	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-13-RTA-2	1	2	9.668	0.1305	AGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-14-RTA-3	1	2	9.771	0.1304	AGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-15-RTA-4	1	2	9.475	0.1306	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-11-RTA-1	2	1	8.434	0.1324	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-12-RTA-2	2	1	8.233	0.1325	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-14-RTA-3	2	1	8.646	0.1322	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-15-RTA-4	2	1	8.682	0.1312	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-11-RTA-1	2	2	8.406	0.1315	M(A,L)GM, AGT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-13-RTA-2	2	2	8.293	0.1330	M(A,L)GM, AGT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-14-RTA-3	2	2	8.325	0.1322	M(A,L)GM, AGT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-15-RTA-4	2	2	8.203	0.1320	M(A,L)GM, AGT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-11-RTA-1	3	3	8.805	0.1321	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-12-RTA-2	3	3	8.750	0.1317	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-14-RTA-3	3	3	8.706	0.1316	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-15-RTA-4	3	3	8.708	0.1323	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-11-RTA-1	3	3	8.969	0.1324	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-12-RTA-2	3	3	8.789	0.1327	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-14-RTA-3	3	3	8.773	0.1327	AGM, AWTT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-15-RTA-4	3	3	8.756	0.1342	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-11-RTA-1	4	4	8.875	0.1299	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-12-RTA-2	4	4	8.717	0.1298	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-14-RTA-3	4	4	8.804	0.1306	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-15-RTA-4	4	4	8.776	0.1311	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-11-RTA-1	4	4	7.342	0.1313	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-13-RTA-2	4	4	7.940	0.1310	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-14-RTA-3	4	4	8.105	0.1310	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-15-RTA-4	4	4	7.858	0.1311	AGM

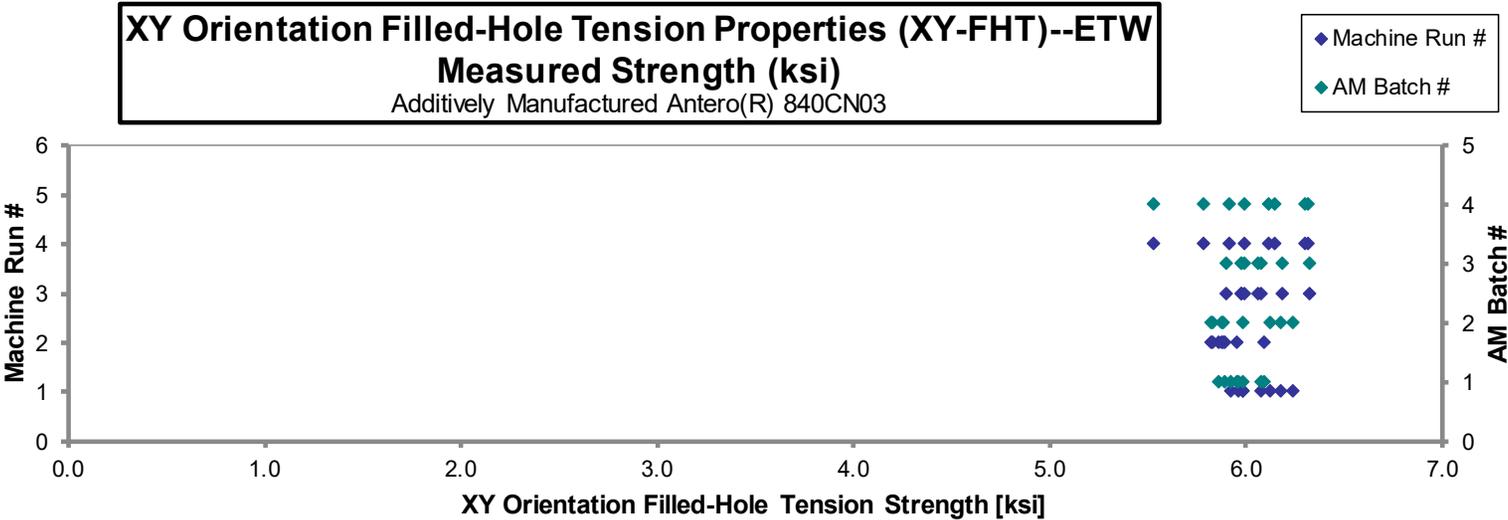
Average	8.661	0.1313
Standard Dev.	0.5187	0.001237
Coeff. of Var. [%]	5.988	0.9424
Min.	7.342	0.1288
Max.	9.771	0.1342
Number of Spec.	32	32



**XY Orientation Filled-Hole Tension Properties (XY-FHT)--ETW
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-11-ETW-1	1	1	5.987	0.1317	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-12-ETW-2	1	1	6.077	0.1306	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-14-ETW-3	1	1	5.959	0.1314	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FHT-15-ETW-4	1	1	5.919	0.1317	AGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-11-ETW-1	1	2	6.091	0.1318	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-12-ETW-2	1	2	5.951	0.1315	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-14-ETW-3	1	2	5.864	0.1326	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FHT-15-ETW-4	1	2	5.891	0.1316	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-11-ETW-1	2	1	6.125	0.1309	AGM, M(A,L)GT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-12-ETW-2	2	1	5.983	0.1307	AGM, AGT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-14-ETW-3	2	1	6.236	0.1300	AGF
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FHT-15-ETW-4	2	1	6.178	0.1299	AGM, AGT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-11-ETW-1	2	2	5.832	0.1308	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-13-ETW-2	2	2	5.874	0.1296	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-14-ETW-3	2	2	5.883	0.1308	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FHT-15-ETW-4	2	2	5.820	0.1310	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-11-ETW-1	3	3	5.902	0.1303	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-12-ETW-2	3	3	5.995	0.1298	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-14-ETW-3	3	3	5.973	0.1307	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FHT-15-ETW-4	3	3	5.978	0.1297	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-11-ETW-1	3	3	6.326	0.1293	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-12-ETW-2	3	3	6.182	0.1289	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-14-ETW-3	3	3	6.074	0.1296	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-FHT-15-ETW-4	3	3	6.060	0.1290	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-11-ETW-1	4	4	6.300	0.1302	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-12-ETW-2	4	4	6.313	0.1300	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-14-ETW-3	4	4	6.118	0.1298	AGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FHT-15-ETW-4	4	4	6.145	0.1302	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-11-ETW-1	4	4	5.918	0.1284	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-13-ETW-2	4	4	5.780	0.1281	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-14-ETW-3	4	4	5.994	0.1278	AGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FHT-15-ETW-4	4	4	5.531	0.1303	M(A,L)GM

Average	6.008	0.1303
Standard Dev.	0.1708	0.001120
Coeff. of Var. [%]	2.844	0.8599
Min.	5.531	0.1278
Max.	6.326	0.1326
Number of Spec.	32	32

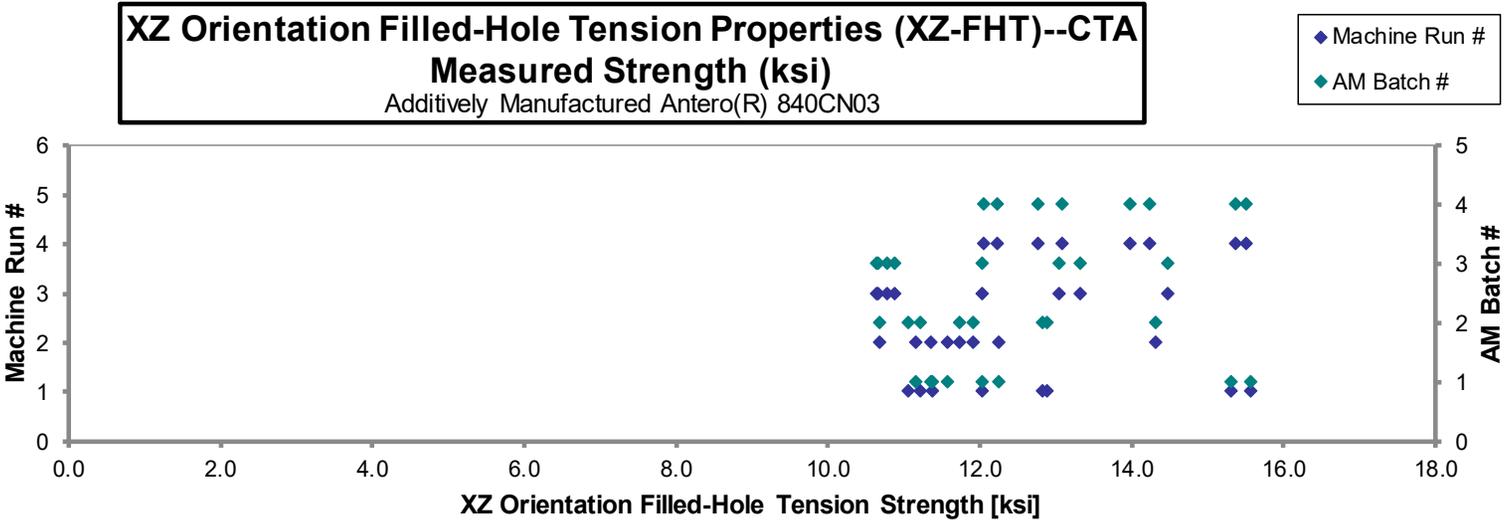


4.22 XZ Filled-Hole Tension Properties (XZ-FHT)

XZ Orientation Filled-Hole Tension Properties (XZ-FHT)--CTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-11-CTA-1	1	1	15.57	0.1262	M(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-12-CTA-2	1	1	15.31	0.1264	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-14-CTA-3	1	1	12.03	0.1272	AGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-15-CTA-4	1	1	11.39	0.1266	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-11-CTA-1	1	2	12.26	0.1303	M(A,L)GM, M(A,L)GB, LWT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-13-CTA-2	1	2	11.36	0.1298	M(A,L)GM, M(A,L)GB, M(A,L)WT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-14-CTA-3	1	2	11.58	0.1296	AGM, AWT
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-15-CTA-4	1	2	11.17	0.1313	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-11-CTA-1	2	1	12.83	0.1304	AGM, AWT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-12-CTA-2	2	1	11.06	0.1291	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-14-CTA-3	2	1	11.22	0.1307	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-15-CTA-4	2	1	12.90	0.1295	AGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-11-CTA-1	2	2	14.32	0.1286	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-13-CTA-2	2	2	10.70	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-14-CTA-3	2	2	11.74	0.1289	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-15-CTA-4	2	2	11.91	0.1271	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-11-CTA-1	3	3	10.68	0.1286	AGM, AGT, AGB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-12-CTA-2	3	3	10.66	0.1308	AGM, AGB
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-14-CTA-3	3	3	13.06	0.1305	AGM, AGT
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-15-CTA-4	3	3	10.79	0.1294	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-11-CTA-1	3	3	14.48	0.1287	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-12-CTA-2	3	3	12.04	0.1287	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-14-CTA-3	3	3	13.34	0.1275	AGM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-15-CTA-4	3	3	10.88	0.1293	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-11-CTA-1	4	4	12.06	0.1289	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-12-CTA-2	4	4	13.09	0.1278	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-14-CTA-3	4	4	14.00	0.1298	AGM, AWT
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-15-CTA-4	4	4	12.78	0.1292	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-11-CTA-1	4	4	15.38	0.1284	M(A,L)GM, M(A,L)AB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-13-CTA-2	4	4	12.23	0.1292	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-14-CTA-3	4	4	15.51	0.1275	AGM, AWT
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-15-CTA-4	4	4	14.26	0.1292	AGM

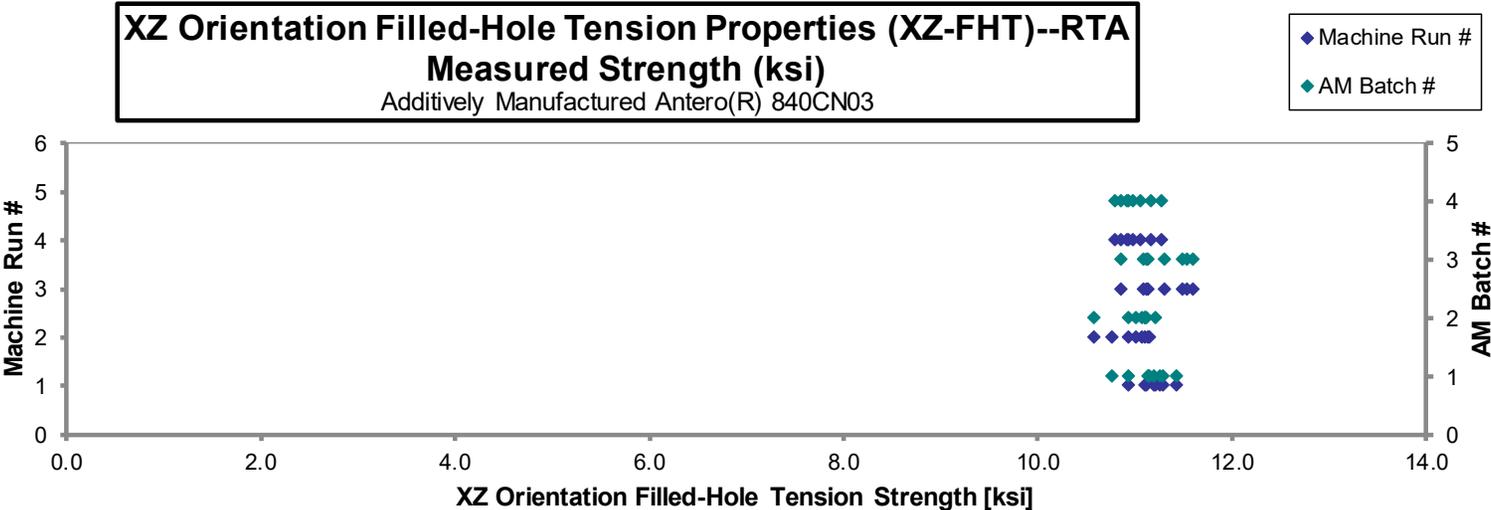
Average	12.58	0.1288
Standard Dev.	1.553	0.001327
Coeff. of Var. [%]	12.35	1.030
Min.	10.66	0.1262
Max.	15.57	0.1313
Number of Spec.	32	32



**XZ Orientation Filled-Hole Tension Properties (XZ-FHT)--RTA
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-11-RTA-1	1	1	11.29	0.1262	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-12-RTA-2	1	1	11.26	0.1269	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-14-RTA-3	1	1	11.20	0.1263	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-15-RTA-4	1	1	11.43	0.1257	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-11-RTA-1	1	2	11.14	0.1310	AGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-13-RTA-2	1	2	10.77	0.1327	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-14-RTA-3	1	2	10.93	0.1326	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-15-RTA-4	1	2	11.16	0.1326	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-11-RTA-1	2	1	10.94	0.1286	AGM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-12-RTA-2	2	1	11.21	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-14-RTA-3	2	1	11.11	0.1286	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-15-RTA-4	2	1	11.13	0.1281	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-11-RTA-1	2	2	11.01	0.1298	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-13-RTA-2	2	2	10.58	0.1310	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-14-RTA-3	2	2	11.08	0.1303	M(A,L)GM, M(A,L)GB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-15-RTA-4	2	2	11.10	0.1296	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-11-RTA-1	3	3	11.53	0.1291	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-12-RTA-2	3	3	11.49	0.1295	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-14-RTA-3	3	3	11.30	0.1308	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-15-RTA-4	3	3	11.61	0.1296	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-11-RTA-1	3	3	11.12	0.1297	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-12-RTA-2	3	3	11.09	0.1298	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-14-RTA-3	3	3	10.86	0.1314	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-15-RTA-4	3	3	11.14	0.1303	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-11-RTA-1	4	4	10.94	0.1284	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-12-RTA-2	4	4	11.07	0.1290	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-14-RTA-3	4	4	11.17	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-15-RTA-4	4	4	11.28	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-11-RTA-1	4	4	10.80	0.1284	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-13-RTA-2	4	4	10.98	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-14-RTA-3	4	4	10.86	0.1291	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-15-RTA-4	4	4	10.93	0.1290	M(A,L)GM

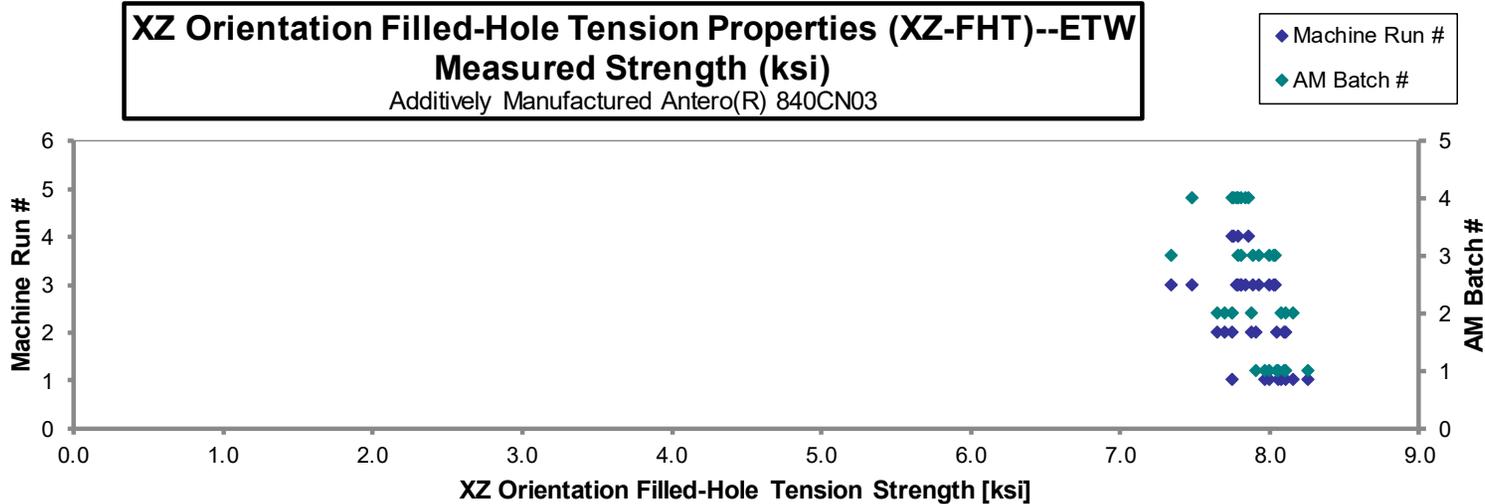
Average	11.11	0.1293
Standard Dev.	0.2267	0.001761
Coeff. of Var. [%]	2.041	1.363
Min.	10.58	0.1257
Max.	11.61	0.1327
Number of Spec.	32	32



**XZ Orientation Filled-Hole Tension Properties (XZ-FHT)--ETW
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-11-ETW-1	1	1	7.968	0.1302	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-12-ETW-2	1	1	8.059	0.1289	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-14-ETW-3	1	1	7.997	0.1294	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FHT-15-ETW-4	1	1	8.257	0.1286	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-11-ETW-1	1	2	8.112	0.1296	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-12-ETW-2	1	2	8.098	0.1291	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-14-ETW-3	1	2	8.049	0.1302	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FHT-15-ETW-4	1	2	7.914	0.1312	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-11-ETW-1	2	1	8.078	0.1289	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-12-ETW-2	2	1	7.752	0.1275	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-14-ETW-3	2	1	8.116	0.1297	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FHT-15-ETW-4	2	1	8.158	0.1280	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-11-ETW-1	2	2	7.705	0.1289	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-13-ETW-2	2	2	7.752	0.1286	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-14-ETW-3	2	2	7.654	0.1290	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FHT-15-ETW-4	2	2	7.885	0.1293	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-11-ETW-1	3	3	7.894	0.1291	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-12-ETW-2	3	3	8.001	0.1296	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-14-ETW-3	3	3	7.811	0.1309	AGM
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FHT-15-ETW-4	3	3	8.032	0.1299	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-11-ETW-1	3	3	8.040	0.1300	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-12-ETW-2	3	3	7.790	0.1303	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-14-ETW-3	3	3	7.929	0.1301	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FHT-15-ETW-4	3	3	7.349	0.1313	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-11-ETW-1	4	3	7.784	0.1299	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-12-ETW-2	4	3	7.814	0.1289	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-14-ETW-3	4	3	7.484	0.1332	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FHT-15-ETW-4	4	3	7.841	0.1298	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-11-ETW-1	4	4	7.750	0.1290	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-13-ETW-2	4	4	7.763	0.1291	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-14-ETW-3	4	4	7.797	0.1280	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FHT-15-ETW-4	4	4	7.860	0.1279	M(A,L)GM

Average	7.890	0.1295
Standard Dev.	0.1952	0.001127
Coeff. of Var. [%]	2.474	0.8704
Min.	7.349	0.1275
Max.	8.257	0.1332
Number of Spec.	32	32



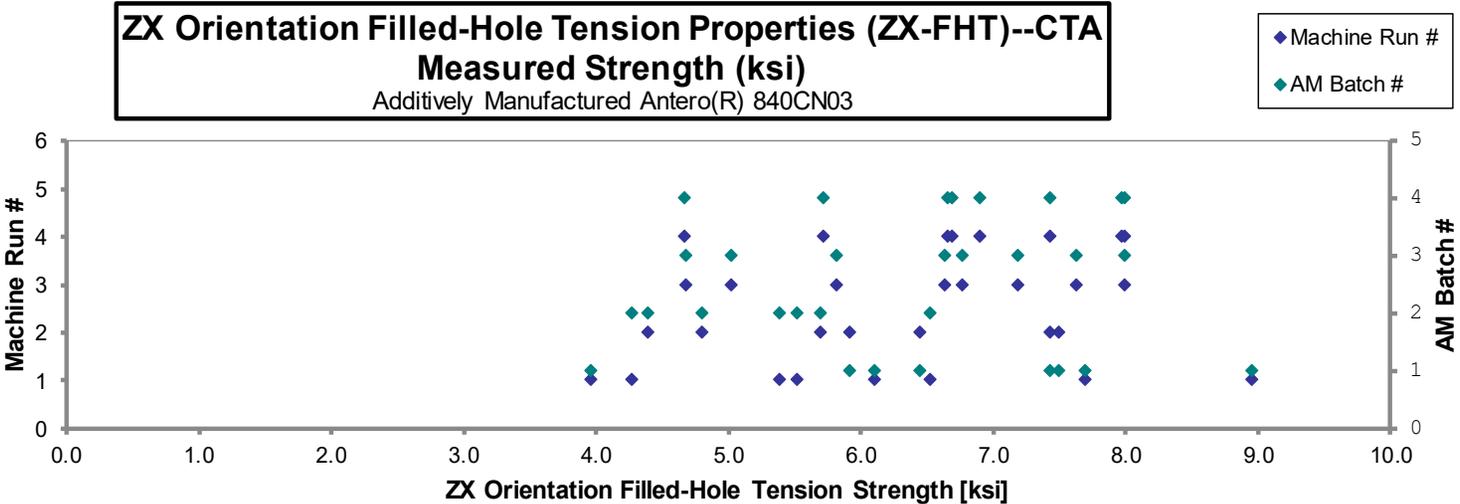
4.23 ZX Filled-Hole Tension Properties (ZX-FHT)

ZX Orientation Filled-Hole Tension Properties (ZX-FHT)--CTA Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-11-CTA-1	1	1	8.958	0.128	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-12-CTA-2	1	1	6.103	0.127	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-14-CTA-3	1	1	3.967	0.128	LGM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-15-CTA-4	1	1	7.693	0.127	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-11-CTA-1	1	2	6.452	0.129	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-13-CTA-2	1	2	7.498	0.127	M(A,L)GM, M(A,L)GB, M(A,L)WT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-14-CTA-3	1	2	5.923	0.127	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-15-CTA-4	1	2	7.436	0.128	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-11-CTA-1	2	1	4.268	0.128	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-12-CTA-2	2	1	5.519	0.129	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-14-CTA-3	2	1	6.525	0.128	M(A,L)GM, M(A,L)GT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-15-CTA-4	2	1	5.387	0.129	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-11-CTA-1	2	2	5.698	0.128	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-13-CTA-2	2	2	4.390	0.127	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-14-CTA-3*	2	2		0.128	M(A,L)WT, LAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-15-CTA-4	2	2	4.799	0.127	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-11-CTA-1	3	3	6.634	0.129	M(A,L)GM, AWT, AWB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-12-CTA-2	3	3	5.815	0.129	M(A,L)GM, AGB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-14-CTA-3	3	3	7.184	0.129	M(A,L)GM, AGT, M(A,L)WB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-15-CTA-4	3	3	6.772	0.128	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-11-CTA-1	3	3	7.997	0.130	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-12-CTA-2	3	3	4.685	0.130	M(A,L)GM, LGT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-14-CTA-3	3	3	7.632	0.128	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-15-CTA-4	3	3	5.027	0.130	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-11-CTA-1	4	4	7.977	0.129	M(A,L)GM, M(A,L)AT, M(A,L)AB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-12-CTA-2	4	4	6.690	0.129	M(A,L)GM, LWT, LWB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-14-CTA-3	4	4	4.671	0.128	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-15-CTA-4	4	4	6.897	0.129	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-11-CTA-1	4	4	7.998	0.126	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-13-CTA-2	4	4	6.655	0.126	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-14-CTA-3	4	4	5.725	0.127	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-15-CTA-4	4	4	7.433	0.127	M(A,L)GM, M(A,L)GB, M(A,L)WT

*Data is not reported due to unacceptable failure mode

Average	6.336	0.128
Standard Dev.	1.292	0.001
Coeff. of Var. [%]	20.387	0.799
Min.	3.967	0.126
Max.	8.958	0.130
Number of Spec.	31	32

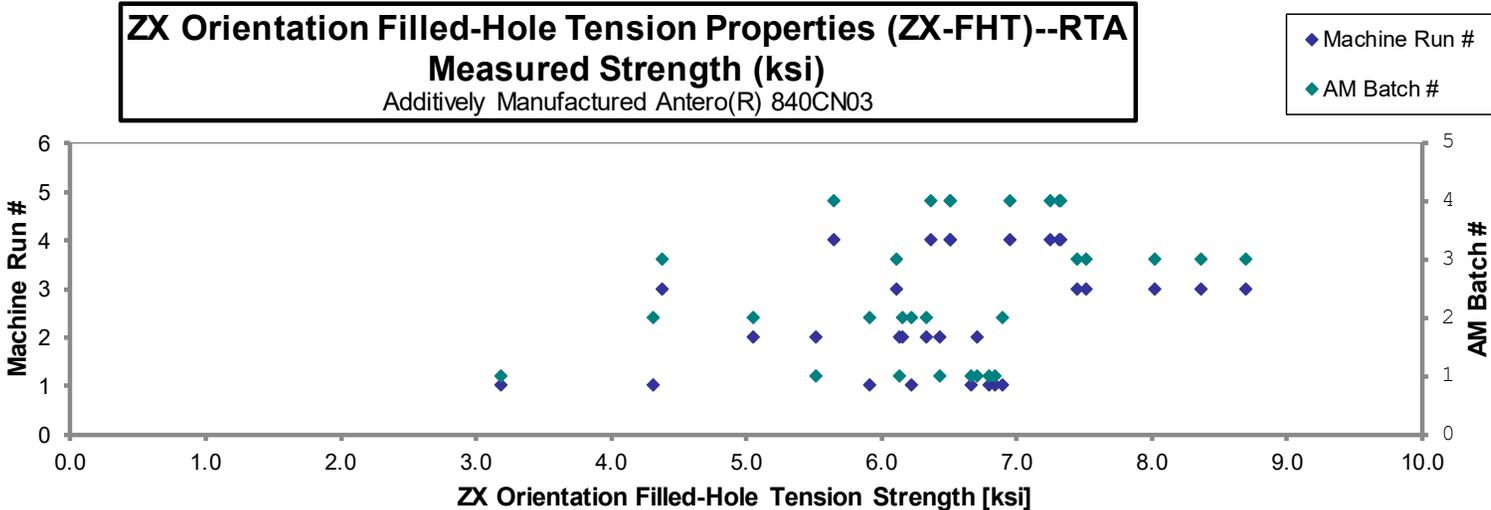


**ZX Orientation Filled-Hole Tension Properties (ZX-FHT)--RTA
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-11-RTA-1	1	1	3.186	0.128	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-12-RTA-2	1	1	6.804	0.128	M(A,L)GM, M(A,L)GT
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-14-RTA-3	1	1	6.668	0.127	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-15-RTA-4	1	1	6.843	0.128	AGM, M(A,L)GT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-11-RTA-1	1	2	6.133	0.128	M(A,L)GM, M(A,L)GT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-13-RTA-2	1	2	5.515	0.128	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-14-RTA-3	1	2	6.713	0.128	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-15-RTA-4	1	2	6.436	0.128	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-11-RTA-1	2	1	5.918	0.128	LGM, AWT, AWB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-12-RTA-2	2	1	4.313	0.128	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-14-RTA-3	2	1	6.228	0.129	M(A,L)GM, M(A,L)AT, M(A,L)AB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-15-RTA-4	2	1	6.898	0.129	M(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-11-RTA-1*	2	2		0.128	
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-13-RTA-2	2	2	6.334	0.127	M(A,L)AB, LAT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-14-RTA-3	2	2	5.058	0.128	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-15-RTA-4	2	2	6.160	0.127	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-11-RTA-1	3	3	6.111	0.127	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-12-RTA-2	3	3	7.523	0.128	M(A,L)GM, M(A,L)GB, M(A,L)WT
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-14-RTA-3	3	3	8.371	0.128	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-15-RTA-4	3	3	4.376	0.127	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-11-RTA-1	3	3	7.454	0.127	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-12-RTA-2*	3	3		0.127	
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-14-RTA-3	3	3	8.695	0.127	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-15-RTA-4	3	3	8.024	0.128	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-11-RTA-1	4	4	6.513	0.128	M(A,L)GM, AWB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-12-RTA-2	4	4	5.654	0.129	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-14-RTA-3	4	4	6.509	0.129	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-15-RTA-4	4	4	6.957	0.128	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-11-RTA-1	4	4	7.316	0.128	M(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-13-RTA-2	4	4	7.257	0.127	M(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-14-RTA-3	4	4	6.368	0.126	M(A,L)GM, M(A,L)GB, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-15-RTA-4	4	4	7.331	0.127	M(A,L)GM, M(A,L)WT

*Data is not reported due to coupons breaking during installation

Average	6.456	0.128
Standard Dev.	1.175	0.001
Coeff. of Var. [%]	18.198	0.579
Min.	3.186	0.126
Max.	8.695	0.129
Number of Spec.	30	32



ZX Orientation Filled-Hole Tension Properties (ZX-FHT)--ETW
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-11-ETW-1	1	1	6.599	0.129	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-12-ETW-2	1	1	6.178	0.129	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-14-ETW-3	1	1	5.977	0.129	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FHT-15-ETW-4	1	1	6.473	0.129	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-11-ETW-1	1	2	6.426	0.127	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-12-ETW-2	1	2	5.720	0.129	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-14-ETW-3	1	2	6.537	0.128	M(A,L)GT, LGM, M(A,L)WB
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FHT-15-ETW-4	1	2	6.474	0.128	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-11-ETW-1	2	1	6.522	0.127	LGM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-12-ETW-2	2	1	6.151	0.128	LGM, AGB, AWT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-14-ETW-3	2	1	6.450	0.128	M(A,L)GM, AGB, AWT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FHT-15-ETW-4	2	1	6.257	0.126	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-11-ETW-1	2	2	4.733	0.127	LGM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-13-ETW-2	2	2	5.640	0.128	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-14-ETW-3	2	2	6.096	0.128	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FHT-15-ETW-4	2	2	5.694	0.127	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-11-ETW-1	3	3	6.455	0.129	M(A,L)GM, AGT, AGB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-12-ETW-2	3	3	6.591	0.129	LGM, AGT, AGB
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-14-ETW-3	3	3	5.266	0.129	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FHT-15-ETW-4	3	3	6.365	0.131	M(A,L)GM, AWT, AWB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-11-ETW-1	3	3	6.259	0.128	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-12-ETW-2	3	3	6.120	0.127	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-14-ETW-3	3	3	6.142	0.127	M(A,L)GM, M(A,L)WB, M(A,L)GT
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-FHT-15-ETW-4	3	3	6.152	0.127	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-11-ETW-1*	4	4		0.127	LGT
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-12-ETW-2	4	4	2.493	0.127	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-14-ETW-3	4	4	5.348	0.126	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FHT-15-ETW-4	4	4	5.935	0.127	M(A,L)WB, LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-11-ETW-1	4	4	5.955	0.129	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-13-ETW-2	4	4	6.042	0.127	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-14-ETW-3	4	4	5.239	0.128	LGM
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FHT-15-ETW-4	4	4	5.736	0.128	LGM

*Data is not reported due to unacceptable failure mode

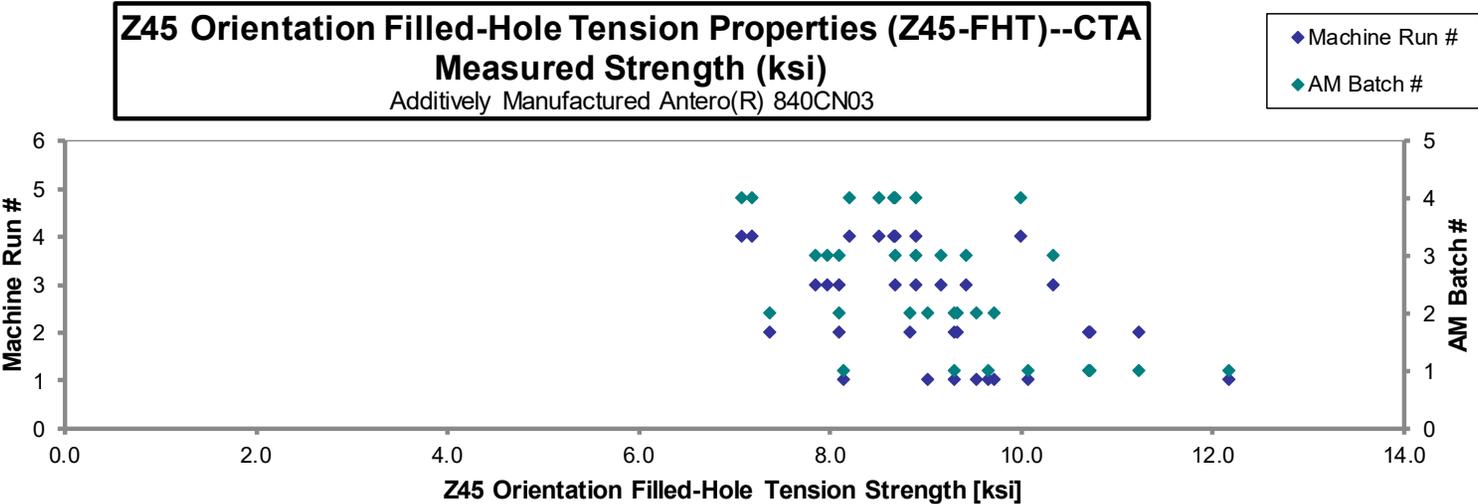
Average	5.936	0.128
Standard Dev.	0.783	0.001
Coeff. of Var. [%]	13.191	0.794
Min.	2.493	0.126
Max.	6.599	0.131
Number of Spec.	31	32

4.24 Z45 Filled-Hole Tension Properties (Z45-FHT)

Z45 Orientation Filled-Hole Tension Properties (Z45-FHT)--CTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-11-CTA-1	1	1	8.143	0.1285	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-12-CTA-2	1	1	9.650	0.1286	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-14-CTA-3	1	1	12.17	0.1283	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-15-CTA-4	1	1	10.07	0.1285	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-11-CTA-1	1	2	9.304	0.1298	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-13-CTA-2	1	2	10.71	0.1294	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-14-CTA-3	1	2	10.71	0.1296	M(A,L)GM, LWT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-15-CTA-4	1	2	11.23	0.1303	M(A,L)GM, AWT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-11-CTA-1	2	1	9.710	0.1296	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-12-CTA-2	2	1	9.013	0.1298	LGM, M(A,L)GT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-14-CTA-3	2	1	9.293	0.1295	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-15-CTA-4	2	1	9.531	0.1298	M(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-11-CTA-1	2	2	8.088	0.1284	LGM, M(A,L)WT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-13-CTA-2	2	2	7.368	0.1289	LGM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-14-CTA-3	2	2	8.831	0.1287	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-15-CTA-4	2	2	9.330	0.1279	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-11-CTA-1	3	3	7.840	0.1293	M(A,L)GM, AGB, AWB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-12-CTA-2	3	3	8.088	0.1297	AGM, AGB, AWB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-14-CTA-3	3	3	8.898	0.1294	AGM, AGB, AWT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-15-CTA-4	3	3	10.34	0.1293	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-11-CTA-1	3	3	7.967	0.1298	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-12-CTA-2	3	3	9.415	0.1292	M(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-14-CTA-3	3	3	9.162	0.1285	AGM, M(A,L)WT, LAT, LAB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-15-CTA-4	3	3	8.673	0.1286	AGM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-11-CTA-1	4	4	7.080	0.1300	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-12-CTA-2	4	4	8.199	0.1297	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-14-CTA-3	4	4	8.502	0.1295	M(A,L)GM, M(A,L)WT, LWB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-15-CTA-4	4	4	8.663	0.1307	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-11-CTA-1	4	4	9.988	0.1288	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-13-CTA-2	4	4	8.899	0.1288	AGM, AWB
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-14-CTA-3	4	4	7.188	0.1290	M(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-15-CTA-4	4	4	8.680	0.1284	M(A,L)GM, M(A,L)WT

Average	9.086	0.1292
Standard Dev.	1.164	0.0006565
Coeff. of Var. [%]	12.81	0.5082
Min.	7.080	0.1279
Max.	12.17	0.1307
Number of Spec.	32	32



Z45 Orientation Filled-Hole Tension Properties (Z45-FHT)--RTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-11-RTA-1	1	1	9.181	0.1295	M(A,L)GM, M(A,L)AB, M(A,L)AT
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-12-RTA-2	1	1	9.557	0.1287	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-14-RTA-3	1	1	6.815	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-15-RTA-4	1	1	9.620	0.1286	M(A,L)GM, M(A,L)WT, M(A,L)AB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-11-RTA-1	1	2	9.619	0.1327	M(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-13-RTA-2	1	2	9.735	0.1331	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-14-RTA-3	1	2	10.08	0.1313	M(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-15-RTA-4	1	2	10.01	0.1320	M(A,L)GM, M(A,L)WB, M(A,L)WT
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-11-RTA-1*	2	1		0.1281	M(A,L)WT, LAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-12-RTA-2	2	1	9.525	0.1278	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-14-RTA-3	2	1	9.314	0.1277	M(A,L)GM, M(A,L)AT, LAB
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-15-RTA-4	2	1	9.636	0.1287	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-11-RTA-1	2	2	8.378	0.1279	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-13-RTA-2	2	2	9.021	0.1287	M(A,L)GM, M(A,L)WT, AWB
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-14-RTA-3	2	2	9.143	0.1272	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-15-RTA-4	2	2	7.469	0.1280	M(A,L)GM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-11-RTA-1	3	3	9.855	0.1297	AGM, M(A,L)WB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-12-RTA-2	3	3	9.172	0.1296	AGM, M(A,L)GT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-14-RTA-3	3	3	9.758	0.1291	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-15-RTA-4	3	3	9.689	0.1305	M(A,L)GM, AWT,AWB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-11-RTA-1	3	3	9.358	0.1285	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-12-RTA-2	3	3	9.674	0.1280	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-14-RTA-3	3	3	9.704	0.1272	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-15-RTA-4	3	3	9.979	0.1262	M(A,L)GM, M(A,L)WT, M(A,L)WB
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-11-RTA-1	4	4	7.941	0.1286	M(A,L)GM, M(A,L)GT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-12-RTA-2*	4	4		0.1282	M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-14-RTA-3	4	4	9.467	0.1286	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-15-RTA-4**	4	4		0.1279	
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-11-RTA-1	4	4	8.741	0.1275	M(A,L)GM, M(A,L)AB, M(A,L)AT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-13-RTA-2	4	4	8.626	0.1267	M(A,L)GM, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-14-RTA-3	4	4	9.268	0.1269	LGM, M(A,L)WT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-15-RTA-4	4	4	8.762	0.1261	M(A,L)GM, M(A,L)AT, M(A,L)AB

*Data is not reported due to unacceptable failure mode

**Data not reported due to coupon breaking during installation

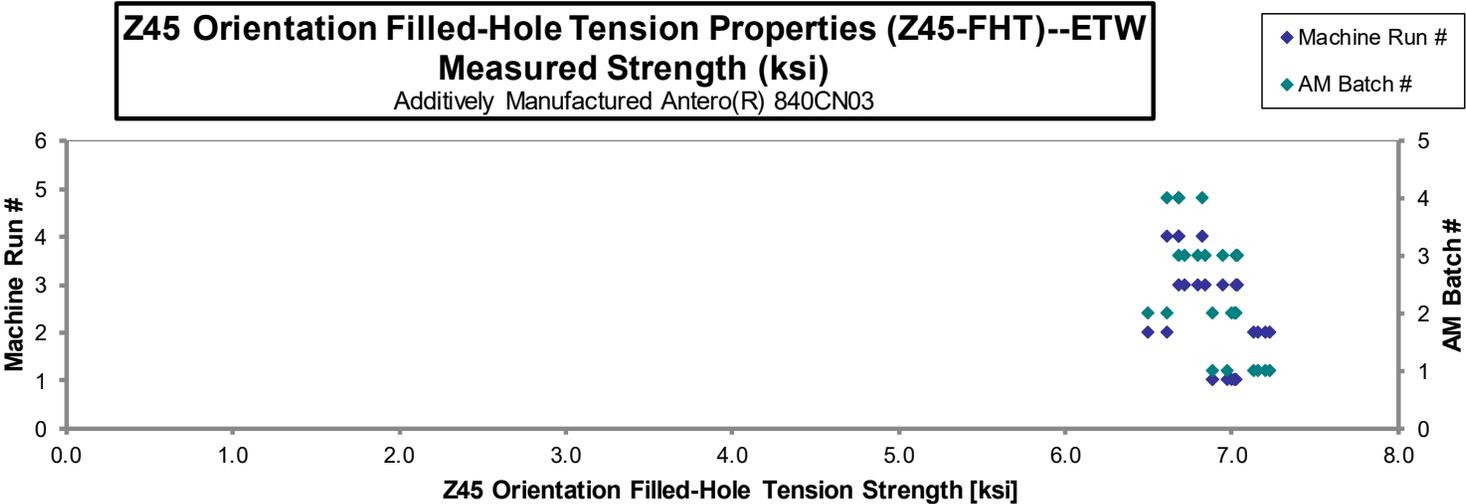
Average	9.210	0.1287
Standard Dev.	0.7649	0.001704
Coeff. of Var. [%]	8.305	1.324
Min.	6.815	0.1261
Max.	10.08	0.1331
Number of Spec.	29	32

**Z45 Orientation Filled-Hole Tension Properties (Z45-FHT)--ETW
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-11-ETW-1*	1	1		0.1300	M(A,L)WB
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-12-ETW-2	1	1	6.880	0.1301	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-14-ETW-3	1	1	6.975	0.1297	M(A,L)GM
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FHT-15-ETW-4*	1	1		0.1295	M(A,L)WB
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-11-ETW-1	1	2	7.202	0.1279	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-12-ETW-2	1	2	7.227	0.1276	M(A,L)GM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-14-ETW-3	1	2	7.154	0.1281	LGM
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FHT-15-ETW-4	1	2	7.134	0.1291	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-11-ETW-1	2	1	6.998	0.1290	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-12-ETW-2	2	1	7.024	0.1280	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-14-ETW-3	2	1	6.880	0.1285	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FHT-15-ETW-4	2	1	7.011	0.1282	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-11-ETW-1*	2	2		0.1282	M(A,L)WT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-13-ETW-2*	2	2		0.1266	M(A,L)WT
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-14-ETW-3	2	2	6.499	0.1282	M(A,L)GM
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FHT-15-ETW-4	2	2	6.609	0.1272	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-11-ETW-1	3	3	6.941	0.1281	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-12-ETW-2	3	3	7.035	0.1283	M(A,L)GM
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-14-ETW-3*	3	3		0.1285	AWB
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FHT-15-ETW-4	3	3	7.023	0.1286	AGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-11-ETW-1	3	3	6.684	0.1306	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-12-ETW-2	3	3	6.714	0.1298	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-14-ETW-3	3	3	6.841	0.1300	LGM
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FHT-15-ETW-4	3	3	6.796	0.1304	M(A,L)GM
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-11-ETW-1	4	4	6.825	0.1278	AGM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-12-ETW-2	4	4	6.613	0.1288	AGM, M(A,L)WT
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-14-ETW-3	4	4	6.679	0.1277	LGM
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FHT-15-ETW-4	4	4	6.682	0.1275	M(A,L)GM
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-11-ETW-1*	4	4		0.1270	LWT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-13-ETW-2*	4	4		0.1275	LWT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-14-ETW-3*	4	4		0.1268	LWT
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FHT-15-ETW-4*	4	4		0.1275	LWT

*Data is not reported due to unacceptable failure mode

Average	6.888	0.1285
Standard Dev.	0.2043	0.001090
Coeff. of Var. [%]	2.966	0.8488
Min.	6.499	0.1266
Max.	7.227	0.1306
Number of Spec.	23	32

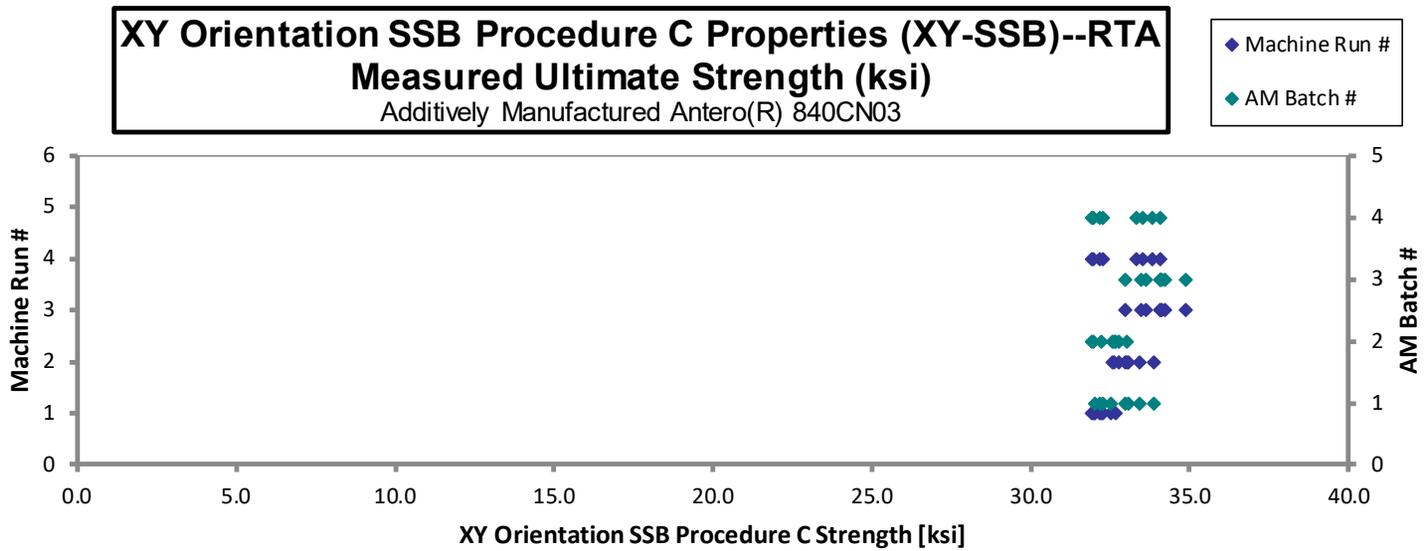
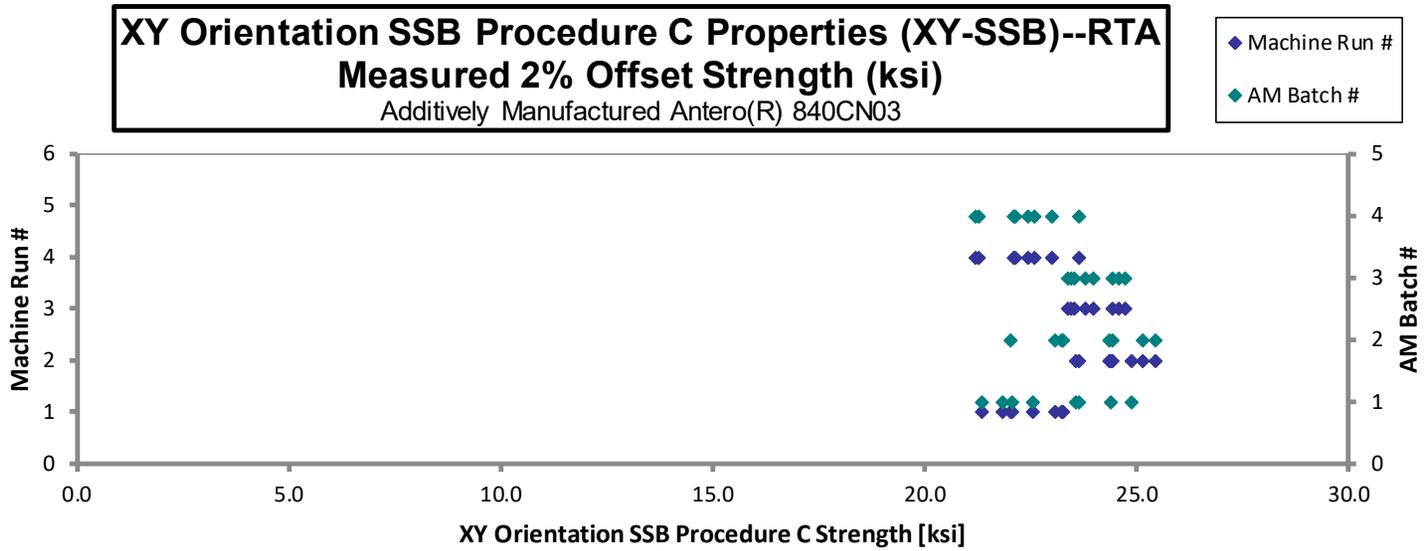


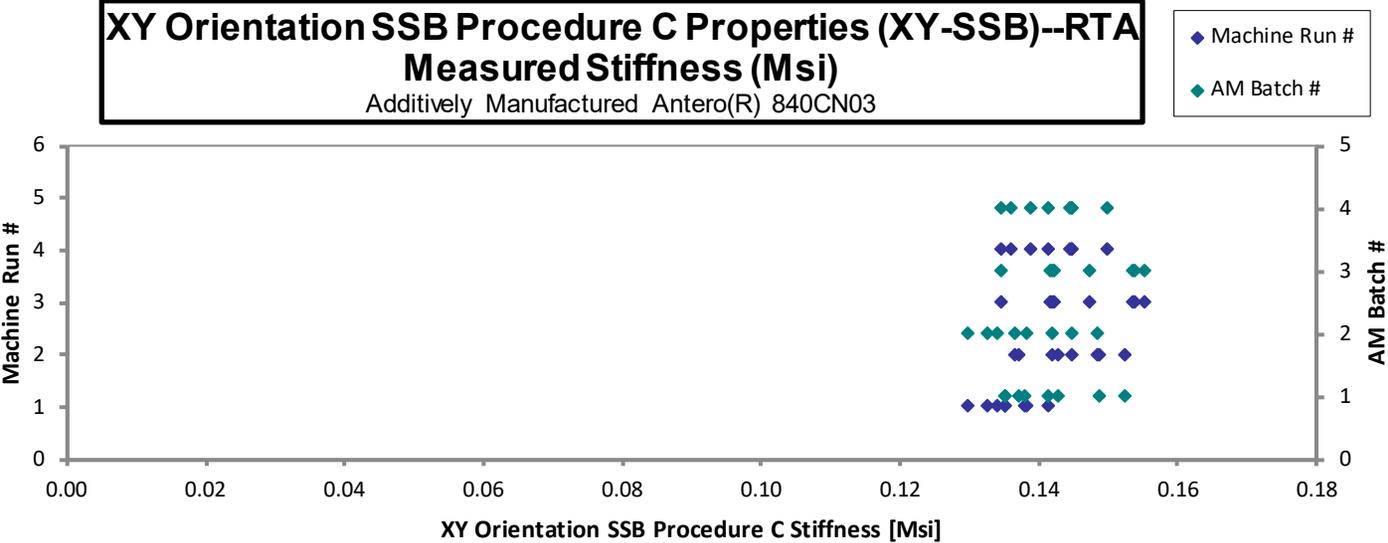
4.25XY Single-Shear Bearing Properties (XY-SSB)

XY Orientation SSB Procedure C Properties (XY-SSB)--RTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Bearing Stiffness [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-SSB-11-RTA-1	1	1	21.34	32.54	0.1380	0.2007	B11
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-SSB-12-RTA-2	1	1	21.84	32.25	0.1412	0.2022	B11
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-SSB-14-RTA-3	1	1	22.04	32.02	0.1351	0.2023	B11
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-SSB-15-RTA-4	1	1	22.54	32.19	0.1350	0.2020	B11
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-SSB-11-RTA-1	1	2	24.39	33.41	0.1487	0.2006	B11
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-SSB-13-RTA-2	1	2	23.56	32.97	0.1523	0.2010	B11
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-SSB-14-RTA-3	1	2	24.87	33.88	0.1428	0.2017	B11
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-SSB-15-RTA-4	1	2	23.64	33.07	0.1371	0.2022	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-SSB-11-RTA-1	2	1	23.23	32.65	0.1381	0.1993	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-SSB-12-RTA-2	2	1	22.02	31.92	0.1326	0.2005	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-SSB-14-RTA-3	2	1	23.07	32.24	0.1341	0.2001	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-SSB-15-RTA-4	2	1	23.27	31.99	0.1297	0.1995	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-SSB-11-RTA-1	2	2	25.46	33.04	0.1419	0.2021	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-SSB-13-RTA-2	2	2	24.36	32.79	0.1449	0.2009	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-SSB-14-RTA-3	2	2	24.42	32.65	0.1483	0.2018	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-SSB-15-RTA-4	2	2	25.15	32.57	0.1366	0.2021	B11
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-SSB-11-RTA-1	3	3	23.53	33.00	0.1346	0.2006	B11
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-SSB-12-RTA-2	3	3	23.37	33.64	0.1416	0.2012	B11
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-SSB-14-RTA-3	3	3	24.56	34.05	0.1421	0.2011	B11
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-SSB-15-RTA-4	3	3	24.71	33.46	0.1419	0.2021	B11
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-SSB-11-RTA-1	3	3	24.42	34.90	0.1538	0.1999	B11
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-SSB-12-RTA-2	3	3	23.46	34.12	0.1534	0.2001	B11
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-SSB-14-RTA-3	3	3	23.98	34.07	0.1472	0.2006	B11
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-SSB-15-RTA-4	3	3	23.80	34.21	0.1552	0.2003	B11
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-SSB-11-RTA-1	4	4	22.44	34.07	0.1447	0.2014	B11
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-SSB-12-RTA-2	4	4	23.65	33.52	0.1414	0.2019	B11
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-SSB-14-RTA-3	4	4	22.09	33.35	0.1498	0.2014	B11
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-SSB-15-RTA-4	4	4	23.00	33.85	0.1448	0.2017	B11
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-SSB-11-RTA-1	4	4	21.18	31.96	0.1361	0.2011	B11
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-SSB-13-RTA-2	4	4	21.28	31.90	0.1346	0.2013	B11
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-SSB-14-RTA-3	4	4	22.57	32.29	0.1388	0.2020	B11
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-SSB-15-RTA-4	4	4	22.13	32.17	0.1444	0.2024	B11

Average	23.29	33.02	0.1419	0.2012
Standard Dev.	1.173	0.8331	0.006694	0.0008580
Coeff. of Var. [%]	5.035	2.523	4.718	0.4265
Min.	21.18	31.90	0.1297	0.1993
Max.	25.46	34.90	0.1552	0.2024
Number of Spec.	32	32	32	32

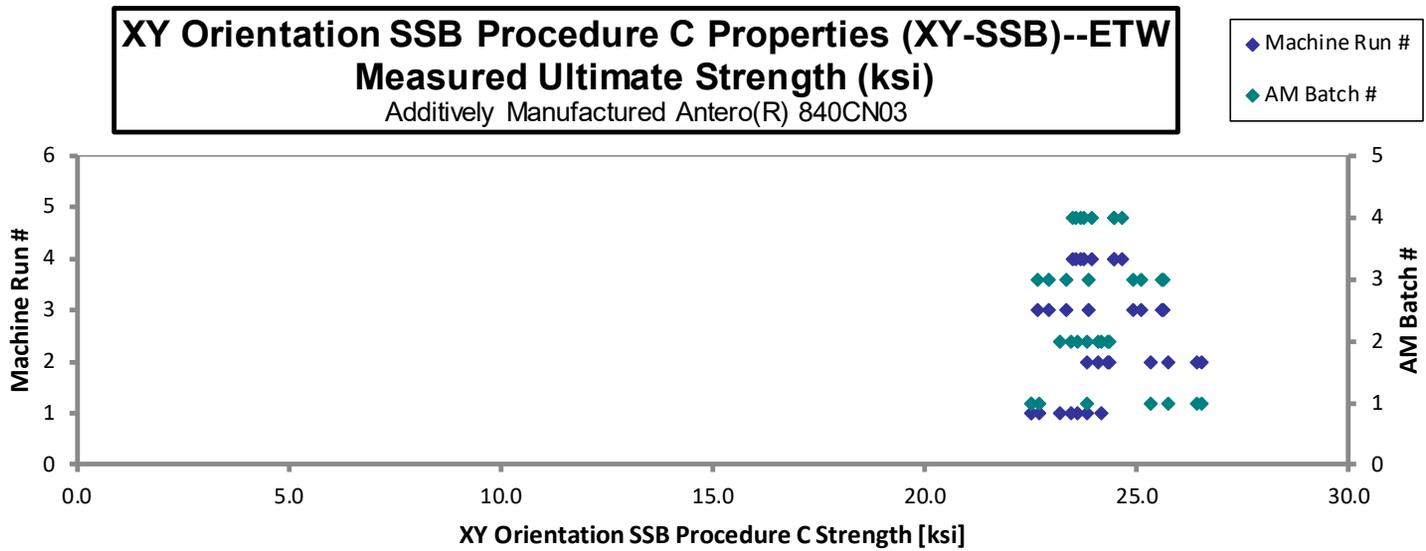
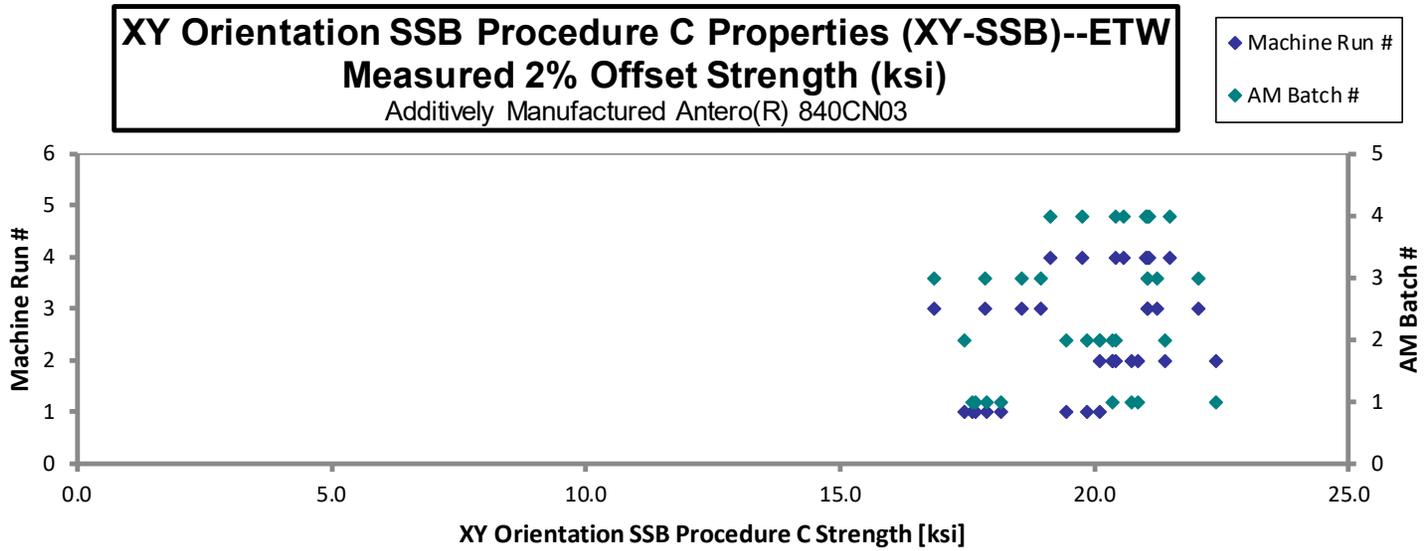




XY Orientation SSB Procedure C Properties (XY-SSB)--ETW Strength Additively Manufactured Antero(R) 840CN03
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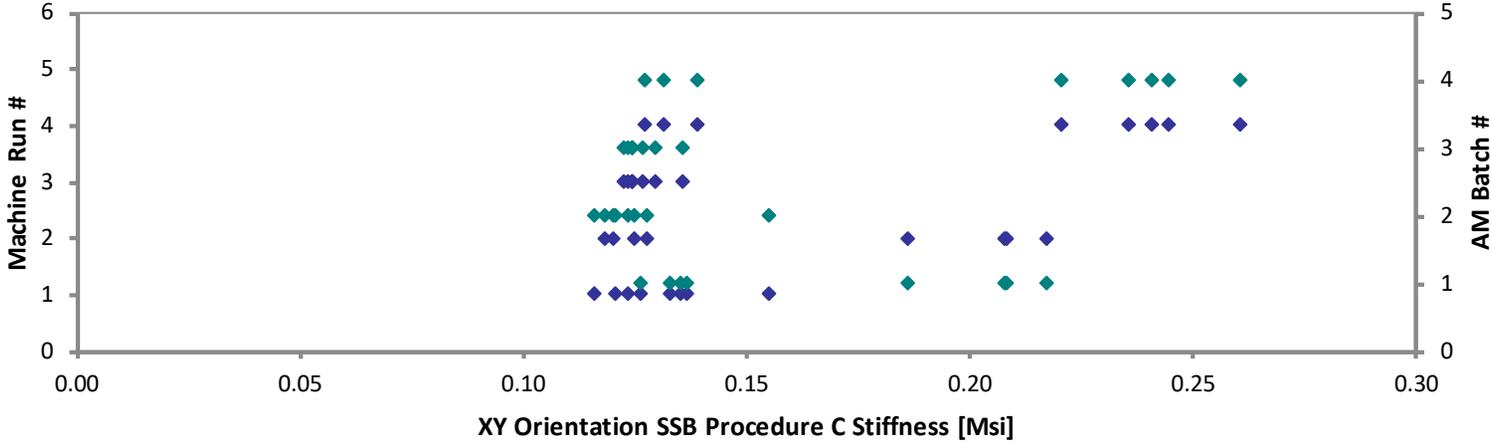
Specimen Number	AM Batch #	Machine Run #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Bearing Stiffness [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-SSB-11-ETW-1	1	1	17.60	23.82	0.1363	0.2024	B1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-SSB-12-ETW-2	1	1	17.66	22.71	0.1328	0.2037	B1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-SSB-14-ETW-3	1	1	18.17	22.50	0.1262	0.2038	B1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-SSB-15-ETW-4	1	1	17.87	22.52	0.1350	0.2029	B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-SSB-11-ETW-1	1	2	20.36	26.44	0.2081	0.2027	B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-SSB-12-ETW-2	1	2	20.87	25.75	0.1859	0.2035	B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-SSB-14-ETW-3	1	2	22.40	26.55	0.2172	0.2034	B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-SSB-15-ETW-4	1	2	20.74	25.32	0.2076	0.2035	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-SSB-11-ETW-1	2	1	20.10	24.17	0.1233	0.2021	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-SSB-12-ETW-2	2	1	19.45	23.20	0.1204	0.2028	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-SSB-14-ETW-3	2	1	19.87	23.60	0.1158	0.2024	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-SSB-15-ETW-4	2	1	17.43	23.46	0.1548	0.2025	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-SSB-11-ETW-1	2	2	20.43	24.30	0.1275	0.2000	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-SSB-13-ETW-2	2	2	21.38	24.35	0.1199	0.2003	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-SSB-14-ETW-3	2	2	20.12	23.84	0.1247	0.2006	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-SSB-15-ETW-4	2	2	20.36	24.08	0.1183	0.2005	B1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-SSB-11-ETW-1	3	3	18.57	23.85	0.1295	0.2034	B1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-SSB-12-ETW-2	3	3	16.86	22.91	0.1354	0.2019	B1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-SSB-14-ETW-3	3	3	18.96	23.35	0.1225	0.2020	B1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-SSB-15-ETW-4	3	3	17.85	22.65	0.1242	0.2021	B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-SSB-11-ETW-1	3	3	21.04	25.64	0.1268	0.1987	B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-SSB-12-ETW-2	3	3	22.06	25.59	0.1233	0.1989	B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-SSB-14-ETW-3	3	3	21.04	24.94	0.1241	0.1989	B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-SSB-15-ETW-4	3	3	21.23	25.09	0.1244	0.1991	B1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-SSB-11-ETW-1	4	4	19.76	24.65	0.1391	0.2004	B1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-SSB-12-ETW-2	4	4	21.05	24.45	0.2605	0.2017	M(B,L)1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-SSB-14-ETW-3	4	4	19.14	23.95	0.1269	0.2022	B1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-SSB-15-ETW-4	4	4	20.42	24.48	0.1315	0.2006	B1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-SSB-11-ETW-1	4	4	20.57	23.48	0.2406	0.1997	B1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-SSB-13-ETW-2	4	4	21.48	23.75	0.2207	0.1997	M(B,L)1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-SSB-14-ETW-3	4	4	21.02	23.69	0.2445	0.2001	B1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-SSB-15-ETW-4	4	4	21.08	23.55	0.2357	0.2011	B1I

Average	19.90	24.15	0.1551	0.2015
Standard Dev.	1.476	1.082	0.04618	0.001584
Coeff. of Var. [%]	7.414	4.482	29.77	0.7860
Min.	16.86	22.50	0.1158	0.1987
Max.	22.40	26.55	0.2605	0.2038
Number of Spec.	32	32	32	32



XY Orientation SSB Procedure C Properties (XY-SSB)--ETW
Measured Stiffness (Msi)
Additively Manufactured Antero(R) 840CN03

- ◆ Machine Run #
- ◆ AM Batch #



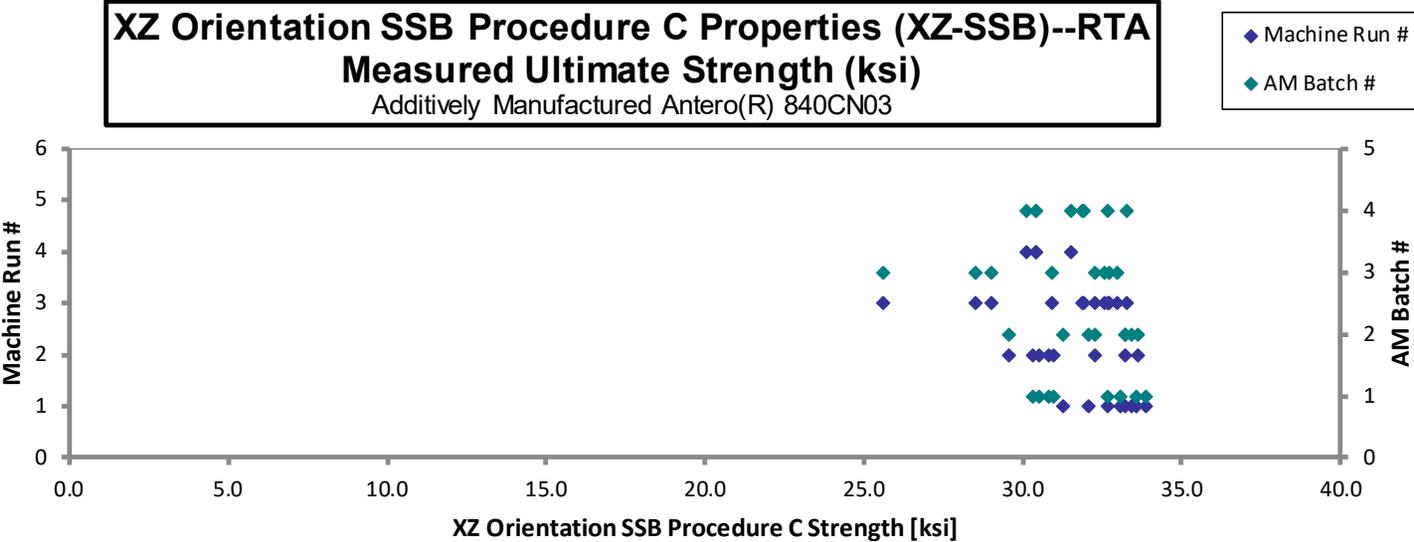
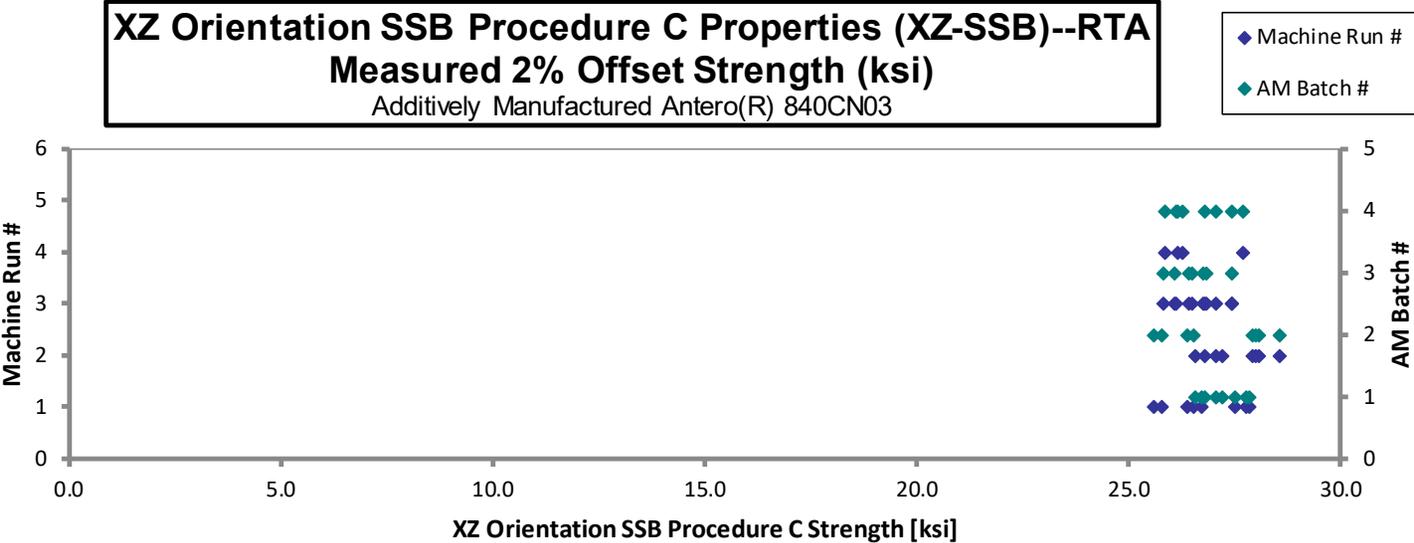
4.26 XZ Single-Shear Bearing Properties (XZ-SSB)

**XZ Orientation SSB Procedure C Properties (XZ-SSB)--RTA
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Bearing Stiffness [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-SSB-11-RTA-1	1	1	27.79	33.87	0.1639	0.1973	C1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-SSB-12-RTA-2	1	1	27.83	32.66	0.1655	0.1989	C1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-SSB-14-RTA-3	1	1	26.71	33.10	0.1691	0.1997	C1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-SSB-15-RTA-4	1	1	27.52	33.60	0.1650	0.1992	C1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-SSB-11-RTA-1	1	2	27.08	30.96	0.1664	0.2005	C1I, B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-SSB-13-RTA-2	1	2	27.22	30.30	0.1661	0.2006	C1I, B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-SSB-14-RTA-3	1	2	26.56	30.82	0.1724	0.1997	C1I, B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-SSB-15-RTA-4	1	2	26.79	30.52	0.1669	0.2015	C1I, B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-SSB-11-RTA-1	2	1	25.80	33.41	0.1604	0.1950	C1I, B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-SSB-12-RTA-2	2	1	26.38	33.24	0.1631	0.1971	C1I, B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-SSB-14-RTA-3	2	1	25.61	32.07	0.1653	0.1957	C1I, B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-SSB-15-RTA-4	2	1	26.53	31.25	0.1573	0.1967	L1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-SSB-11-RTA-1	2	2	27.99	29.59	0.1710	0.1979	C1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-SSB-13-RTA-2	2	2	28.57	33.25	0.1634	0.1984	C1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-SSB-14-RTA-3	2	2	27.91	32.29	0.1613	0.1979	C1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-SSB-15-RTA-4	2	2	28.06	33.61	0.1635	0.1979	C1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-SSB-11-RTA-1	3	3	26.76	32.95	0.1700	0.1986	M(C,L)1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-SSB-12-RTA-2*	3	3		25.62	0.1633	0.1980	M(C,L)1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-SSB-14-RTA-3	3	3	25.80	28.99	0.1809	0.1988	M(C,L)1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-SSB-15-RTA-4	3	3	26.50	32.25	0.1743	0.1981	M(C,L)1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-SSB-11-RTA-1	3	3	27.42	32.58	0.1686	0.2004	C1I, B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-SSB-12-RTA-2	3	3	26.83	32.74	0.1672	0.2009	C1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-SSB-14-RTA-3	3	3	26.42	30.91	0.1596	0.1999	C1I, B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-SSB-15-RTA-4	3	3	26.10	28.52	0.1661	0.2002	C1I, B1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-SSB-11-RTA-1	4	3	27.07	32.68	0.1667	0.2002	C1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-SSB-12-RTA-2	4	3	27.45	33.30	0.1639	0.2003	C1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-SSB-14-RTA-3	4	3	26.81	31.90	0.1777	0.2003	C1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-SSB-15-RTA-4	4	3	26.13	31.87	0.1637	0.2005	C1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-SSB-11-RTA-1	4	4	25.86	30.43	0.1612	0.1988	C1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-SSB-13-RTA-2	4	4	26.15	30.40	0.1600	0.1984	C1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-SSB-14-RTA-3	4	4	27.69	31.53	0.1644	0.1981	C1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-SSB-15-RTA-4	4	4	26.27	30.14	0.1614	0.1983	C1I

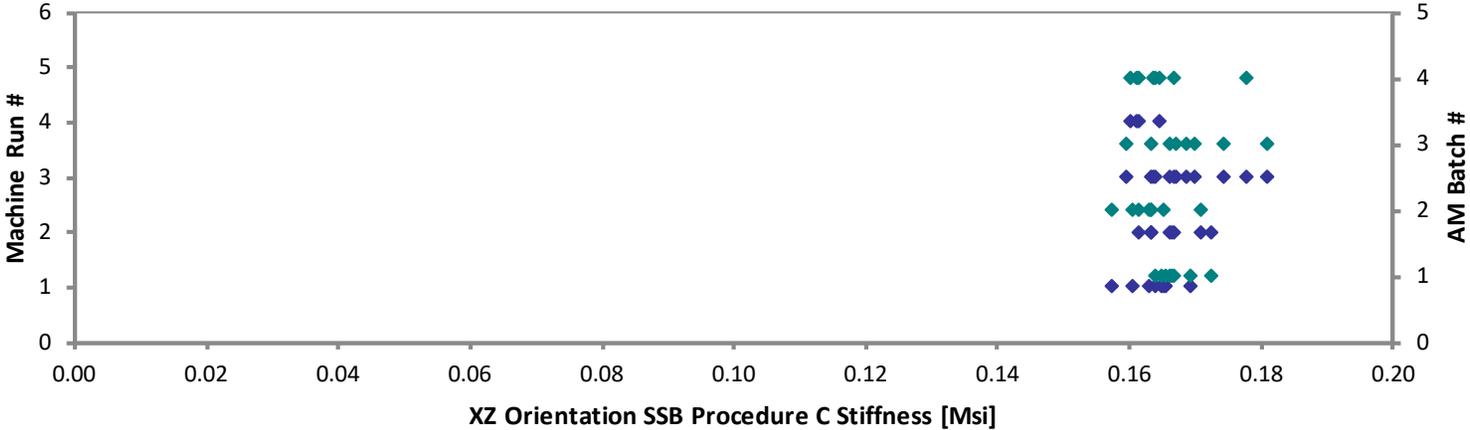
*2% Offset Strength is not reported as ultimate strength is achieved prior to that

Average	26.89	31.60	0.1659	0.1989
Standard Dev.	0.7762	1.798	0.005163	0.001531
Coeff. of Var. [%]	2.886	5.690	3.112	0.7699
Min.	25.61	25.62	0.1573	0.1950
Max.	28.57	33.87	0.1809	0.2015
Number of Spec.	31	32	32	32



XZ Orientation SSB Procedure C Properties (XZ-SSB)--RTA
Measured Stiffness (Msi)
Additively Manufactured Antero(R) 840CN03

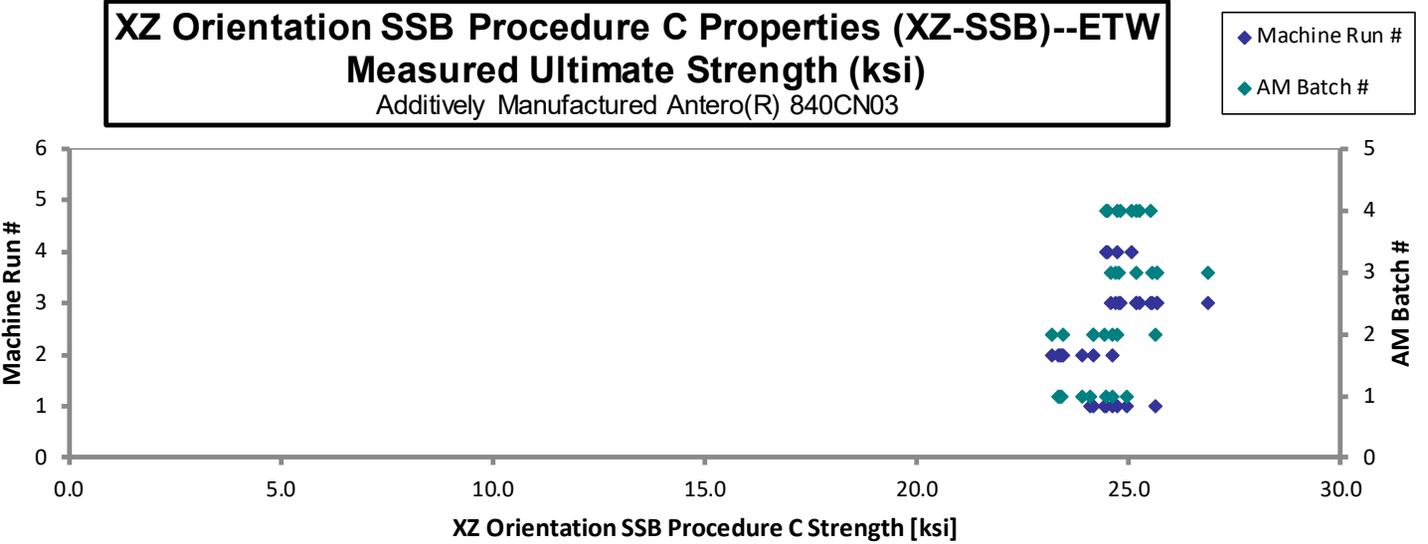
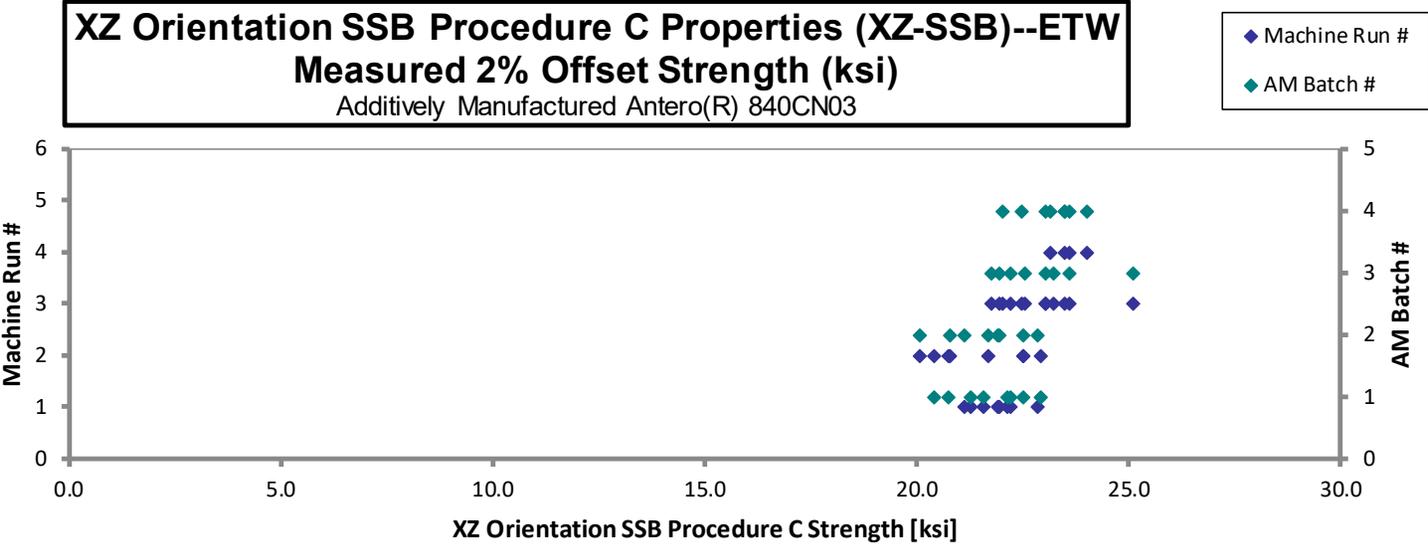
- ◆ Machine Run #
- ◆ AM Batch #



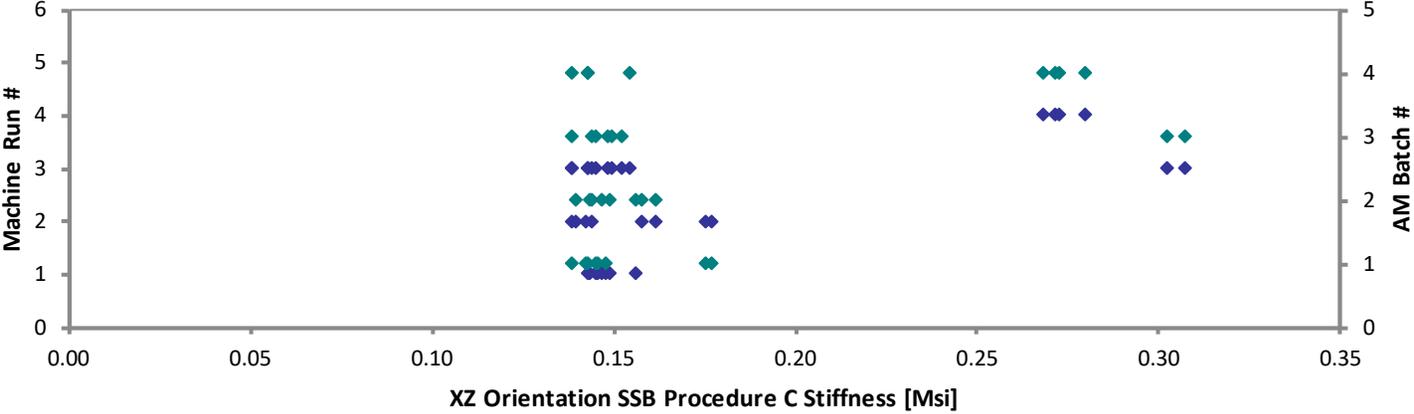
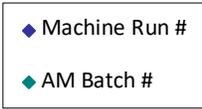
**XZ Orientation SSB Procedure C Properties (XZ-SSB)--ETW
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Bearing Stiffness [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-SSB-11-ETW-1	1	1	21.26	24.08	0.1425	0.1994	M(B,C)11
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-SSB-12-ETW-2	1	1	21.59	24.48	0.1477	0.1994	M(B,C,L)11
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-SSB-14-ETW-3	1	1	22.20	24.97	0.1449	0.1992	M(B,C)11
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-SSB-15-ETW-4	1	1	22.13	24.62	0.1457	0.1997	M(B,C)11
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-SSB-11-ETW-1	1	2	22.53	23.40	0.1420	0.2000	M(C,L)11
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-SSB-12-ETW-2	1	2	22.94	23.43	0.1381	0.2005	M(C,L)11
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-SSB-14-ETW-3	1	2	20.41	23.33	0.1752	0.1991	M(C,L)11
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-SSB-15-ETW-4	1	2	20.76	23.89	0.1771	0.2017	M(C,L)11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-SSB-11-ETW-1	2	1	22.86	25.62	0.1467	0.1983	M(B,C,L)11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-SSB-12-ETW-2	2	1	21.90	24.72	0.1559	0.1986	M(B,C,L)11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-SSB-14-ETW-3	2	1	21.11	24.15	0.1487	0.1991	M(B,C,L)11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-SSB-15-ETW-4	2	1	21.96	24.43	0.1434	0.1989	M(B,C,L)11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-SSB-11-ETW-1	2	2	22.51	24.16	0.1396	0.1963	M(C,L)11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-SSB-13-ETW-2	2	2	20.80	23.18	0.1439	0.1975	M(C,L)11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-SSB-14-ETW-3	2	2	21.68	24.61	0.1615	0.1970	M(C,L)11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-SSB-15-ETW-4	2	2	20.07	23.45	0.1576	0.1971	M(B,C)11
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-SSB-11-ETW-1	3	3	23.05	25.20	0.1383	0.1994	M(B,C,L)11
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-SSB-12-ETW-2	3	3	21.75	24.59	0.1493	0.1989	M(B,C)11
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-SSB-14-ETW-3	3	3	22.21	24.78	0.1438	0.1988	M(B,C,L)11
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-SSB-15-ETW-4	3	3	21.96	24.70	0.1521	0.1991	M(B,C)11
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-SSB-11-ETW-1	3	3	23.25	25.68	0.1452	0.1978	M(B,S)11
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-SSB-12-ETW-2	3	3	25.10	26.88	0.3075	0.1972	M(B,S)11
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-SSB-14-ETW-3	3	3	23.60	25.57	0.3022	0.1970	M(B,S)11
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-SSB-15-ETW-4	3	3	22.56	25.66	0.1480	0.1967	M(B,S)11
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-SSB-11-ETW-1	4	3	22.03	25.17	0.1540	0.1995	M(B,C,L)11
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-SSB-12-ETW-2	4	3	23.49	25.52	0.1428	0.1997	M(B,C,L)11
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-SSB-14-ETW-3	4	3	23.05	25.24	0.1426	0.1995	M(B,S)11
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-SSB-15-ETW-4	4	3	22.47	24.82	0.1384	0.1991	M(B,S)11
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-SSB-11-ETW-1	4	4	23.48	24.47	0.2729	0.1983	M(B,C,L)11
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-SSB-13-ETW-2	4	4	23.16	24.50	0.2682	0.1989	M(B,S)11
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-SSB-14-ETW-3	4	4	24.00	25.05	0.2798	0.1978	M(B,C,L)11
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-SSB-15-ETW-4	4	4	23.62	24.73	0.2714	0.1984	M(B,S)11

Average	22.36	24.66	0.1740	0.1987
Standard Dev.	1.105	0.8193	0.05472	0.001190
Coeff. of Var. [%]	4.944	3.322	31.45	0.5989
Min.	20.07	23.18	0.1381	0.1963
Max.	25.10	26.88	0.3075	0.2017
Number of Spec.	32	32	32	32



XZ Orientation SSB Procedure C Properties (XZ-SSB)--ETW
Measured Stiffness (Msi)
Additively Manufactured Antero(R) 840CN03



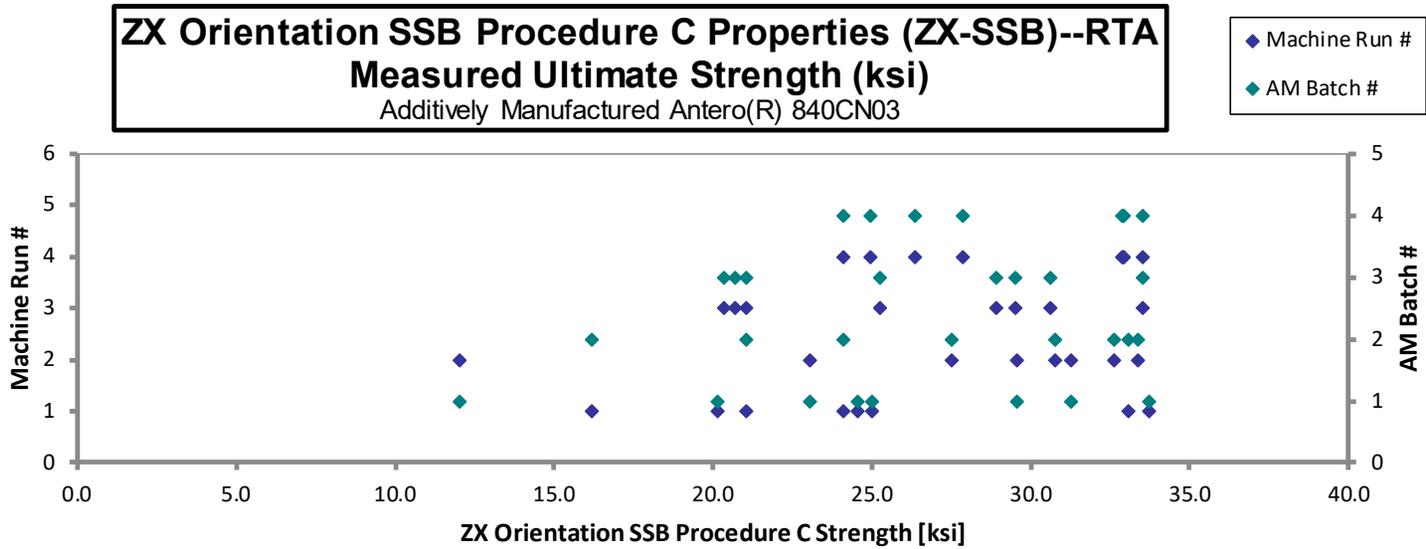
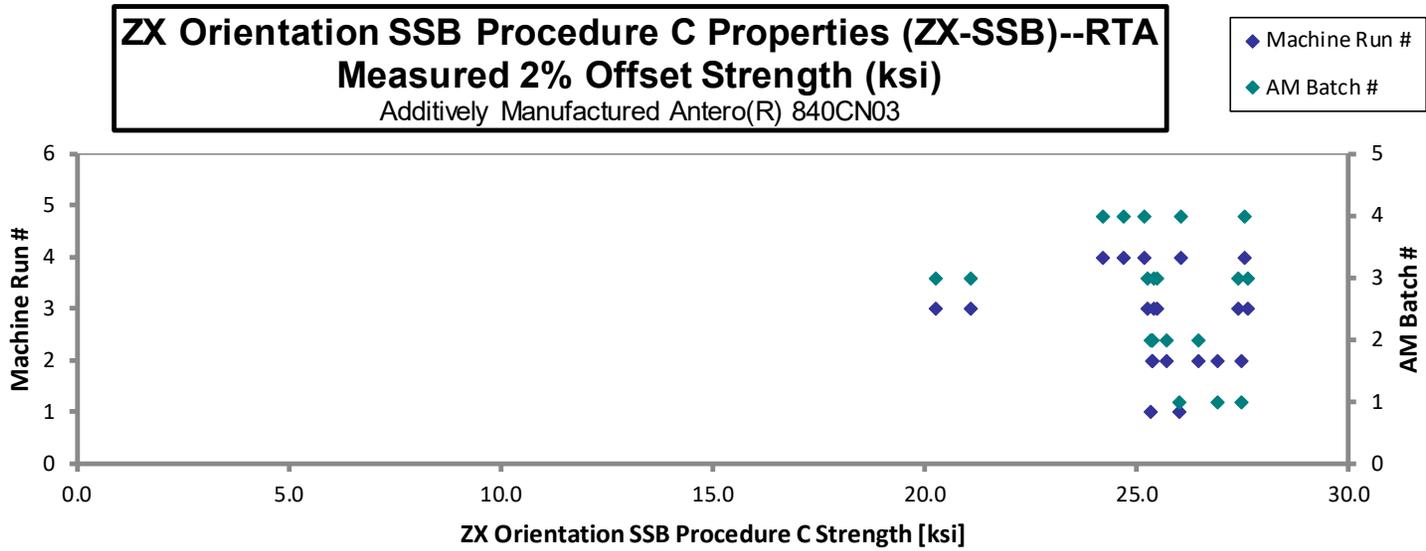
4.27 ZX Single-Shear Bearing Properties (ZX-SSB)

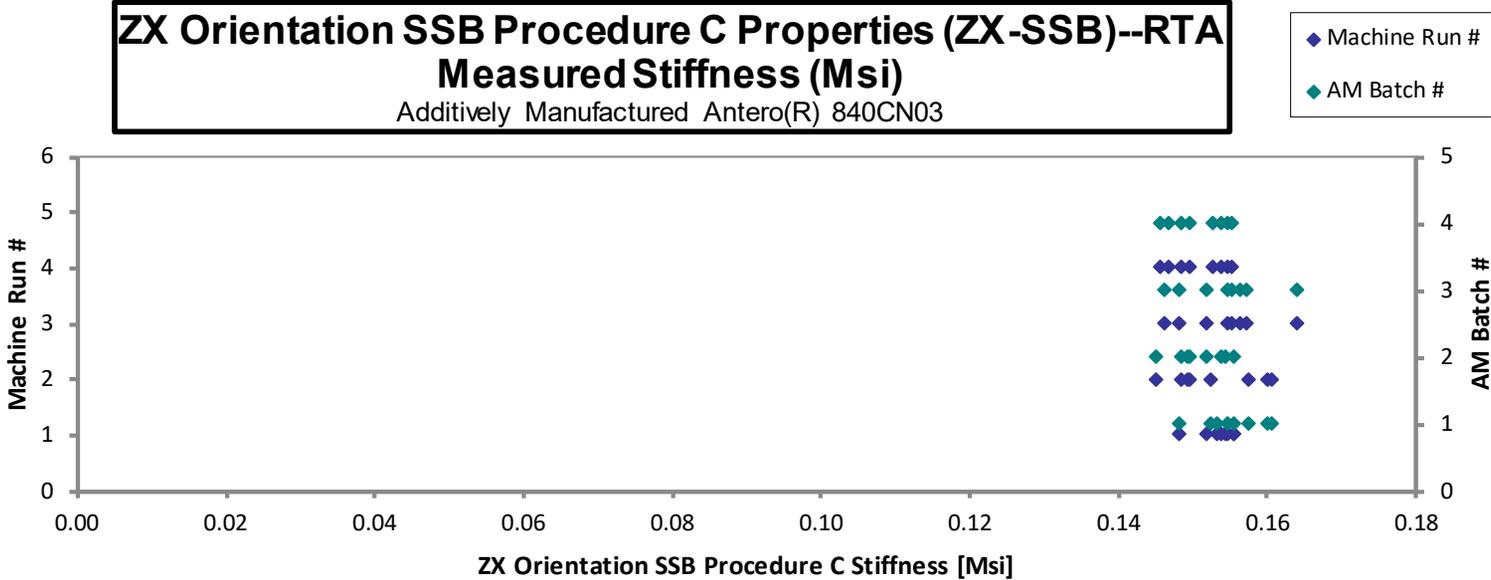
ZX Orientation SSB Procedure C Properties (ZX-SSB)--RTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Bearing Stiffness [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-SSB-11-RTA-1	1	1	26.01	33.72	0.1481	0.1988	B1I, C1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-SSB-12-RTA-2*	1	1		25.01	0.1554	0.1982	L1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-SSB-14-RTA-3*	1	1		20.12	0.1533	0.1982	L1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-SSB-15-RTA-4*	1	1		24.57	0.1545	0.1989	L1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-SSB-11-RTA-1*	1	2		12.02	0.1605	0.1990	L1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-SSB-13-RTA-2*	1	2		23.05	0.1524	0.1980	L1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-SSB-14-RTA-3*	1	2	27.47	29.58	0.1600	0.1964	L1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-SSB-15-RTA-4	1	2	26.89	31.25	0.1575	0.1986	L1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-SSB-11-RTA-1*	2	1		21.06	0.1517	0.1963	L1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-SSB-12-RTA-2*	2	1		16.17	0.1555	0.1966	L1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-SSB-14-RTA-3*	2	1		24.10	0.1544	0.1966	L1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-SSB-15-RTA-4	2	1	25.34	33.05	0.1538	0.1972	C1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-SSB-11-RTA-1	2	2	25.72	30.77	0.1495	0.1956	L1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-SSB-13-RTA-2	2	2	25.37	32.62	0.1483	0.1964	L1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-SSB-14-RTA-3	2	2	26.47	33.36	0.1491	0.1972	B1I, C1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-SSB-15-RTA-4	2	2	25.35	27.53	0.1451	0.1971	L1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-SSB-11-RTA-1	3	3	25.49	29.51	0.1463	0.2000	L1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-SSB-12-RTA-2	3	3	25.26	25.26	0.1482	0.1979	L1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-SSB-14-RTA-3	3	3	25.39	28.93	0.1553	0.1981	L1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-SSB-15-RTA-4	3	3	21.07	21.07	0.1517	0.1972	L1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-SSB-11-RTA-1	3	3	27.42	30.61	0.1547	0.2008	L1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-SSB-12-RTA-2	3	3	20.26	20.32	0.1640	0.1987	L1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-SSB-14-RTA-3	3	3	27.64	33.55	0.1563	0.2001	L1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-SSB-15-RTA-4*	3	3		20.69	0.1571	0.1999	L1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-SSB-11-RTA-1*	4	4		24.10	0.1547	0.1986	L1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-SSB-12-RTA-2	4	4	27.54	27.85	0.1538	0.1975	L1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-SSB-14-RTA-3*	4	4		24.98	0.1551	0.1977	L1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-SSB-15-RTA-4*	4	4		26.36	0.1467	0.1976	L1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-SSB-11-RTA-1	4	4	24.19	32.85	0.1526	0.1988	C1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-SSB-13-RTA-2	4	4	25.19	32.93	0.1457	0.1983	C1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-SSB-14-RTA-3	4	4	24.70	32.91	0.1483	0.1985	C1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-SSB-15-RTA-4	4	4	26.03	33.54	0.1496	0.1985	C1I

*2% Offset Strength is not reported as ultimate strength is achieved prior to that

Average	25.44	26.98	0.1528	0.1980
Standard Dev.	1.911	5.681	0.004551	0.001212
Coeff. of Var. [%]	7.510	21.05	2.979	0.6119
Min.	20.26	12.02	0.1451	0.1956
Max.	27.64	33.72	0.1640	0.2008
Number of Spec.	20	32	32	32

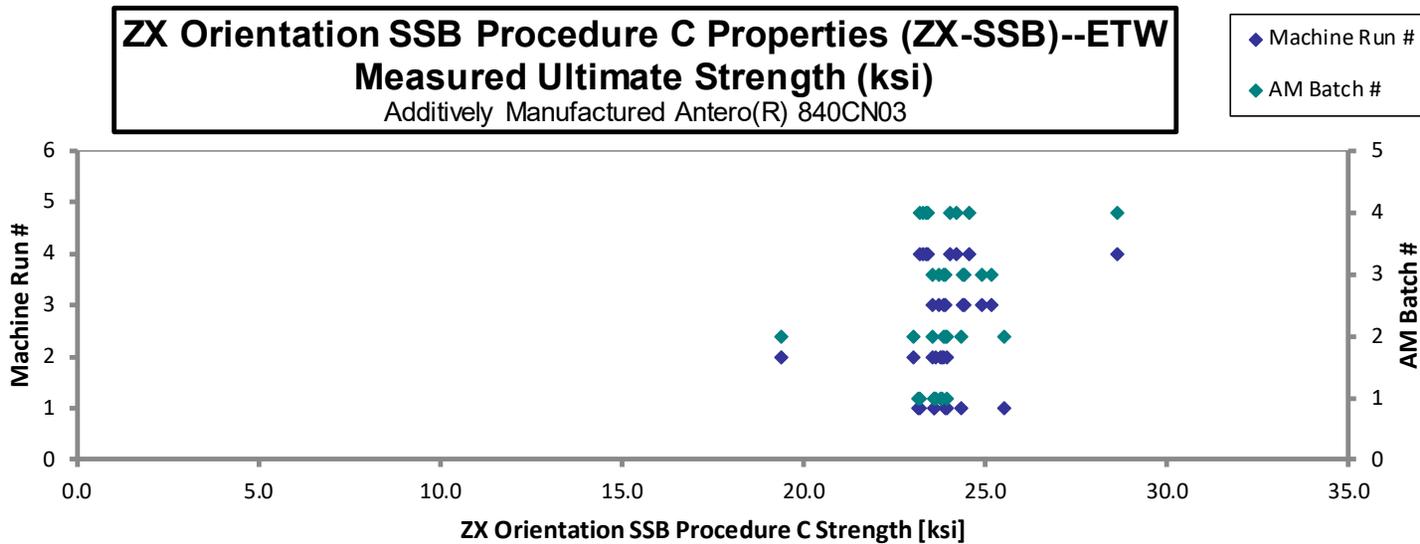
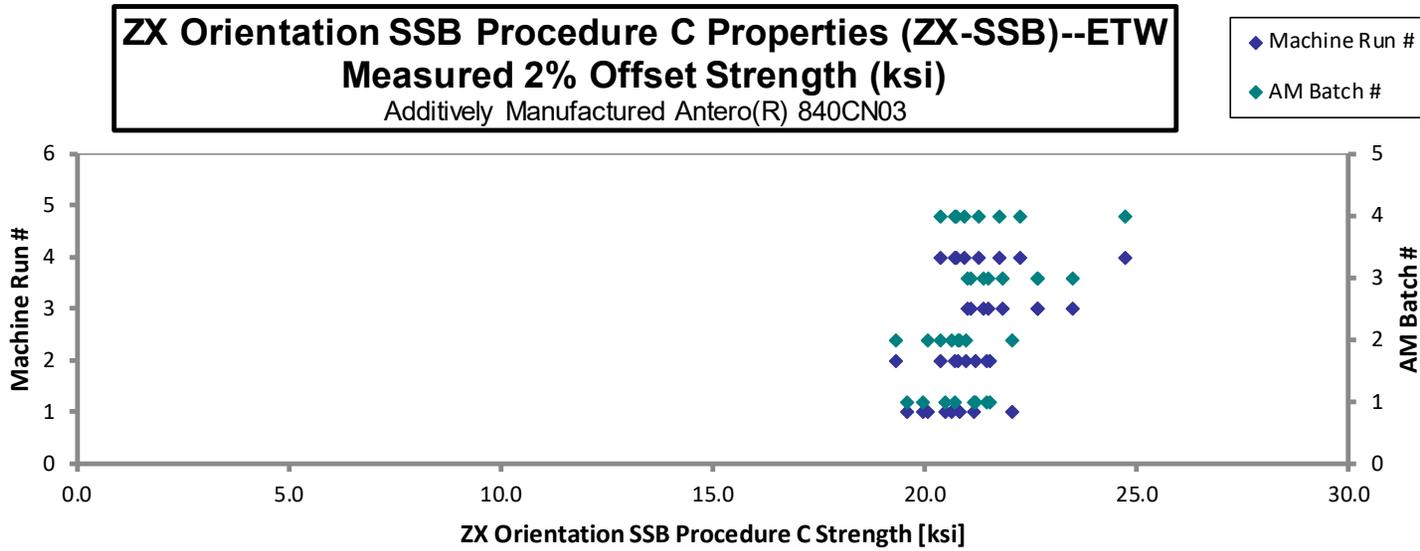




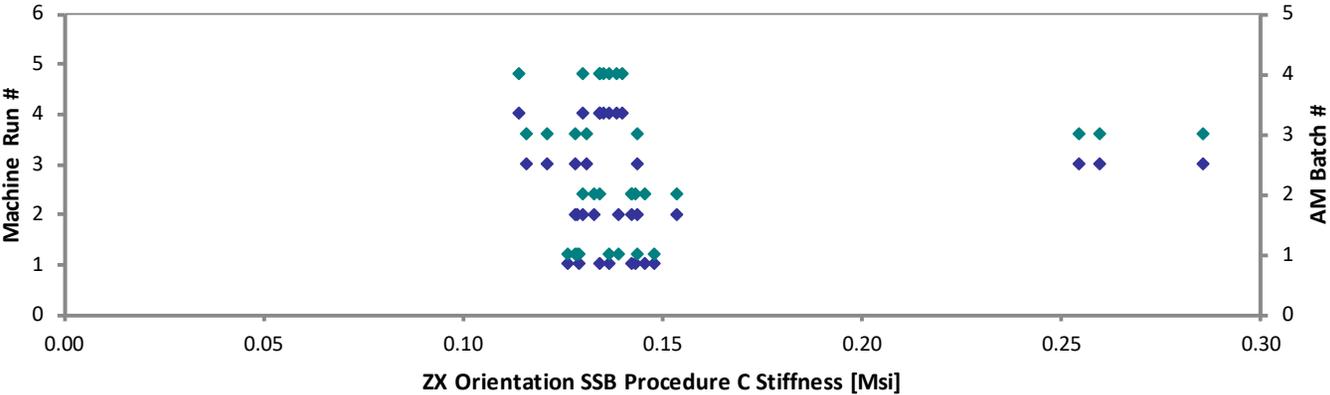
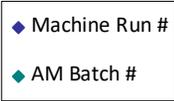
**ZX Orientation SSB Procedure C Properties (ZX-SSB)--ETW
Strength**
Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Bearing Stiffness [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-SSB-11-ETW-1	1	1	20.50	23.19	0.1291	0.1992	B1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-SSB-12-ETW-2	1	1	19.96	23.13	0.1363	0.1979	B1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-SSB-14-ETW-3	1	1	19.60	23.60	0.1480	0.1984	B1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-SSB-15-ETW-4	1	1	21.14	23.58	0.1262	0.1975	M(B,L)1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-SSB-11-ETW-1	1	2	20.69	23.62	0.1391	0.2010	B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-SSB-12-ETW-2	1	2	21.19	23.92	0.1438	0.1992	B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-SSB-14-ETW-3	1	2	21.55	23.83	0.1283	0.1973	M(B,L)1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-SSB-15-ETW-4	1	2	21.47	23.76	0.1278	0.2016	M(B,L)1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-SSB-11-ETW-1	2	1	22.08	25.53	0.1453	0.1950	M(B,L)1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-SSB-12-ETW-2	2	1	20.08	23.93	0.1423	0.1977	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-SSB-14-ETW-3	2	1	20.64	24.33	0.1430	0.1971	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-SSB-15-ETW-4	2	1	20.82	23.88	0.1341	0.1974	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-SSB-11-ETW-1	2	2	20.77	23.86	0.1420	0.1981	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-SSB-13-ETW-2	2	2	19.33	19.37	0.1533	0.1980	L1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-SSB-14-ETW-3	2	2	20.98	23.53	0.1299	0.1977	L1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-SSB-15-ETW-4	2	2	20.39	23.01	0.1327	0.1983	L1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-SSB-11-ETW-1	3	3	21.00	23.71	0.1309	0.1996	B1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-SSB-12-ETW-2	3	3	21.51	23.90	0.1159	0.1983	L1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-SSB-14-ETW-3	3	3	21.07	23.54	0.1278	0.1994	B1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-SSB-15-ETW-4	3	3	21.84	23.87	0.1211	0.1979	L1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-SSB-11-ETW-1	3	3	21.40	24.36	0.1437	0.1988	B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-SSB-12-ETW-2	3	3	22.66	25.18	0.2856	0.1979	B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-SSB-14-ETW-3	3	3	23.48	24.89	0.2542	0.1984	M(B,L)1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-SSB-15-ETW-4	3	3	22.68	24.41	0.2596	0.1987	M(B,L)1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-SSB-11-ETW-1	4	4	22.25	24.54	0.1343	0.1985	B1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-SSB-12-ETW-2	4	4	20.94	24.02	0.1384	0.1985	M(B,L)1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-SSB-14-ETW-3	4	4	21.74	24.20	0.1349	0.1973	B1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-SSB-15-ETW-4	4	4	24.72	28.63	0.1400	0.1983	M(B,L,C)1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-SSB-11-ETW-1	4	4	21.27	23.20	0.1139	0.1991	B1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-SSB-13-ETW-2	4	4	20.74	23.27	0.1299	0.1990	B1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-SSB-14-ETW-3	4	4	20.72	23.35	0.1364	0.1983	B1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-SSB-15-ETW-4	4	4	20.35	23.40	0.1342	0.1985	M(B,L)1I

Average	21.24	23.89	0.1469	0.1984
Standard Dev.	1.094	1.311	0.04024	0.001144
Coeff. of Var. [%]	5.150	5.485	27.39	0.5770
Min.	19.33	19.37	0.1139	0.1950
Max.	24.72	28.63	0.2856	0.2016
Number of Spec.	32	32	32	32



ZX Orientation SSB Procedure C Properties (ZX-SSB)--ETW
Measured Stiffness (Msi)
Additively Manufactured Antero(R) 840CN03

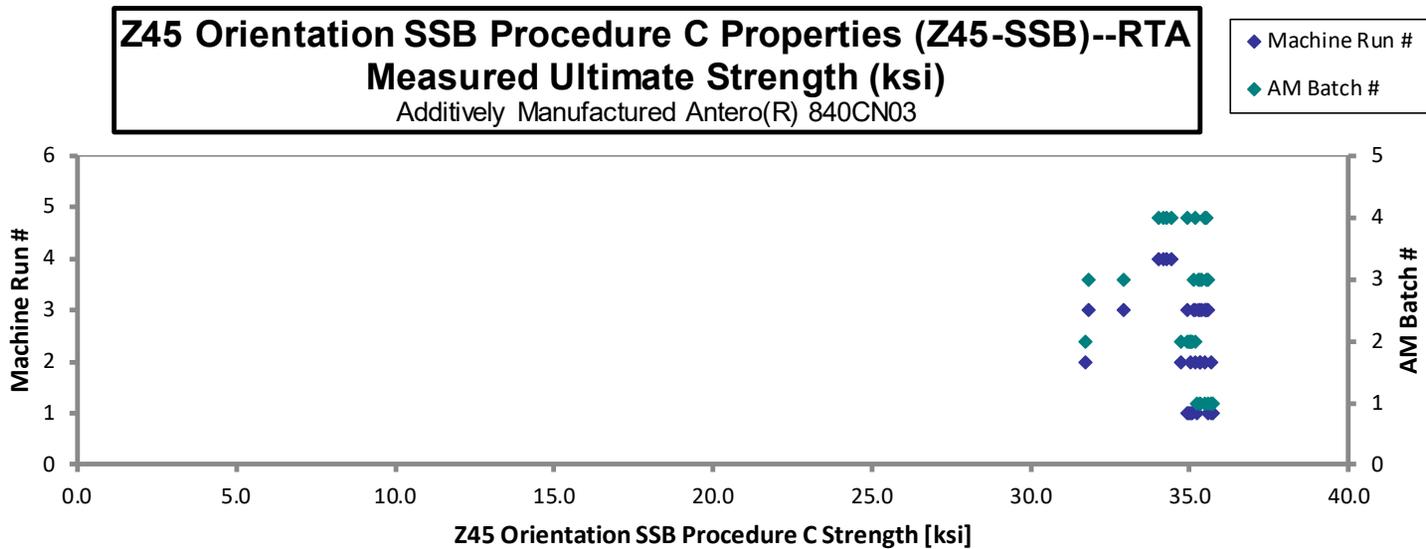
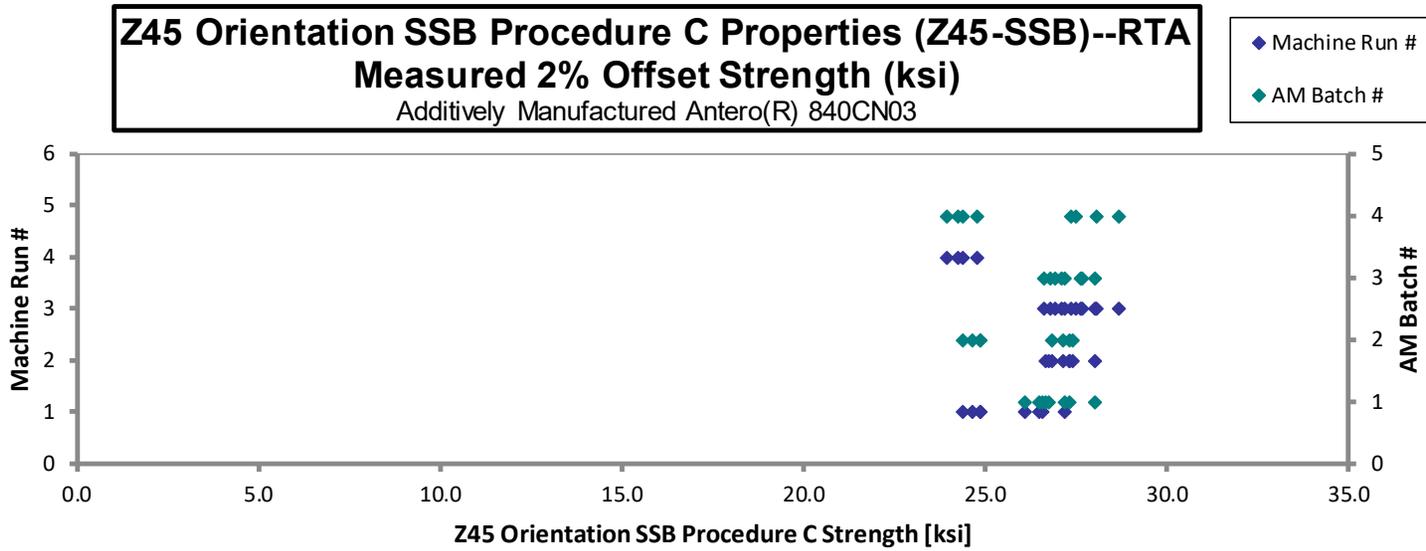


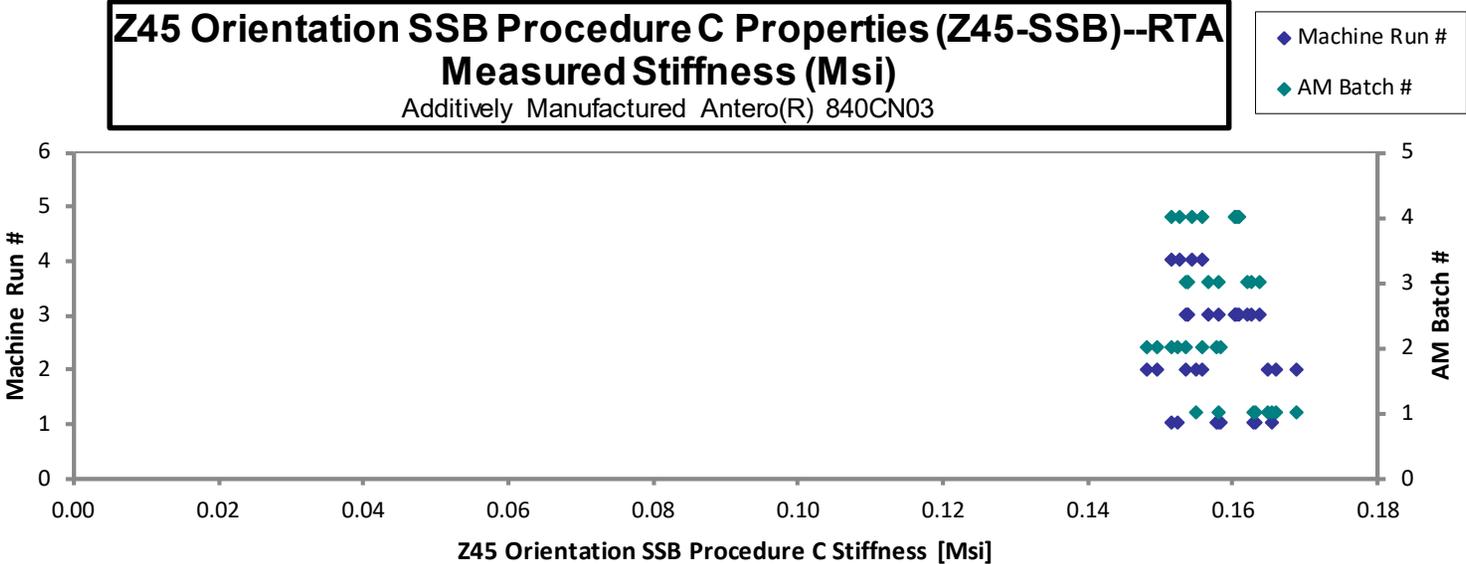
4.28 Z45 Single-Shear Bearing Properties (Z45-SSB)

Z45 Orientation SSB Procedure C Properties (Z45-SSB)--RTA
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Bearing Stiffness [ksi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-SSB-11-RTA-1	1	1	26.10	35.23	0.1580	0.1949	B11
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-SSB-12-RTA-2	1	1	26.58	35.56	0.1628	0.1948	B11
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-SSB-14-RTA-3	1	1	26.47	35.68	0.1655	0.1947	B11
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-SSB-15-RTA-4	1	1	27.17	35.73	0.1630	0.1950	B11
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-SSB-11-RTA-1	1	2	26.73	35.47	0.1660	0.1986	B11
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-SSB-13-RTA-2	1	2	27.33	35.70	0.1647	0.1991	B11
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-SSB-14-RTA-3	1	2	28.00	35.34	0.1549	0.1987	B11
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-SSB-15-RTA-4	1	2	26.67	35.31	0.1688	0.1974	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-SSB-11-RTA-1	2	1	24.62	34.95	0.1515	0.1971	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-SSB-12-RTA-2	2	1	24.88	35.10	0.1577	0.1975	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-SSB-14-RTA-3	2	1	24.36	34.97	0.1584	0.1969	B11, L11
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-SSB-15-RTA-4	2	1	24.87	35.03	0.1523	0.1974	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-SSB-11-RTA-1	2	2	27.40	35.19	0.1559	0.1962	B11, L11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-SSB-13-RTA-2	2	2	27.33	35.04	0.1494	0.1969	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-SSB-14-RTA-3	2	2	26.85	34.74	0.1481	0.1965	B11
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-SSB-15-RTA-4	2	2	27.14	31.70	0.1536	0.1966	B11, L11
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-SSB-11-RTA-1	3	3	26.60	35.38	0.1579	0.1985	B11
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-SSB-12-RTA-2	3	3	26.81	35.29	0.1539	0.1976	B11
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-SSB-14-RTA-3	3	3	27.08	35.13	0.1535	0.1977	B11
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-SSB-15-RTA-4	3	3	26.94	35.35	0.1537	0.1974	B11
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-SSB-11-RTA-1	3	3	28.02	35.59	0.1619	0.1987	C11, B11
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-SSB-12-RTA-2	3	3	27.64	35.52	0.1638	0.1992	B11
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-SSB-14-RTA-3	3	3	27.20	32.90	0.1626	0.1993	L11
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-SSB-15-RTA-4	3	3	27.69	31.81	0.1568	0.1994	L11
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-SSB-11-RTA-1	4	3	27.35	34.94	0.1604	0.1969	B11
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-SSB-12-RTA-2	4	3	28.04	35.18	0.1610	0.1971	B11
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-SSB-14-RTA-3	4	3	27.51	35.50	0.1607	0.1975	B11
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-SSB-15-RTA-4	4	3	28.69	35.53	0.1603	0.1976	B11
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-SSB-11-RTA-1	4	4	24.37	34.01	0.1544	0.1985	B11
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-SSB-13-RTA-2	4	4	23.95	34.28	0.1559	0.1979	B11
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-SSB-14-RTA-3	4	4	24.25	34.16	0.1526	0.1978	B11
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-SSB-15-RTA-4	4	4	24.80	34.45	0.1514	0.1963	B11

Average	26.55	34.87	0.1579	0.1974
Standard Dev.	1.309	1.006	0.005248	0.001306
Coeff. of Var. [%]	4.932	2.886	3.325	0.6619
Min.	23.95	31.70	0.1481	0.1947
Max.	28.69	35.73	0.1688	0.1994
Number of Spec.	32	32	32	32

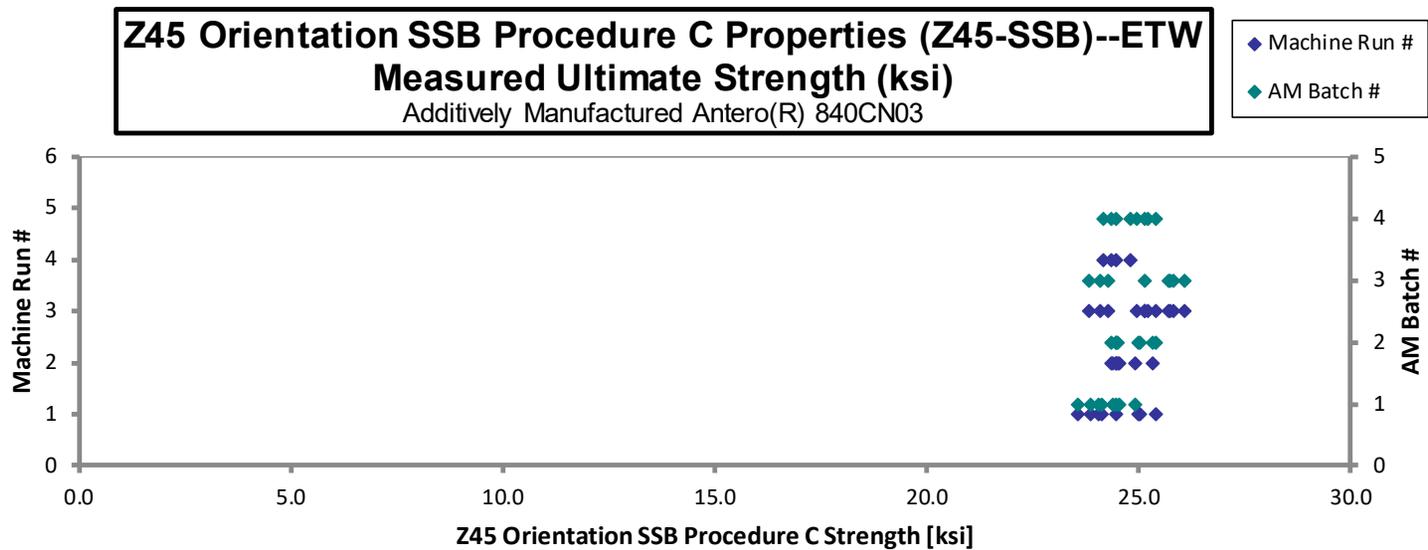
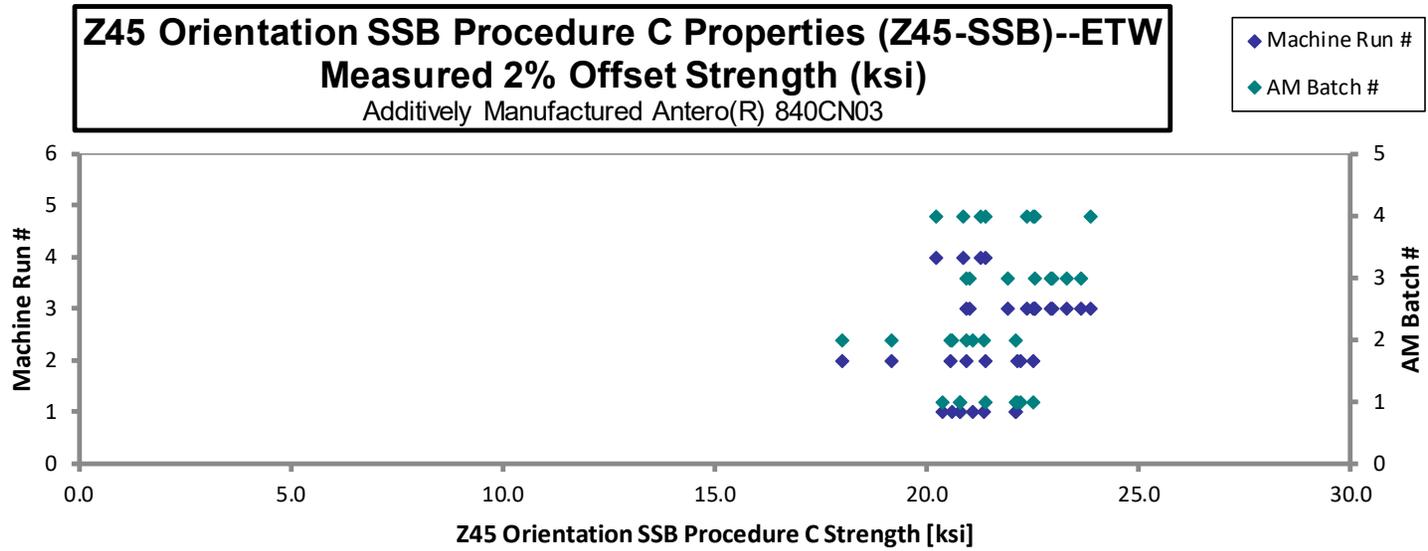




Z45 Orientation SSB Procedure C Properties (Z45-SSB)--ETW
Strength
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Bearing Stiffness [Msi]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-SSB-11-ETW-1	1	1	20.38	23.55	0.1371	0.1977	B1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-SSB-12-ETW-2	1	1	20.77	23.88	0.1394	0.1980	B1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-SSB-14-ETW-3	1	1	22.08	24.12	0.1280	0.1980	B1I
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-SSB-15-ETW-4	1	1	20.79	24.05	0.1335	0.1977	B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-SSB-11-ETW-1	1	2	21.39	24.39	0.1432	0.1980	B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-SSB-12-ETW-2	1	2	22.13	24.46	0.1409	0.1978	B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-SSB-14-ETW-3	1	2	22.53	24.56	0.1328	0.1971	B1I
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-SSB-15-ETW-4	1	2	22.21	24.91	0.1395	0.1977	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-SSB-11-ETW-1	2	1	22.12	25.39	0.1307	0.1956	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-SSB-12-ETW-2	2	1	21.36	25.02	0.1376	0.1953	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-SSB-14-ETW-3	2	1	20.58	25.00	0.1363	0.1962	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-SSB-15-ETW-4	2	1	21.10	24.47	0.1341	0.1955	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-SSB-11-ETW-1	2	2	20.57	24.52	0.1385	0.1954	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-SSB-13-ETW-2	2	2	17.99	24.46	0.1456	0.1954	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-SSB-14-ETW-3	2	2	20.93	25.34	0.1418	0.1955	B1I
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-SSB-15-ETW-4	2	2	19.16	24.34	0.1446	0.1952	B1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-SSB-11-ETW-1	3	3	22.92	25.14	0.1327	0.1972	B1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-SSB-12-ETW-2	3	3	21.00	24.28	0.1208	0.1969	B1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-SSB-14-ETW-3	3	3	21.91	24.10	0.1306	0.1975	B1I
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-SSB-15-ETW-4	3	3	20.94	23.83	0.1364	0.1966	B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-SSB-11-ETW-1	3	3	22.54	25.73	0.1448	0.1944	B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-SSB-12-ETW-2	3	3	23.32	25.81	0.1374	0.1952	B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-SSB-14-ETW-3	3	3	23.63	26.09	0.1417	0.1953	B1I
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-SSB-15-ETW-4	3	3	22.95	25.71	0.1363	0.1942	B1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-SSB-11-ETW-1	4	3	23.88	25.41	0.2696	0.1982	M(B,S)1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-SSB-12-ETW-2	4	3	22.50	25.15	0.1334	0.1979	B1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-SSB-14-ETW-3	4	3	22.56	25.22	0.1378	0.1973	B1I
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-SSB-15-ETW-4	4	3	22.35	24.97	0.1402	0.1974	B1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-SSB-11-ETW-1	4	4	20.23	24.18	0.1309	0.1979	B1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-SSB-13-ETW-2	4	4	21.26	24.81	0.1318	0.1968	B1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-SSB-14-ETW-3	4	4	20.87	24.46	0.1409	0.1971	B1I
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-SSB-15-ETW-4	4	4	21.38	24.36	0.1299	0.1983	B1I

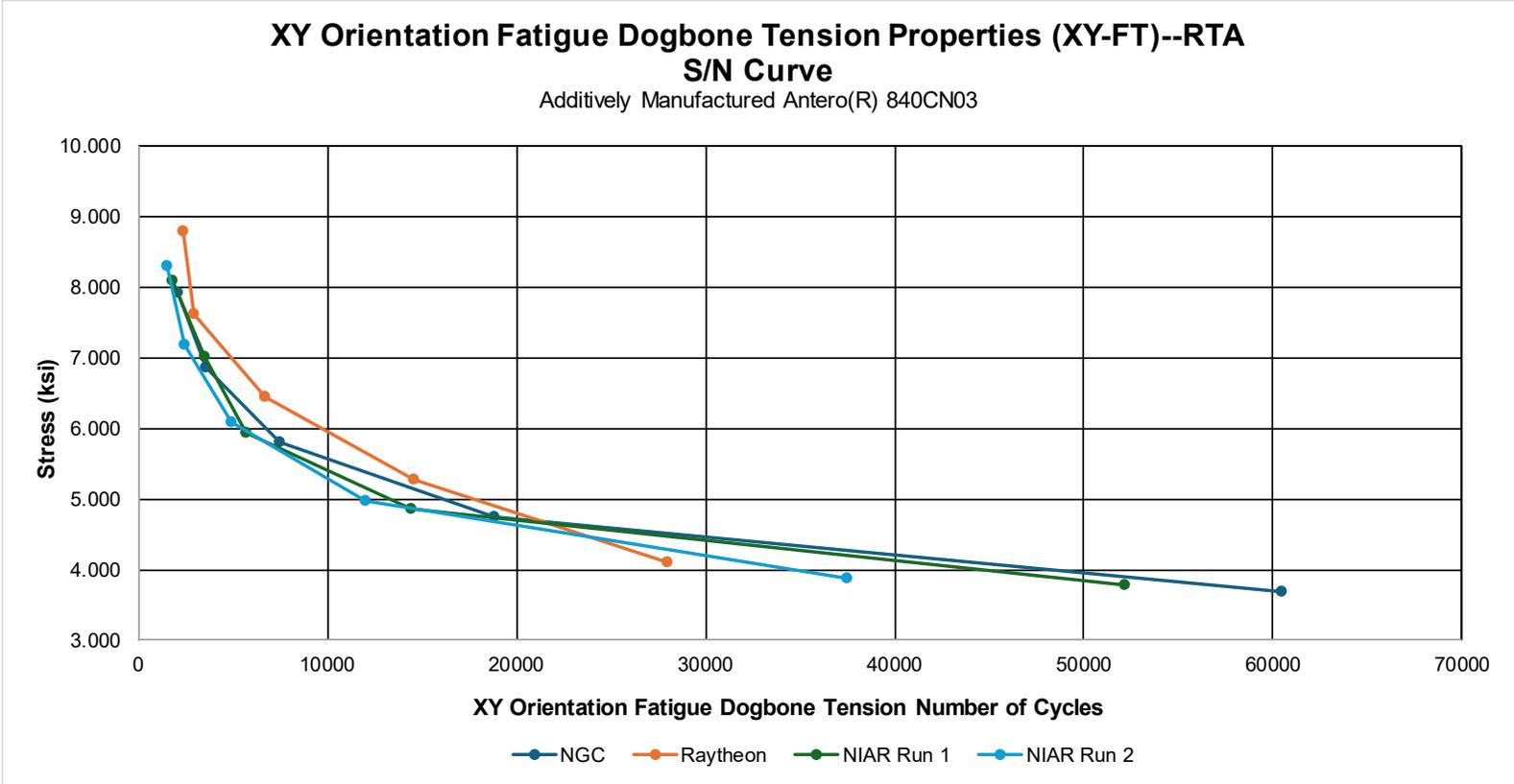
Average	21.57	24.74	0.1406	0.1967
Standard Dev.	1.260	0.6349	0.02417	0.001230
Coeff. of Var. [%]	5.841	2.566	17.19	0.6253
Min.	17.99	23.55	0.1208	0.1942
Max.	23.88	26.09	0.2696	0.1983
Number of Spec.	32	32	32	32



5. Fatigue Data

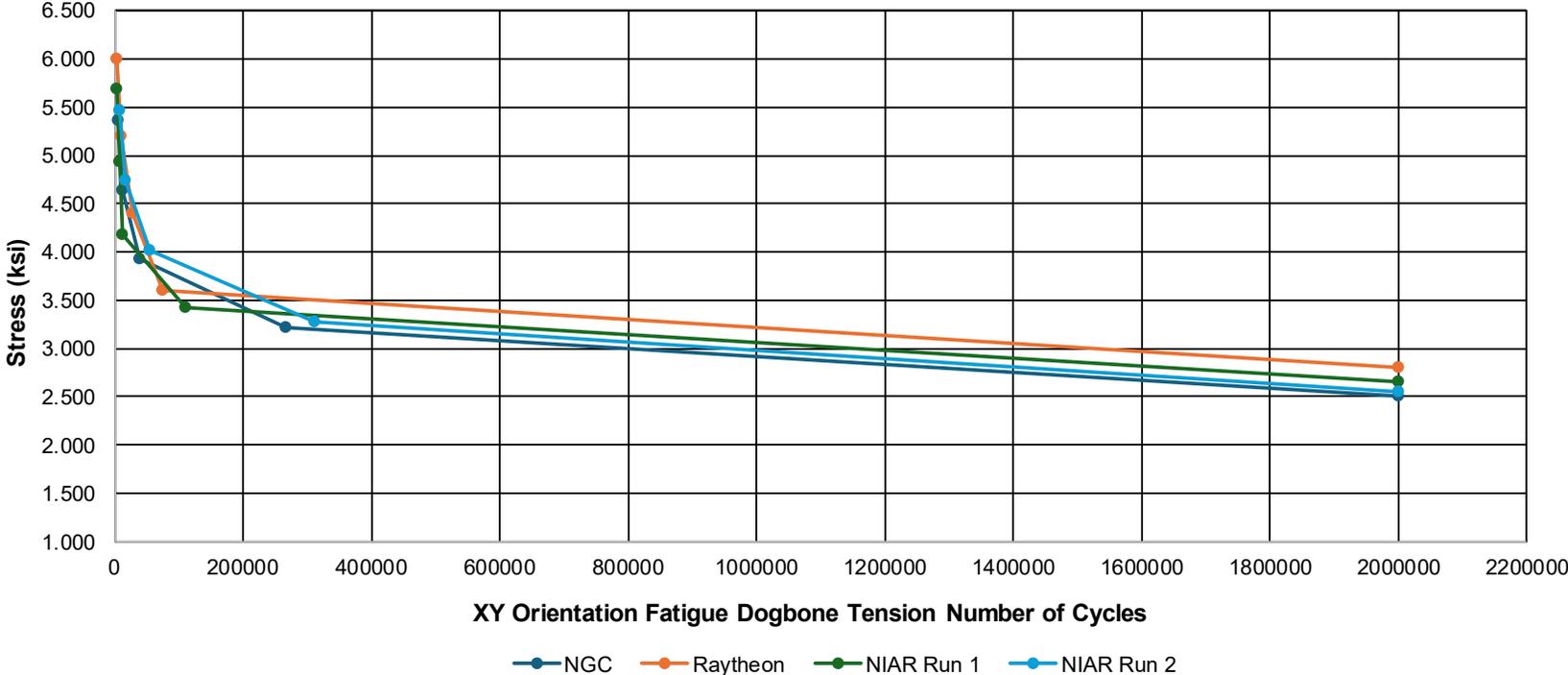
5.1 Individual Test Charts

5.1.1 XY Fatigue Tension Properties (XY-FT)

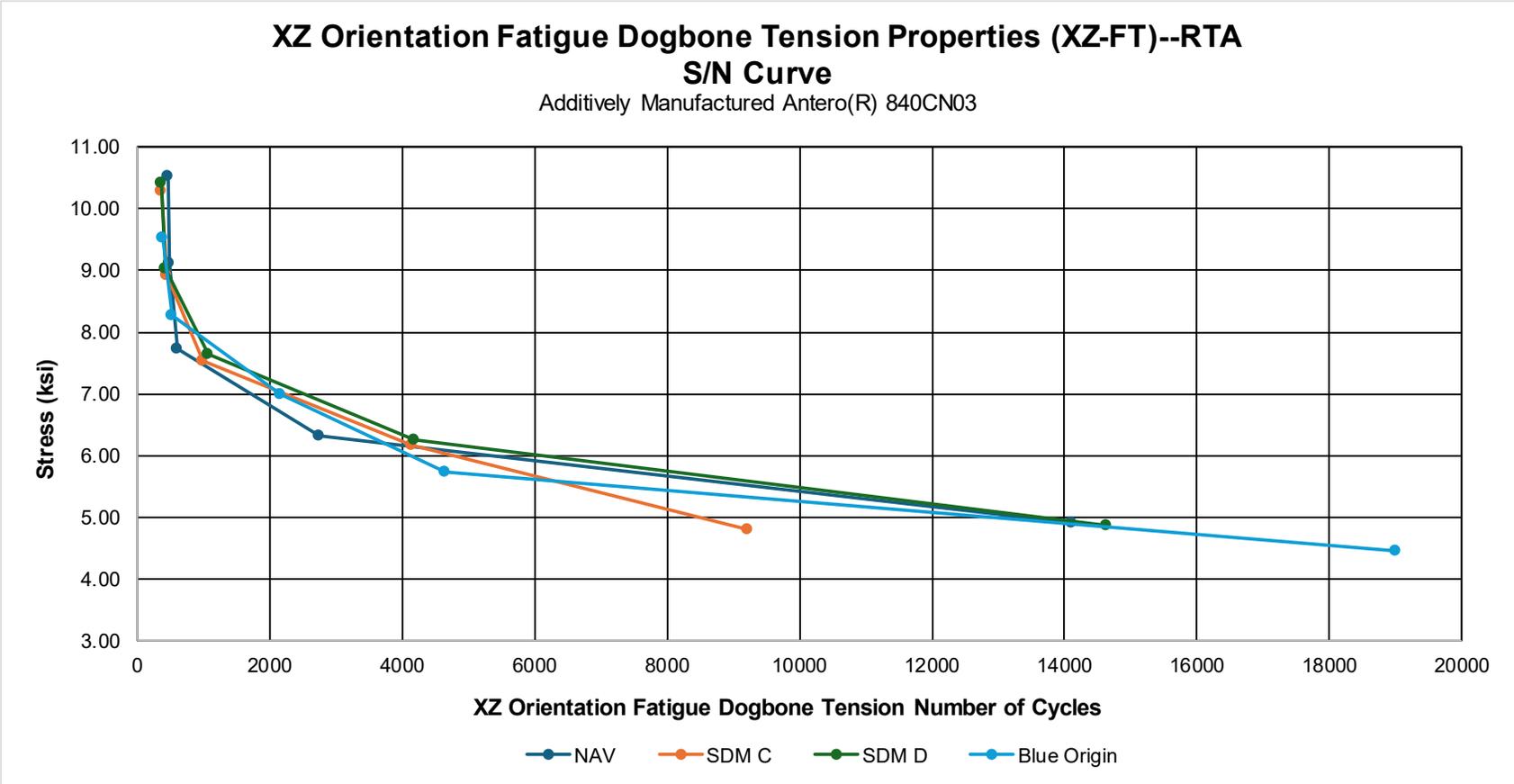


XY Orientation Fatigue Dogbone Tension Properties (XY-FT)--ETW S/N Curve

Additively Manufactured Antero(R) 840CN03

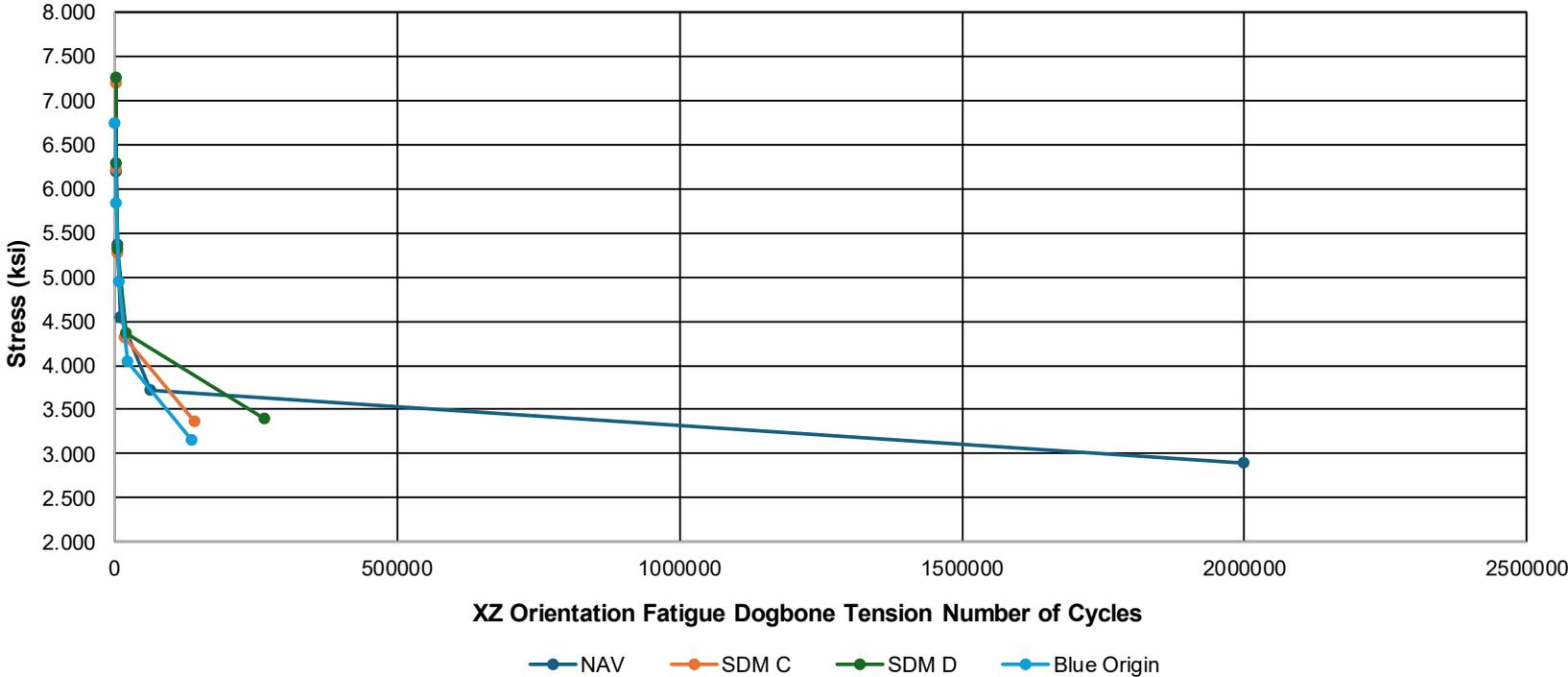


5.1.2 XZ Fatigue Tension Properties (XZ-FT)

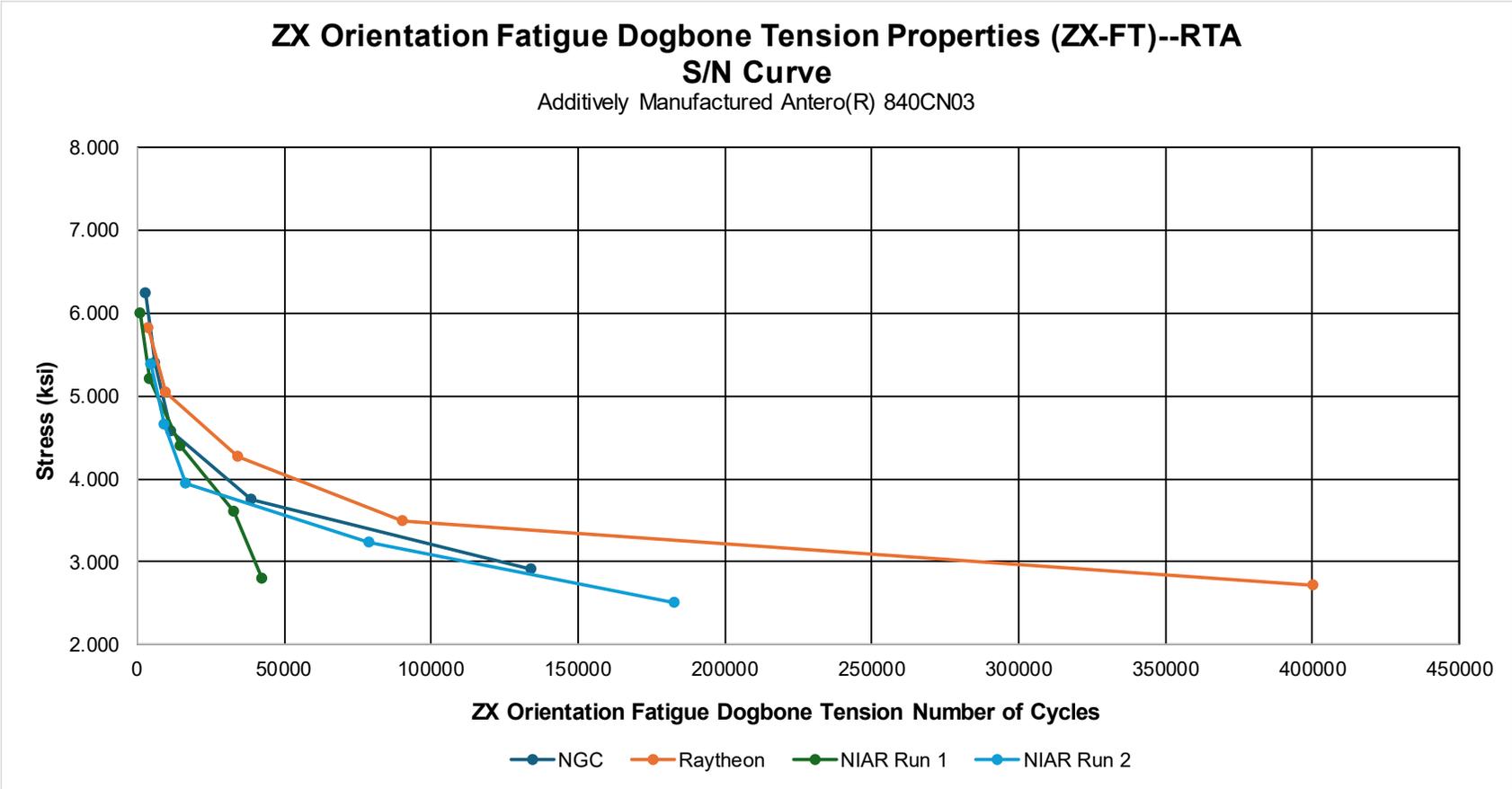


XZ Orientation Fatigue Dogbone Tension Properties (XZ-FT)--ETW S/N Curve

Additively Manufactured Antero(R) 840CN03

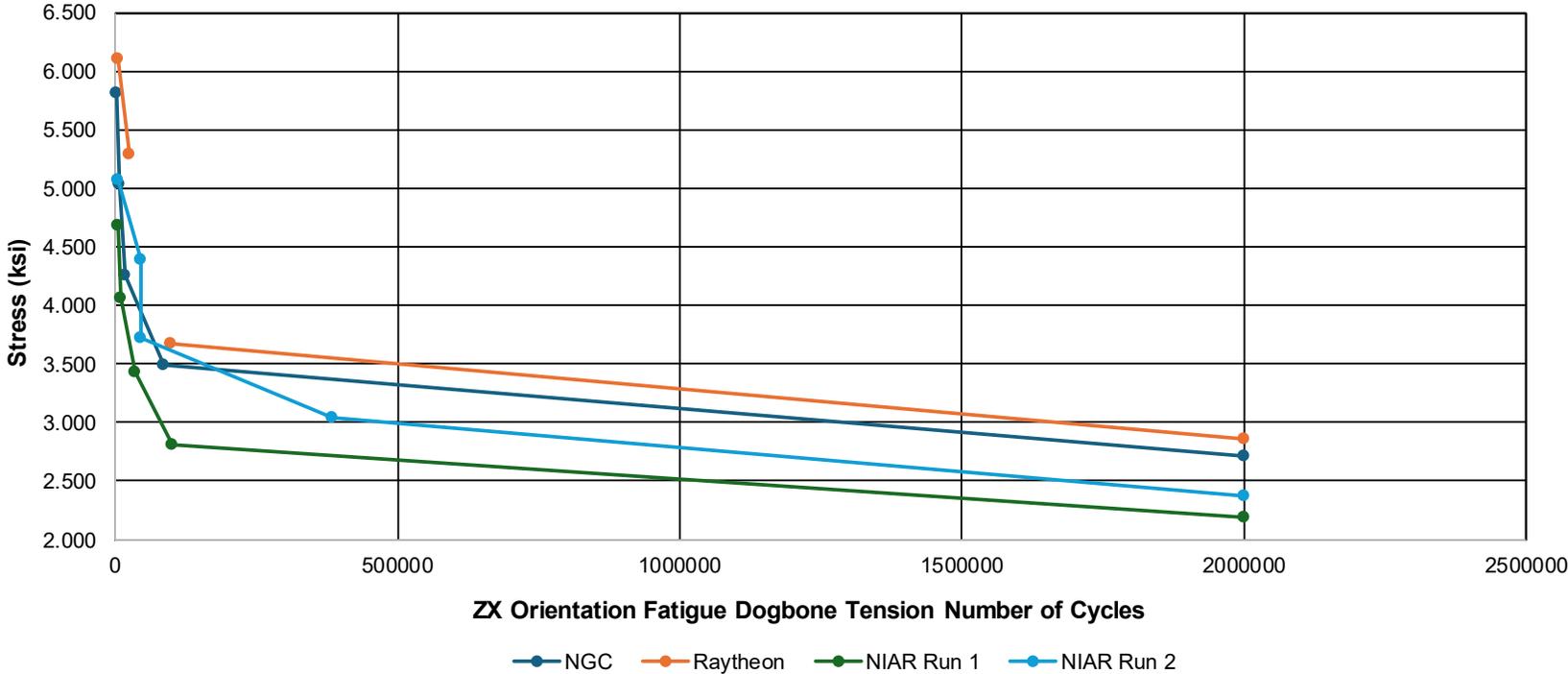


5.1.3 ZX Fatigue Tension Properties (ZX-FT)

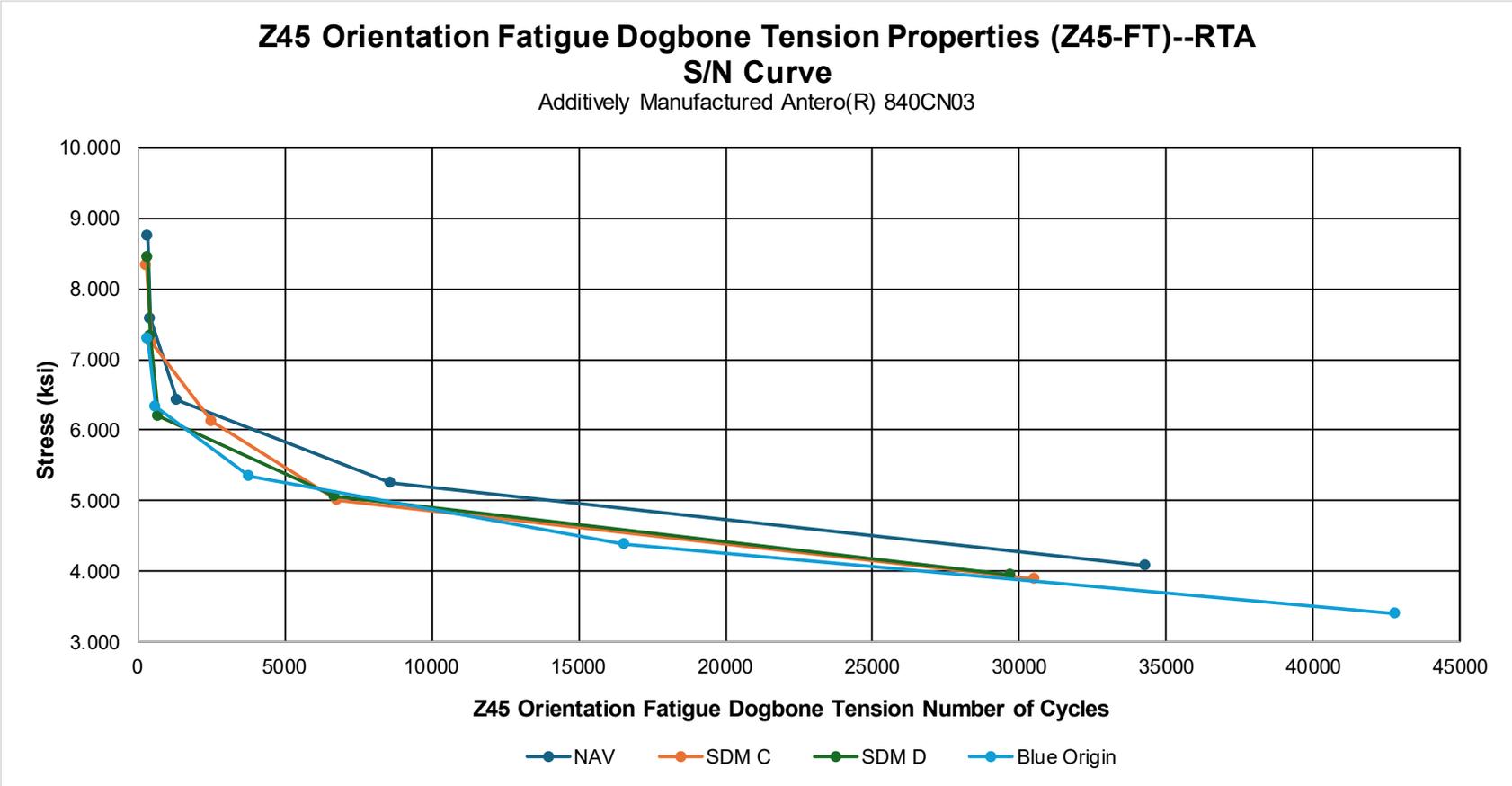


ZX Orientation Fatigue Dogbone Tension Properties (ZX-FT)--ETW S/N Curve

Additively Manufactured Antero(R) 840CN03

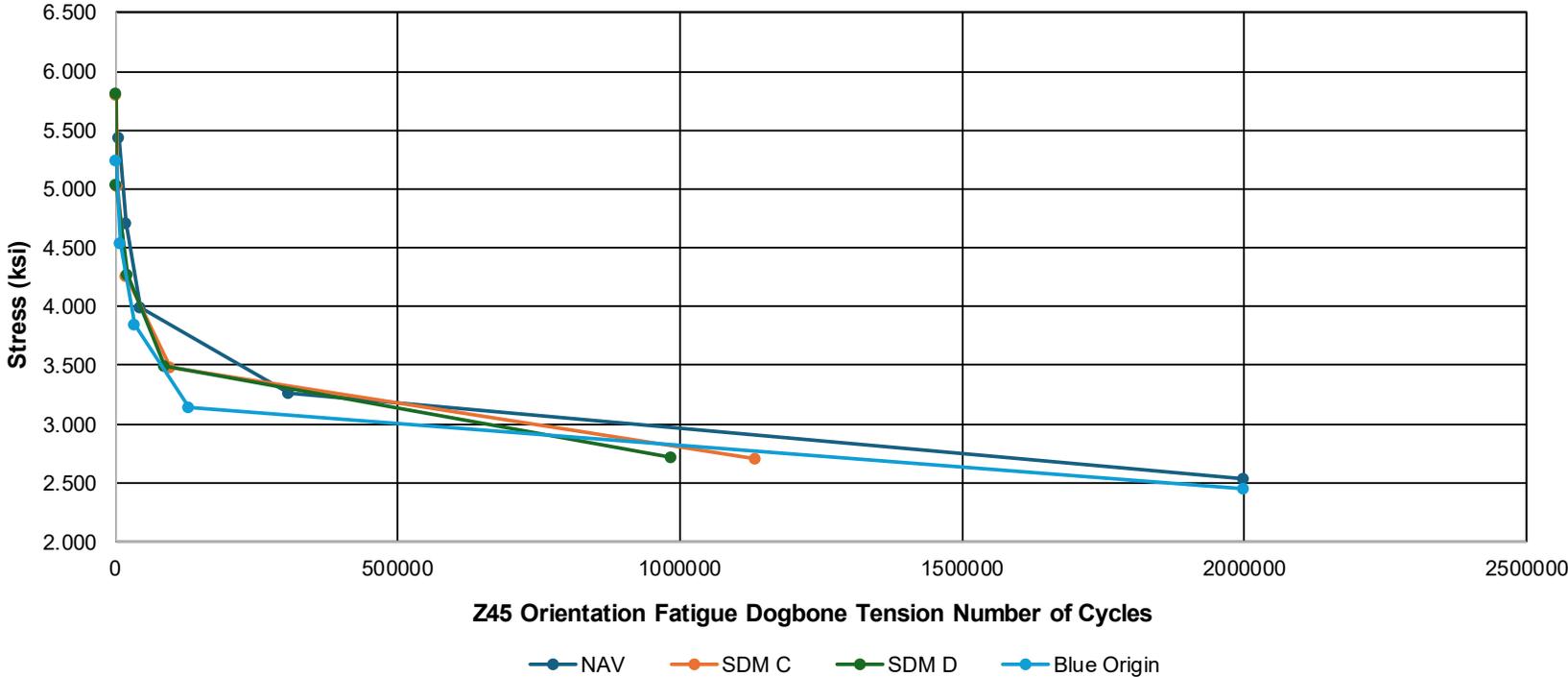


5.1.4 Z45 Fatigue Tension Properties (Z45-FT)



Z45 Orientation Fatigue Dogbone Tension Properties (Z45-FT)--ETW S/N Curve

Additively Manufactured Antero(R) 840CN03



5.2 Raw Data

5.2.1 XY Fatigue Tension Properties (XY-FT)

XY Orientation Fatigue Dogbone Tension Properties (XY-FT)--RTA

No. of Cycles

Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	No. of Cycles	Min Load [lbs]	Max Load [lbs]	Load %	Stress level (ksi)	Static Stress (ksi)	Static Load (lbs)	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FT-11-RTA-1	1	1	2067	5.209	520.9	75	7.913	10.55	703.8	0.1317	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FT-12-RTA-2	1	1	3575	4.528	452.8	65	6.858	10.55	703.8	0.1317	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FT-14-RTA-3	1	1	7488	3.824	382.4	55	5.803	10.55	703.8	0.1317	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FT-15-RTA-4	1	1	18791	3.118	311.8	45	4.748	10.55	703.8	0.1312	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FT-13-RTA-5	1	1	60445	2.443	244.3	35	3.693	10.55	703.8	0.1320	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FT-11-RTA-1	1	2	2341	5.746	574.6	75	8.783	11.71	785.2	0.1308	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FT-13-RTA-2	1	2	2926	5.011	501.1	65	7.612	11.71	785.2	0.1314	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FT-14-RTA-3	1	2	6665	4.203	420.3	55	6.441	11.71	785.2	0.1304	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FT-15-RTA-4	1	2	14532	3.453	345.3	45	5.270	11.71	785.2	0.1310	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FT-12-RTA-5	1	2	28006	2.699	269.9	35	4.099	11.71	785.2	0.1314	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FT-11-RTA-1	2	1	1803	5.242	524.2	75	8.093	10.79	705.1	0.1293	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FT-12-RTA-2	2	1	3479	4.554	455.4	65	7.014	10.79	705.1	0.1293	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FT-14-RTA-3	2	1	5711	3.855	385.5	55	5.935	10.79	705.1	0.1293	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FT-15-RTA-4	2	1	14437	3.142	314.2	45	4.856	10.79	705.1	0.1291	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FT-13-RTA-5	2	1	52196	2.439	243.9	35	3.777	10.79	705.1	0.1288	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FT-11-RTA-1	2	2	1486	5.395	539.5	75	8.295	11.06	720.4	0.1300	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FT-13-RTA-2	2	2	2451	4.714	471.4	65	7.189	11.06	720.4	0.1296	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FT-14-RTA-3	2	2	4928	3.966	396.6	55	6.083	11.06	720.4	0.1295	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FT-15-RTA-4	2	2	11982	3.243	324.3	45	4.977	11.06	720.4	0.1293	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FT-12-RTA-5	2	2	37513	2.515	251.5	35	3.871	11.06	720.4	0.1296	FAILURE AT GAGE SECTION

**XY Orientation Fatigue Dogbone Tension Properties (XY-FT)--ETW
No. of Cycles**

Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	No. of Cycles	Min Load [lbs]	Max Load [lbs]	Load %	Stress level (ksi)	Static Stress (ksi)	Static Load (lbs)	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FT-11-ETW-1	1	1	5794	3.550	355.0	75	5.360	7.146	473.8	0.1322	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FT-12-ETW-2	1	1	12426	3.080	308.0	65	4.645	7.146	473.8	0.1318	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FT-14-ETW-3	1	1	39310	2.621	262.1	55	3.930	7.146	473.8	0.1322	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FT-15-ETW-4	1	1	266088	2.127	212.7	45	3.216	7.146	473.8	0.1320	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FT-13-ETW-5	1	1	2000000	1.671	167.1	35	2.501	7.146	473.8	0.1329	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FT-12-ETW-5	1	2	4140	3.958	395.8	75	6.002	8.002	523.4	0.1310	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FT-15-ETW-4	1	2	9780	3.409	340.9	65	5.201	8.002	523.4	0.1312	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FT-14-ETW-3	1	2	27334	2.882	288.2	55	4.401	8.002	523.4	0.1309	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FT-13-ETW-2	1	2	74646	2.362	236.2	45	3.601	8.002	523.4	0.1306	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FT-11-ETW-1	1	2	2000000	1.831	183.1	35	2.801	8.002	523.4	0.1306	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FT-11-ETW-1	2	2	3446	3.737	373.7	75	5.696	7.595	498.3	0.1308	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FT-12-ETW-2	2	2	6784	3.246	324.6	65	4.937	7.595	498.3	0.1306	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FT-14-ETW-3	2	2	12490	2.729	272.9	55	4.177	7.595	498.3	0.1303	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FT-15-ETW-4	2	2	109768	2.225	222.5	45	3.418	7.595	498.3	0.1299	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FT-13-ETW-5	2	2	2000000	1.738	173.8	35	2.658	7.595	498.3	0.1307	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FT-11-ETW-1	2	1	8264	3.586	358.6	75	5.470	7.293	484.0	0.1289	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FT-13-ETW-2	2	1	15865	3.117	311.7	65	4.740	7.293	484.0	0.1288	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FT-14-ETW-3	2	1	53901	2.628	262.8	55	4.011	7.293	484.0	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FT-15-ETW-4	2	1	310709	2.134	213.4	45	3.282	7.293	484.0	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FT-12-ETW-5	2	1	2000000	1.682	168.2	35	2.553	7.293	484.0	0.1298	FAILURE AT GAGE SECTION

5.2.2 XZ Fatigue Tension Properties (XZ-FT)

XZ Orientation Fatigue Dogbone Tension Properties (XZ-FT)--RTA
No. of Cycles
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	No. of Cycles	Min Load [lbs]	Max Load [lbs]	Load %	Stress level (ksi)	Static Stress (ksi)	Static Load (lbs)	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FT-12-RTA-5	3	1	456	6.763	676.3	75	10.53	14.04	912.1	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FT-15-RTA-4	3	1	474	5.843	584.3	65	9.126	14.04	912.1	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FT-14-RTA-3	3	1	608	4.963	496.3	55	7.722	14.04	912.1	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FT-13-RTA-2	3	1	2752	4.059	405.9	45	6.318	14.04	912.1	0.1271	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FT-11-RTA-1	3	1	14121	3.135	313.5	35	4.914	14.04	912.1	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FT-11-RTA-1	3	2	360	6.801	680.1	75	10.29	13.72	894.3	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FT-12-RTA-2	3	2	444	5.911	591.1	65	8.918	13.72	894.3	0.1310	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FT-14-RTA-3	3	2	986	4.982	498.2	55	7.546	13.72	894.3	0.1302	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FT-15-RTA-4	3	2	4137	4.078	407.8	45	6.174	13.72	894.3	0.1304	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FT-13-RTA-5	3	2	9221	3.178	317.8	35	4.802	13.72	894.3	0.1308	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FT-11-RTA-1	4	1	364	6.898	689.8	75	10.43	13.90	901.7	0.1302	FAILURE AT FILLET SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FT-12-RTA-2	4	1	414	5.949	594.9	65	9.035	13.90	901.7	0.1298	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FT-14-RTA-3	4	1	1072	5.043	504.3	55	7.645	13.90	901.7	0.1299	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FT-15-RTA-4	4	1	4180	4.124	412.4	45	6.255	13.90	901.7	0.1298	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FT-13-RTA-5	4	1	14631	3.230	323.0	35	4.865	13.90	901.7	0.1305	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FT-11-RTA-1	4	2	367	6.227	622.7	75	9.540	12.72	856.6	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FT-13-RTA-2	4	2	524	6.376	637.6	65	8.268	12.72	856.6	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FT-14-RTA-3	4	2	2149	4.535	453.5	55	6.996	12.72	856.6	0.1283	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FT-15-RTA-4	4	2	4638	3.736	373.6	45	5.724	12.72	856.6	0.1291	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FT-12-RTA-5	4	2	19012	2.891	289.1	35	4.452	12.72	856.6	0.1284	FAILURE AT GAGE SECTION

XZ Orientation Fatigue Dogbone Tension Properties (XZ-FT)--ETW

No. of Cycles

Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	No. of Cycles	Min Load [lbs]	Max Load [lbs]	Load %	Stress level (ksi)	Static Stress (ksi)	Static Load [lbs]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FT-11-ETW-1	3	1	2070	4.003	400.3	75	6.197	8.263	536.0	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FT-13-ETW-2	3	1	4477	3.464	346.4	65	5.371	8.263	536.0	0.1270	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FT-14-ETW-3	3	1	8907	2.952	295.2	55	4.545	8.263	536.0	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FT-15-ETW-4	3	1	62650	2.396	239.6	45	3.718	8.263	536.0	0.1269	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FT-12-ETW-5	3	1	2000000	1.868	186.8	35	2.892	8.263	536.0	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FT-11-ETW-1	3	2	755	4.761	476.1	75	7.190	9.587	630.3	0.1307	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FT-12-ETW-2	3	2	1481	4.119	411.9	65	6.232	9.587	630.3	0.1308	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FT-14-ETW-3	3	2	3369	3.476	347.6	55	5.273	9.587	630.3	0.1304	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FT-15-ETW-4	3	2	18192	2.845	284.5	45	4.314	9.587	630.3	0.1302	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-FT-13-ETW-5	3	2	141947	2.206	220.6	35	3.355	9.587	630.3	0.1298	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FT-11-ETW-1	4	1	835	4.805	480.5	75	7.265	9.686	632.1	0.1301	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FT-12-ETW-2	4	1	1864	4.154	415.4	65	6.296	9.686	632.1	0.1300	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FT-14-ETW-3	4	1	5066	3.503	350.3	55	5.327	9.686	632.1	0.1292	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FT-15-ETW-4	4	1	18411	2.873	287.3	45	4.359	9.686	632.1	0.1298	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FT-13-ETW-5	4	1	264401	2.238	223.8	35	3.390	9.686	632.1	0.1302	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FT-11-ETW-1	4	2	499	4.330	433.0	75	6.740	8.986	597.8	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FT-13-ETW-2	4	2	2370	3.720	372.0	65	5.841	8.986	597.8	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FT-14-ETW-3	4	2	6825	3.169	316.9	55	4.942	8.986	597.8	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FT-15-ETW-4	4	2	23197	2.592	259.2	45	4.044	8.986	597.8	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FT-12-ETW-5	4	2	136844	2.018	201.8	35	3.145	8.986	597.8	0.1273	FAILURE AT GAGE SECTION

5.2.3 ZX Fatigue Tension Properties (ZX-FT)

ZX Orientation Fatigue Dogbone Tension Properties (ZX-FT)--RTA
No. of Cycles
 Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	No. of Cycles	Min Load [lbs]	Max Load [lbs]	Load %	Stress level (ksi)	Static Stress (ksi)	Static Load (lbs)	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FT-11-RTA-1	1	1	2952	3.988	398.8	75	6.238	8.317	533.3	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FT-12-RTA-2	1	1	6015	3.448	344.8	65	5.406	8.317	533.3	0.1264	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FT-14-RTA-3	1	1	11635	2.925	292.5	55	4.574	8.317	533.3	0.1268	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FT-15-RTA-4	1	1	38851	2.393	239.3	45	3.743	8.317	533.3	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FT-13-RTA-5	1	1	133920	1.867	186.7	35	2.911	8.317	533.3	0.1269	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FT-11-RTA-1	1	2	3766	3.763	376.3	75	5.825	7.767	501.2	0.1279	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FT-13-RTA-2	1	2	9741	3.194	319.4	65	5.049	7.767	501.2	0.1254	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FT-14-RTA-3	1	2	34259	2.715	271.5	55	4.272	7.767	501.2	0.1262	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FT-15-RTA-4	1	2	90199	2.242	224.2	45	3.495	7.767	501.2	0.1274	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FT-12-RTA-5	1	2	400136	1.736	173.6	35	2.718	7.767	501.2	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FT-11-RTA-1	2	1	905	3.831	383.1	75	6.006	8.008	508.8	0.1257	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FT-12-RTA-2	2	1	4087	3.304	330.4	65	5.205	8.008	508.8	0.1253	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FT-14-RTA-3	2	1	14641	2.790	279.0	55	4.404	8.008	508.8	0.1255	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FT-15-RTA-4	2	1	33057	2.273	227.3	45	3.604	8.008	508.8	0.1251	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FT-13-RTA-5	2	1	42648	1.797	179.7	35	2.803	8.008	508.8	0.1262	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FT-11-RTA-1	2	2	4526	3.381	338.1	75	5.378	7.170	452.3	0.1246	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FT-13-RTA-2	2	2	9116	2.958	295.8	65	4.661	7.170	452.3	0.1255	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FT-14-RTA-3	2	2	16377	2.523	252.3	55	3.944	7.170	452.3	0.1260	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FT-15-RTA-4	2	2	79111	2.035	203.5	45	3.227	7.170	452.3	0.1251	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FT-12-RTA-5	2	2	182950	1.594	159.4	35	2.510	7.170	452.3	0.1256	FAILURE AT GAGE SECTION

**ZX Orientation Fatigue Dogbone Tension Properties (ZX-FT)--ETW
No. of Cycles**

Additively Manufactured Antero(R) 840CN03

Specimen Number	AM Batch #	Machine Run #	No. of Cycles	Min Load [lbs]	Max Load [lbs]	Load %	Stress level (ksi)	Static Stress (ksi)	Static Load [lbs]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FT-11-ETW-1	1	1	2513	3.671	367.1	75	5.813	7.750	493.5	0.1254	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FT-12-ETW-2	1	1	7229	3.164	316.4	65	5.038	7.750	493.5	0.1248	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FT-14-ETW-3	1	1	16010	2.684	268.4	55	4.263	7.750	493.5	0.1251	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FT-15-ETW-4	1	1	85978	2.197	219.7	45	3.488	7.750	493.5	0.1252	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FT-13-ETW-5	1	1	2000000	1.705	170.5	35	2.713	7.750	493.5	0.1248	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FT-12-ETW-5	1	2	4655	3.445	344.5	75	6.113	8.150	519.3	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FT-15-ETW-4	1	2	24256	2.915	291.5	65	5.298	8.150	519.3	0.1274	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FT-14-ETW-3*	1	2				55					
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FT-13-ETW-2	1	2	97782	2.384	238.4	45	3.668	8.150	519.3	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FT-11-ETW-1	1	2	2000000	1.852	185.2	35	2.853	8.150	519.3	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FT-11-ETW-1	2	1	3628	2.975	297.5	75	4.683	6.244	397.2	0.1259	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FT-12-ETW-2	2	1	10344	2.564	256.4	65	4.059	6.244	397.2	0.1253	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FT-14-ETW-3	2	1	34411	2.190	219.0	55	3.434	6.244	397.2	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FT-15-ETW-4	2	1	100091	1.780	178.0	45	2.810	6.244	397.2	0.1260	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FT-13-ETW-5	2	1	2000000	1.384	138.4	35	2.185	6.244	397.2	0.1257	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FT-11-ETW-1	2	2	4999	3.229	322.9	75	5.074	6.765	429.7	0.1238	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FT-13-ETW-2	2	2	45798	2.781	278.1	65	4.397	6.765	429.7	0.1230	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FT-14-ETW-3	2	2	44969	2.362	236.2	55	3.721	6.765	429.7	0.1232	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FT-15-ETW-4	2	2	385236	1.930	193.0	45	3.044	6.765	429.7	0.1235	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FT-12-ETW-5	2	2	2000000	1.502	150.2	35	2.368	6.765	429.7	0.1236	FAILURE AT GAGE SECTION

*Coupon cracked prior to loading

5.2.4 Z45 Fatigue Tension Properties (Z45-FT)

Z45 Orientation Fatigue Dogbone Tension Properties (Z45-FT)--RTA
No. of Cycles
 Additively Manufactured Antero(R) 840CN03

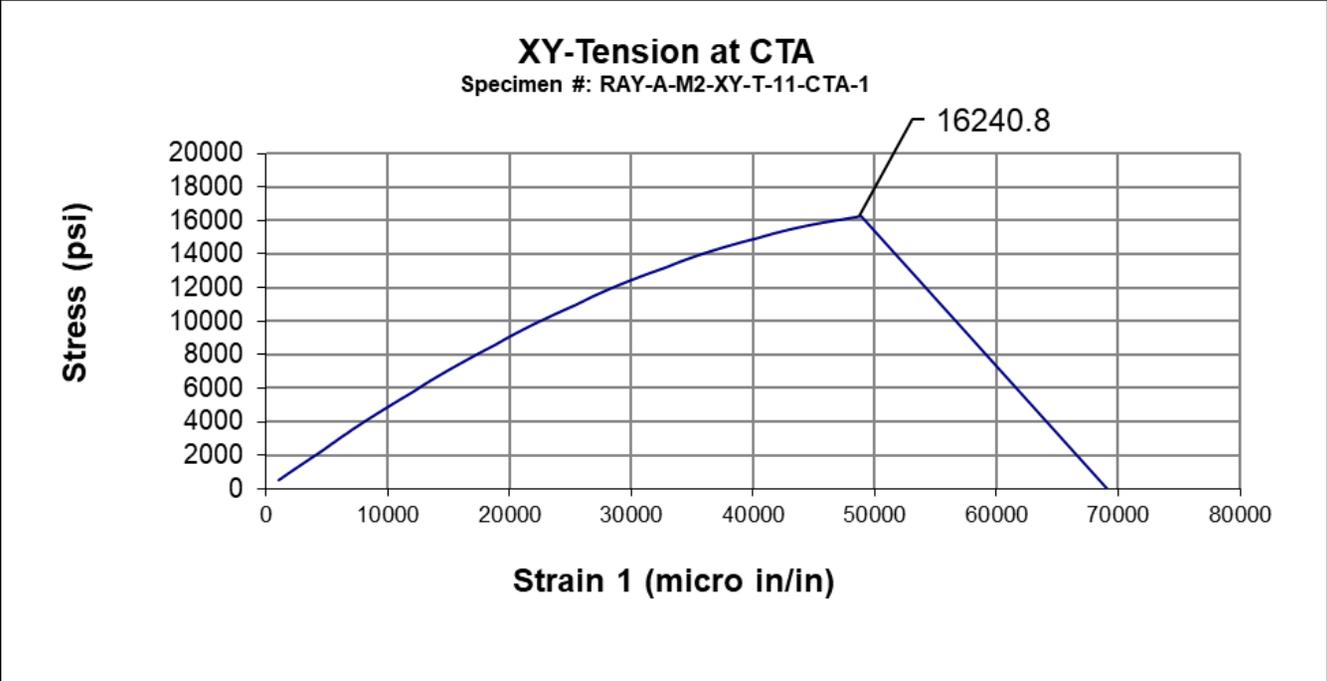
Specimen Number	AM Batch #	Machine Run #	No. of Cycles	Min Load [lbs]	Max Load [lbs]	Load %	Stress level (ksi)	Static Stress (ksi)	Static Load (lbs)	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FT-12-RTA-5	3	1	320	5.611	561.1	75	8.753	11.67	760.6	0.1274	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FT-15-RTA-4	3	1	402	4.871	487.1	65	7.586	11.67	760.6	0.1276	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FT-14-RTA-3	3	1	1339	4.118	411.8	55	6.419	11.67	760.6	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FT-13-RTA-2	3	1	8620	3.375	337.5	45	5.252	11.67	760.6	0.1276	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FT-11-RTA-1	3	1	34313	2.620	262.0	35	4.085	11.67	760.6	0.1275	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FT-11-RTA-1	3	2	308	5.438	543.8	75	8.340	11.12	733.4	0.1294	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FT-12-RTA-2	3	2	450	4.678	467.8	65	7.228	11.12	733.4	0.1286	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FT-14-RTA-3	3	2	2511	3.974	397.4	55	6.116	11.12	733.4	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FT-15-RTA-4	3	2	6780	3.247	324.7	45	5.004	11.12	733.4	0.1287	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FT-13-RTA-5	3	2	30544	2.530	253.0	35	3.892	11.12	733.4	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FT-11-RTA-1	4	1	313	5.454	545.4	75	8.453	11.27	712.8	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FT-12-RTA-2	4	1	430	4.734	473.4	65	7.326	11.27	712.8	0.1287	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FT-14-RTA-3	4	1	680	4.018	401.8	55	6.199	11.27	712.8	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FT-15-RTA-4	4	1	6679	3.299	329.9	45	5.072	11.27	712.8	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FT-13-RTA-5	4	1	29694	2.555	255.5	35	3.945	11.27	712.8	0.1289	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FT-11-RTA-1	4	2	351	4.698	469.8	75	7.296	9.728	649.1	0.1267	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FT-13-RTA-2	4	2	595	4.022	402.2	65	6.323	9.728	649.1	0.1262	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FT-14-RTA-3	4	2	3794	3.406	340.6	55	5.350	9.728	649.1	0.1261	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FT-15-RTA-4	4	2	16547	2.781	278.1	45	4.378	9.728	649.1	0.1258	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FT-12-RTA-5	4	2	42796	2.184	218.4	35	3.405	9.728	649.1	0.1273	FAILURE AT GAGE SECTION

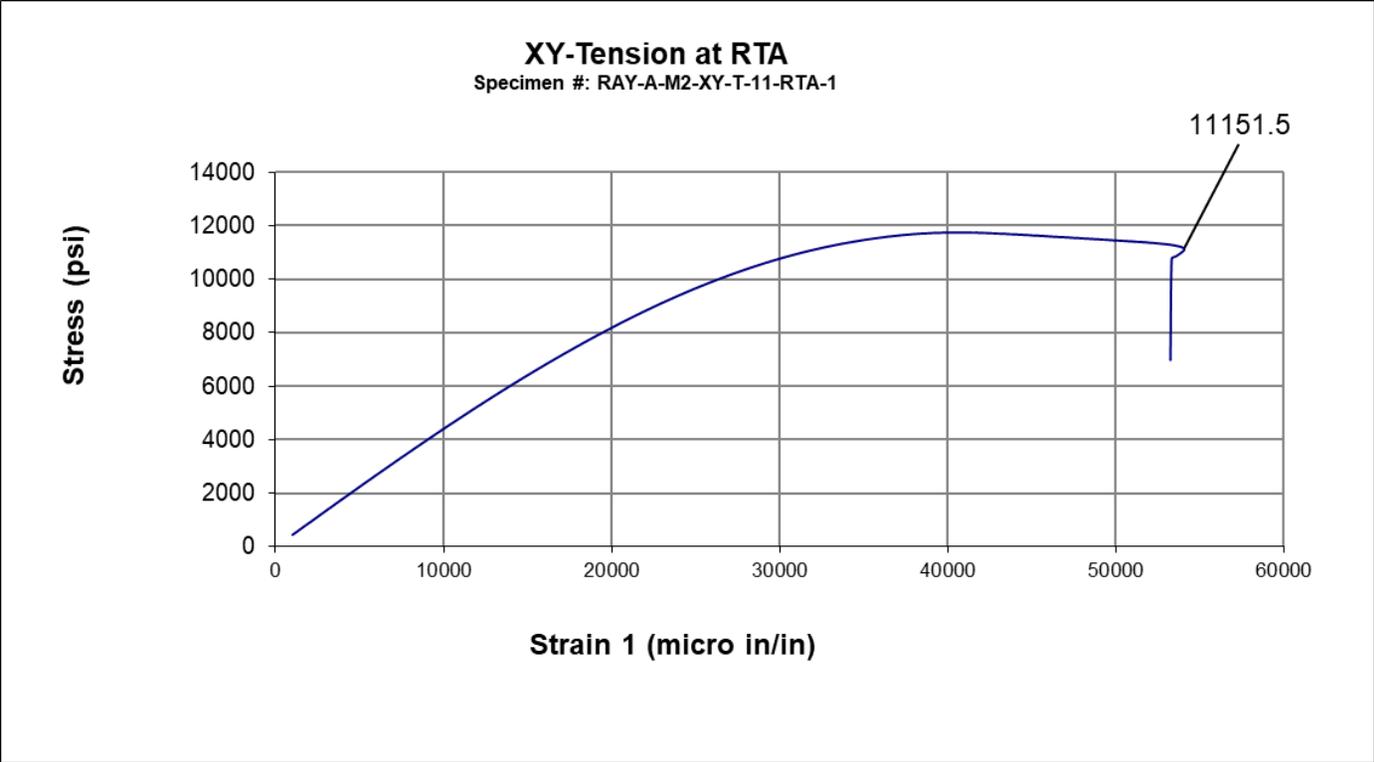
Z45 Orientation Fatigue Dogbone Tension Properties (Z45-FT)--ETW No. of Cycles Additively Manufactured Antero(R) 840CN03
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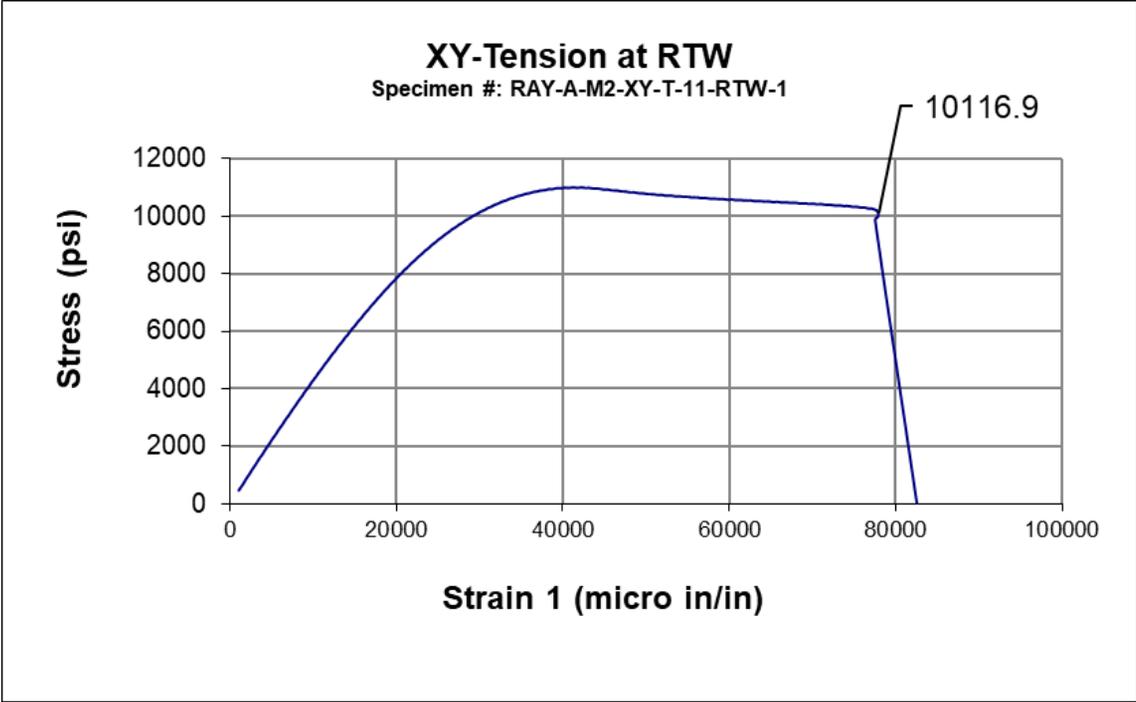
Specimen Number	AM Batch #	Machine Run #	No. of Cycles	Min Load [lbs]	Max Load [lbs]	Load %	Stress level (ksi)	Static Stress (ksi)	Static Load [lbs]	Avg. Specimen Thickness [in]	Failure Mode
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FT-11-ETW-1	3	1	6471	3.508	350.8	75	5.435	7.247	472.2	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FT-13-ETW-2	3	1	17996	3.021	302.1	65	4.711	7.247	472.2	0.1272	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FT-14-ETW-3	3	1	43873	2.585	258.5	55	3.986	7.247	472.2	0.1286	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FT-15-ETW-4	3	1	305658	2.090	209.0	45	3.261	7.247	472.2	0.1273	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FT-12-ETW-5	3	1	2000000	1.647	164.7	35	2.536	7.247	472.2	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FT-11-ETW-1	3	2	582	3.780	378.0	75	5.802	7.736	508.3	0.1293	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FT-12-ETW-2	3	2	3962	3.257	325.7	65	5.028	7.736	508.3	0.1286	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FT-14-ETW-3	3	2	17963	2.764	276.4	55	4.255	7.736	508.3	0.1290	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FT-15-ETW-4	3	2	96727	2.253	225.3	45	3.481	7.736	508.3	0.1284	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-FT-13-ETW-5	3	2	1134117	1.757	175.7	35	2.708	7.736	508.3	0.1289	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FT-11-ETW-1	4	1	918	3.815	381.5	75	5.818	7.757	505.0	0.1297	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FT-12-ETW-2	4	1	1637	3.281	328.1	65	5.042	7.757	505.0	0.1289	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FT-14-ETW-3	4	1	21838	2.760	276.0	55	4.266	7.757	505.0	0.1282	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FT-15-ETW-4	4	1	86608	2.271	227.1	45	3.491	7.757	505.0	0.1285	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FT-13-ETW-5	4	1	985573	1.759	175.9	35	2.715	7.757	505.0	0.1281	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FT-11-ETW-1	4	2	2018	3.292	329.2	75	5.240	6.986	459.0	0.1249	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FT-13-ETW-2	4	2	8684	2.835	283.5	65	4.541	6.986	459.0	0.1243	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FT-14-ETW-3	4	2	33020	2.404	240.4	55	3.842	6.986	459.0	0.1245	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FT-15-ETW-4	4	2	130623	1.969	196.9	45	3.144	6.986	459.0	0.1247	FAILURE AT GAGE SECTION
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FT-12-ETW-5	4	2	2000000	1.539	153.9	35	2.445	6.986	459.0	0.1254	FAILURE AT GAGE SECTION

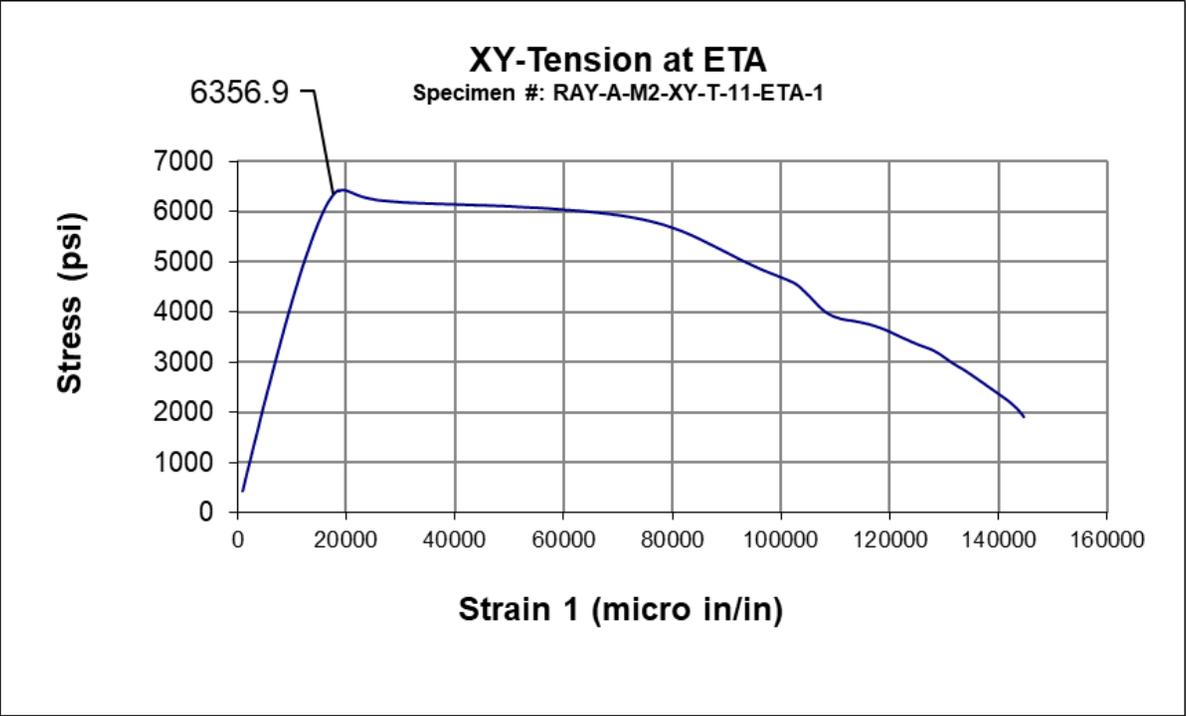
6. Full Stress vs. Strain Curve

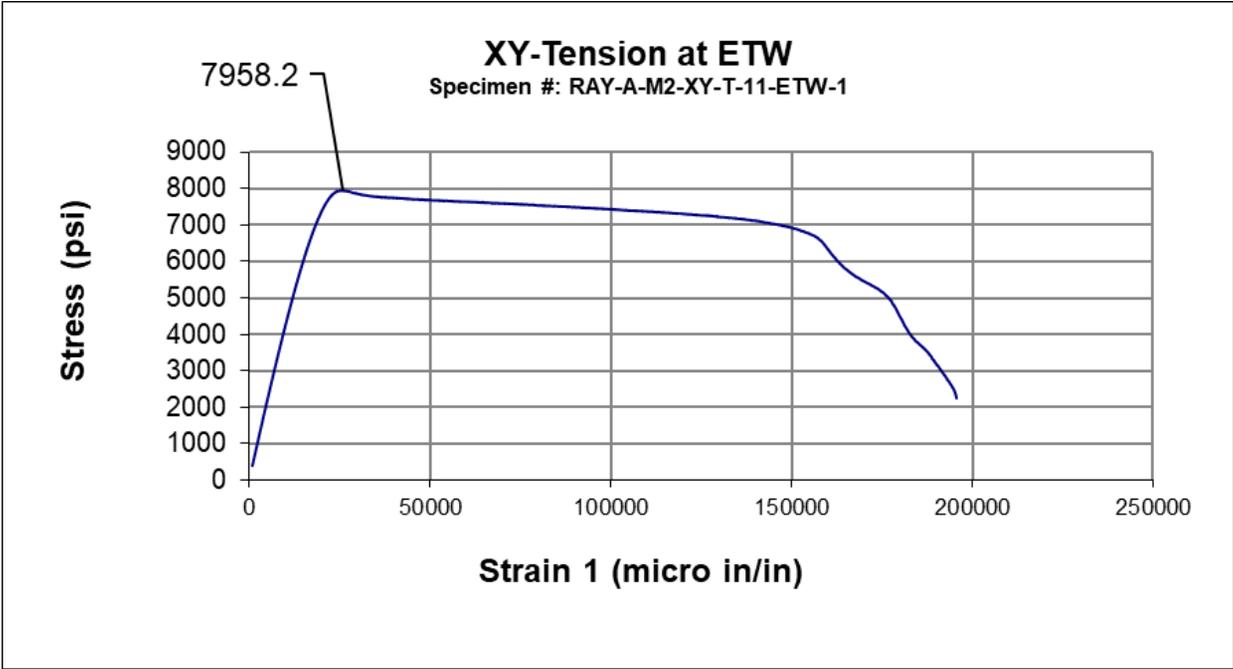
6.1 Dogbone XY-Tension Properties (XY-T)



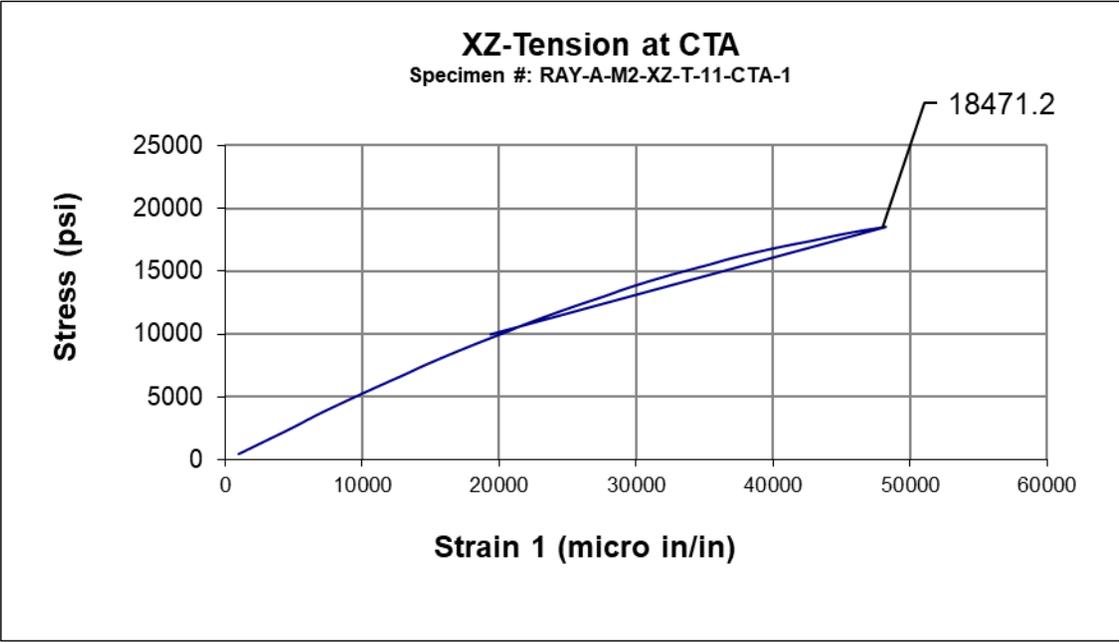


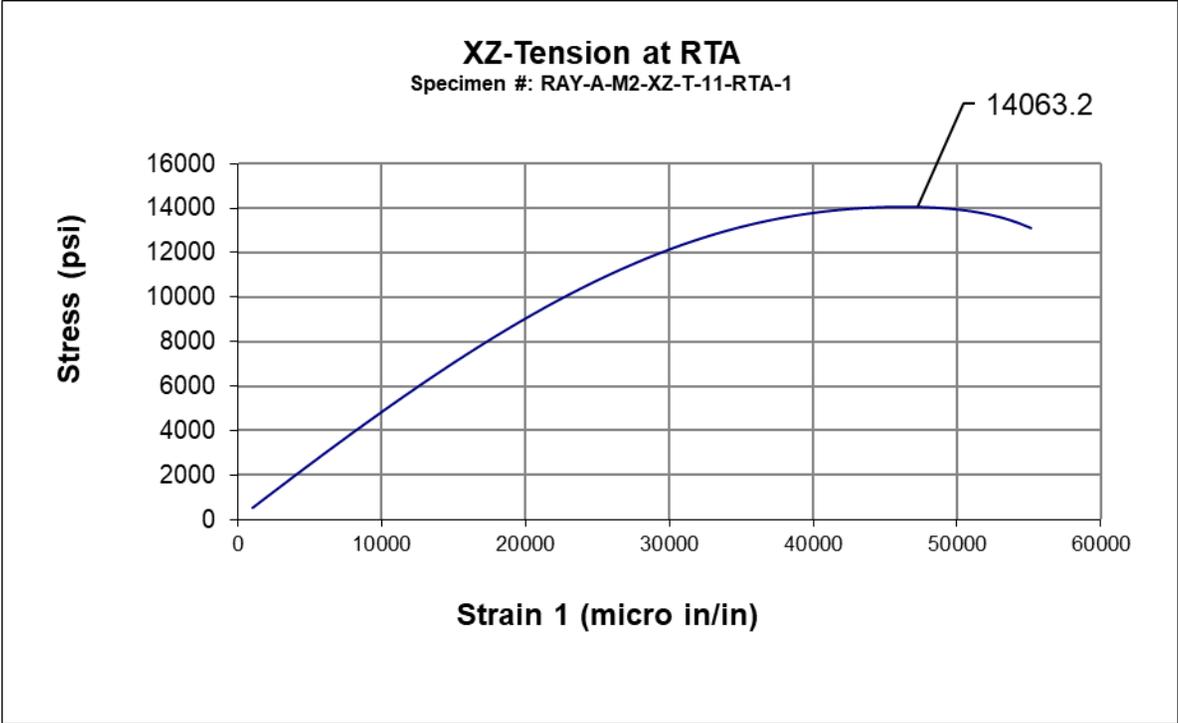


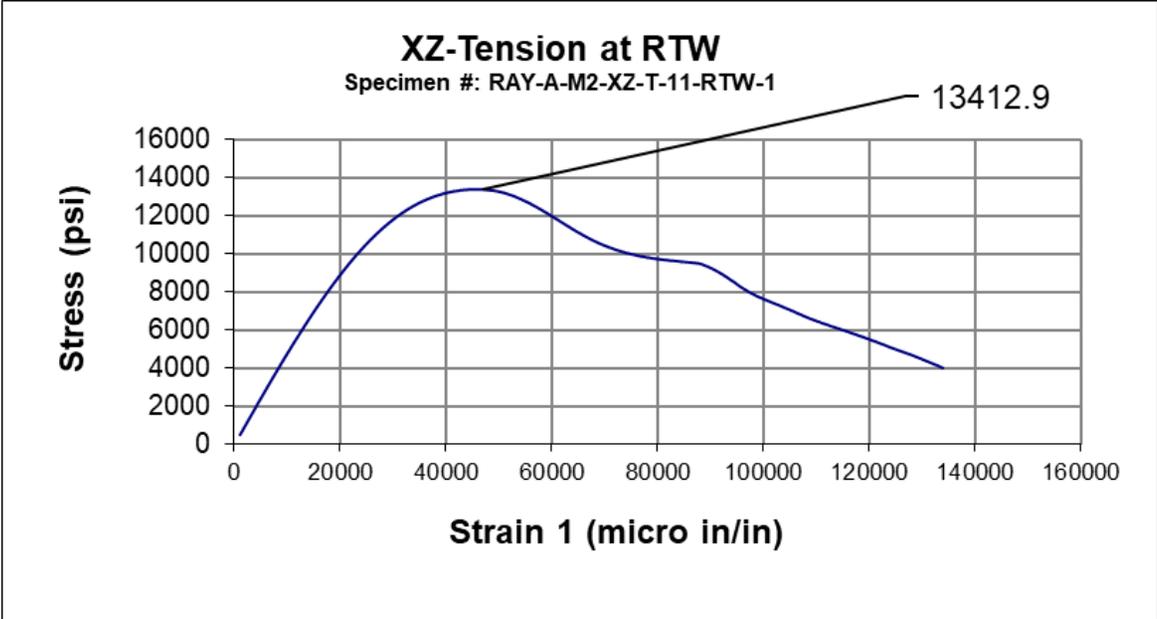


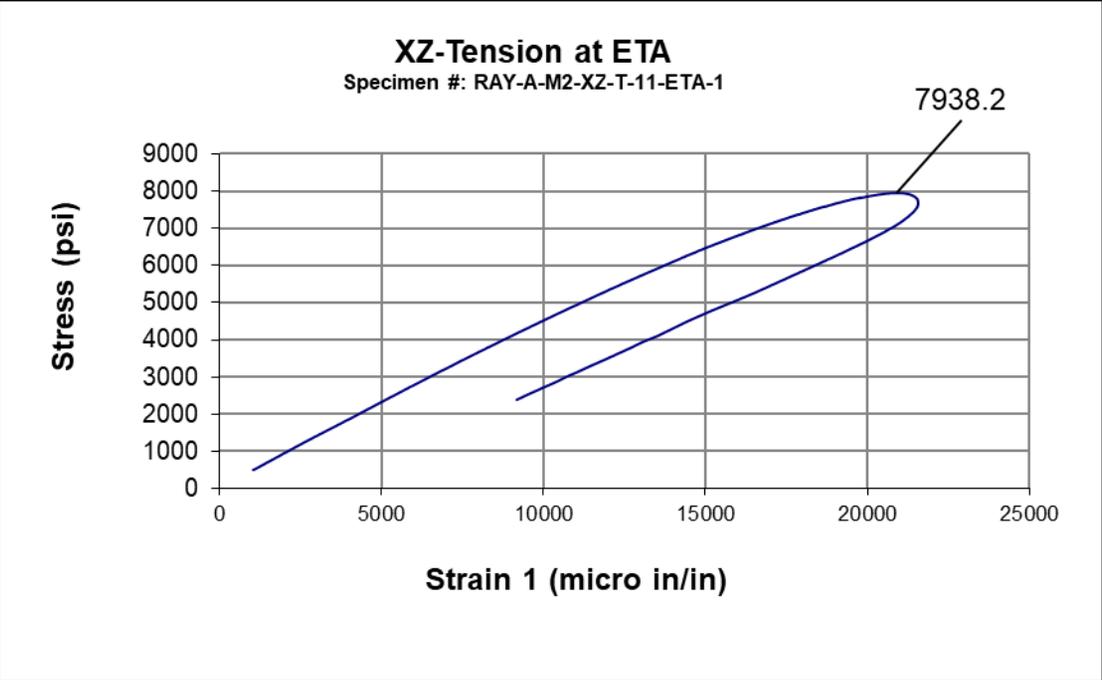


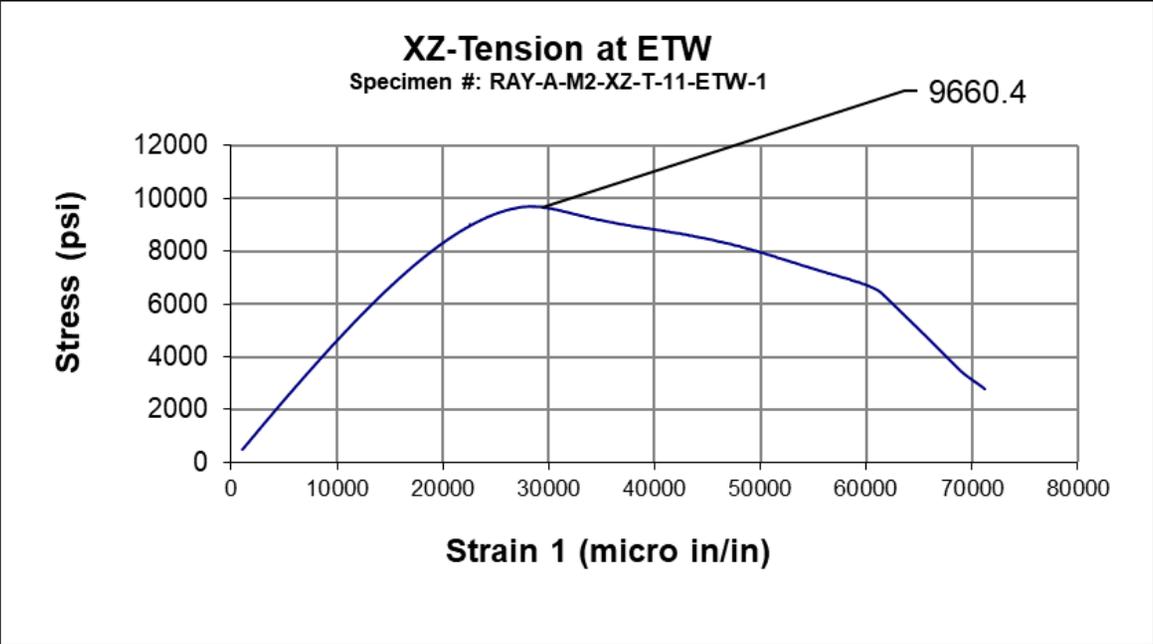
6.2 Dogbone XZ-Tension Properties (XZ-T)



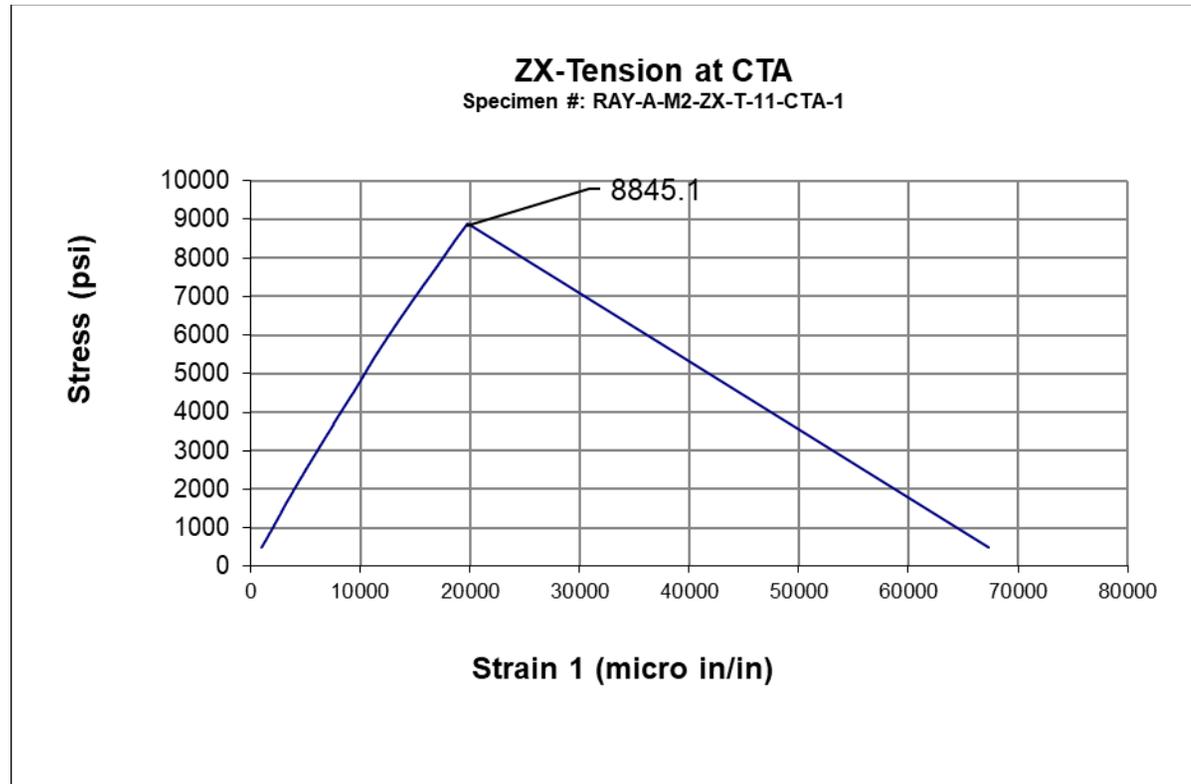


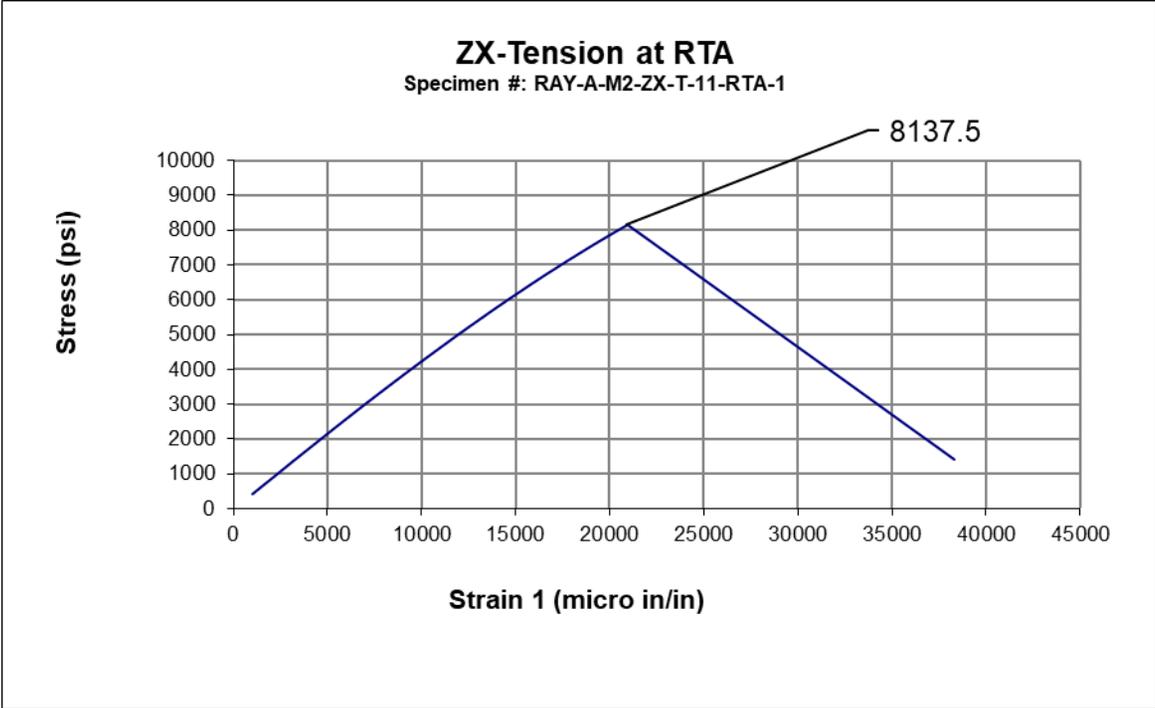


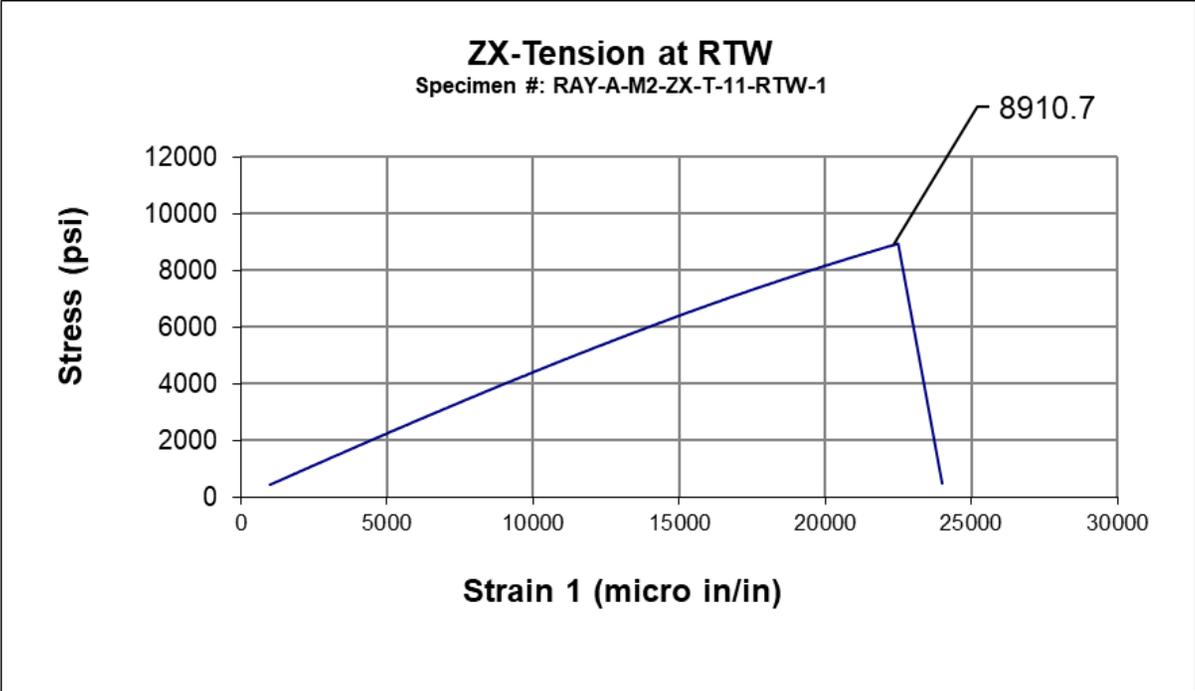


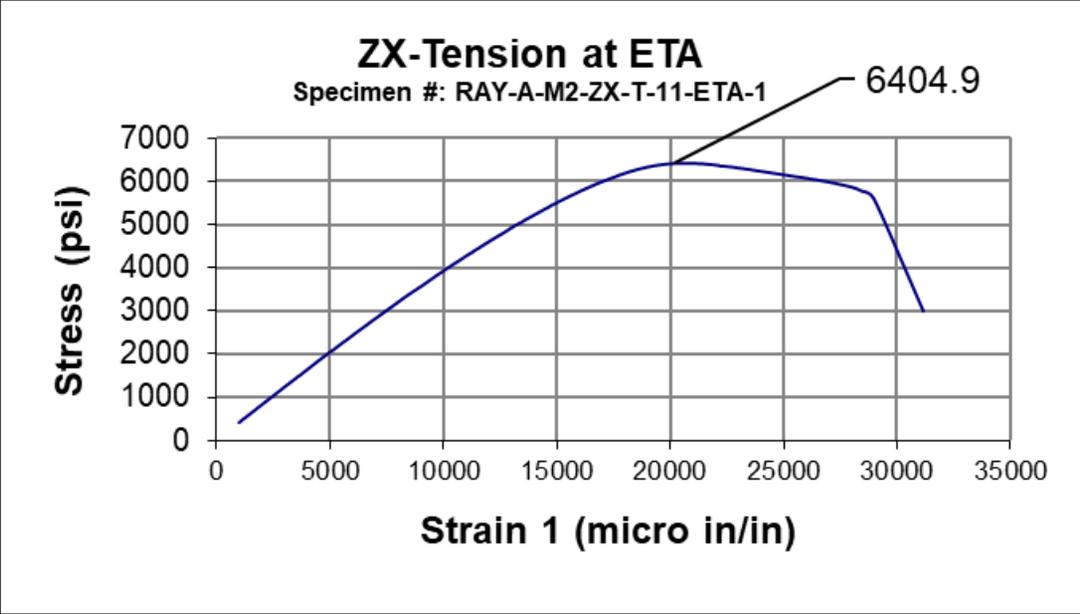


6.3 Dogbone ZX-Tension Properties (ZX-T)



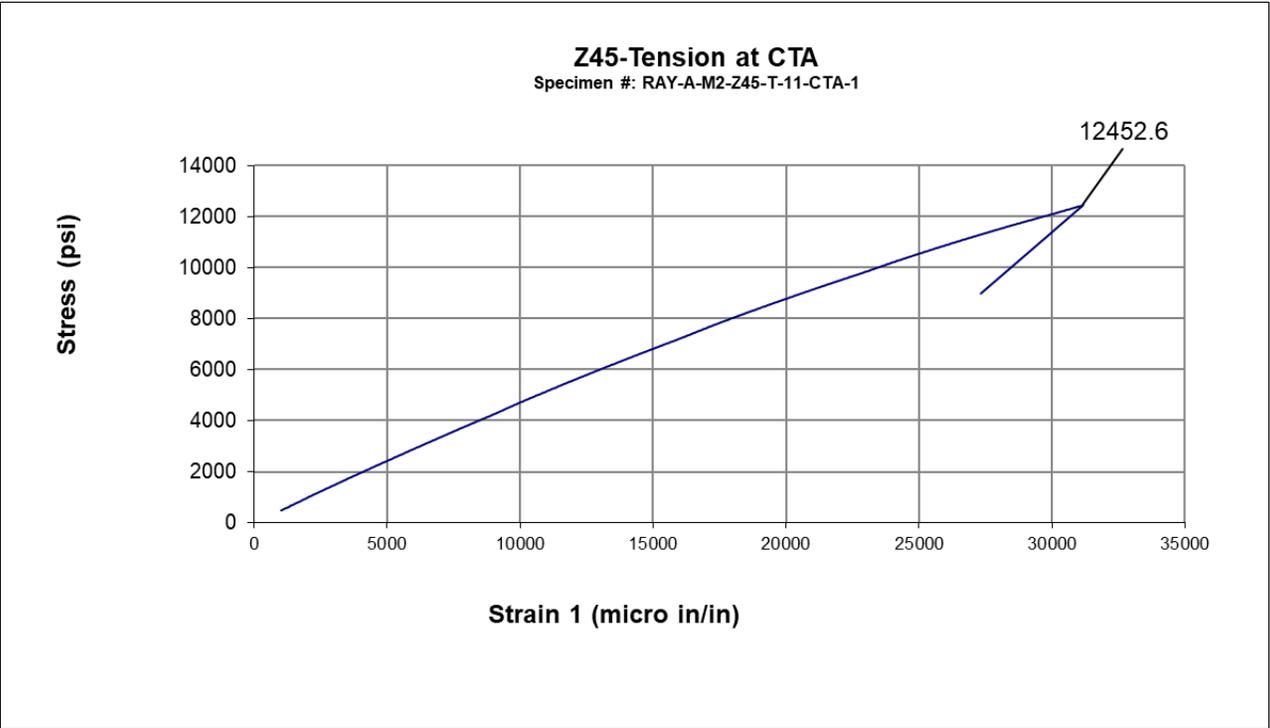


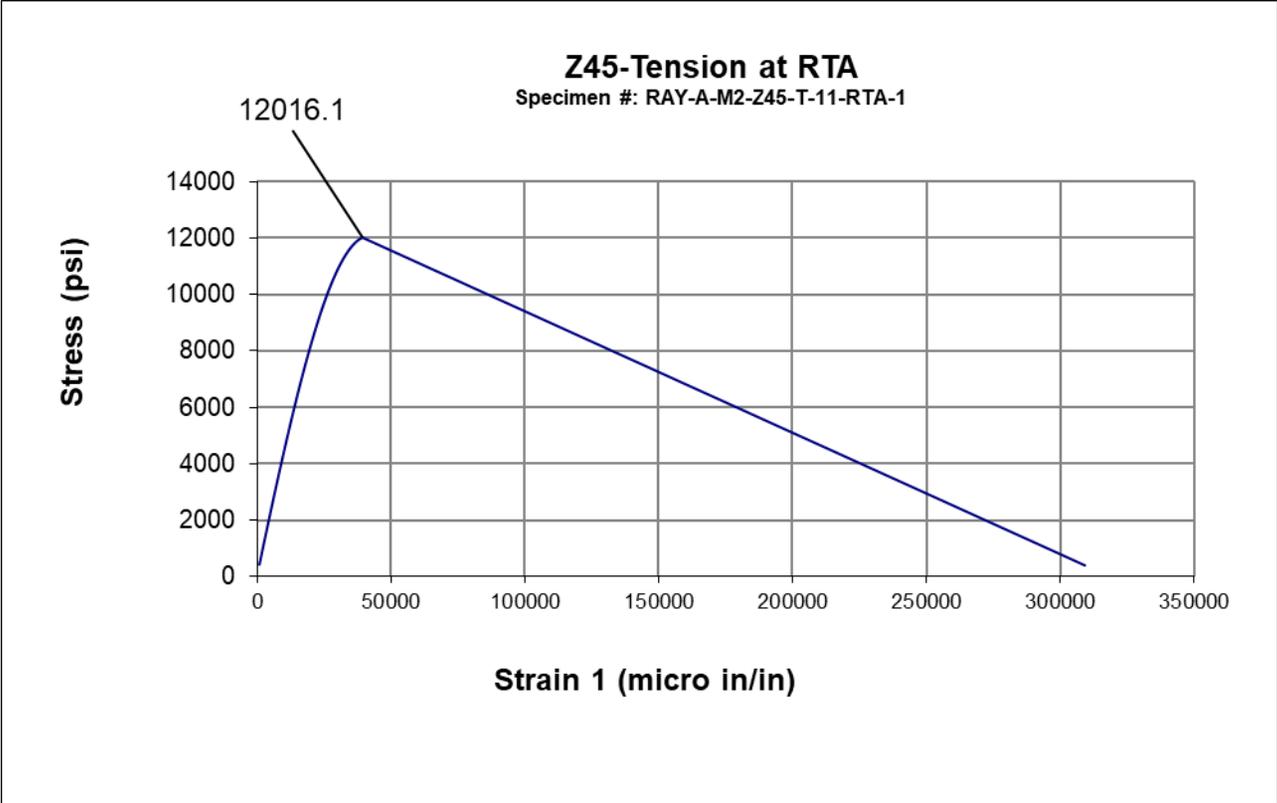


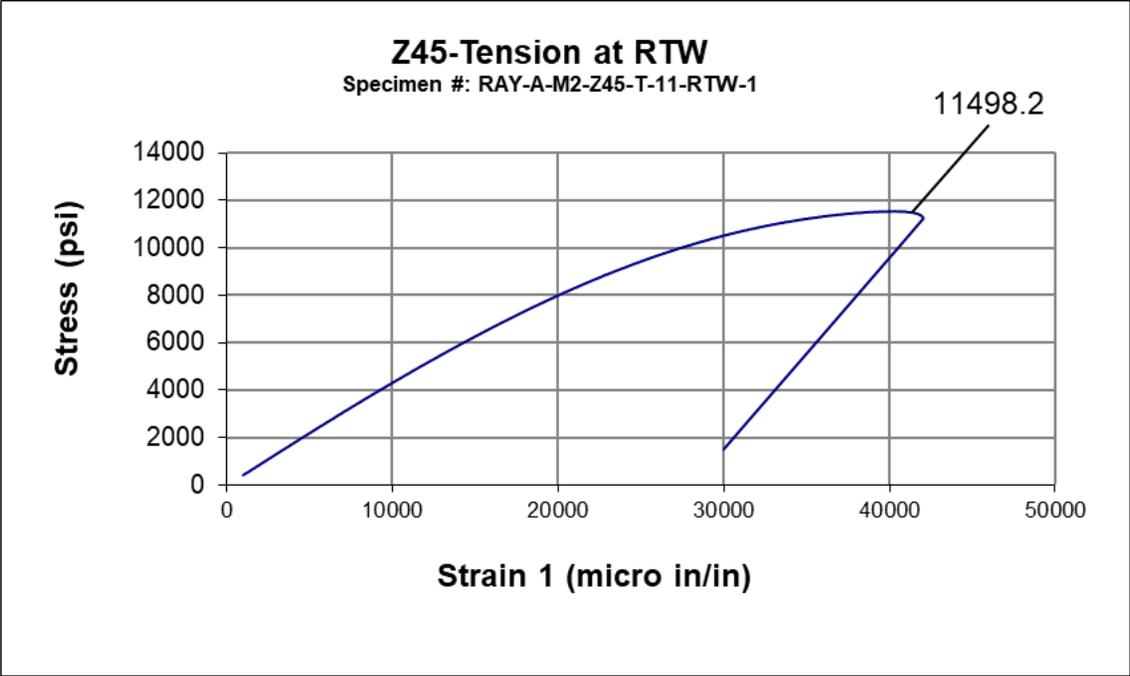


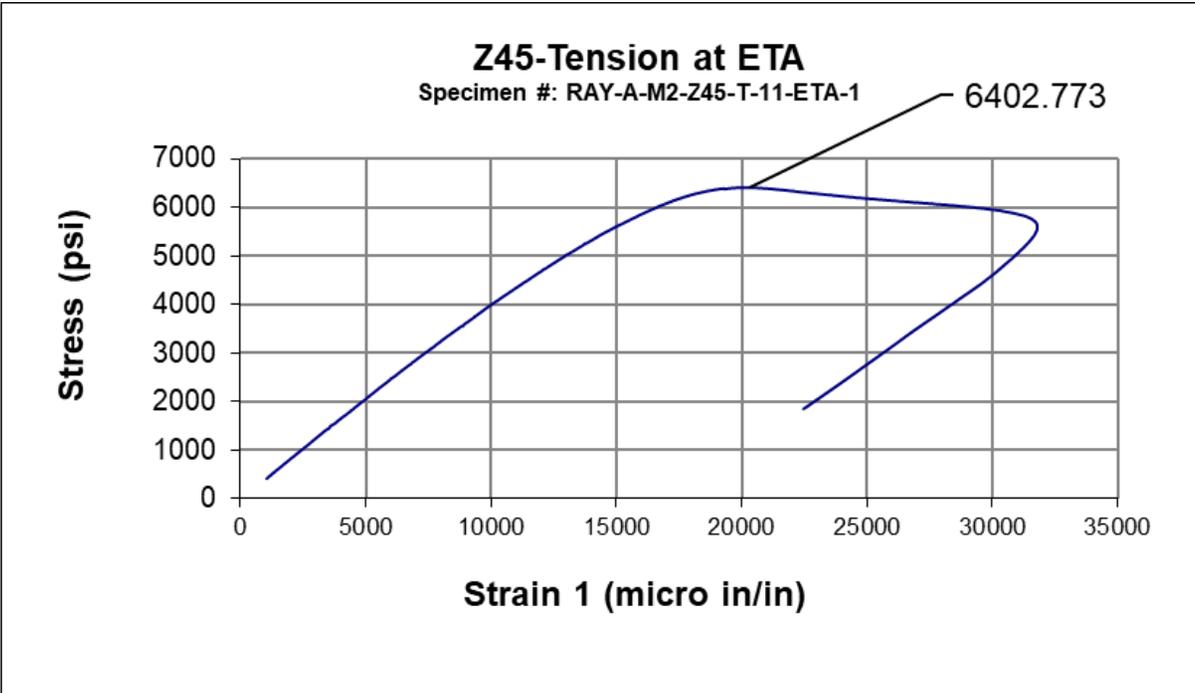


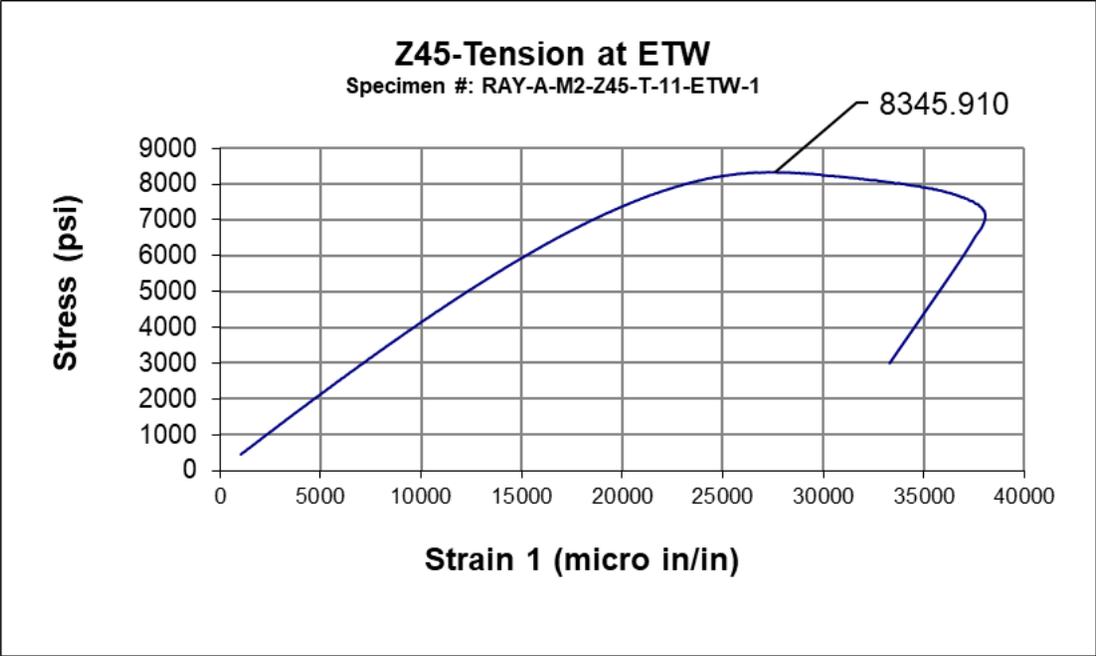
6.4 Dogbone Z45-Tension Properties (Z45-T)



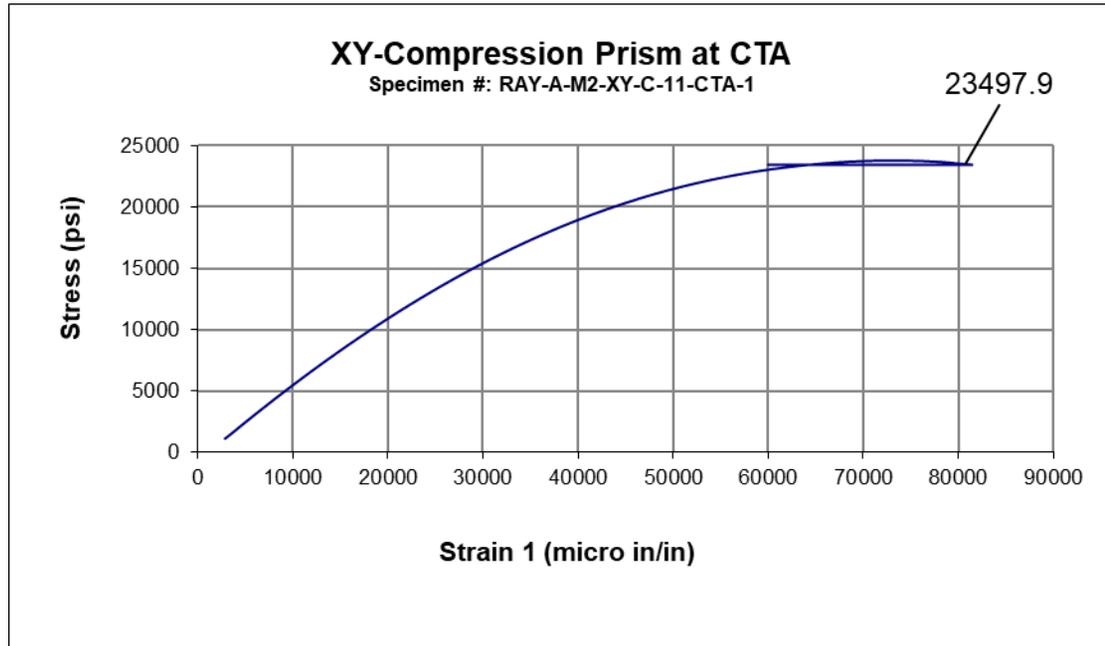


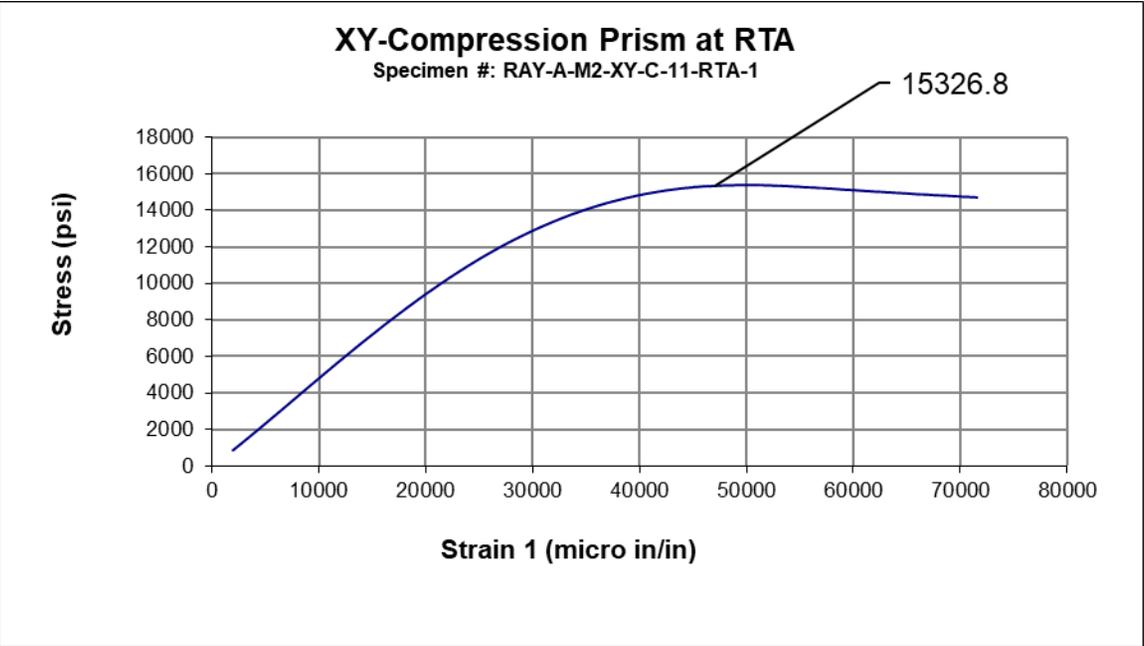


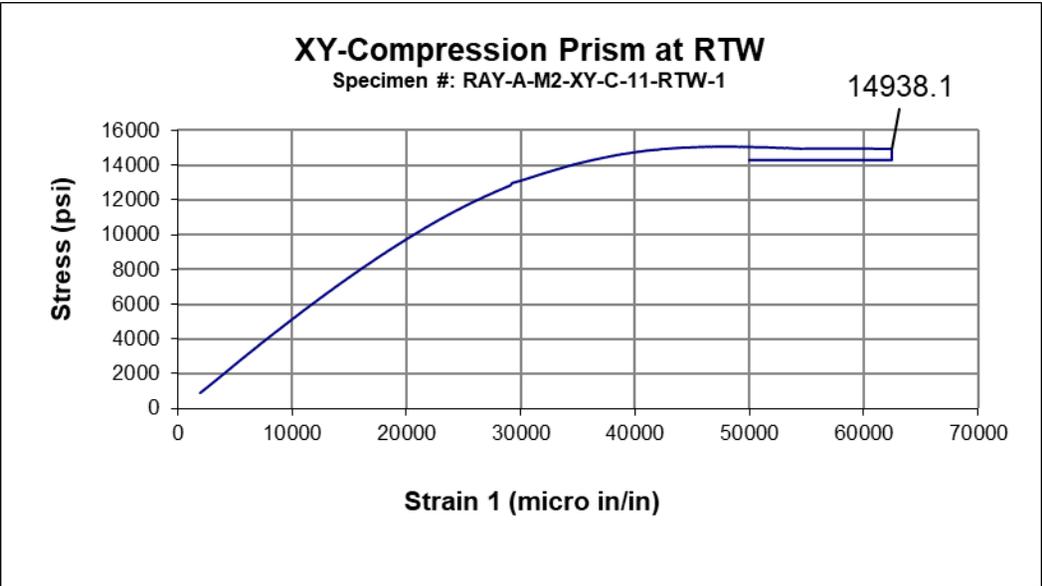


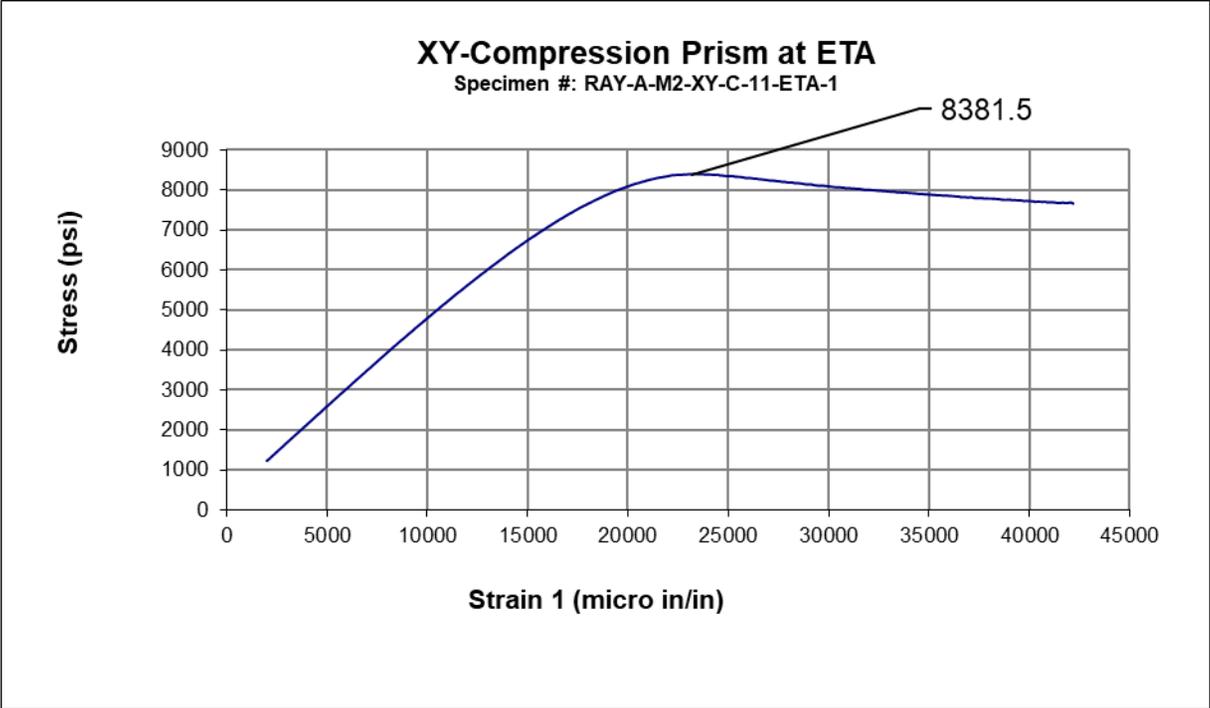


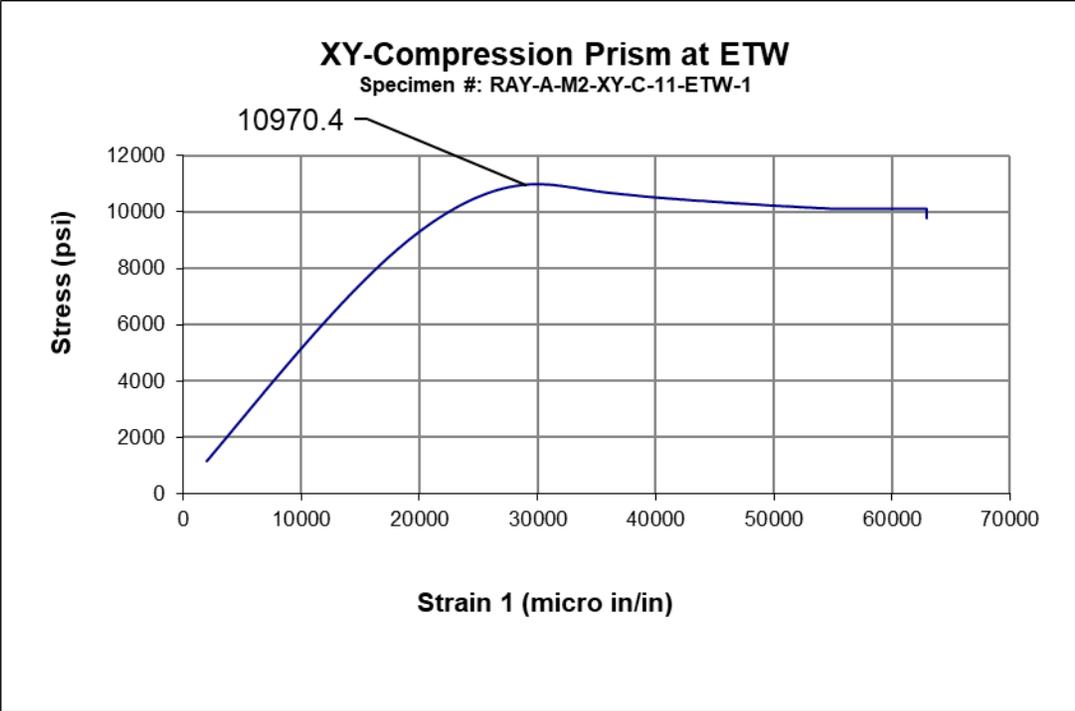
6.5 XY Compression Prism Properties (XY-C)



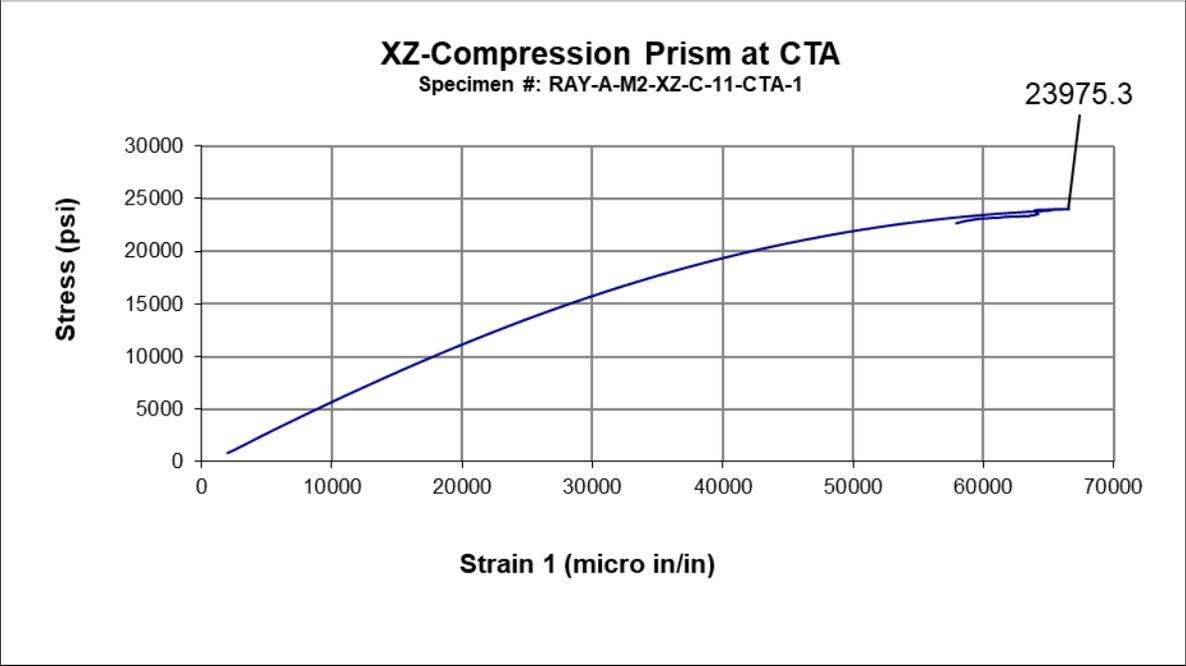


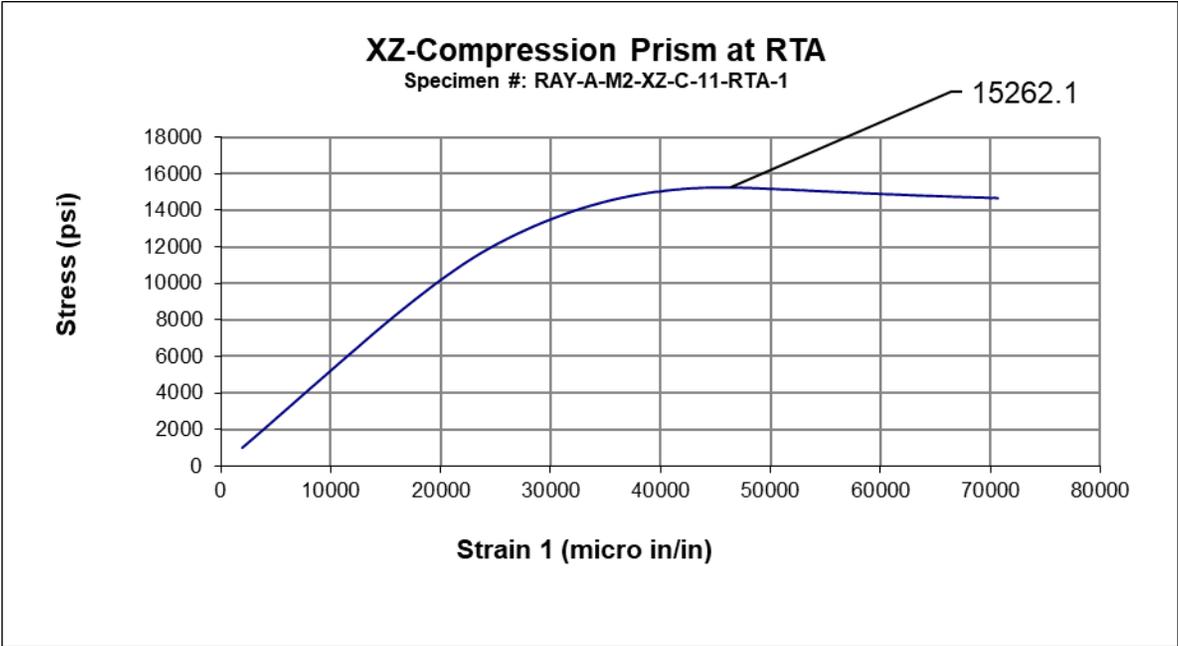


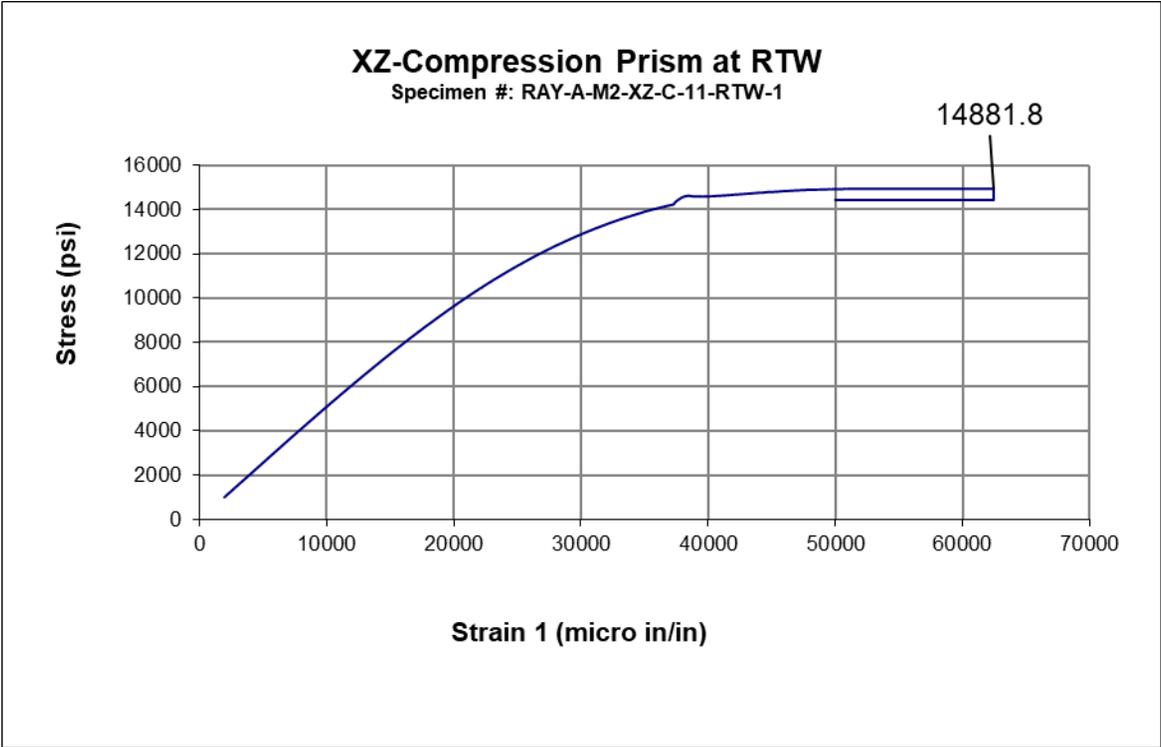




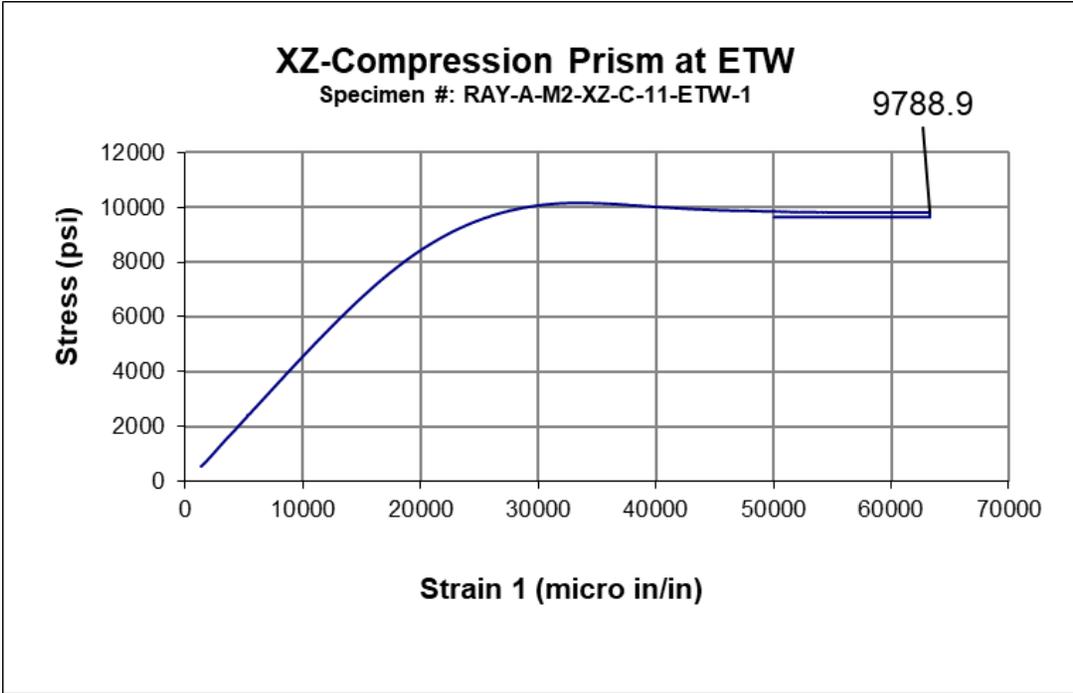
6.6 XZ Compression Prism Properties (XZ-C)



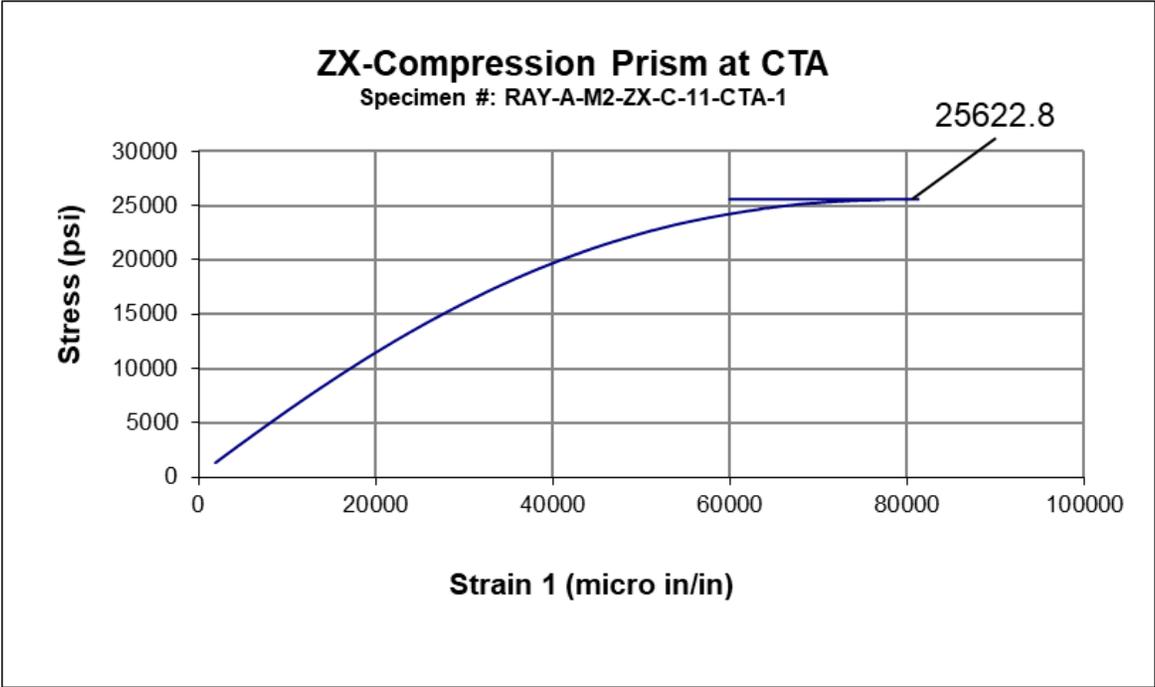


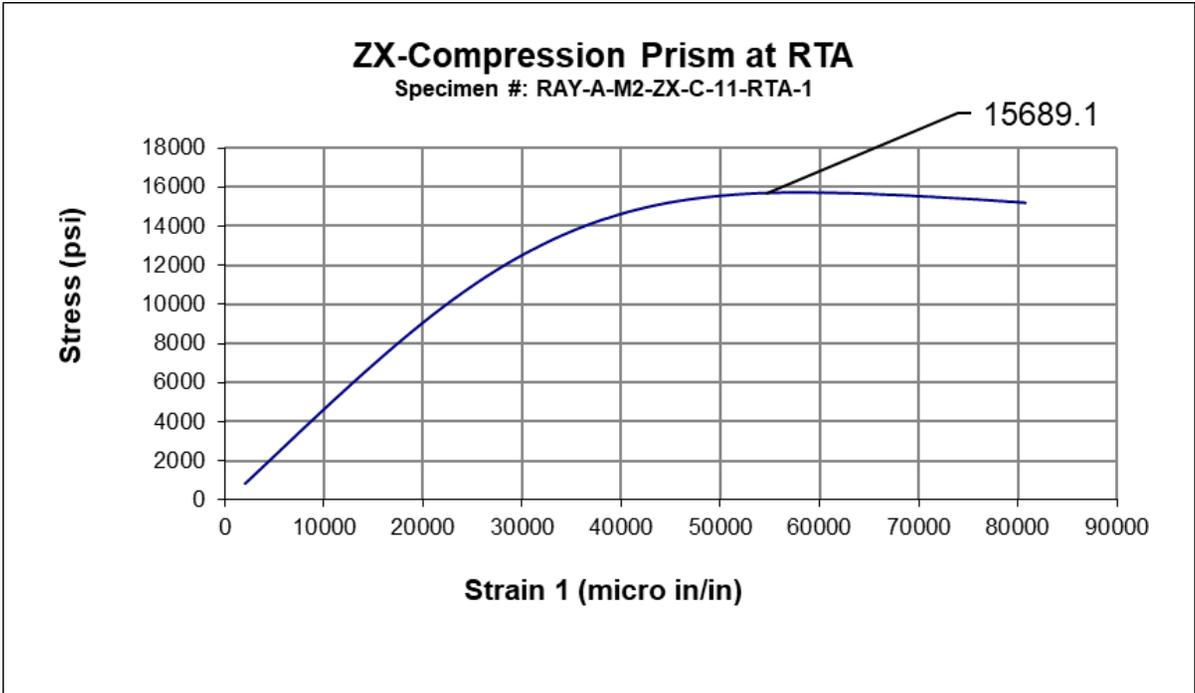


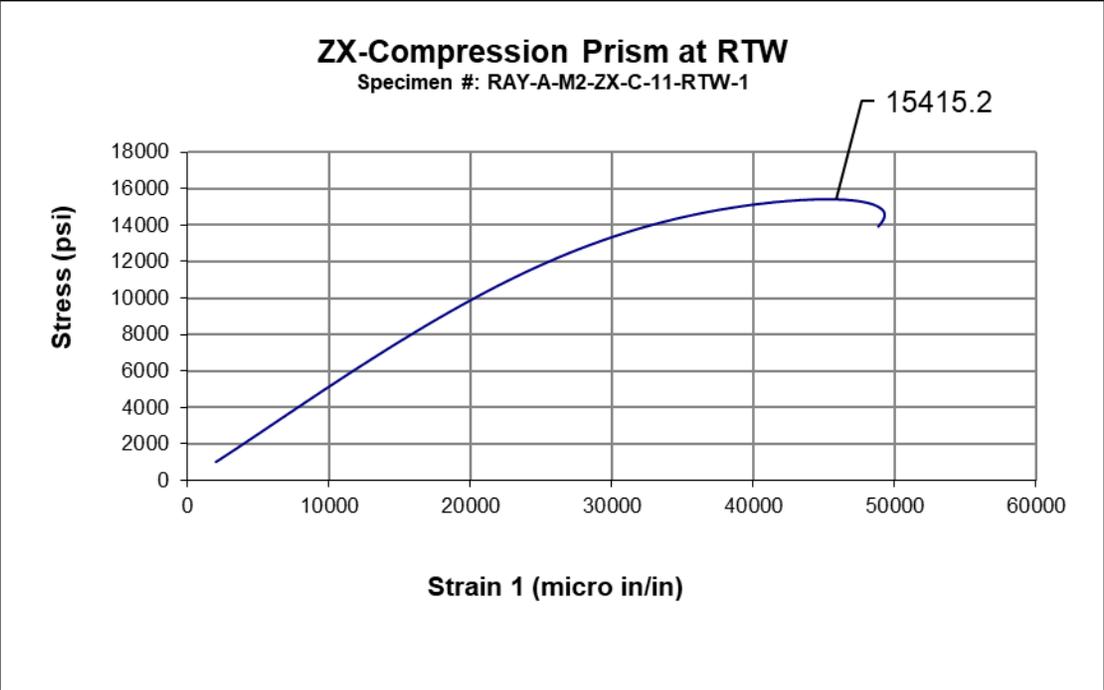




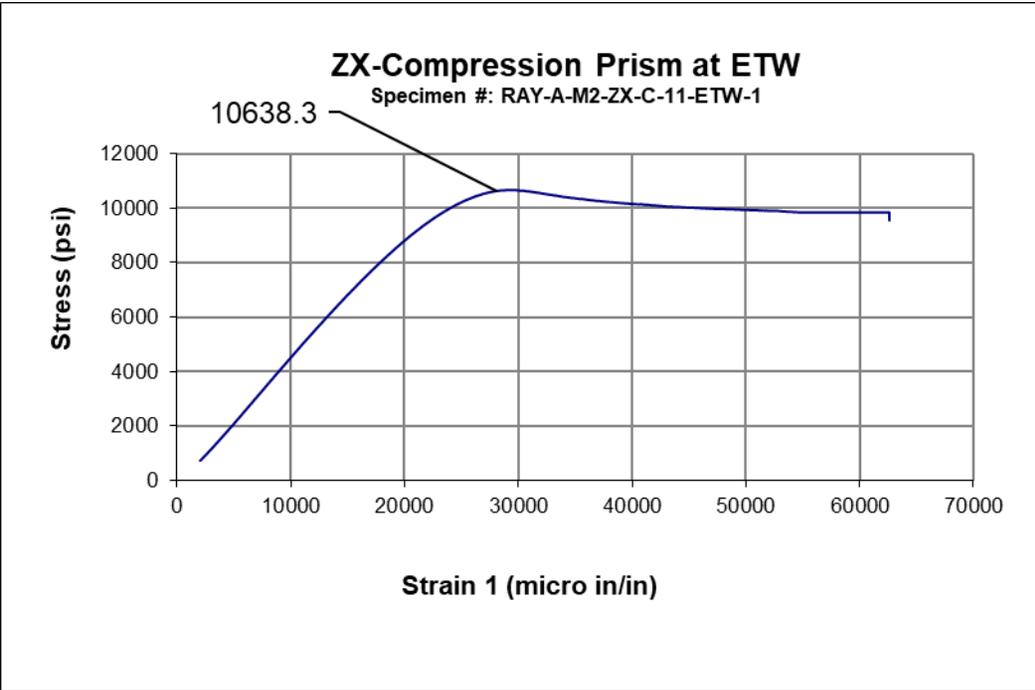
6.7 ZX Compression Prism Properties (ZX-C)



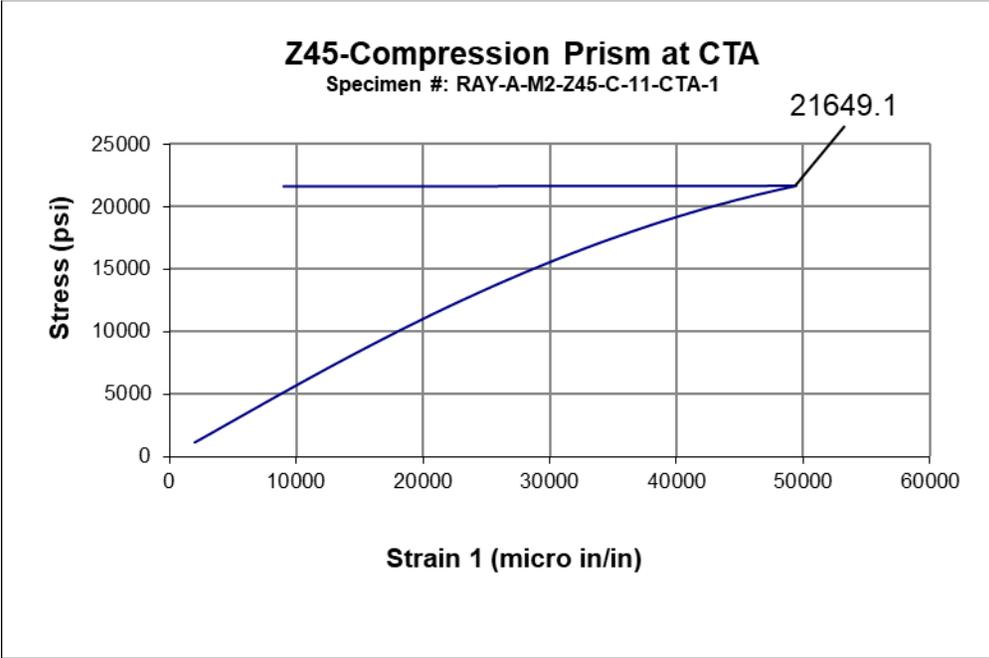


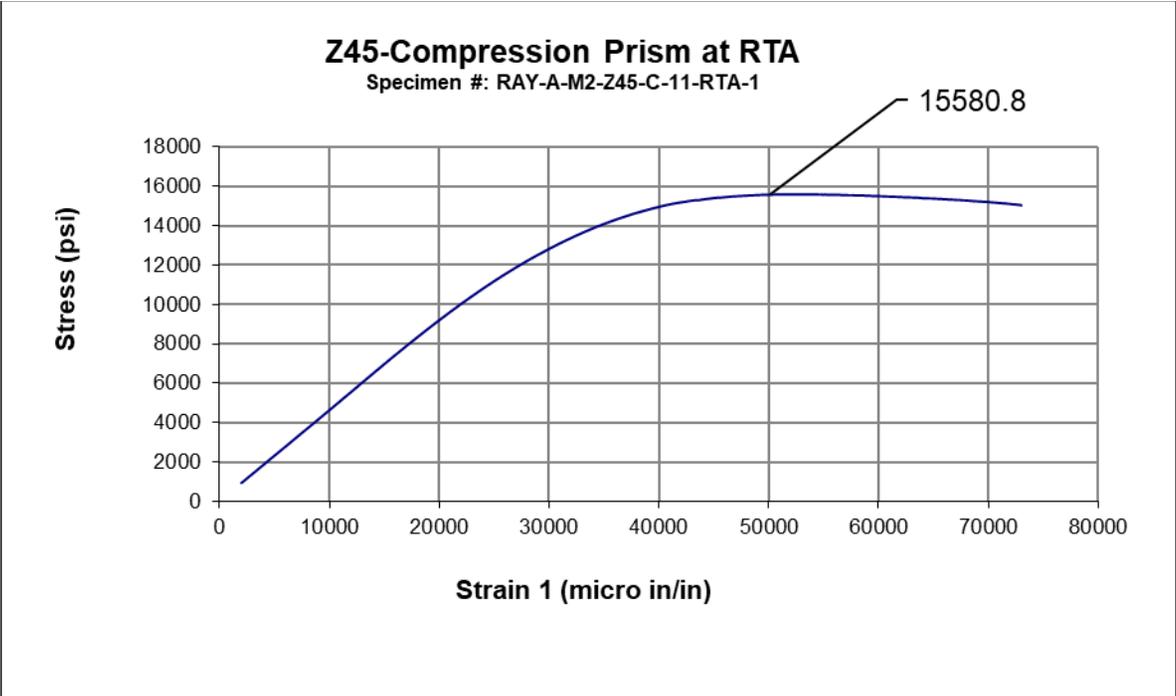


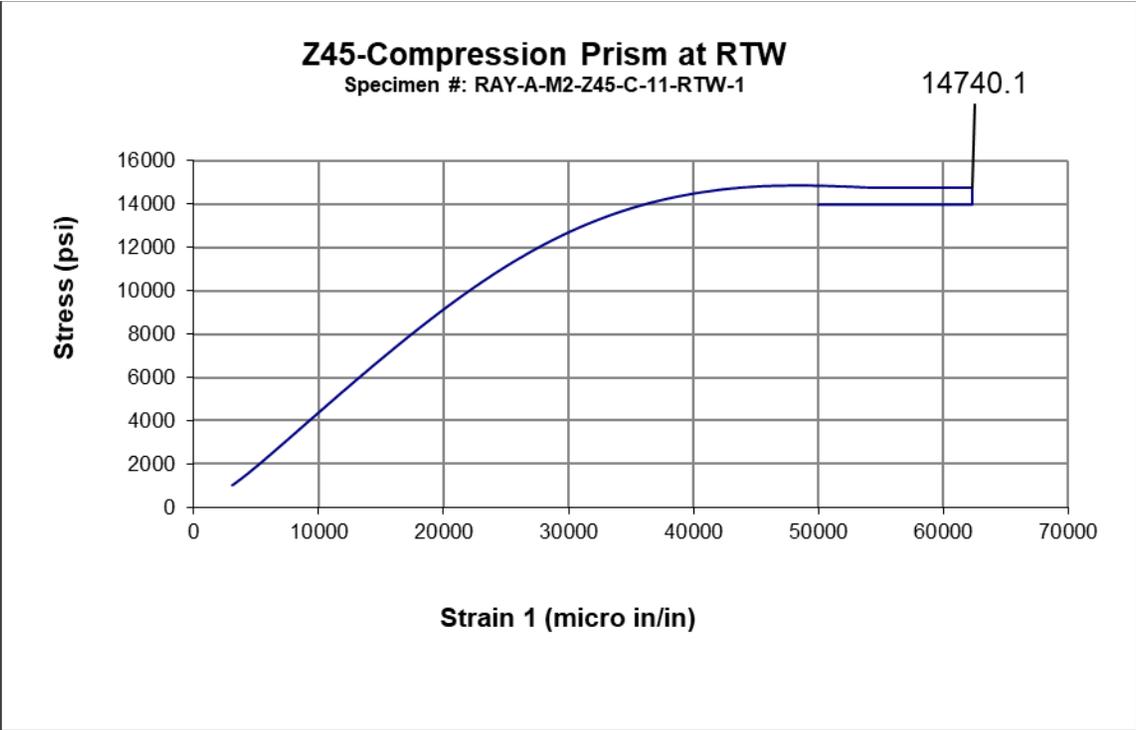




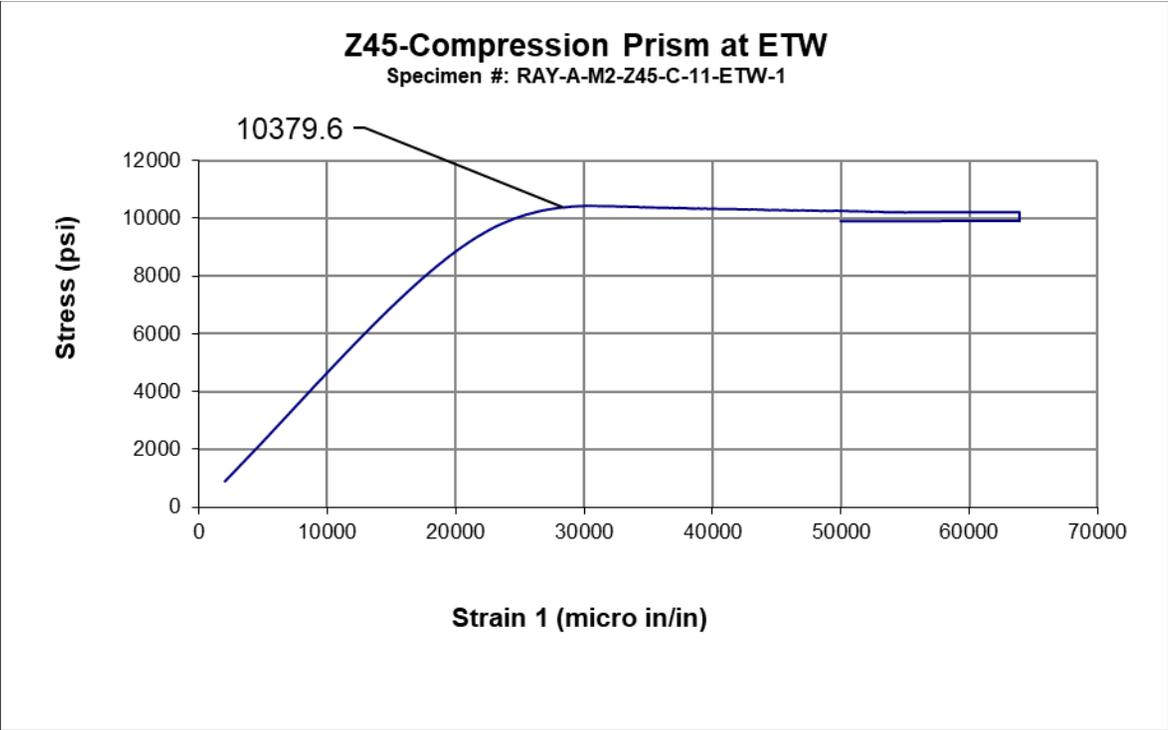
6.8 Z45 Compression Prism Properties (Z45-C)



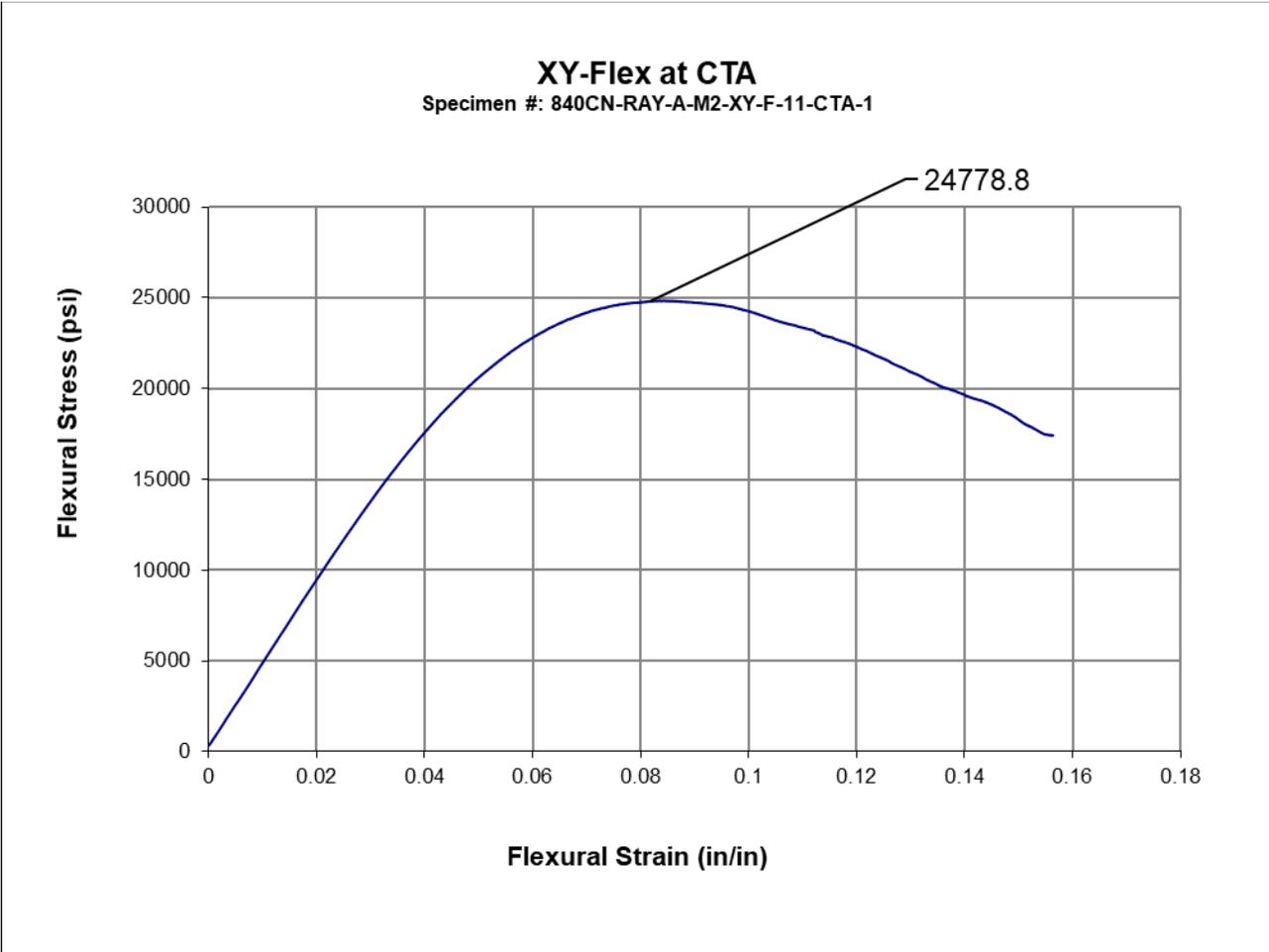


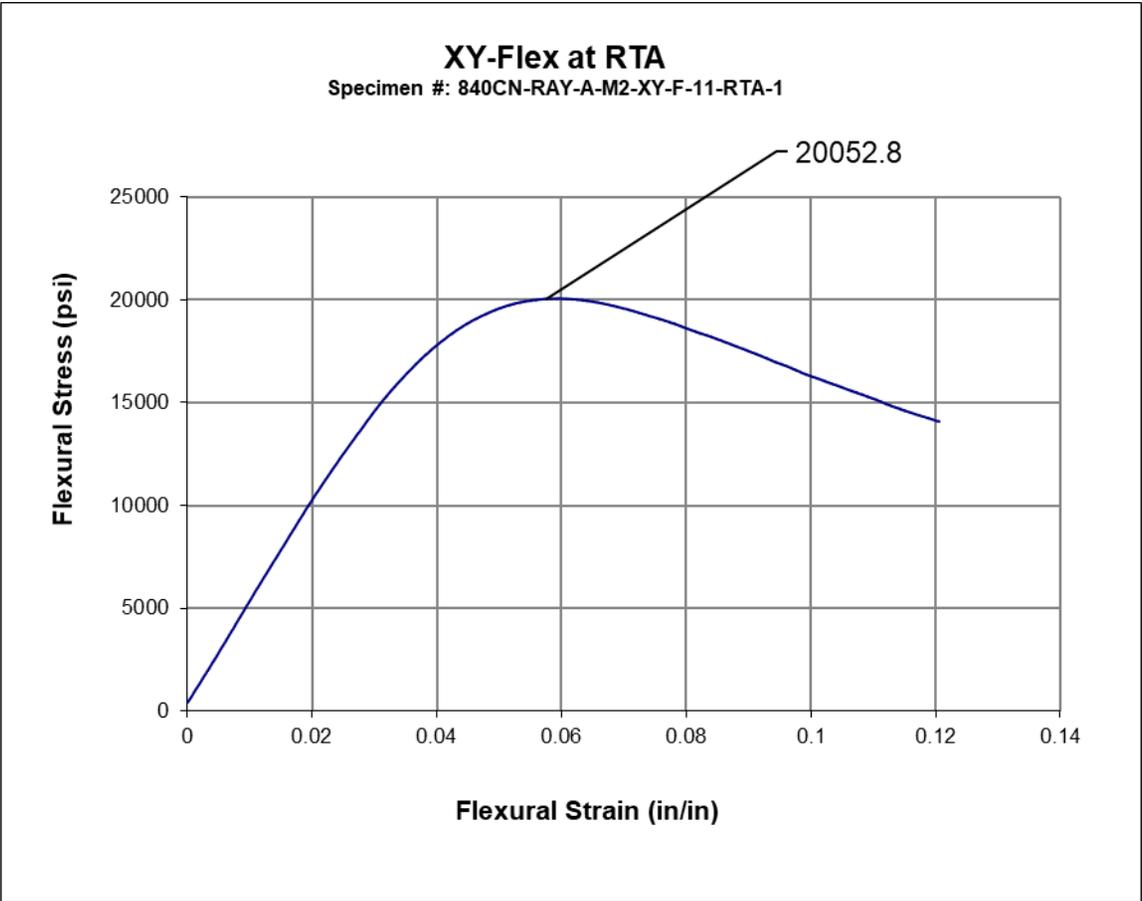


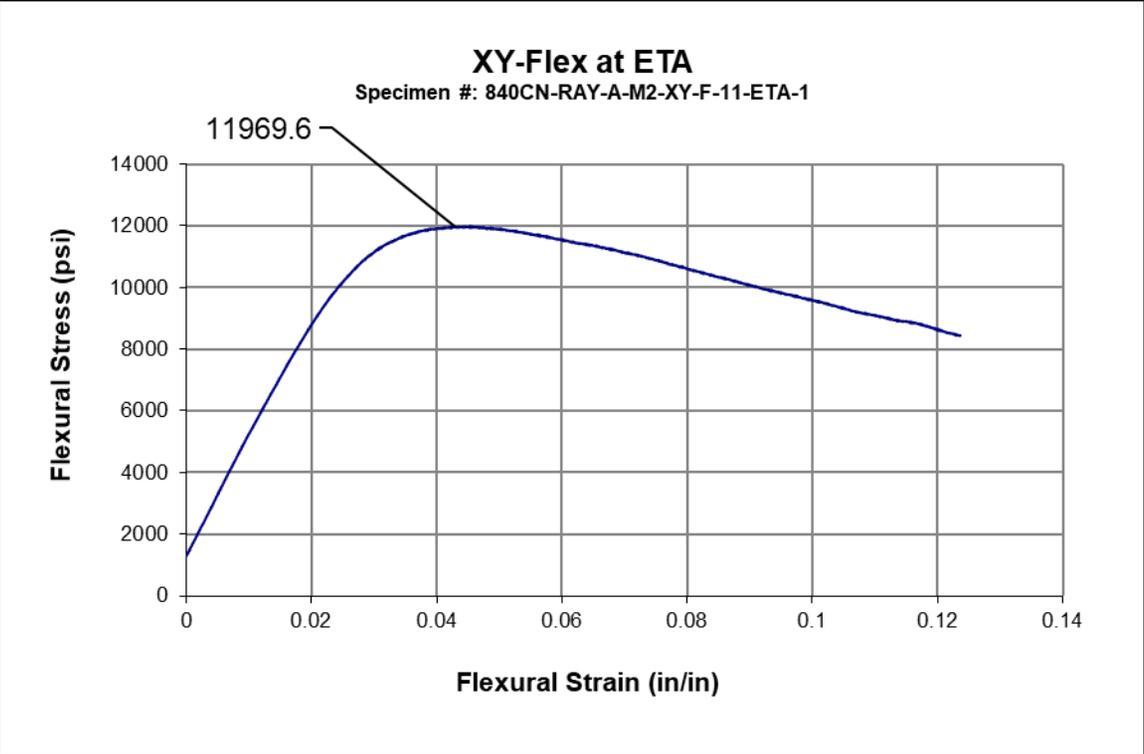


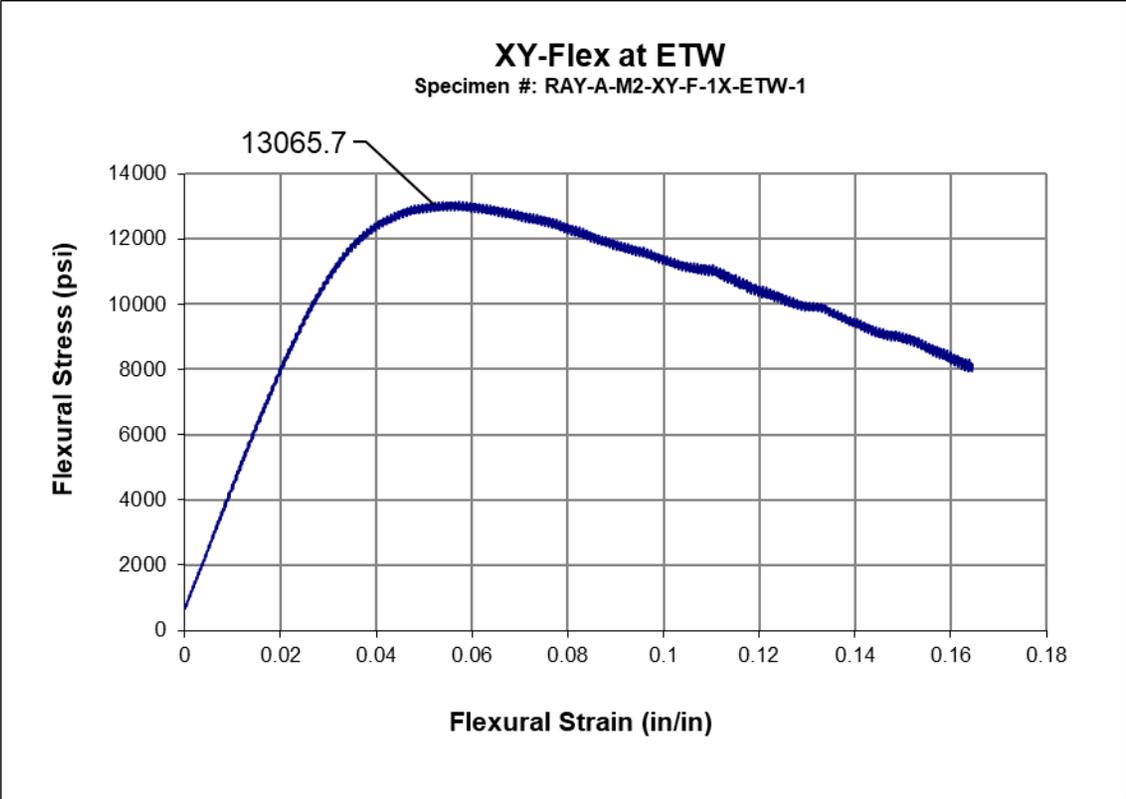


6.9 XY Flex Properties (XY-F)

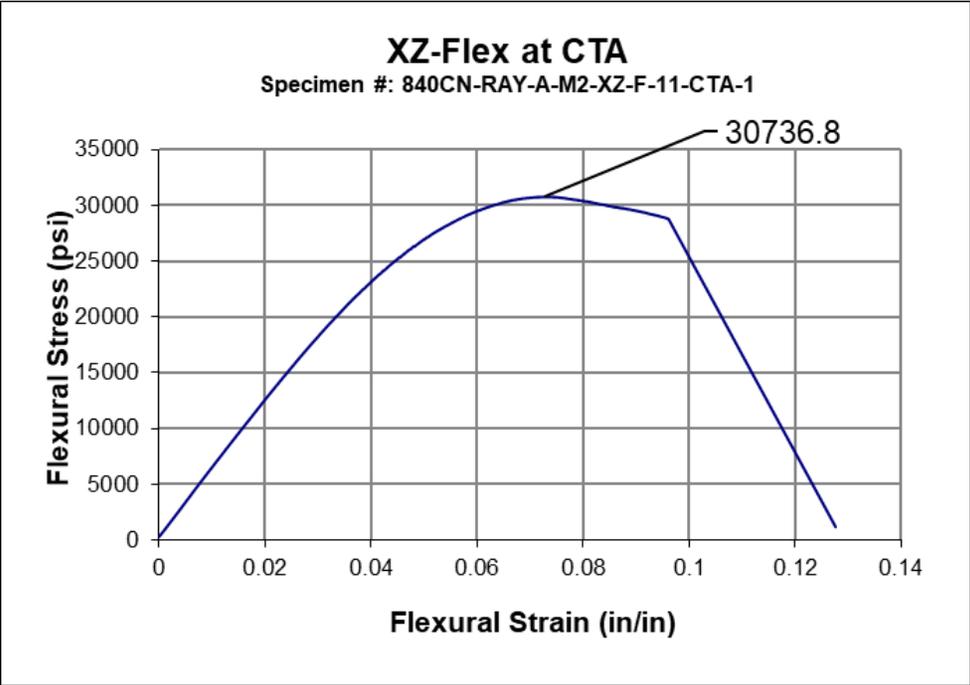


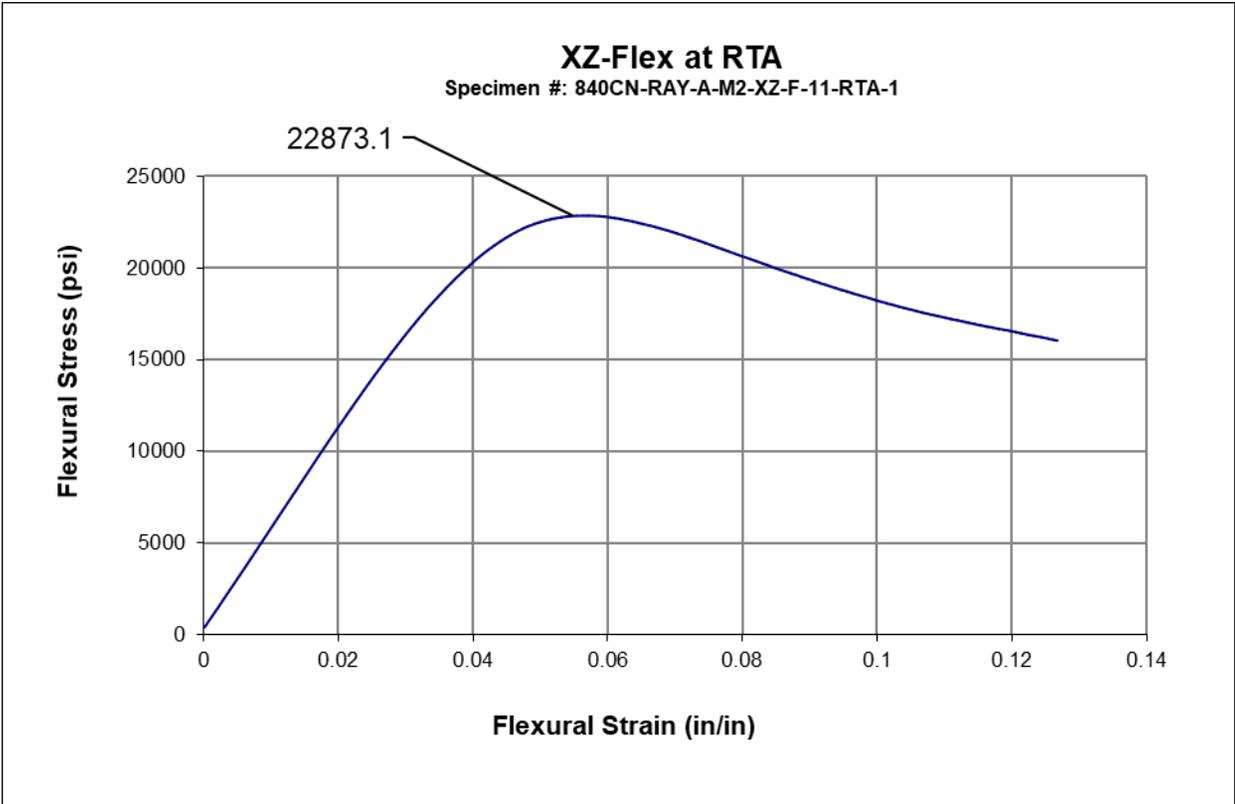


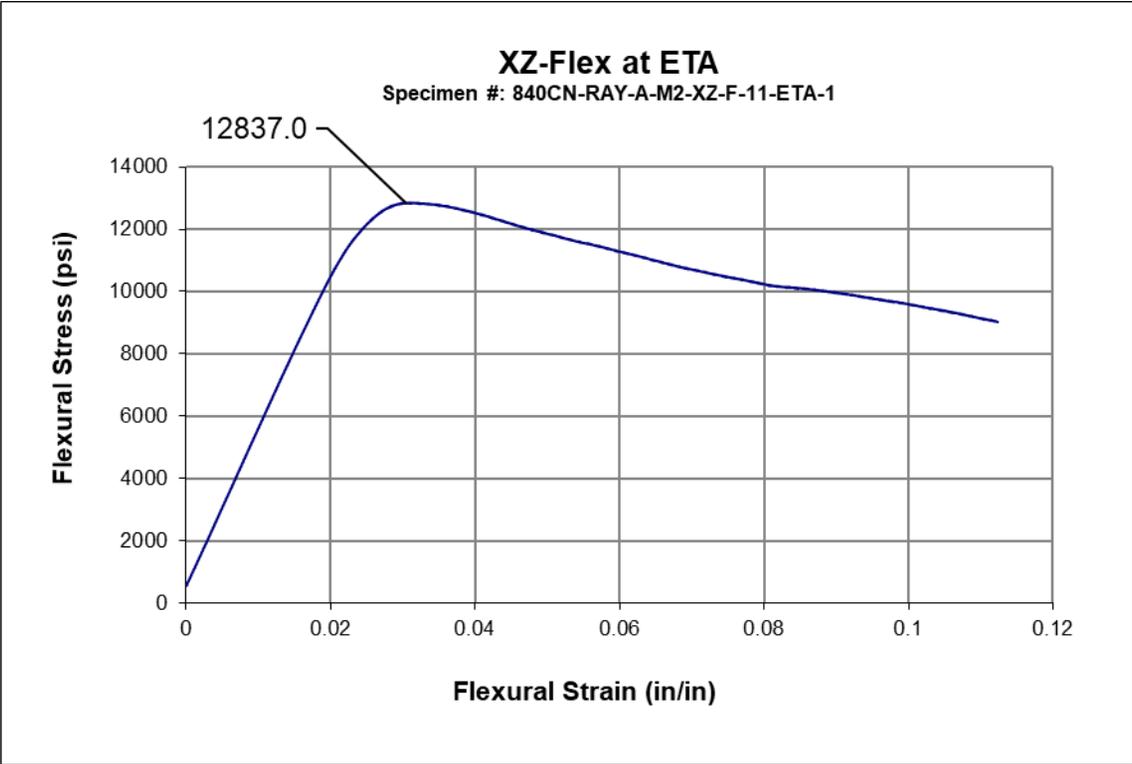


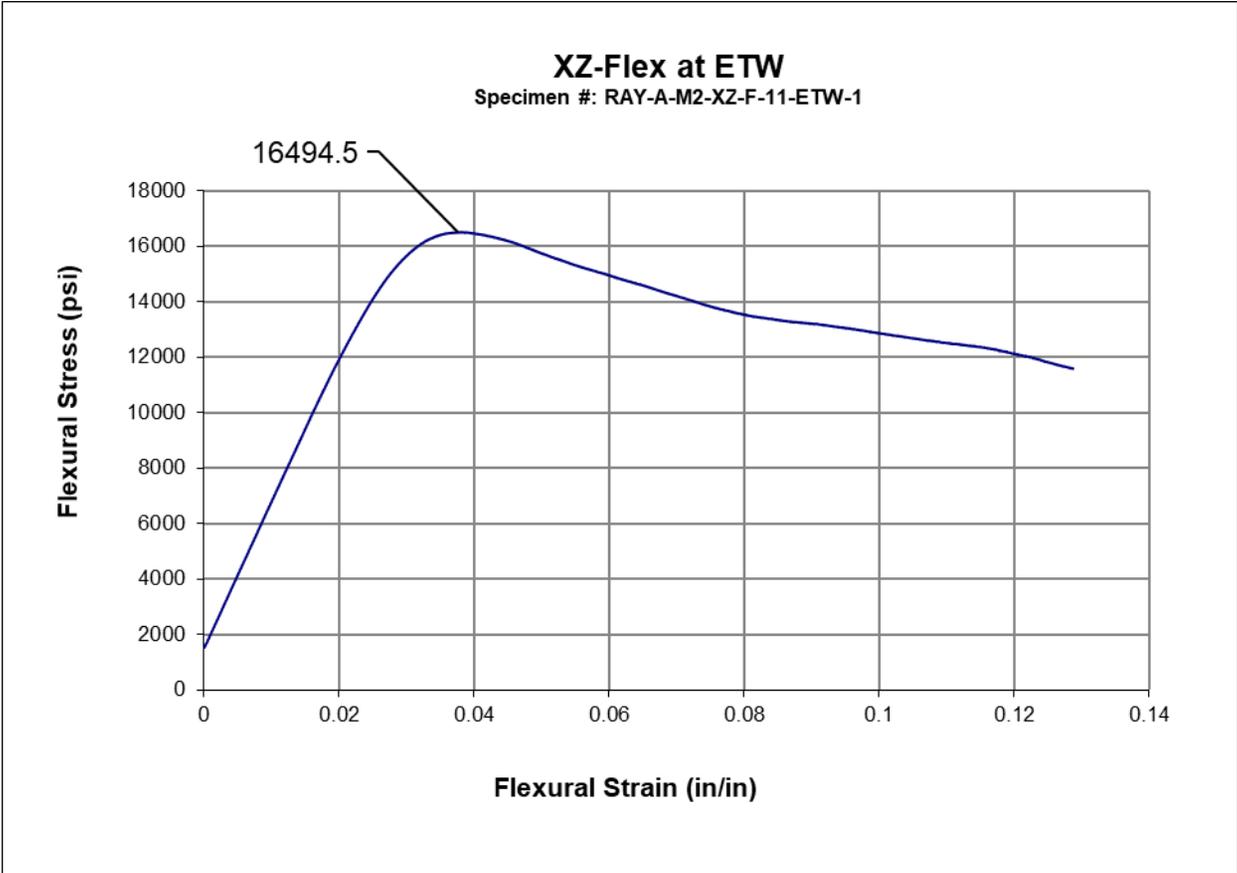


6.10 XZ Flex Properties (XZ-F)

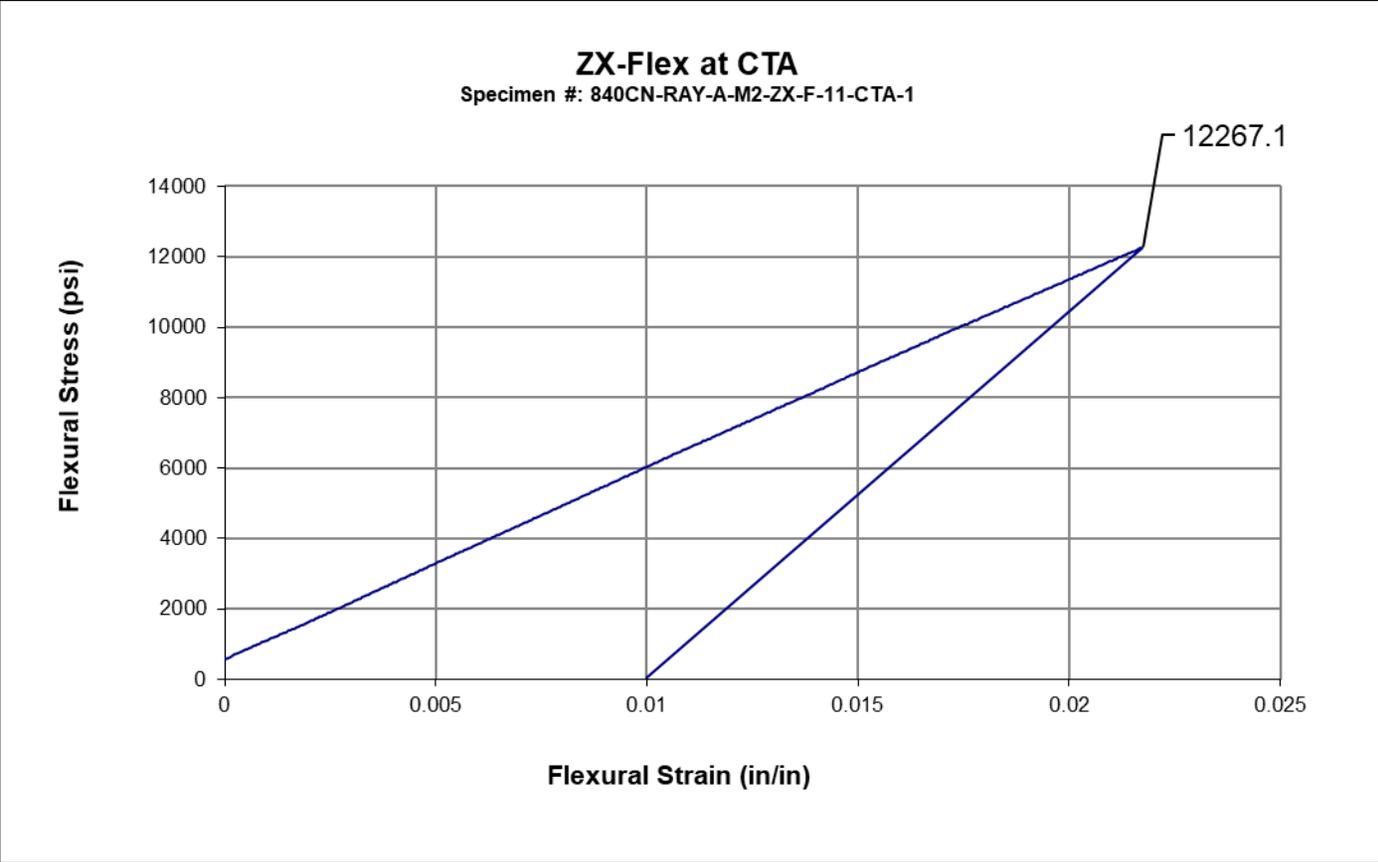


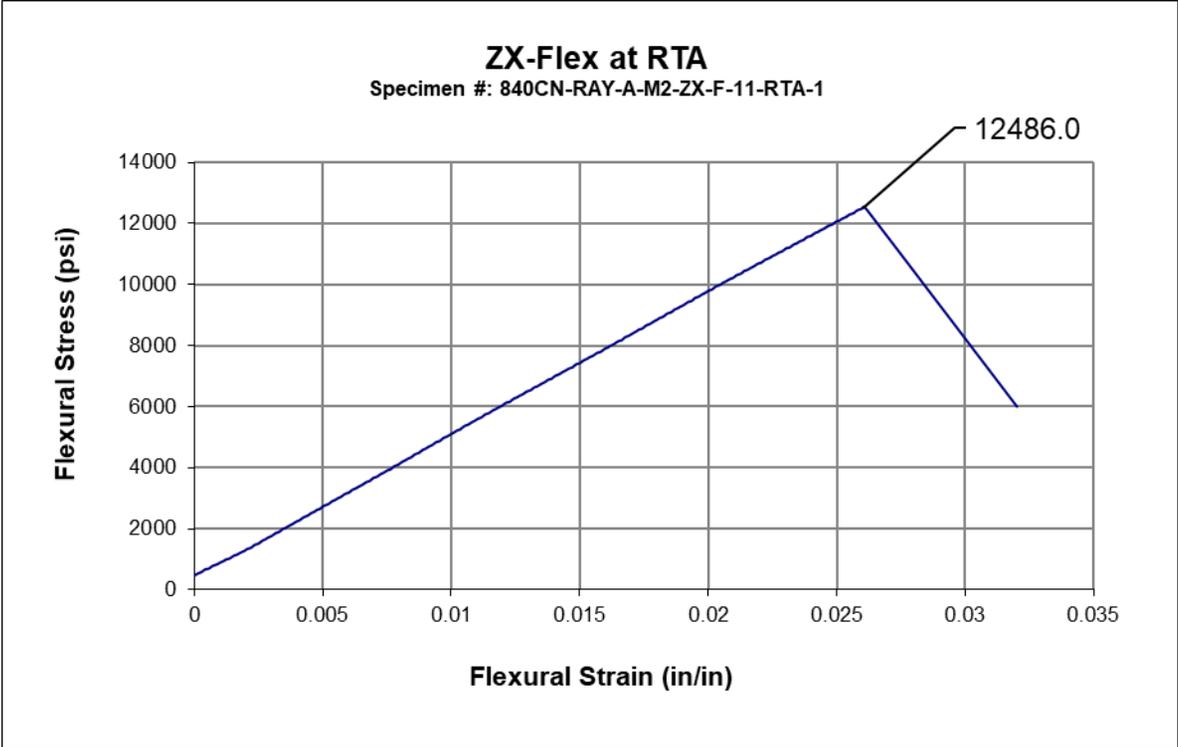


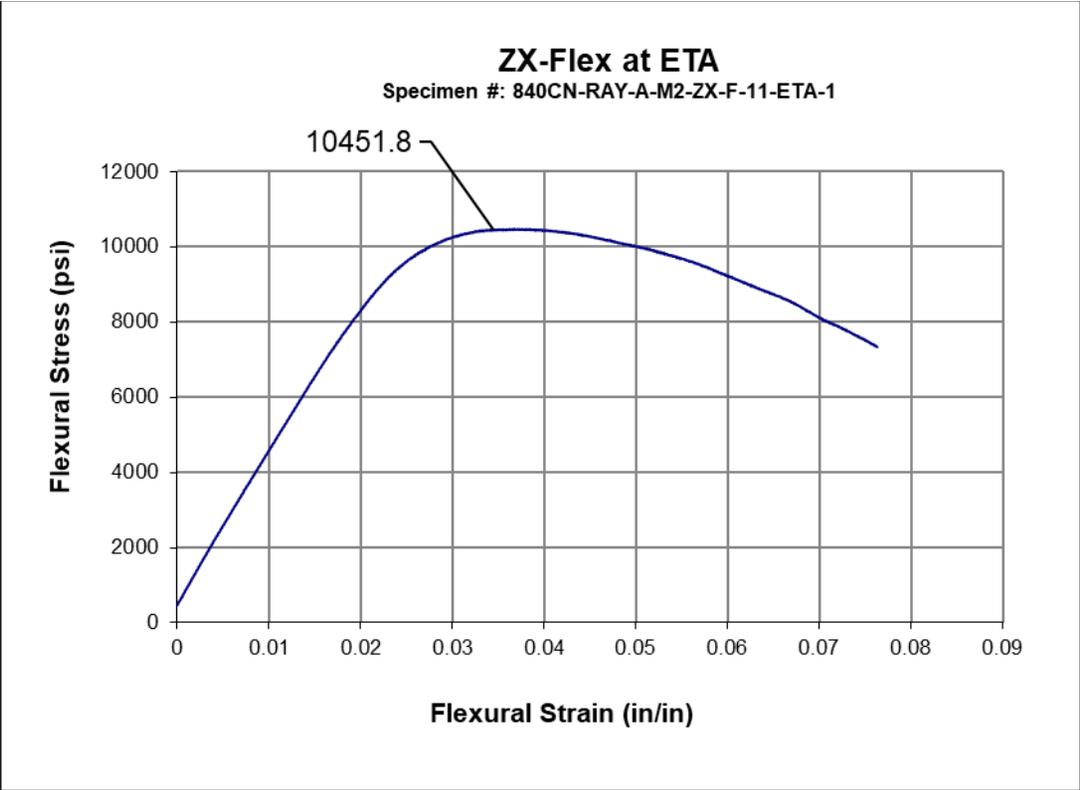


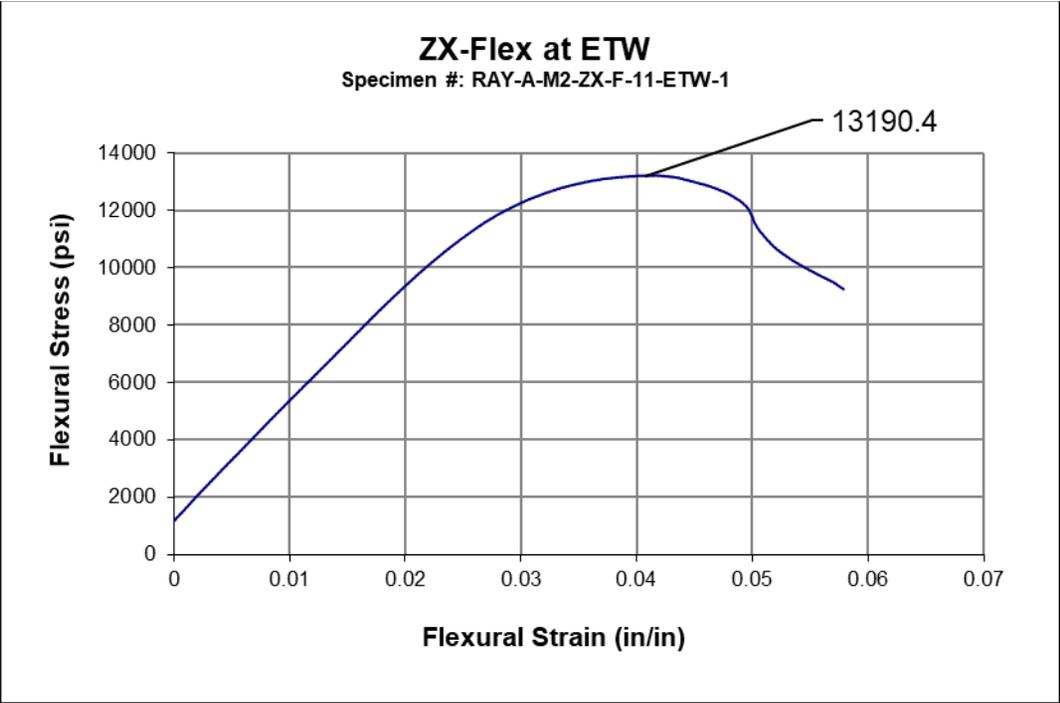


6.11 ZX Flex Properties (ZX-F)

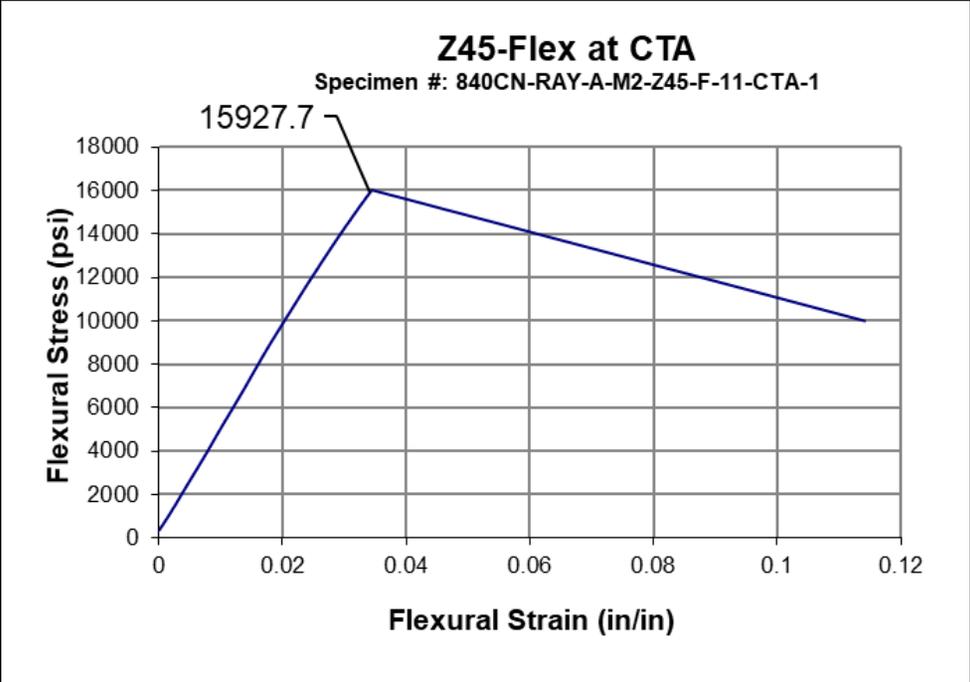


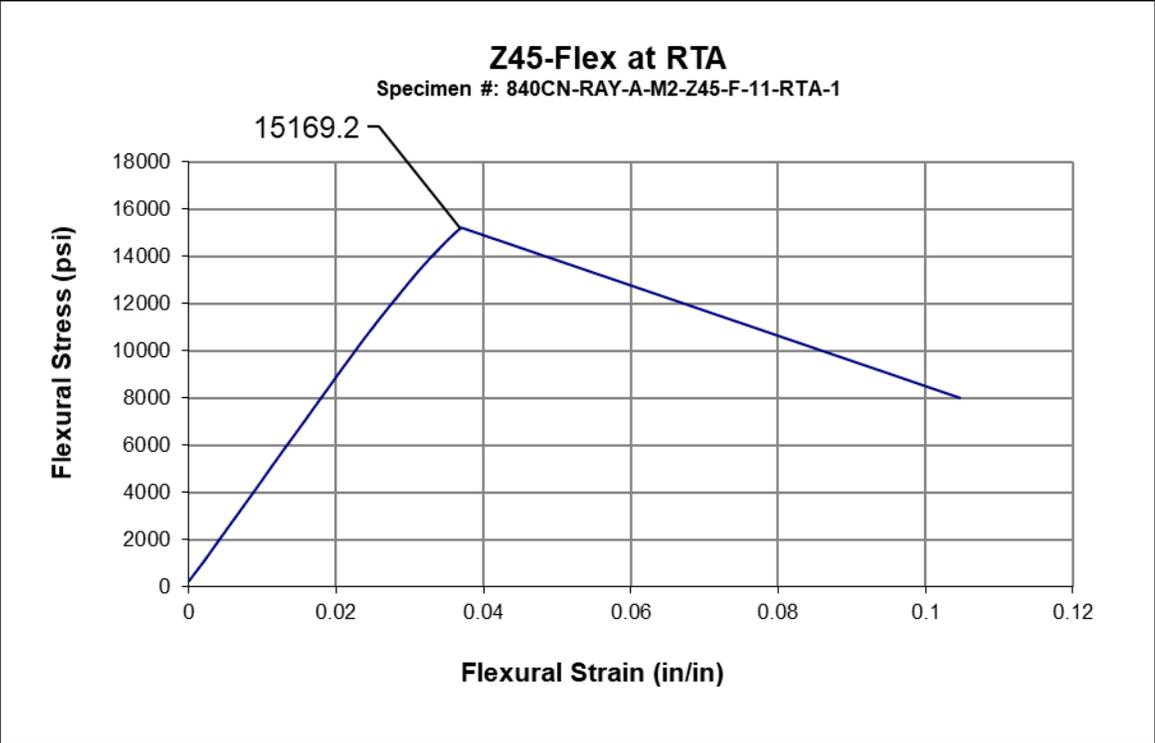


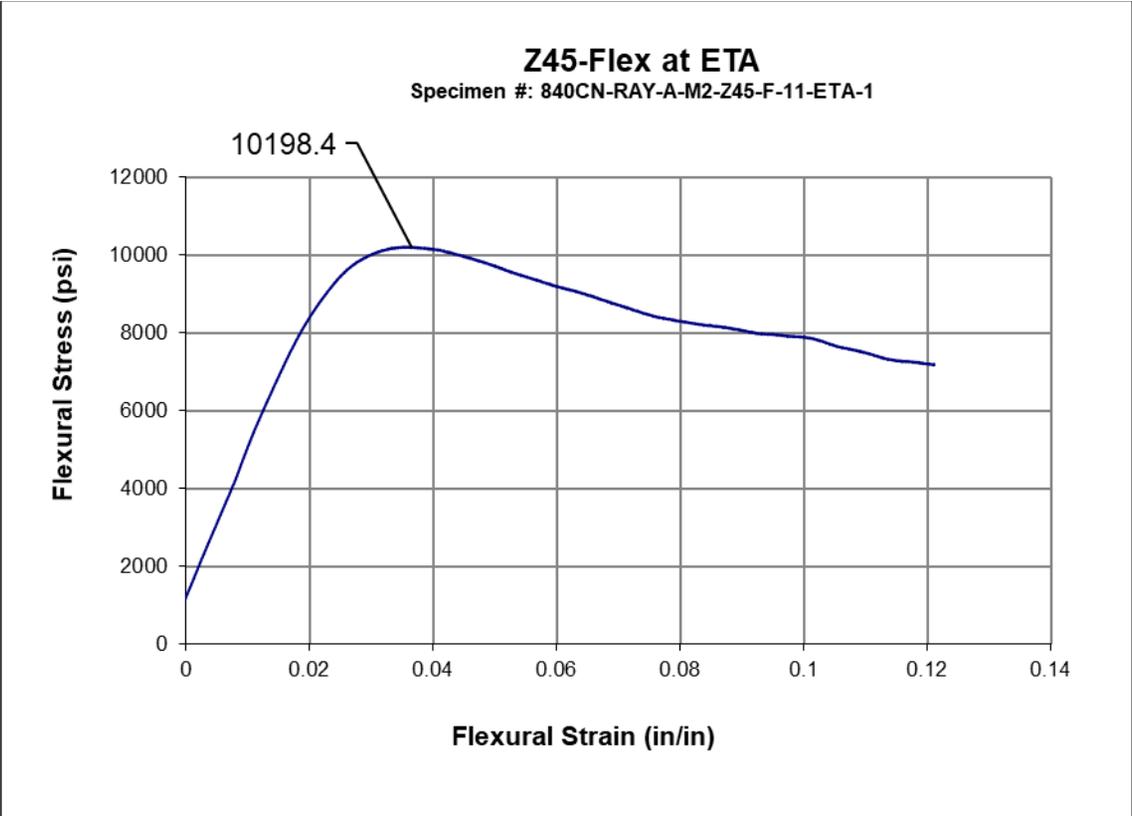


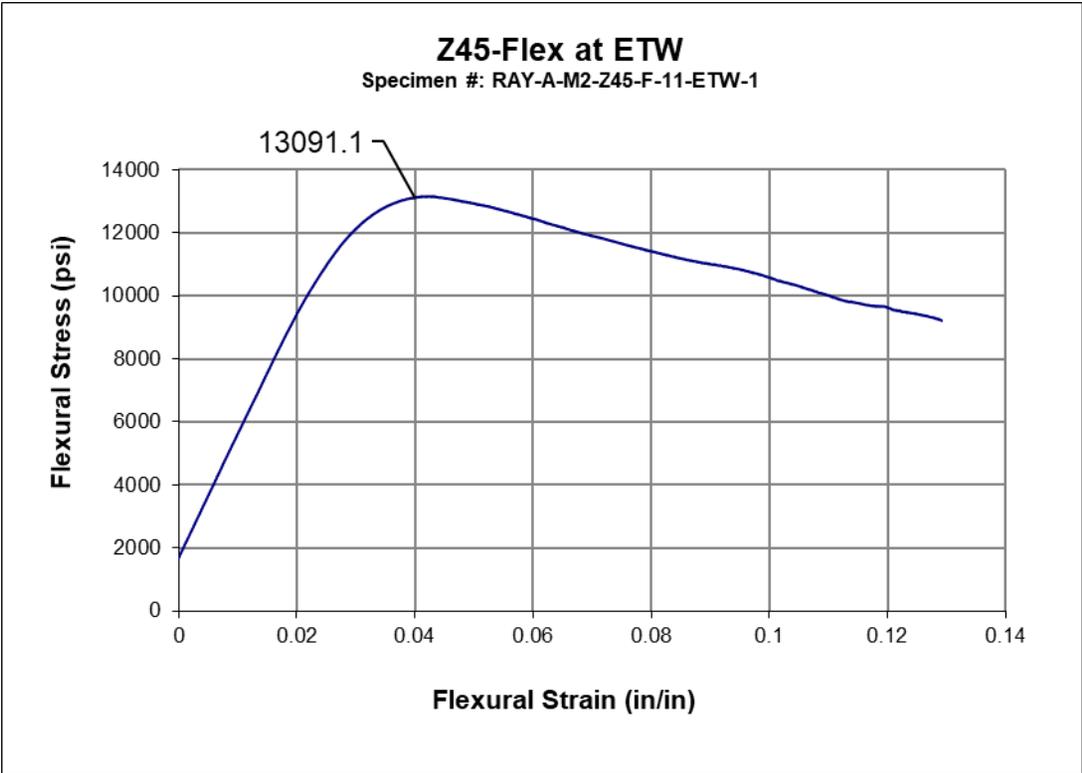


6.12 Z45 Flex Properties (Z45-F)

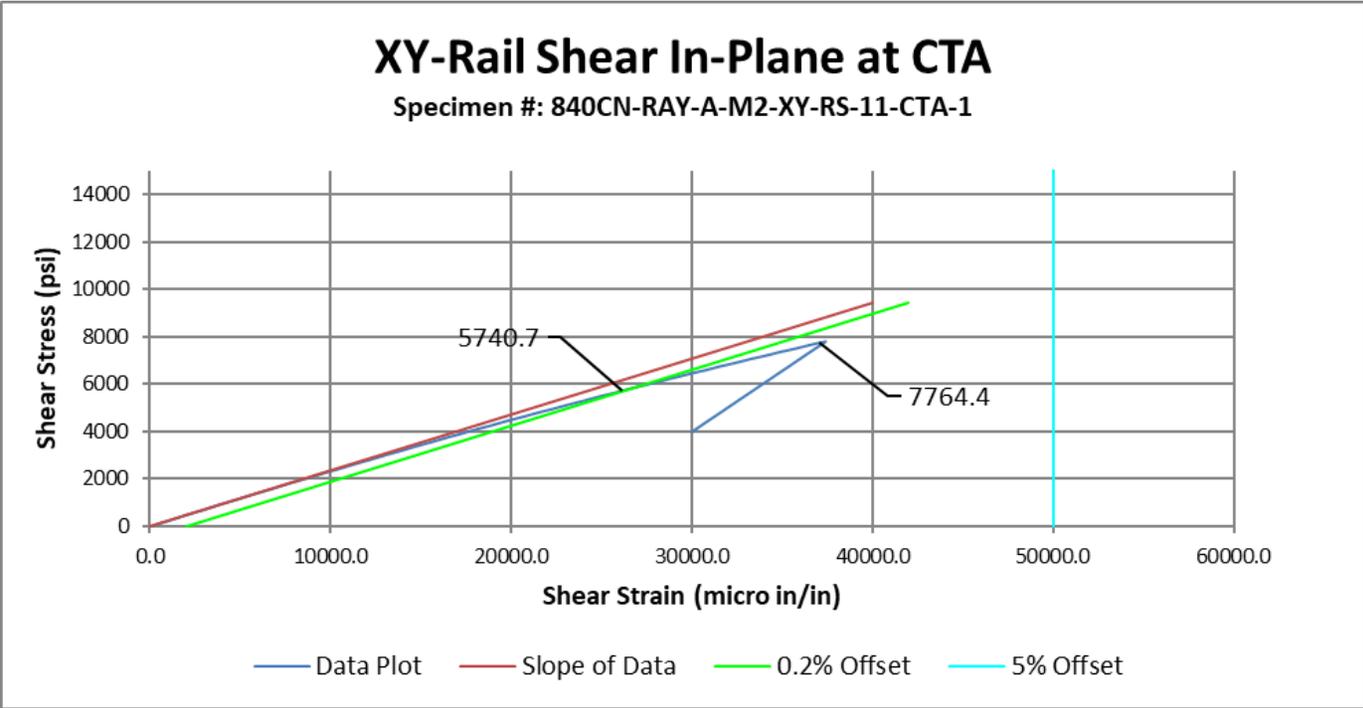


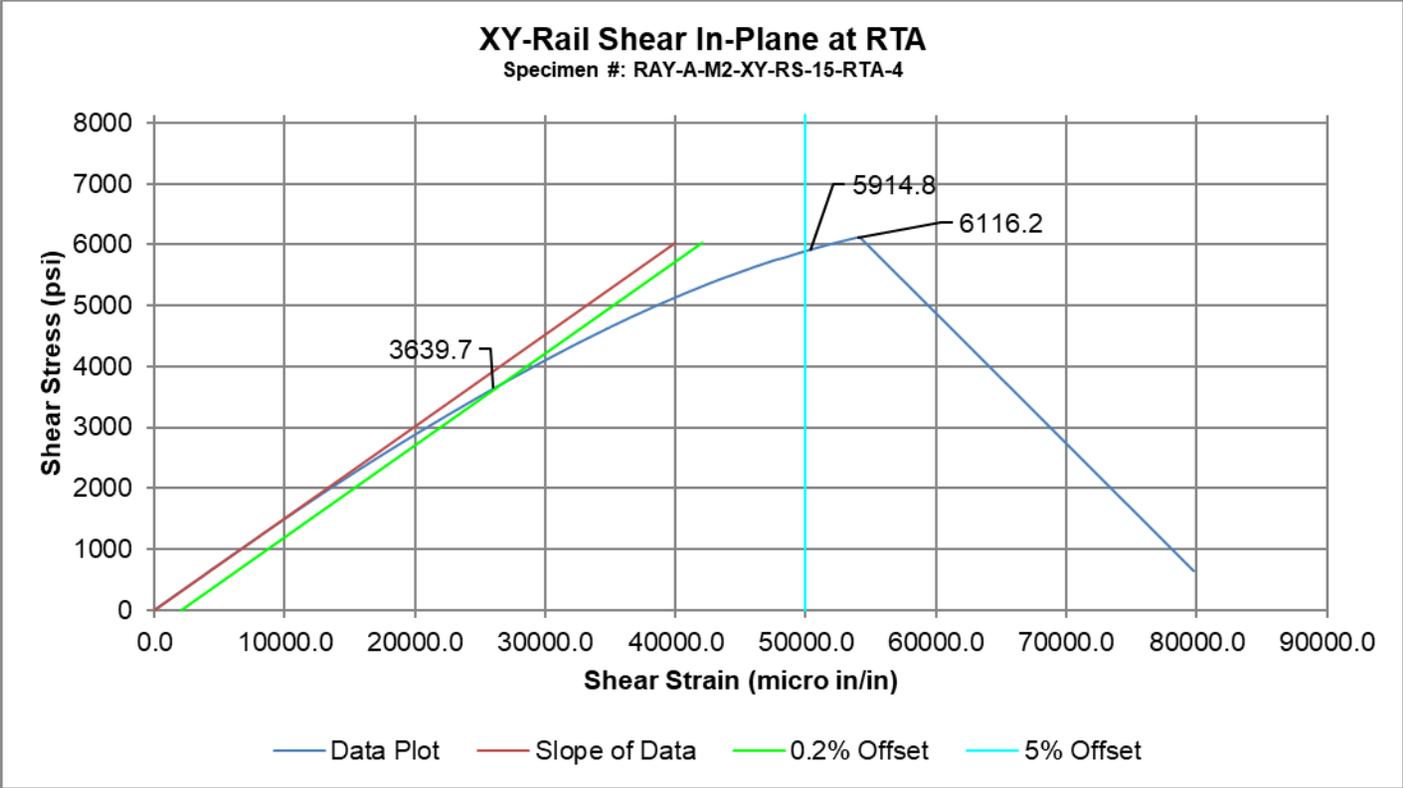


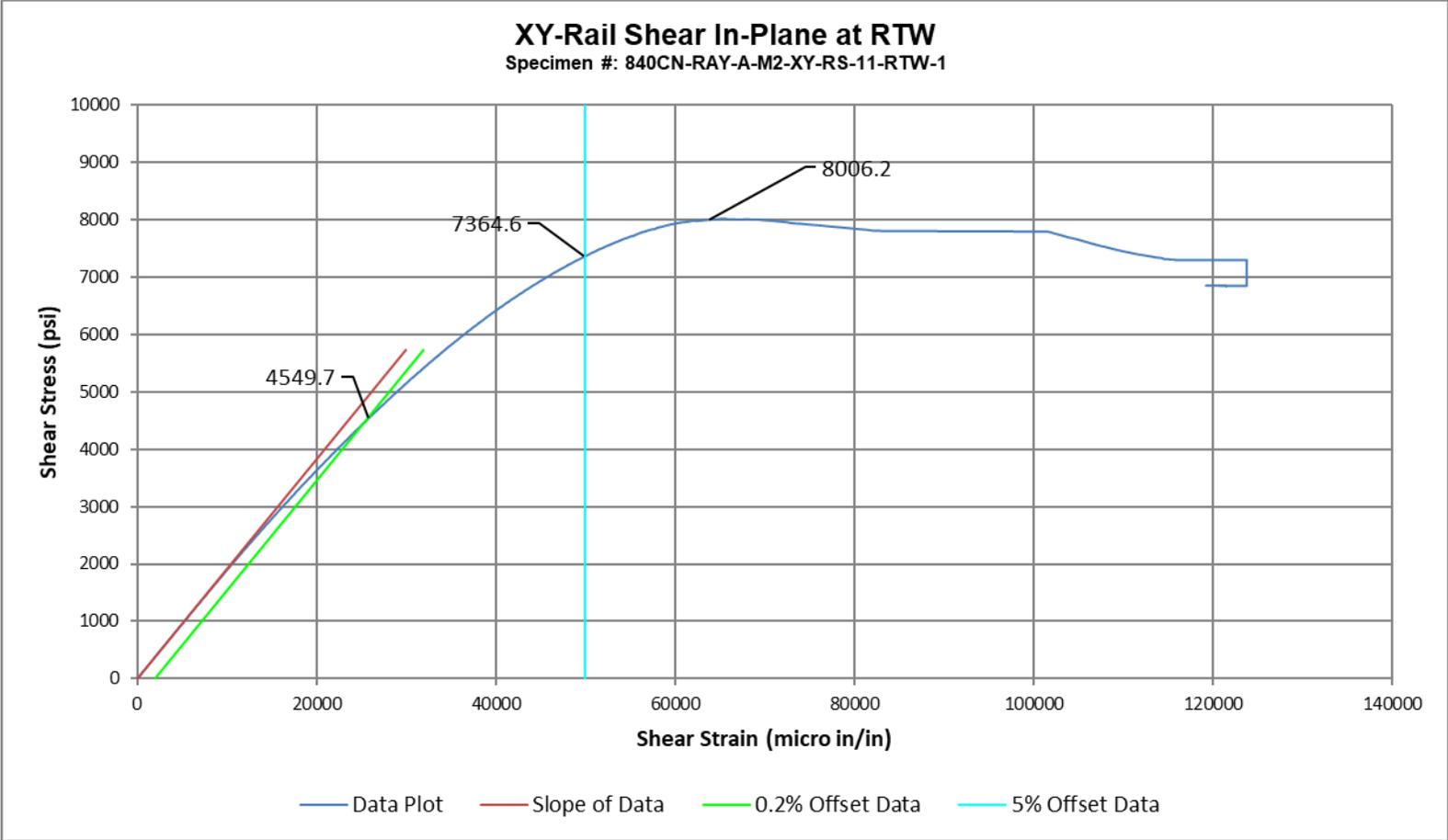


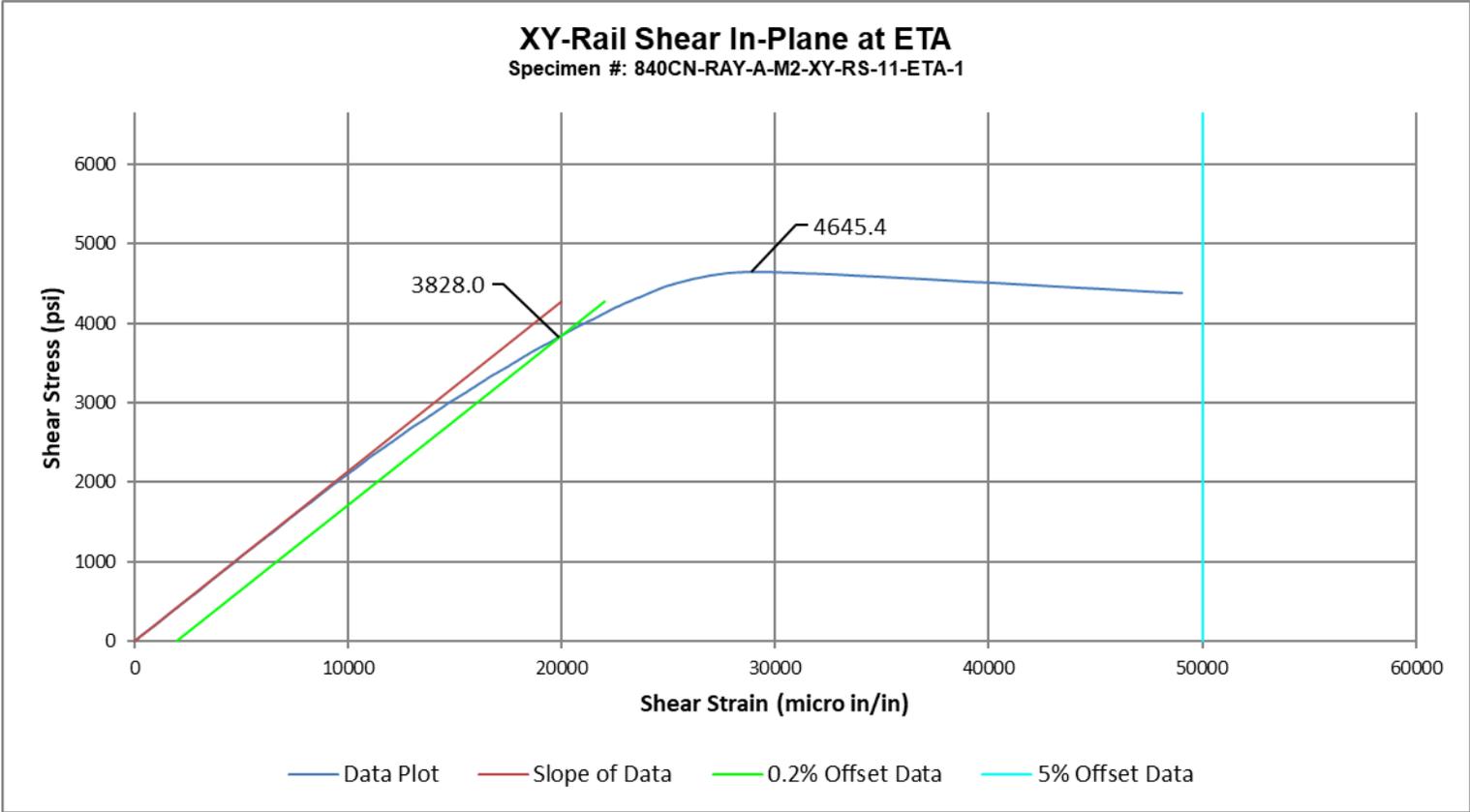


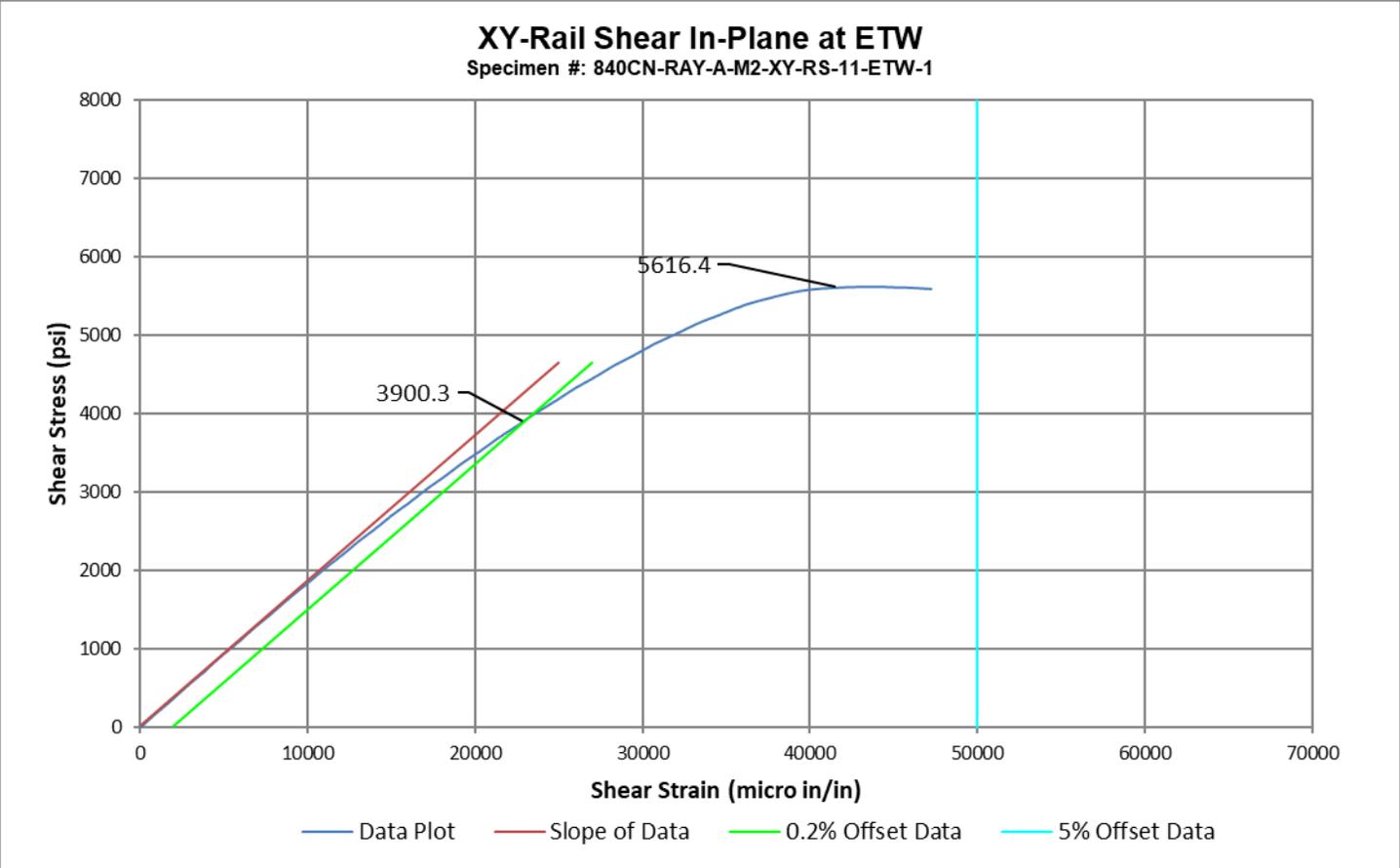
6.13 XY Rail Shear In-Plane Properties (XY-RS)



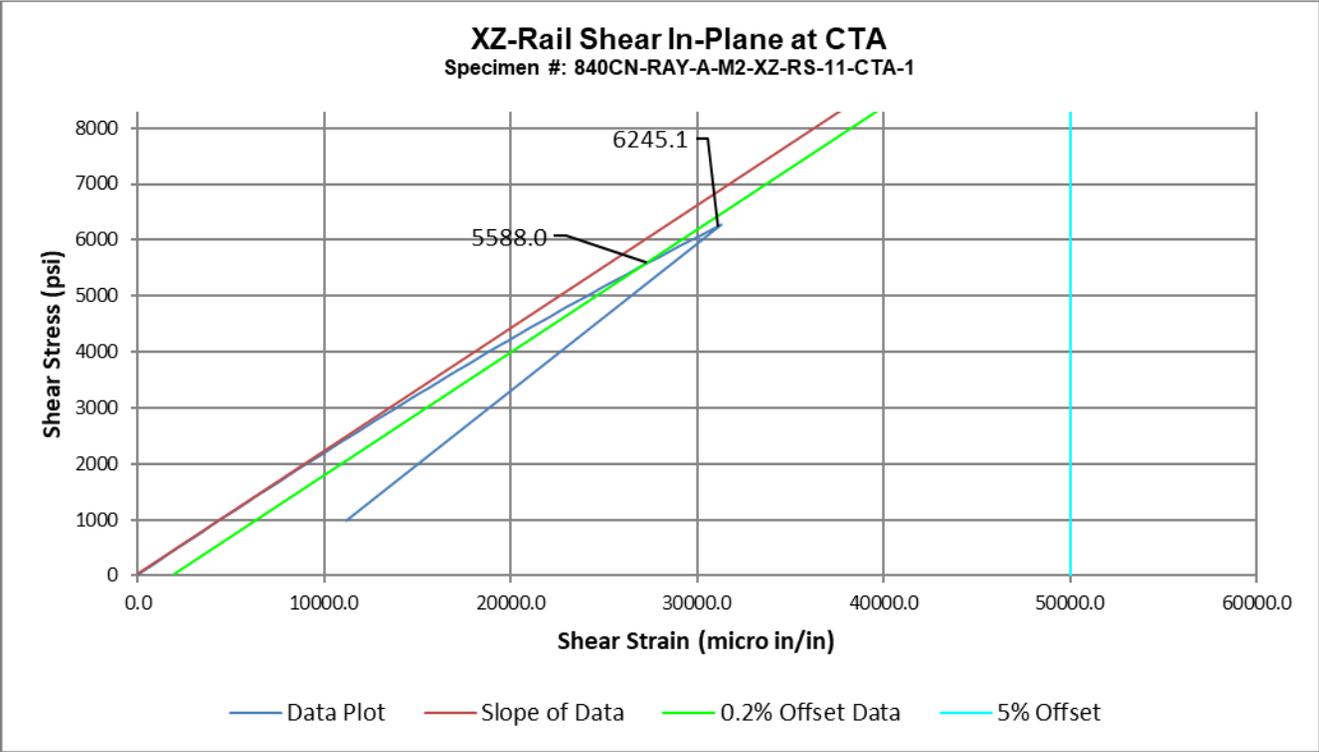


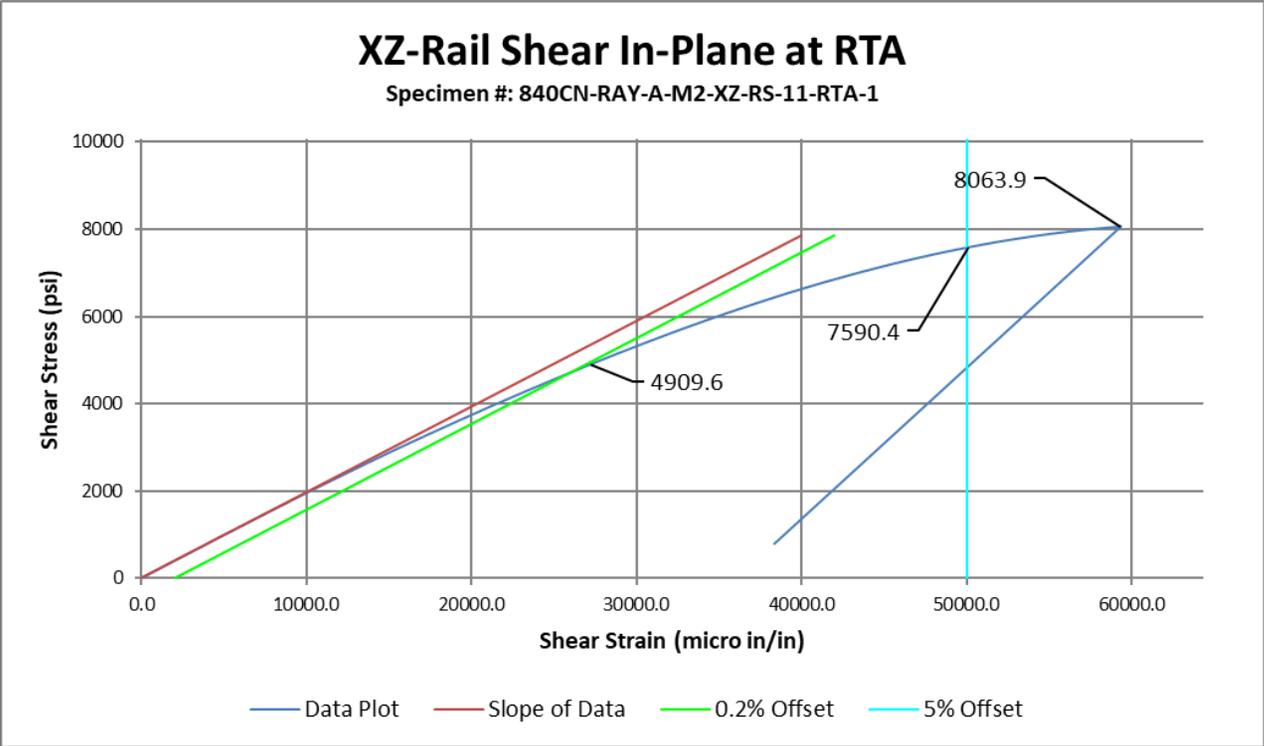


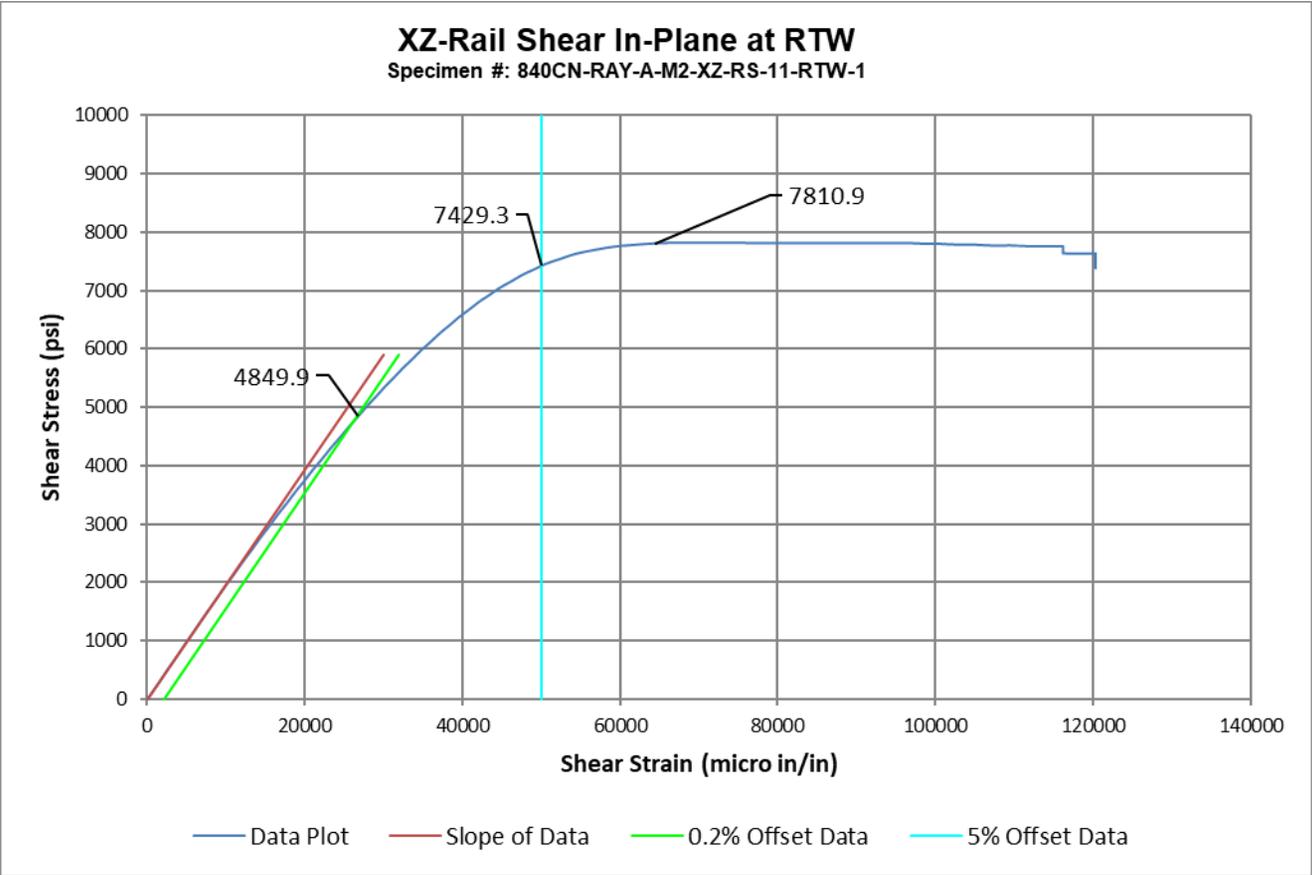


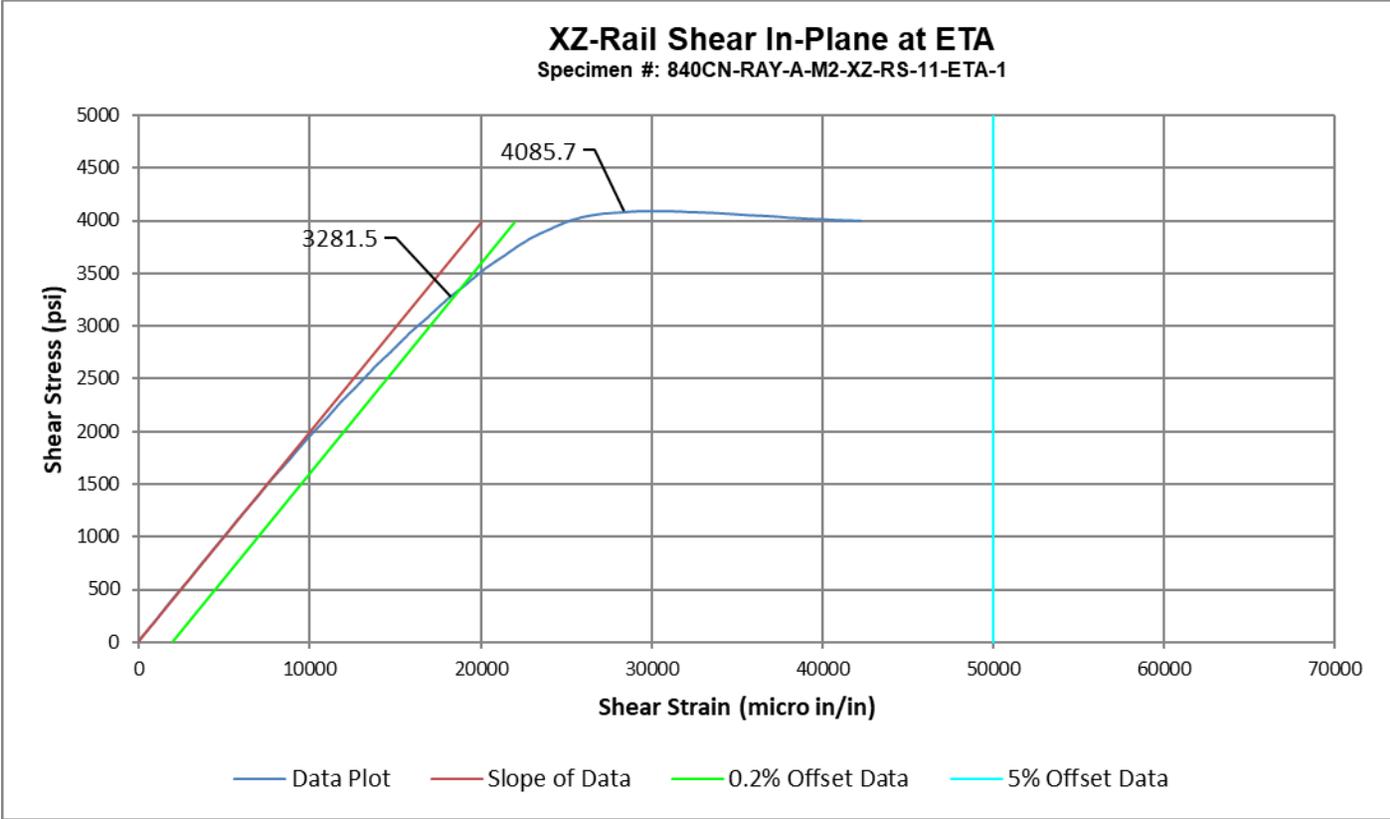


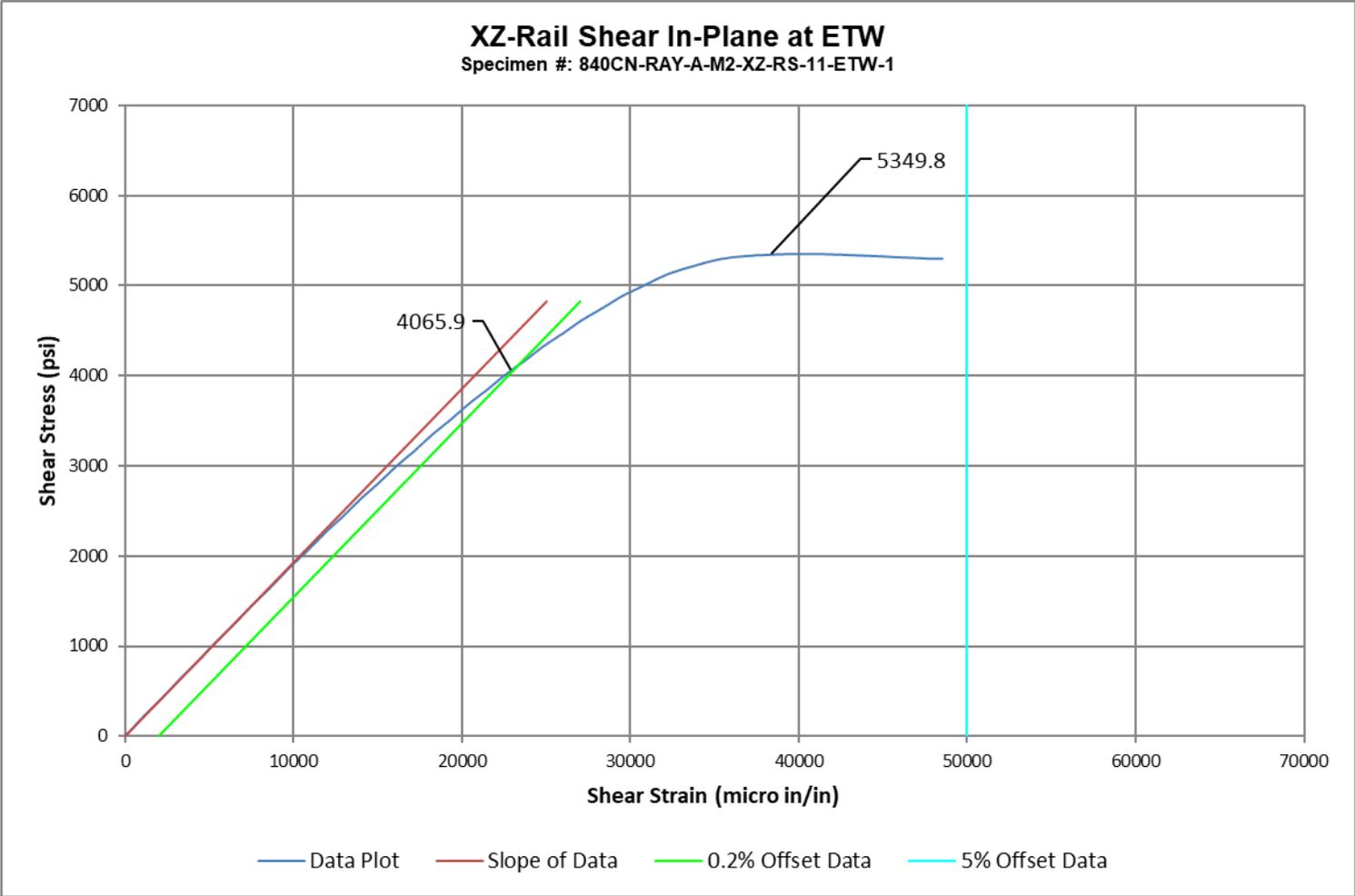
6.14 XZ Rail Shear In-Plane Properties (XZ-RS)



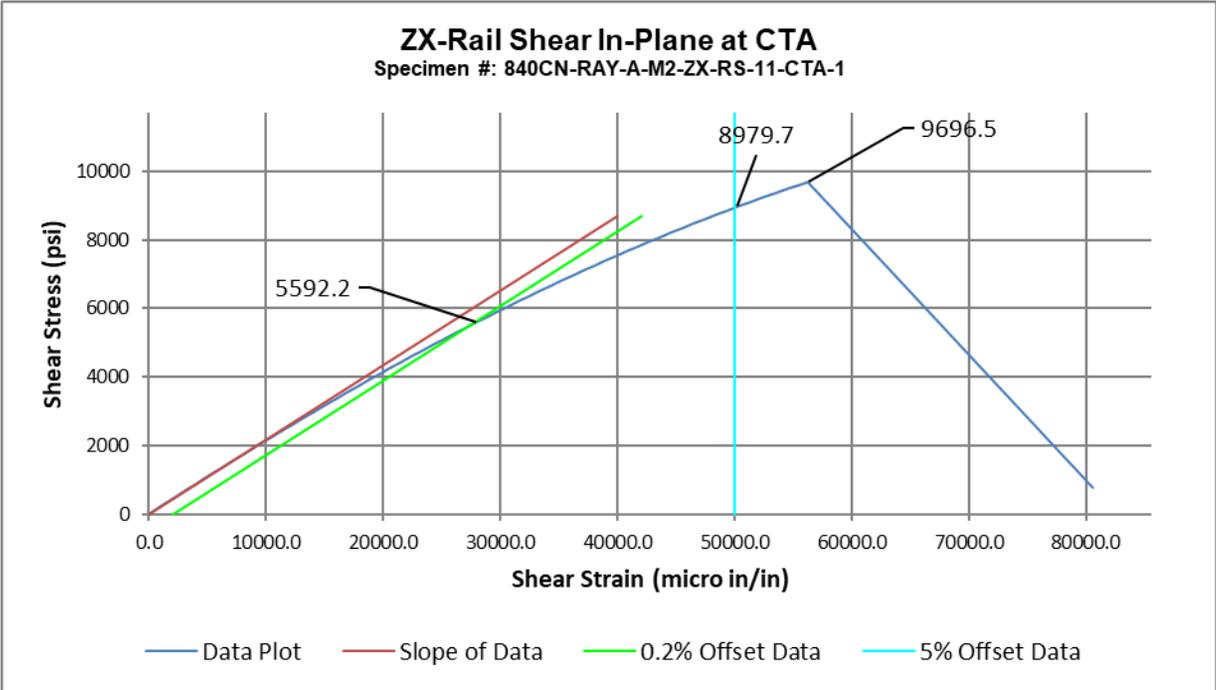


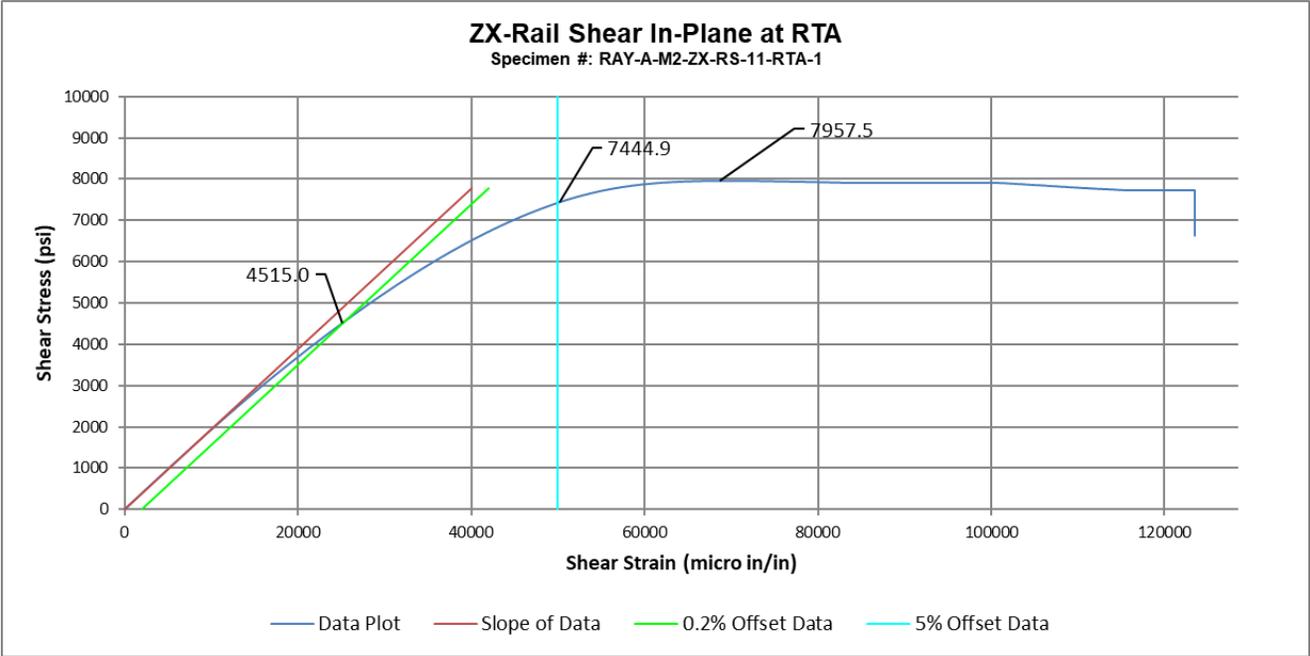


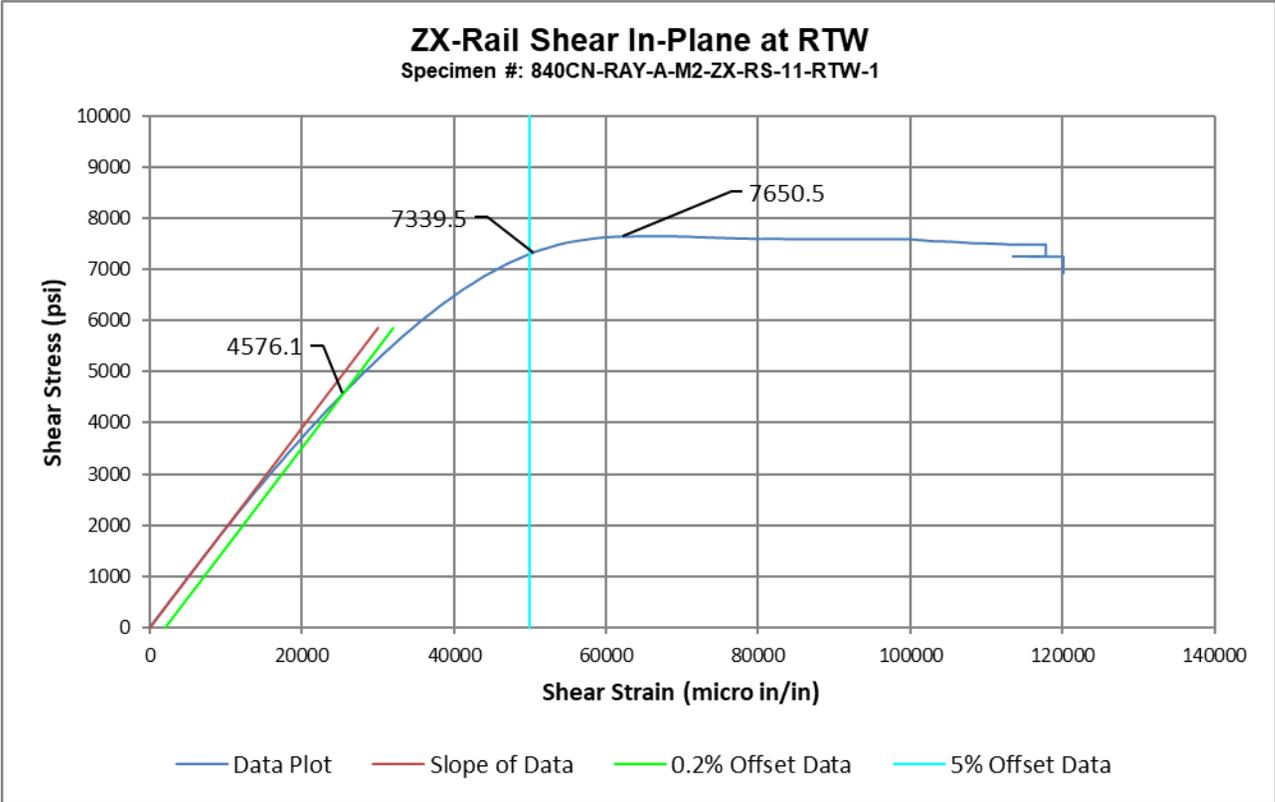


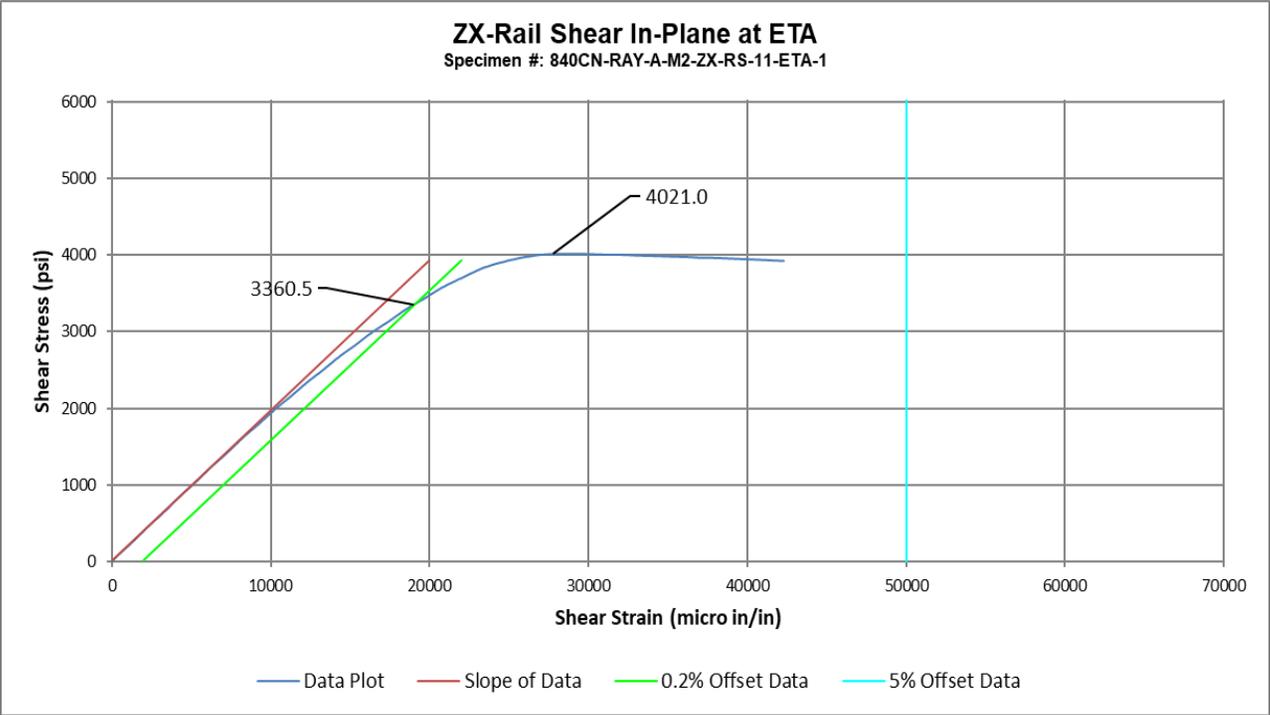


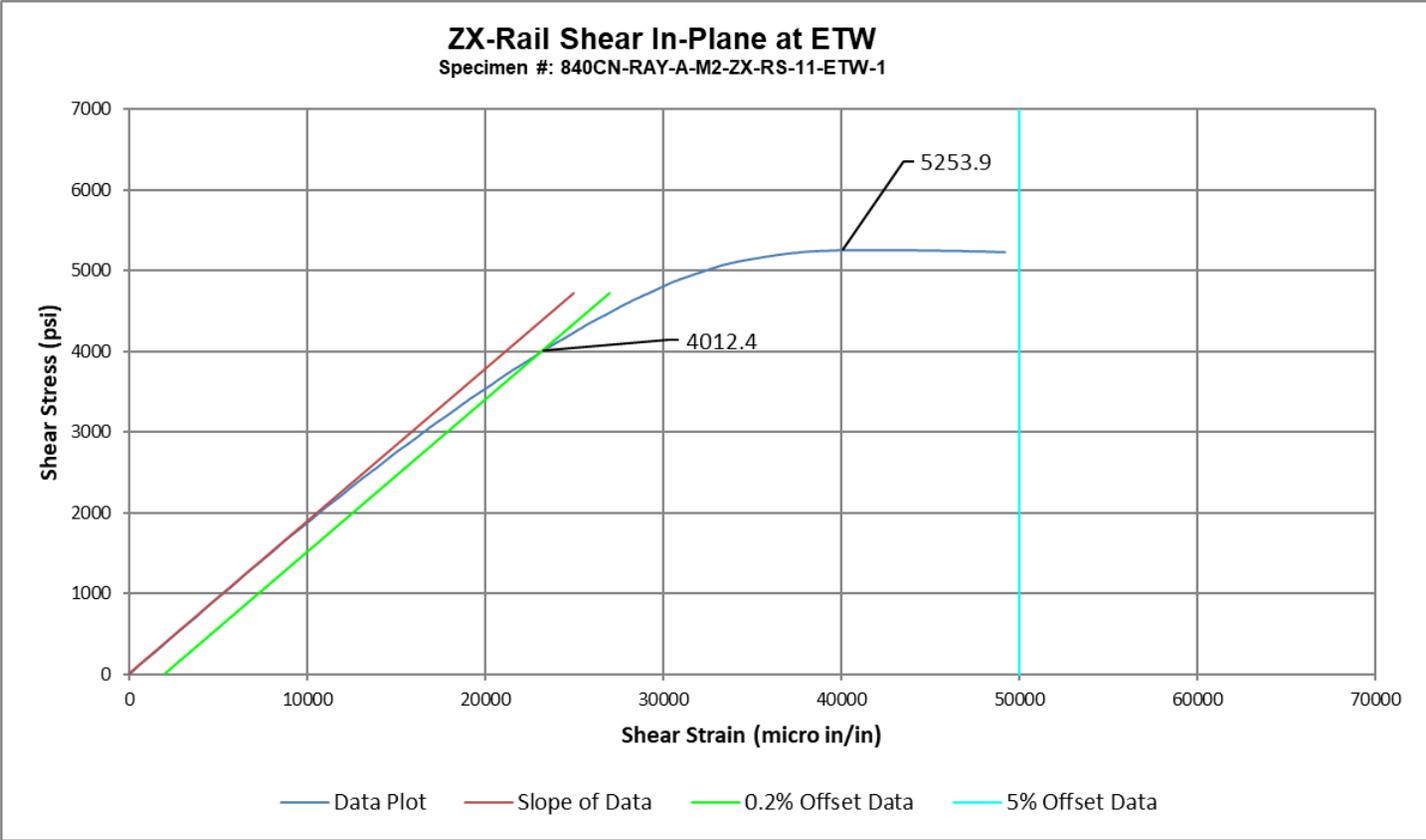
6.15ZX Rail Shear In-Plane Properties (ZX-RS)



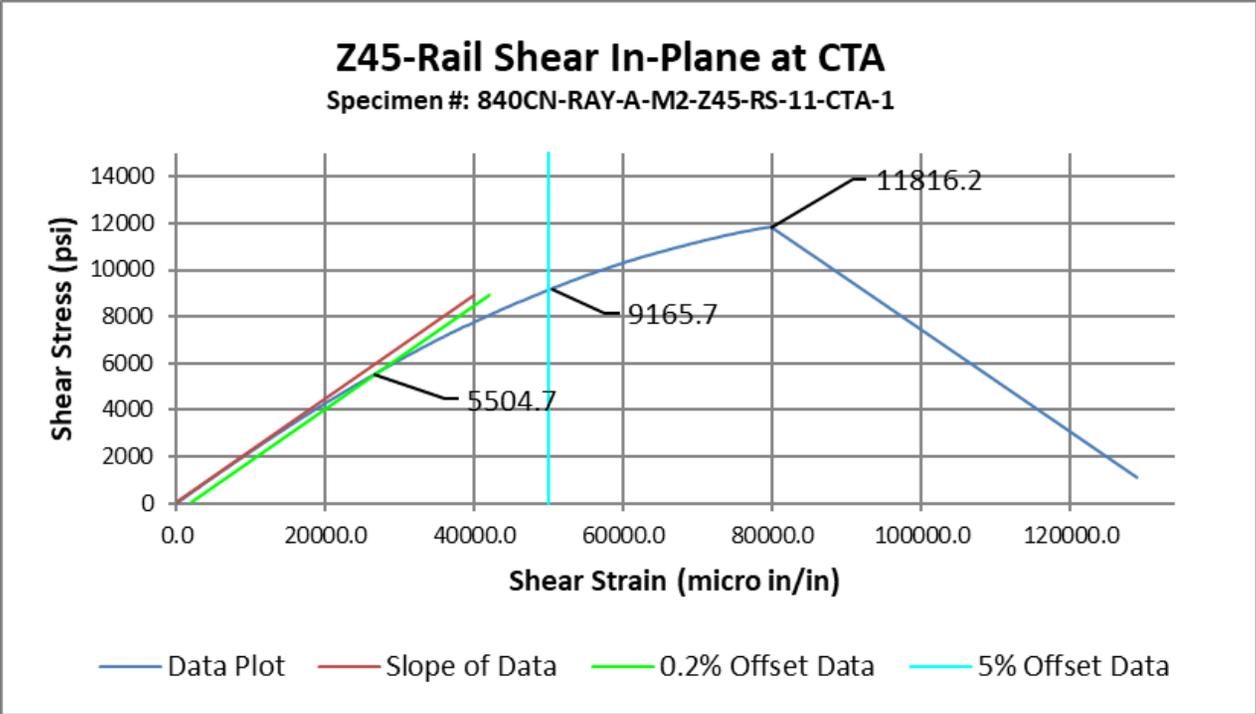


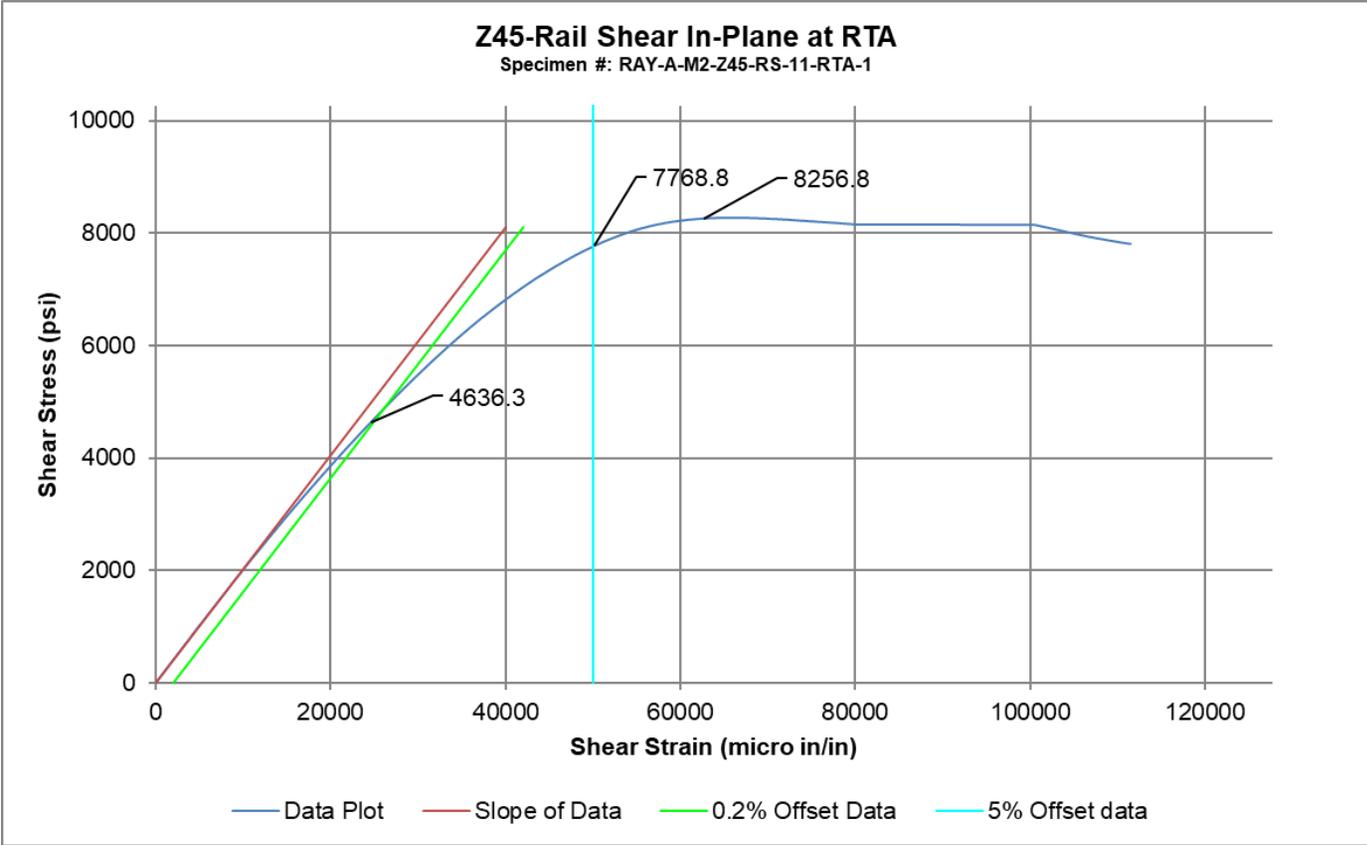


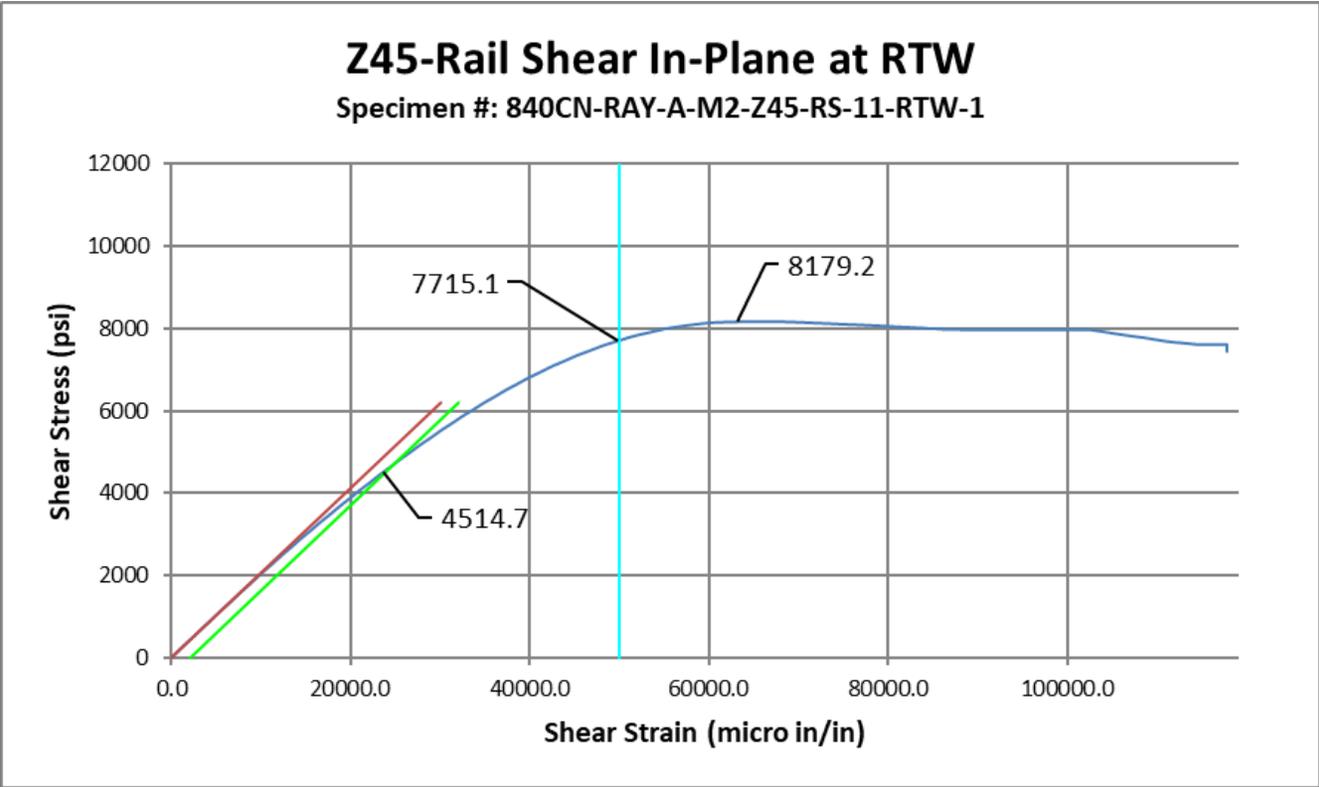


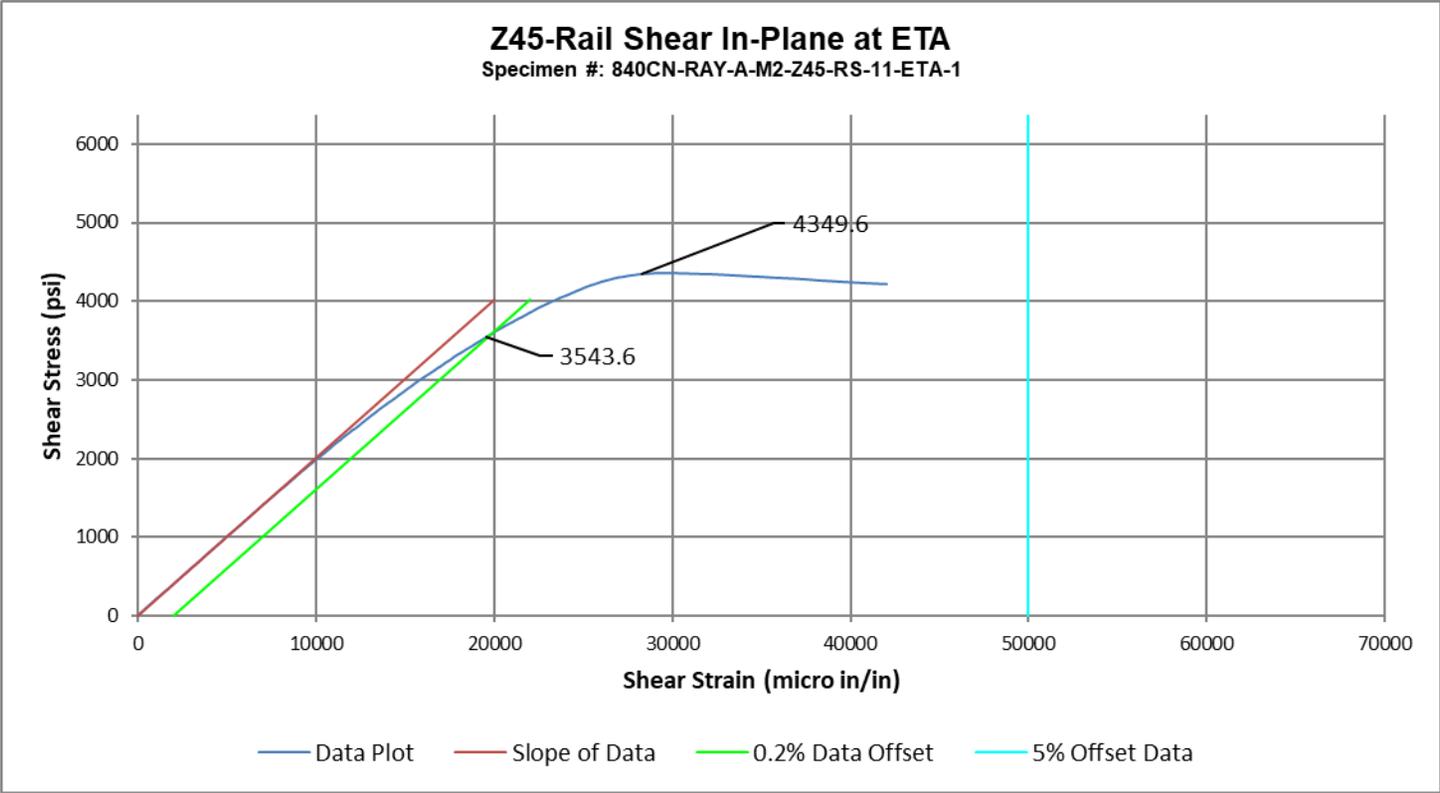


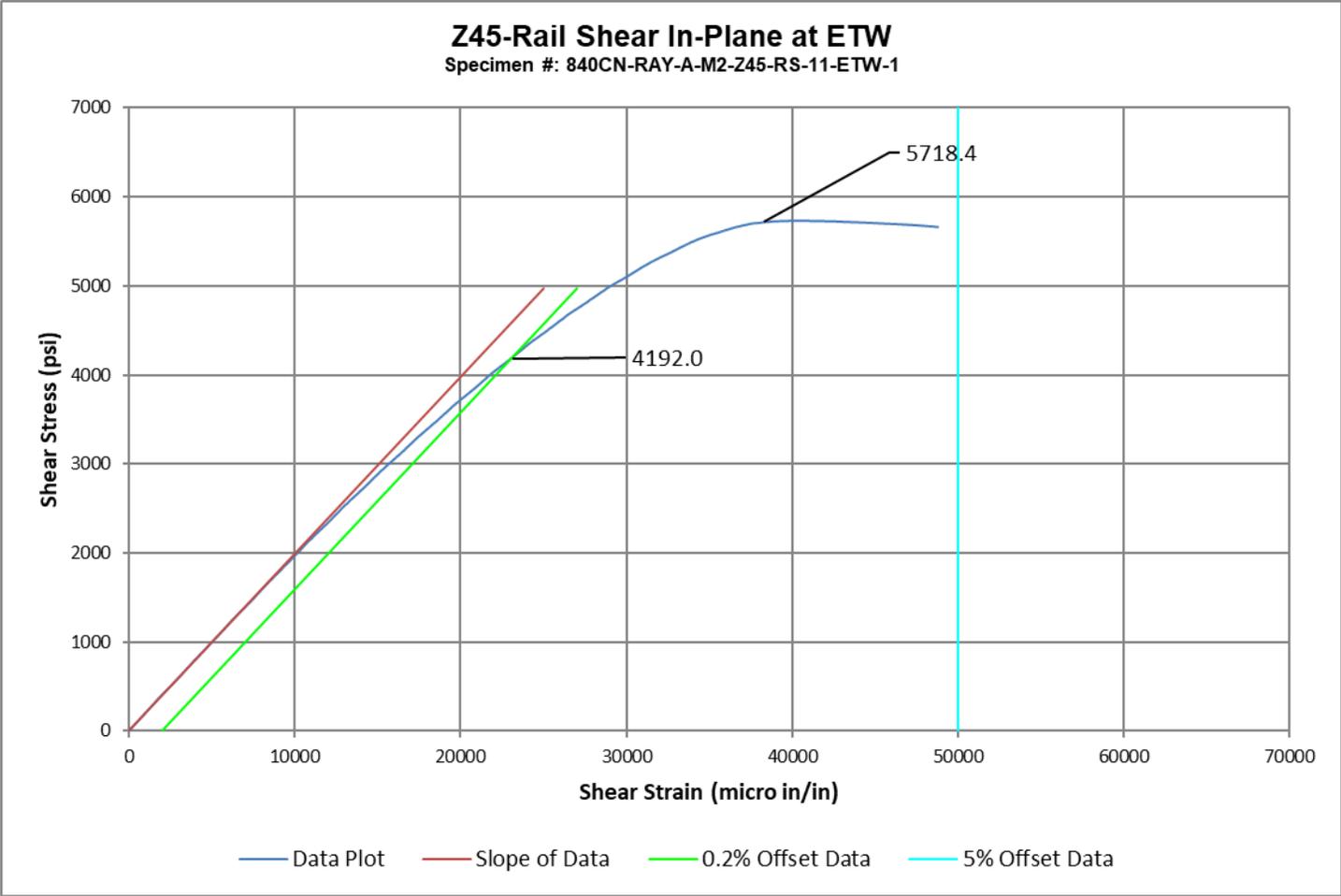
6.16 Z45 Rail Shear In-Plane Properties (Z45-RS)



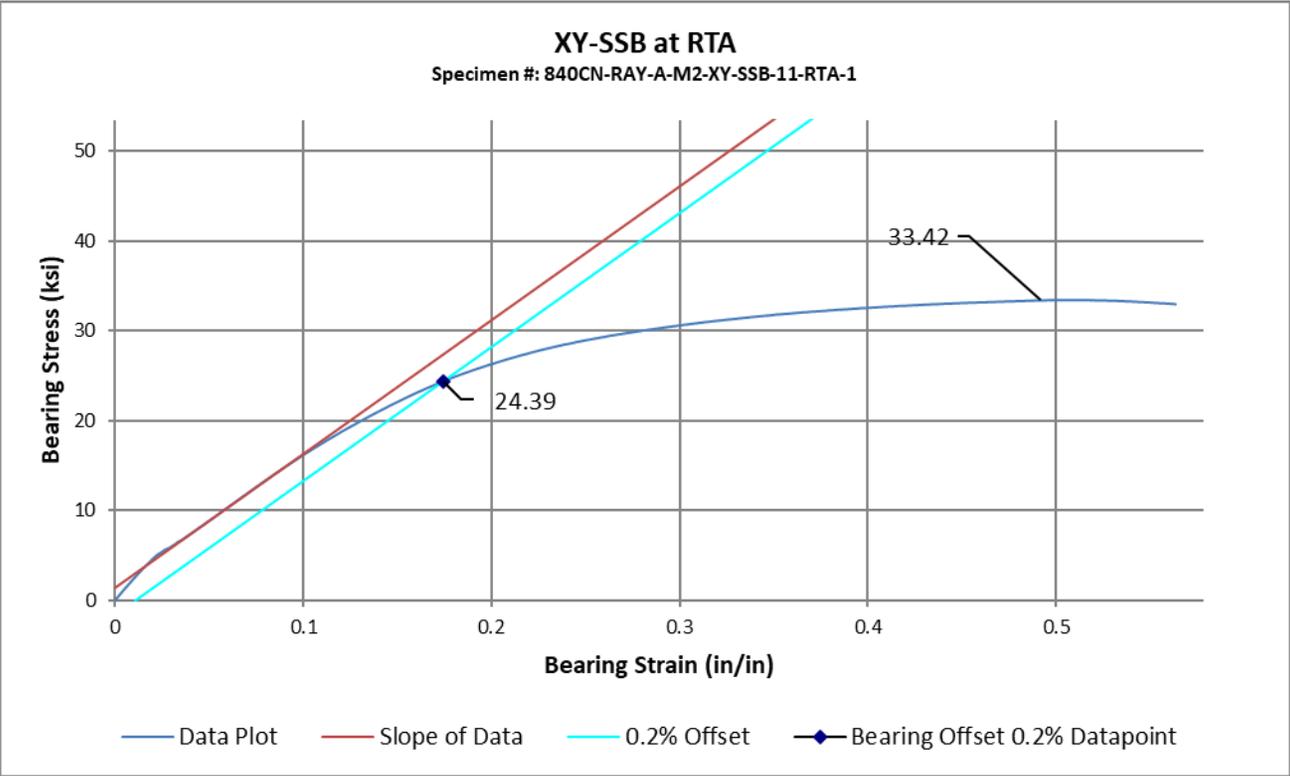


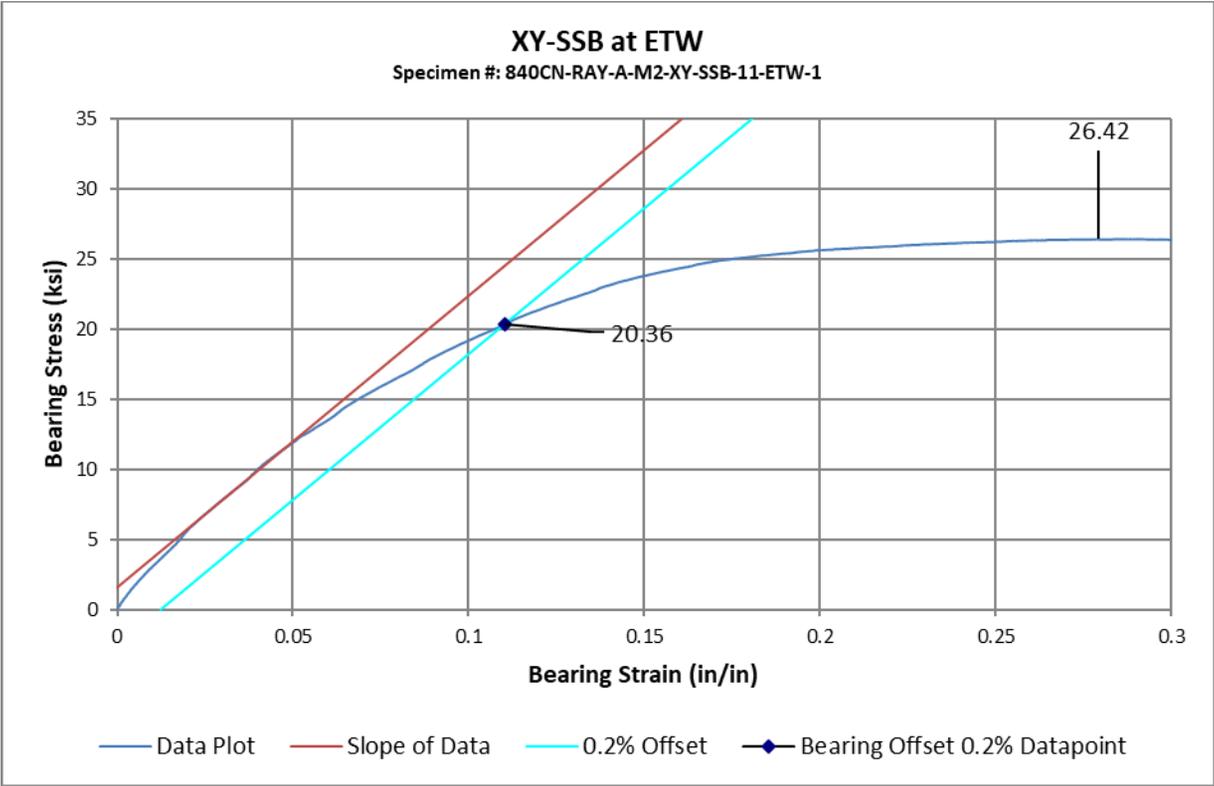




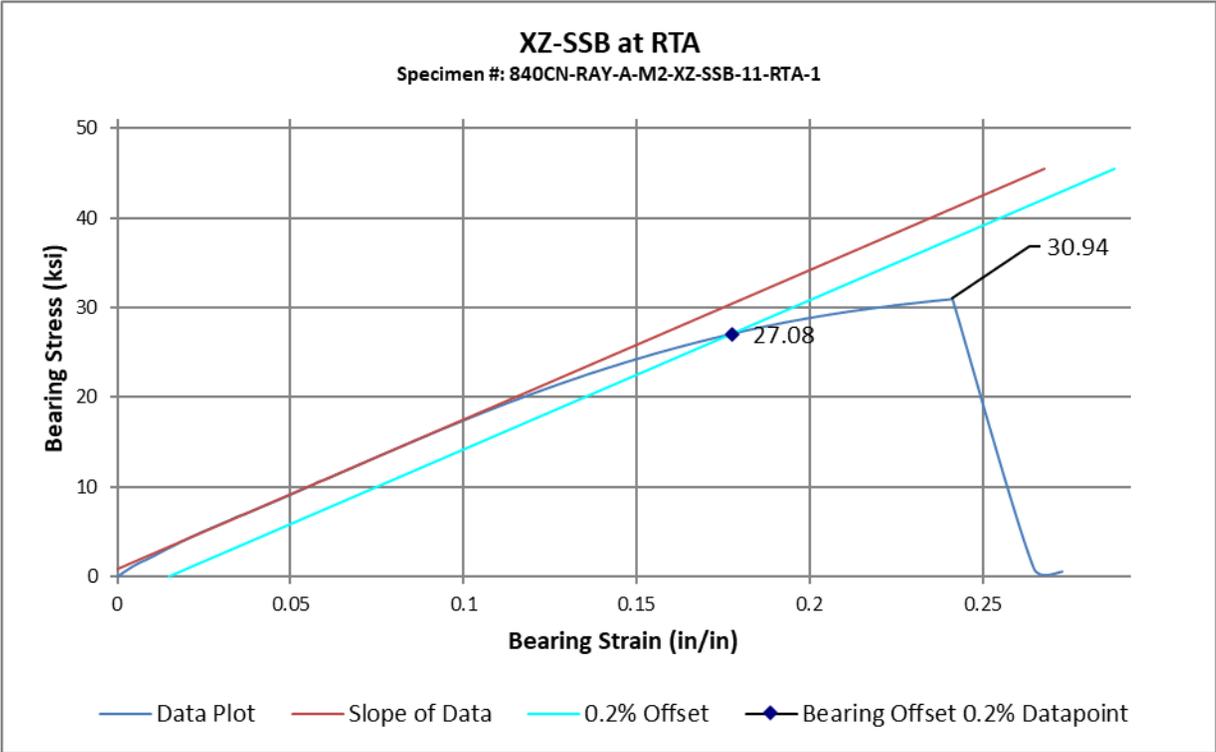


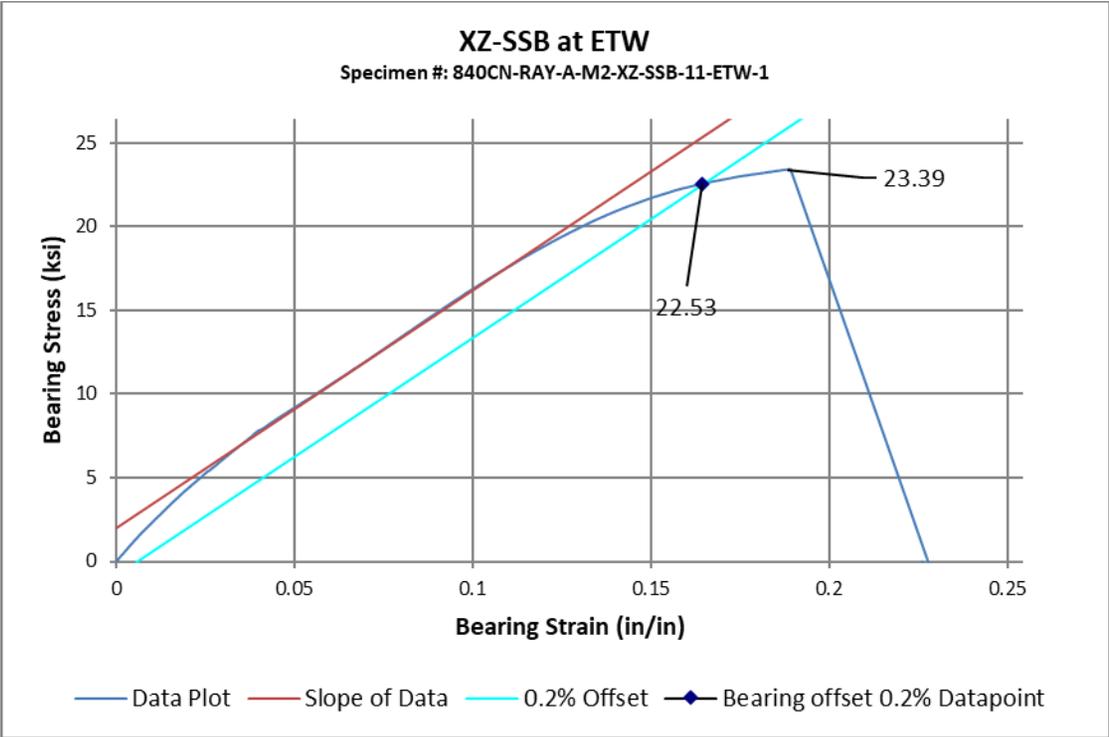
6.17 XY Single-Shear Bearing Properties (XY-SSB)



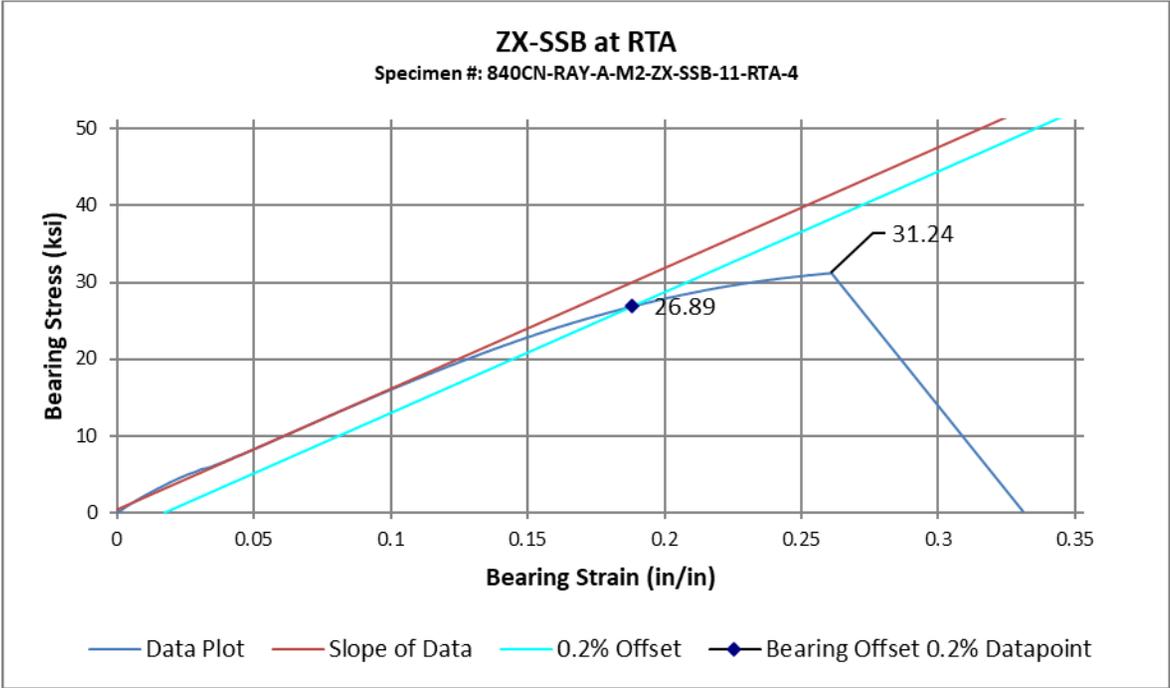


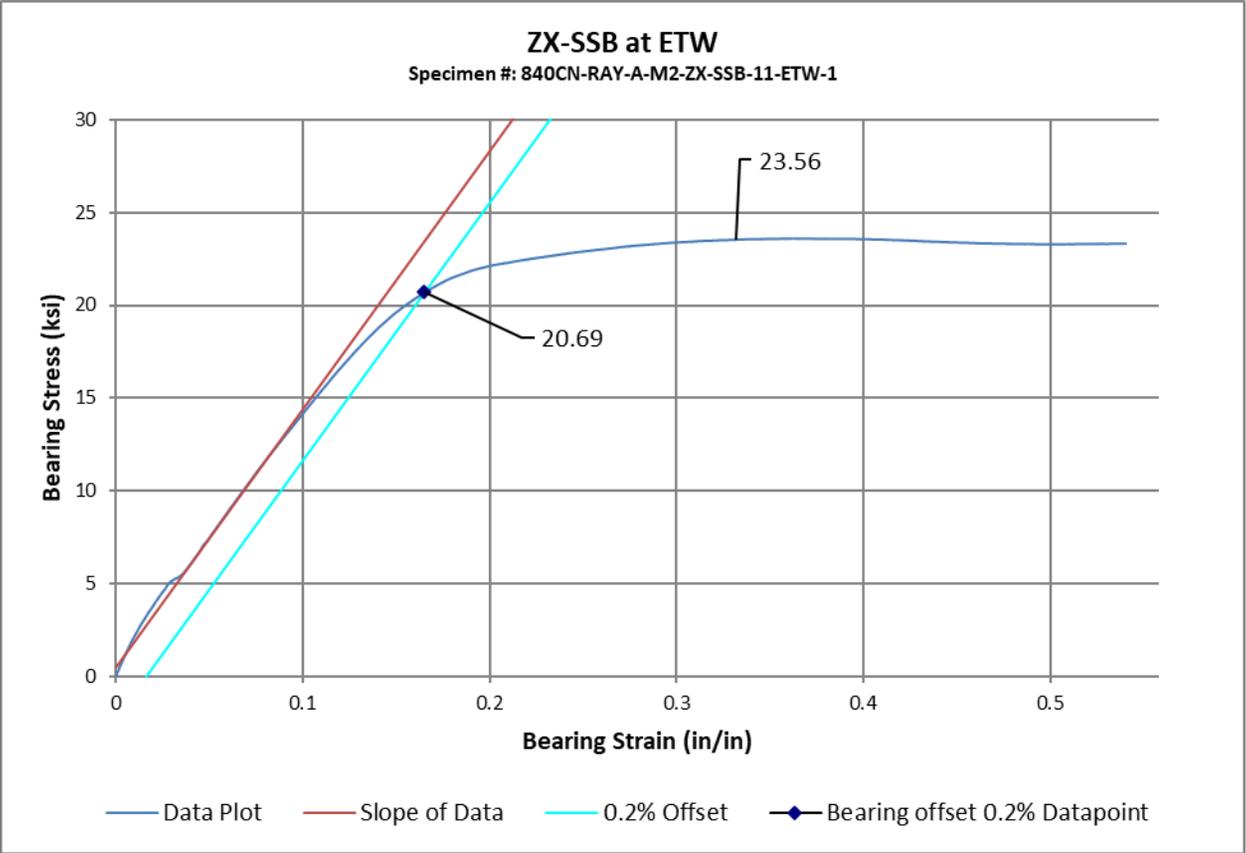
6.18 XZ Single-Shear Bearing Properties (XZ-SSB)



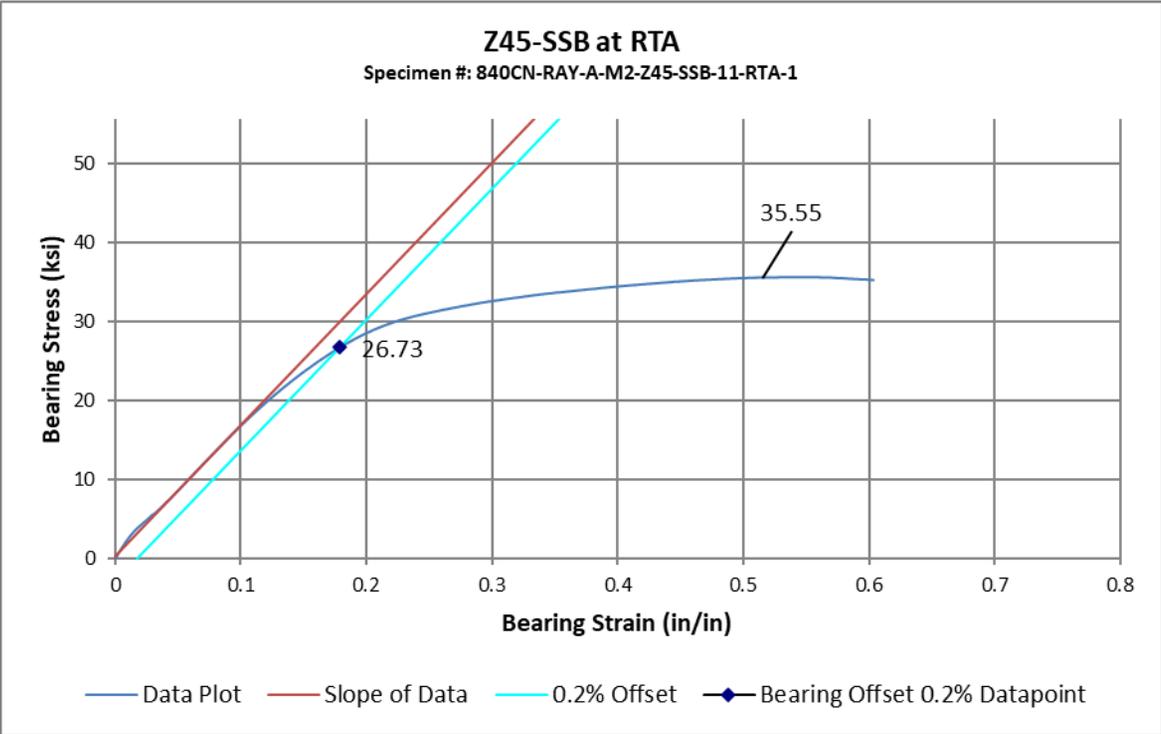


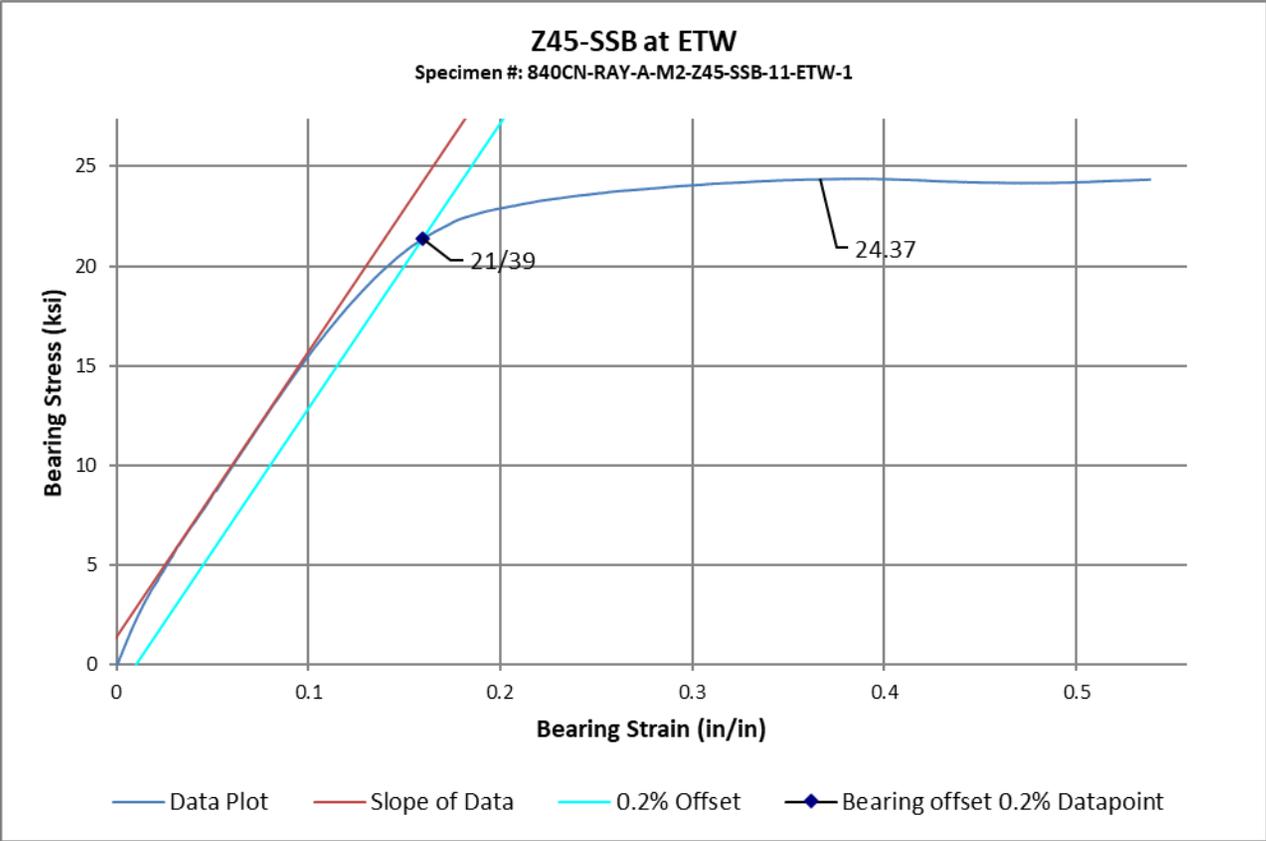
6.19 ZX Single-Shear Bearing Properties (ZX-SSB)





6.20 Z45 Single-Shear Bearing Properties (Z45-SSB)





7. Fluid Sensitivity Comparison

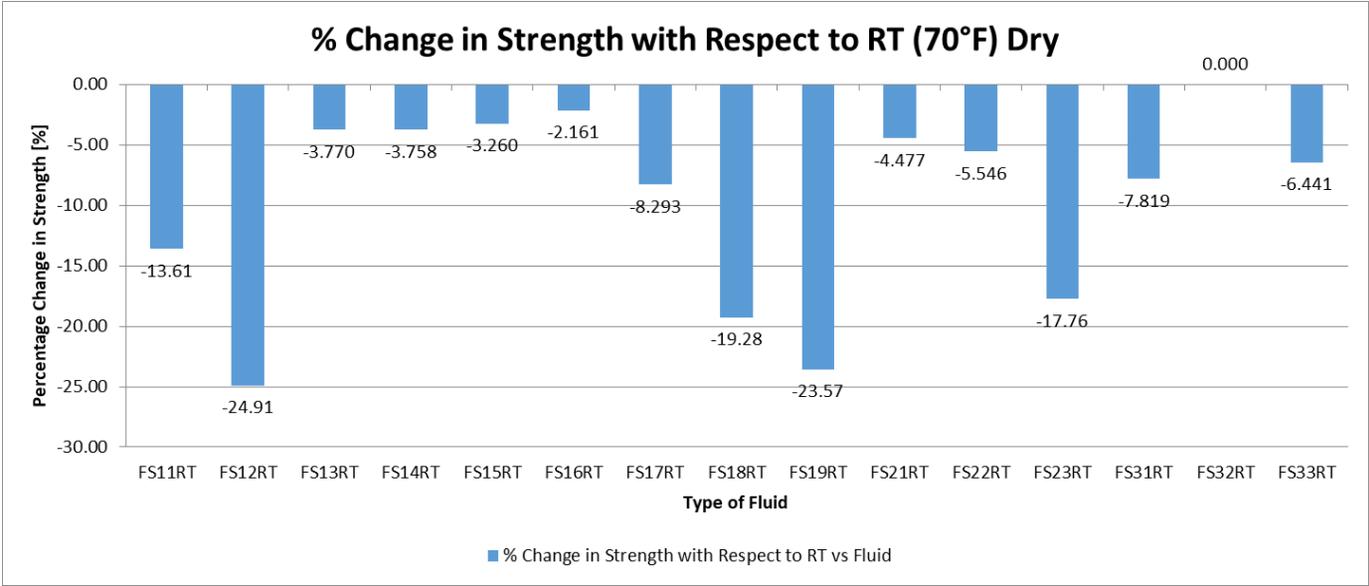
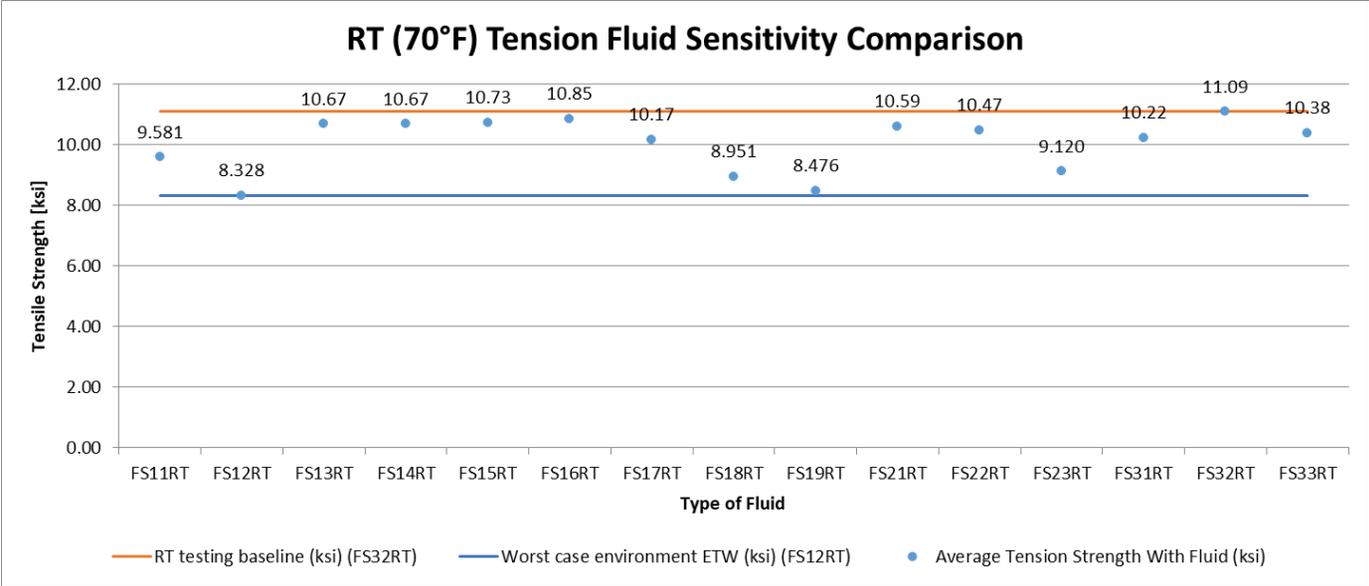
7.1 Room Temperature Test Data

Code	Type of Fluid	Exposure
FS11RT	100 Low Lead Aviation Fuel (ASTM D910)	90 days min @ 70°F ± 10F
FS12RT	ASTM D1655 Jet A Fuel	
FS13RT	MIL-PRF-5606 Hydraulic Oil	
FS14RT	MIL-PRF-83282 Hydraulic Oil	
FS15RT	MIL-PRF-7808 Engine Oil	
FS16RT	MIL-PRF-23699 Class STD Engine Oil	
FS17RT	Sea Water ASTM D1141	
FS18RT	Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	
FS19RT	50% Water with 50% Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	
FS31RT	Distilled Water	
FS21RT	MEK washing fluid. ASTM D740	90 mins @ 70°F ± 10F
FS22RT	Polypropylene Glycol Deicer (Type I) SAE AMS 1424	
FS23RT	Isopropyl Alcohol Deicing Agent (TT-I-735)	48±4 hrs @ 70°F ± 10F
FS32RT	Dry	Per section 6.1 Test Plan
FS33RT	85% Relative Humidity	

Fluid Sensitivity Screening
Tension Strength Properties (TFS)--RT (70°F) Strength
Additively Manufactured Antero(R) 840CN03

Fluid Code	Specimen Number	AM Batch #	Print Cycle #	AM Machine #	Print Direction	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode	Average Strength [ksi]
FS11RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS11RT-11-RTA-1	A	1	1	XY	9.441	0.1314	FAILURE AT GAGE SECTION	9.581
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS11RT-12-RTA-2	A	1	1	XY	9.910	0.1317	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS11RT-13-RTA-3	A	1	1	XY	9.430	0.1318	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS11RT-14-RTA-4	A	1	1	XY	9.574	0.1317	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS11RT-15-RTA-5	A	1	1	XY	9.548	0.1317	FAILURE AT GAGE SECTION	
FS12RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS12RT-11-RTA-1	A	1	1	XY	8.236	0.1326	FAILURE AT GAGE SECTION	8.328
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS12RT-12-RTA-2	A	1	1	XY	8.342	0.1326	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS12RT-13-RTA-3	A	1	1	XY	8.296	0.1324	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS12RT-14-RTA-4	A	1	1	XY	8.354	0.1324	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS12RT-15-RTA-5	A	1	1	XY	8.410	0.1329	FAILURE AT GAGE SECTION	
FS13RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS13RT-11-RTA-1	A	1	1	XY	10.64	0.1323	FAILURE AT GAGE SECTION	10.67
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS13RT-12-RTA-2	A	1	1	XY	10.55	0.1319	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS13RT-13-RTA-3	A	1	1	XY	10.63	0.1318	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS13RT-14-RTA-4	A	1	1	XY	10.77	0.1320	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS13RT-15-RTA-5	A	1	1	XY	10.77	0.1318	FAILURE AT GAGE SECTION	
FS14RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS14RT-11-RTA-1	A	1	1	XY	10.51	0.1323	FAILURE AT GAGE SECTION	10.67
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS14RT-12-RTA-2	A	1	1	XY	10.52	0.1321	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS14RT-13-RTA-3	A	1	1	XY	10.63	0.1319	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS14RT-14-RTA-4	A	1	1	XY	10.90	0.1318	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS14RT-15-RTA-5	A	1	1	XY	10.80	0.1320	FAILURE AT GAGE SECTION	
FS15RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS15RT-11-RTA-1	A	1	1	XY	10.60	0.1323	FAILURE AT GAGE SECTION	10.73
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS15RT-12-RTA-2	A	1	1	XY	10.57	0.1321	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS15RT-13-RTA-3	A	1	1	XY	10.92	0.1320	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS15RT-14-RTA-4	A	1	1	XY	10.86	0.1319	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS15RT-15-RTA-5	A	1	1	XY	10.70	0.1318	FAILURE AT GAGE SECTION	
FS16RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS16RT-11-RTA-1	A	1	1	XY	10.86	0.1313	FAILURE AT GAGE SECTION	10.85
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS16RT-12-RTA-2	A	1	1	XY	10.84	0.1316	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS16RT-13-RTA-3	A	1	1	XY	11.00	0.1317	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS16RT-14-RTA-4	A	1	1	XY	10.75	0.1322	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS16RT-15-RTA-5	A	1	1	XY	10.80	0.1323	FAILURE AT GAGE SECTION	
FS17RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS17RT-11-RTA-1	A	1	1	XY	10.13	0.1325	FAILURE AT GAGE SECTION	10.17
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS17RT-12-RTA-2	A	1	1	XY	10.13	0.1322	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS17RT-13-RTA-3	A	1	1	XY	10.22	0.1330	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS17RT-14-RTA-4	A	1	1	XY	10.22	0.1330	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS17RT-15-RTA-5	A	1	1	XY	10.16	0.1332	FAILURE AT GAGE SECTION	
FS18RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS18RT-11-RTA-1	A	1	1	XY	8.990	0.1317	FAILURE AT GAGE SECTION	8.951
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS18RT-12-RTA-2	A	1	1	XY	8.890	0.1321	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS18RT-13-RTA-3	A	1	1	XY	8.962	0.1317	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS18RT-14-RTA-4	A	1	1	XY	8.938	0.1321	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS18RT-15-RTA-5	A	1	1	XY	8.956	0.1318	FAILURE AT GAGE SECTION	
FS19RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS19RT-11-RTA-1	A	1	1	XY	8.476	0.1320	FAILURE AT GAGE SECTION	8.476
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS19RT-12-RTA-2	A	1	1	XY	8.413	0.1316	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS19RT-13-RTA-3	A	1	1	XY	8.538	0.1319	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS19RT-14-RTA-4	A	1	1	XY	8.425	0.1322	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS19RT-15-RTA-5	A	1	1	XY	8.526	0.1317	FAILURE AT GAGE SECTION	
FS21RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS21RT-11-RTA-1	A	1	1	XY	10.34	0.1316	FAILURE AT GAGE SECTION	10.59
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS21RT-12-RTA-2	A	1	1	XY	10.66	0.1313	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS21RT-13-RTA-3	A	1	1	XY	10.69	0.1311	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS21RT-14-RTA-4	A	1	1	XY	10.62	0.1315	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS21RT-15-RTA-5	A	1	1	XY	10.66	0.1318	FAILURE AT GAGE SECTION	
FS22RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS22RT-11-RTA-1	A	1	1	XY	10.38	0.1318	FAILURE AT GAGE SECTION	10.47
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS22RT-12-RTA-2	A	1	1	XY	10.41	0.1321	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS22RT-13-RTA-3	A	1	1	XY	10.35	0.1320	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS22RT-14-RTA-4	A	1	1	XY	10.42	0.1318	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS22RT-15-RTA-5	A	1	1	XY	10.81	0.1319	FAILURE AT GAGE SECTION	
FS23RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS23RT-11-RTA-1	A	1	1	XY	8.846	0.1313	FAILURE AT GAGE SECTION	9.120
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS23RT-12-RTA-2	A	1	1	XY	9.042	0.1313	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS23RT-13-RTA-3	A	1	1	XY	9.159	0.1314	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS23RT-14-RTA-4	A	1	1	XY	9.323	0.1329	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS23RT-15-RTA-5	A	1	1	XY	9.228	0.1316	FAILURE AT GAGE SECTION	
FS31RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS31RT-11-RTA-1	A	1	1	XY	10.28	0.1319	FAILURE AT GAGE SECTION	10.22
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS31RT-12-RTA-2	A	1	1	XY	10.05	0.1316	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS31RT-13-RTA-3	A	1	1	XY	10.18	0.1313	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS31RT-14-RTA-4	A	1	1	XY	10.34	0.1315	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS31RT-15-RTA-5	A	1	1	XY	10.26	0.1321	FAILURE AT GAGE SECTION	
FS32RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS32RT-11-RTA-1	A	1	1	XY	10.91	0.1322	FAILURE AT FILLET SECTION	11.09
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS32RT-12-RTA-2	A	1	1	XY	11.16	0.1318	FAILURE AT FILLET SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS32RT-13-RTA-3	A	1	1	XY	11.01	0.1315	FAILURE AT FILLET SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS32RT-14-RTA-4	A	1	1	XY	11.28	0.1315	FAILURE AT FILLET SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS32RT-15-RTA-5	A	1	1	XY	10.43	0.1320	FAILURE AT GAGE SECTION	
FS33RT	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS33RT-11-RTA-1	A	1	1	XY	10.43	0.1321	FAILURE AT GAGE SECTION	10.38
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS33RT-12-RTA-2	A	1	1	XY	10.30	0.1321	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS33RT-13-RTA-3	A	1	1	XY	10.24	0.1321	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS33RT-14-RTA-4	A	1	1	XY	10.43	0.1320	FAILURE AT GAGE SECTION	
	NTPAMB40001-STR-840CN-NGC-A-MI-XY-TFS33RT-15-RTA-5	A	1	1	XY	10.48	0.1323	FAILURE AT GAGE SECTION	

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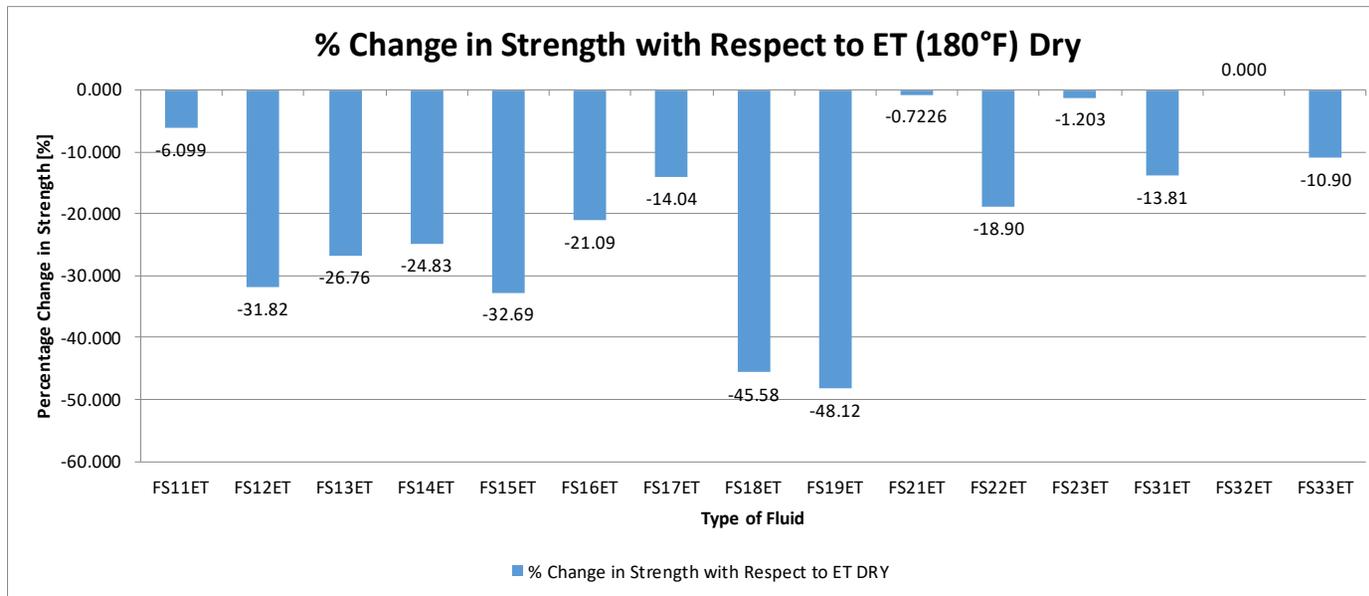
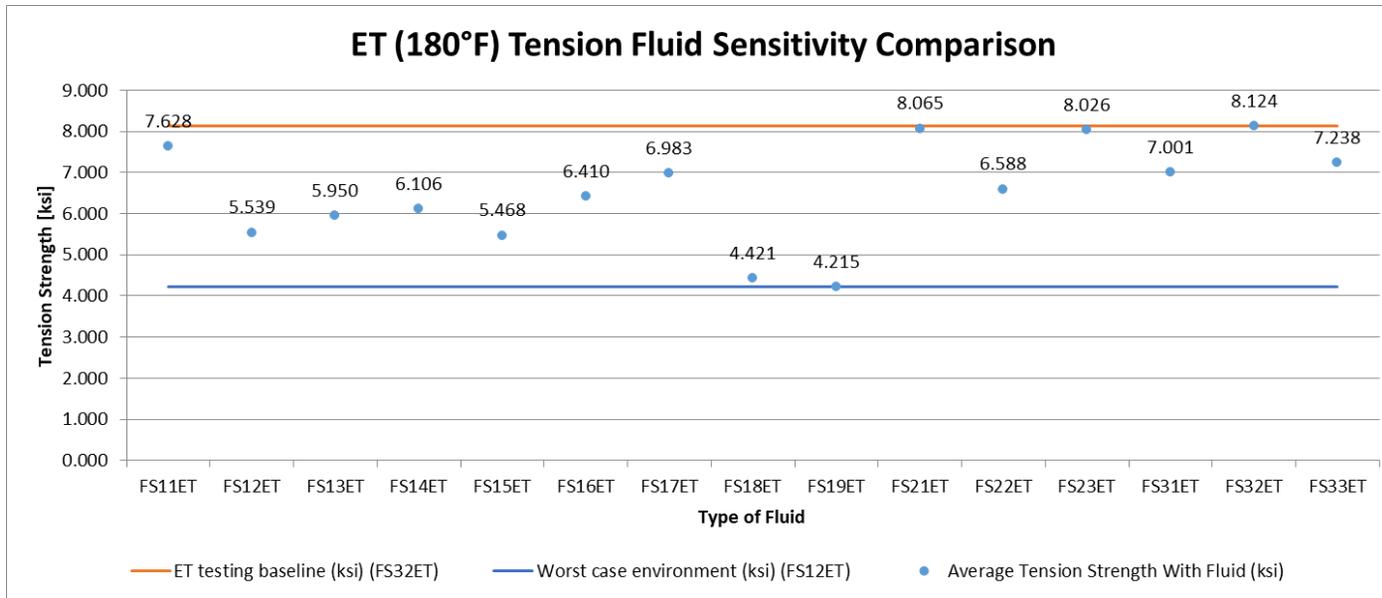
7.2 Elevated Temperature Test Data

Code	Type of Fluid	Exposure
FS11ET	100 Low Lead Aviation Fuel (ASTM D910)	90 days min @ 70°F ± 10F
FS12ET	ASTM D1655 Jet A Fuel	
FS13ET	MIL-PRF-5606 Hydraulic Oil	
FS14ET	MIL-PRF-83282 Hydraulic Oil	
FS15ET	MIL-PRF-7808 Engine Oil	
FS16ET	MIL-PRF-23699 Class STD Engine Oil	
FS17ET	Sea Water ASTM D1141	
FS18ET	Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	
FS19ET	50% Water with 50% Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	
FS31ET	Distilled Water	
FS21ET	MEK washing fluid. ASTM D740	90 mins @ 70°F ± 10F
FS22ET	Polypropylene Glycol Deicer (Type I) SAE AMS 1424	
FS23ET	Isopropyl Alcohol Deicing Agent (TT-I-735)	48±4 hrs @ 70°F ± 10F
FS32ET	Dry	Per section 6.1 Test Plan
FS33ET	85% Relative Humidity	

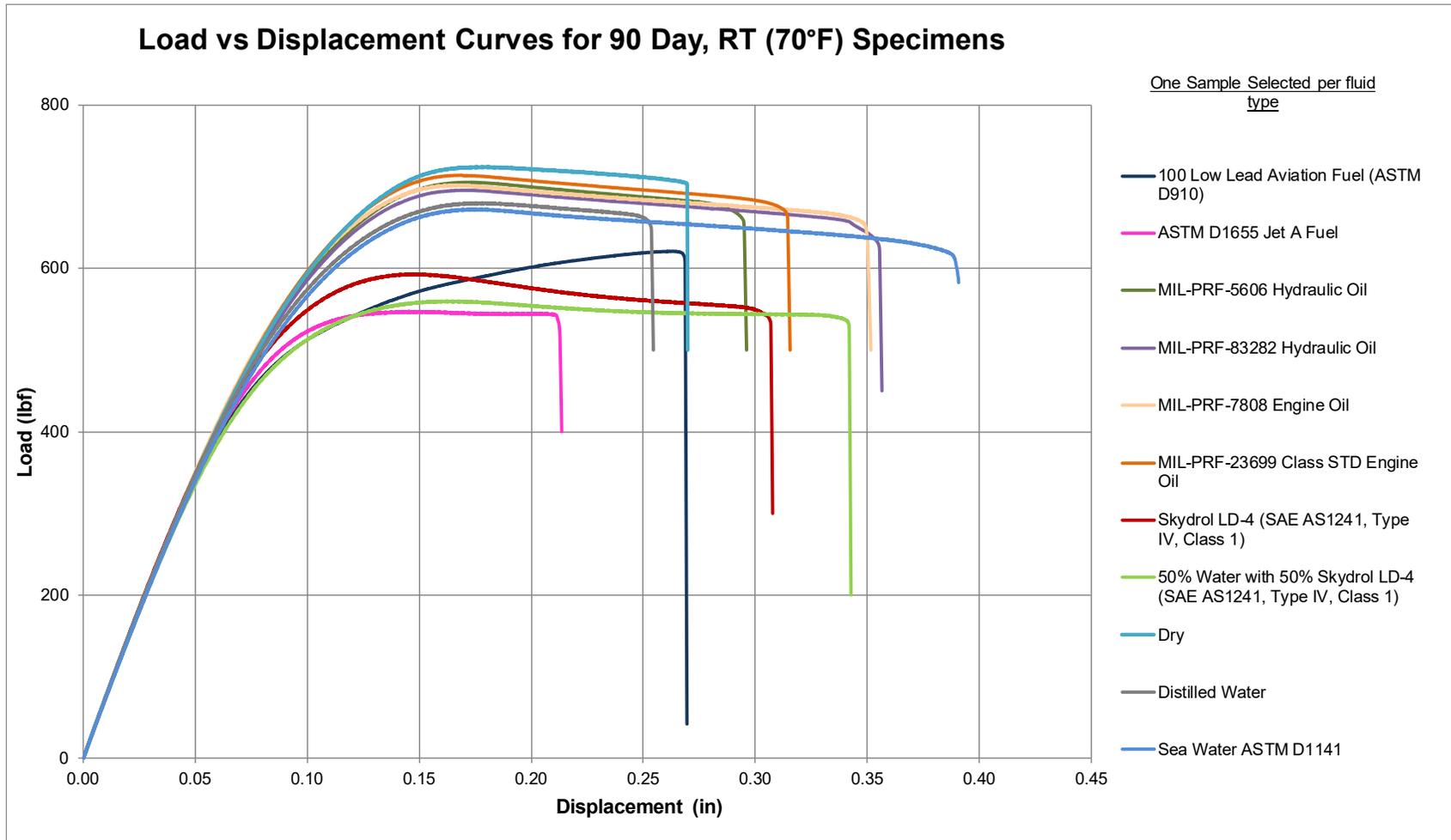
Fluid Sensitivity Screening
Tension Strength Properties (TFS)–ET (180°F) Strength
Additively Manufactured Antero(R) 840CN03

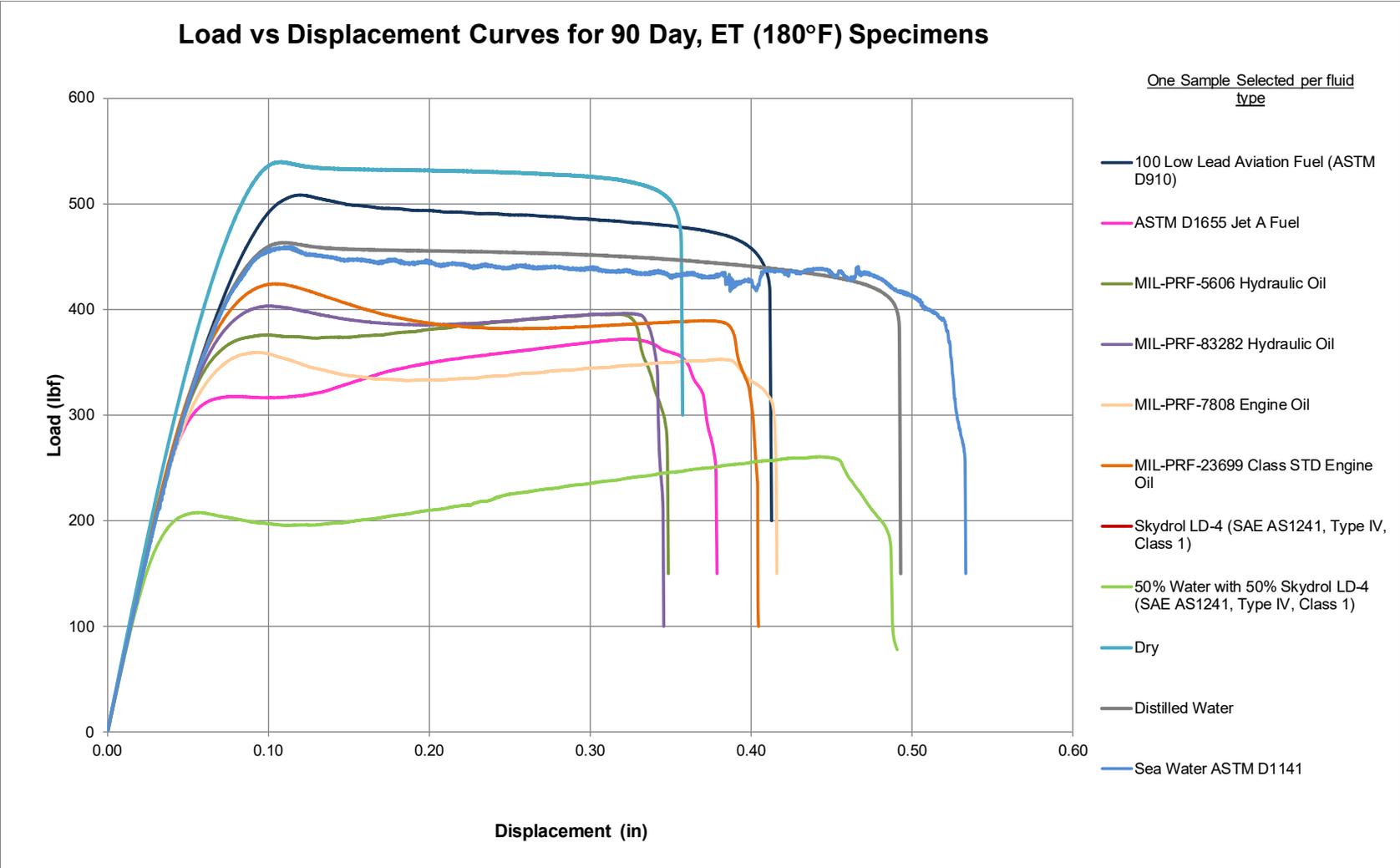
Fluid Code	Specimen Number	AM Batch #	Print Cycle #	AM Machine #	Print Direction	Strength [ksi]	Avg. Specimen Thickness [in]	Failure Mode	Average Strength [ksi]
FS11ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS11ET-11-ETA-1	A	1	1	XY	7.660	0.1320	FAILURE AT GAGE SECTION	7.628
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS11ET-12-ETA-2	A	1	1	XY	7.646	0.1323	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS11ET-13-ETA-3	A	1	1	XY	7.558	0.1320	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS11ET-14-ETA-4	A	1	1	XY	7.805	0.1325	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS11ET-15-ETA-5	A	1	1	XY	7.670	0.1325	FAILURE AT GAGE SECTION	
FS12ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS12ET-11-ETA-1	A	1	1	XY	5.612	0.1319	FAILURE AT GAGE SECTION	5.539
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS12ET-12-ETA-2	A	1	1	XY	5.622	0.1317	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS12ET-13-ETA-3	A	1	1	XY	5.519	0.1318	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS12ET-14-ETA-4	A	1	1	XY	5.459	0.1322	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS12ET-15-ETA-5	A	1	1	XY	5.481	0.1317	FAILURE AT GAGE SECTION	
FS13ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS13ET-11-ETA-1	A	1	1	XY	5.971	0.1323	FAILURE AT GAGE SECTION	5.950
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS13ET-12-ETA-2	A	1	1	XY	5.944	0.1320	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS13ET-13-ETA-3	A	1	1	XY	5.910	0.1315	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS13ET-14-ETA-4	A	1	1	XY	5.961	0.1315	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS13ET-15-ETA-5	A	1	1	XY	5.952	0.1323	FAILURE AT GAGE SECTION	
FS14ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS14ET-11-ETA-1	A	1	1	XY	6.078	0.1322	FAILURE AT GAGE SECTION	6.106
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS14ET-12-ETA-2	A	1	1	XY	6.127	0.1321	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS14ET-13-ETA-3	A	1	1	XY	6.069	0.1317	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS14ET-14-ETA-4	A	1	1	XY	6.111	0.1320	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS14ET-15-ETA-5	A	1	1	XY	6.147	0.1318	FAILURE AT GAGE SECTION	
FS15ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS15ET-11-ETA-1	A	1	1	XY	5.425	0.1323	FAILURE AT GAGE SECTION	5.468
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS15ET-12-ETA-2	A	1	1	XY	5.389	0.1316	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS15ET-13-ETA-3	A	1	1	XY	5.436	0.1319	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS15ET-14-ETA-4	A	1	1	XY	5.419	0.1317	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS15ET-15-ETA-5	A	1	1	XY	5.669	0.1318	FAILURE AT GAGE SECTION	
FS16ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS16ET-11-ETA-1	A	1	1	XY	6.457	0.1313	FAILURE AT GAGE SECTION	6.410
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS16ET-12-ETA-2	A	1	1	XY	6.261	0.1318	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS16ET-13-ETA-3	A	1	1	XY	6.373	0.1319	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS16ET-14-ETA-4	A	1	1	XY	6.485	0.1314	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS16ET-15-ETA-5	A	1	1	XY	6.475	0.1315	FAILURE AT GAGE SECTION	
FS17ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS17ET-11-ETA-1	A	1	1	XY	6.987	0.1314	FAILURE AT GAGE SECTION	6.983
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS17ET-12-ETA-2	A	1	1	XY	7.002	0.1318	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS17ET-13-ETA-3	A	1	1	XY	6.942	0.1317	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS17ET-14-ETA-4	A	1	1	XY	6.994	0.1319	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS17ET-15-ETA-5	A	1	1	XY	6.989	0.1316	FAILURE AT GAGE SECTION	
FS18ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS18ET-11-ETA-1	A	1	1	XY	4.507	0.1312	FAILURE AT GAGE SECTION	4.421
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS18ET-12-ETA-2	A	1	1	XY	4.462	0.1313	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS18ET-13-ETA-3	A	1	1	XY	4.389	0.1319	FAILURE AT GAGE AND FILLET SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS18ET-14-ETA-4	A	1	1	XY	4.503	0.1318	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS18ET-15-ETA-5	A	1	1	XY	4.245	0.1321	FAILURE AT GAGE SECTION	
FS19ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS19ET-11-ETA-1	A	1	1	XY	3.971	0.1310	FAILURE AT GAGE AND FILLET SECTION	4.215
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS19ET-12-ETA-2	A	1	1	XY	4.270	0.1318	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS19ET-13-ETA-3	A	1	1	XY	4.166	0.1320	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS19ET-14-ETA-4	A	1	1	XY	4.140	0.1315	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS19ET-15-ETA-5	A	1	1	XY	4.526	0.1320	FAILURE AT GAGE SECTION	
FS21ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS21ET-11-ETA-1	A	1	1	XY	7.939	0.1319	FAILURE AT GAGE SECTION	8.065
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS21ET-12-ETA-2	A	1	1	XY	7.908	0.1314	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS21ET-13-ETA-3	A	1	1	XY	8.243	0.1319	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS21ET-14-ETA-4	A	1	1	XY	8.083	0.1326	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS21ET-15-ETA-5	A	1	1	XY	8.152	0.1322	FAILURE AT GAGE SECTION	
FS22ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS22ET-11-ETA-1	A	1	1	XY	6.649	0.1319	FAILURE AT GAGE SECTION	6.588
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS22ET-12-ETA-2	A	1	1	XY	6.948	0.1320	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS22ET-13-ETA-3	A	1	1	XY	6.398	0.1319	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS22ET-14-ETA-4	A	1	1	XY	6.476	0.1320	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS22ET-15-ETA-5	A	1	1	XY	6.469	0.1320	FAILURE AT GAGE SECTION	
FS23ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS23ET-11-ETA-1	A	1	1	XY	8.038	0.1306	FAILURE AT GAGE SECTION	8.026
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS23ET-12-ETA-2	A	1	1	XY	8.088	0.1302	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS23ET-13-ETA-3	A	1	1	XY	8.093	0.1300	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS23ET-14-ETA-4	A	1	1	XY	8.016	0.1296	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS23ET-15-ETA-5	A	1	1	XY	7.895	0.1300	FAILURE AT GAGE SECTION	
FS31ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS31ET-11-ETA-1	A	1	1	XY	7.014	0.1319	FAILURE AT GAGE SECTION	7.001
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS31ET-12-ETA-2	A	1	1	XY	7.064	0.1321	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS31ET-13-ETA-3	A	1	1	XY	6.949	0.1319	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS31ET-14-ETA-4	A	1	1	XY	6.884	0.1319	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS31ET-15-ETA-5	A	1	1	XY	7.096	0.1317	FAILURE AT GAGE SECTION	
FS32ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS32ET-11-ETA-1	A	1	1	XY	8.194	0.1317	FAILURE AT GAGE SECTION	8.124
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS32ET-12-ETA-2	A	1	1	XY	8.253	0.1316	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS32ET-13-ETA-3	A	1	1	XY	8.204	0.1315	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS32ET-14-ETA-4	A	1	1	XY	7.981	0.1322	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS32ET-15-ETA-5	A	1	1	XY	7.985	0.1320	FAILURE AT GAGE SECTION	
FS33ET	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS33ET-11-ETA-1	A	1	1	XY	7.216	0.1326	FAILURE AT GAGE SECTION	7.238
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS33ET-12-ETA-2	A	1	1	XY	7.084	0.1326	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS33ET-13-ETA-3	A	1	1	XY	7.295	0.1323	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS33ET-14-ETA-4	A	1	1	XY	7.300	0.1320	FAILURE AT GAGE SECTION	
	NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TFS33ET-15-ETA-5	A	1	1	XY	7.295	0.1323	FAILURE AT GAGE SECTION	

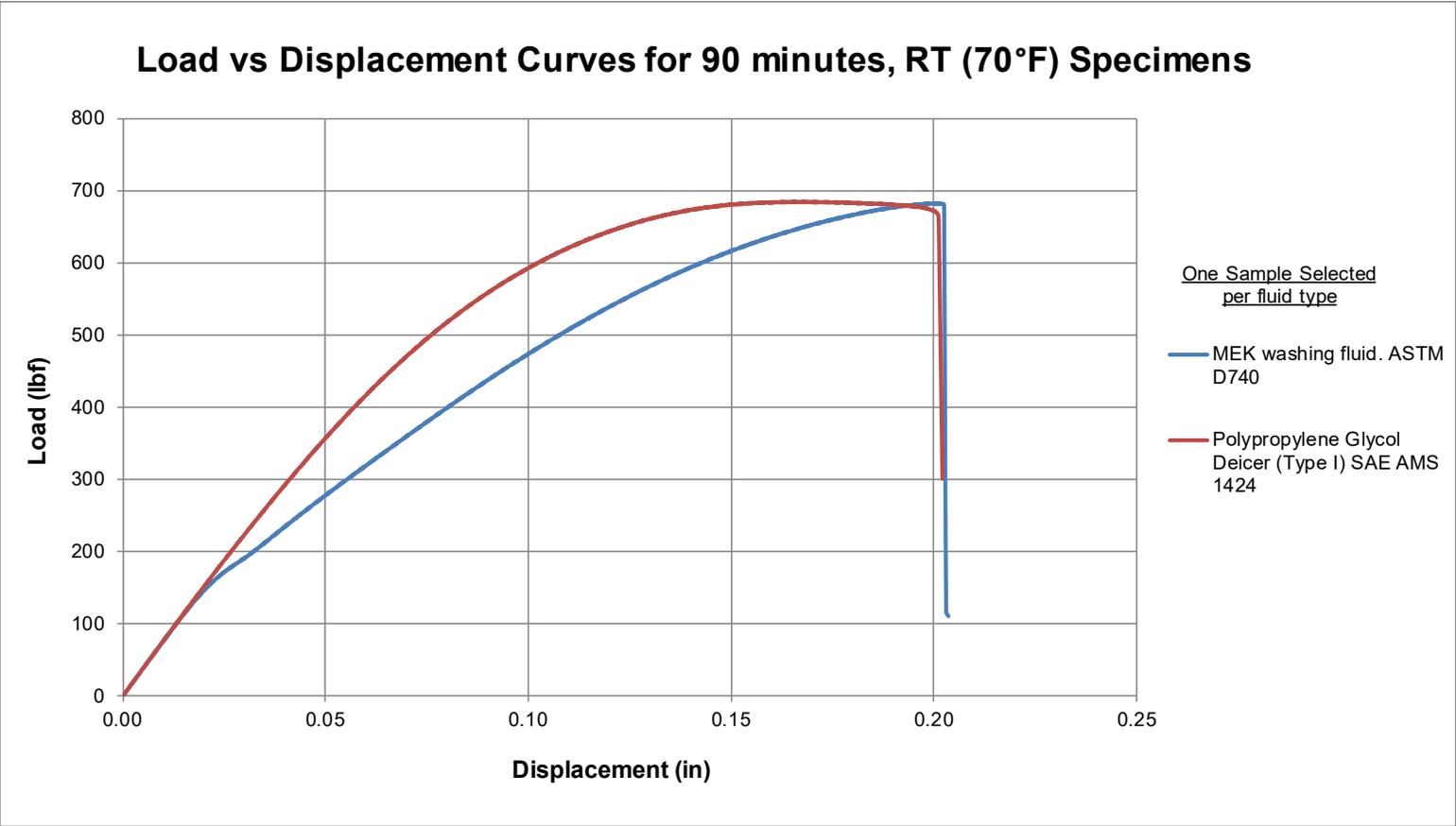
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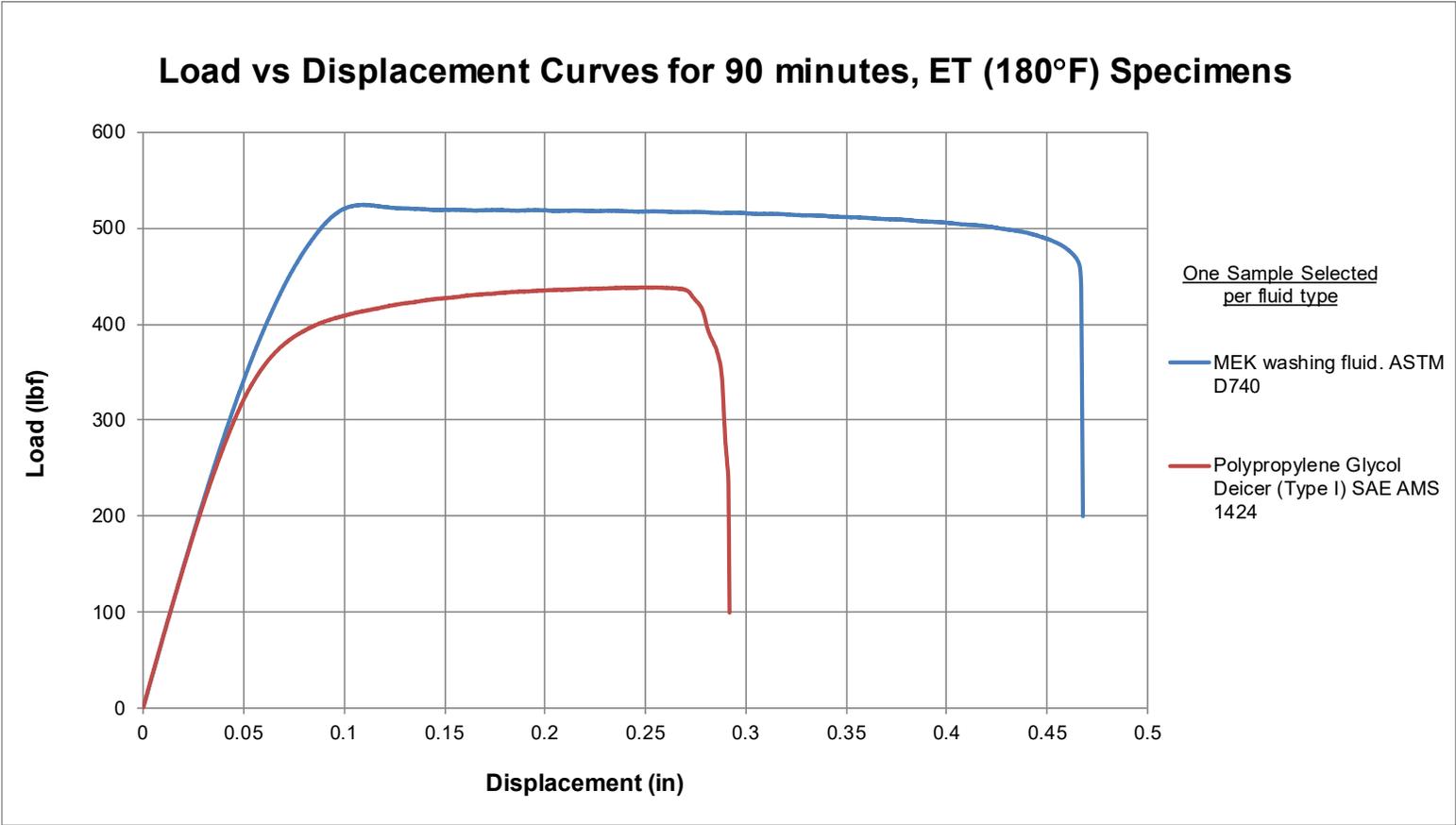


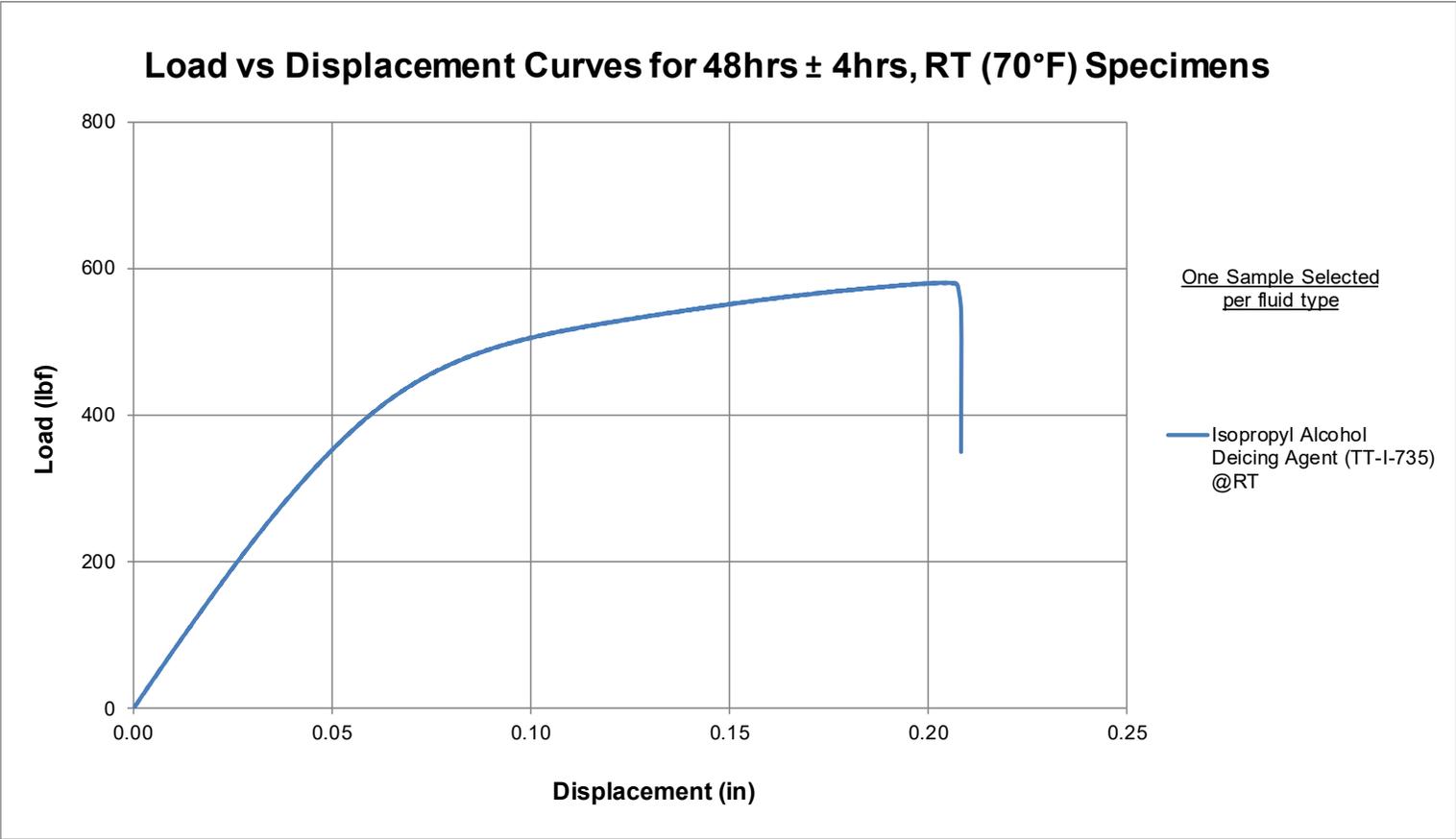
7.3 Load Displacement Curves

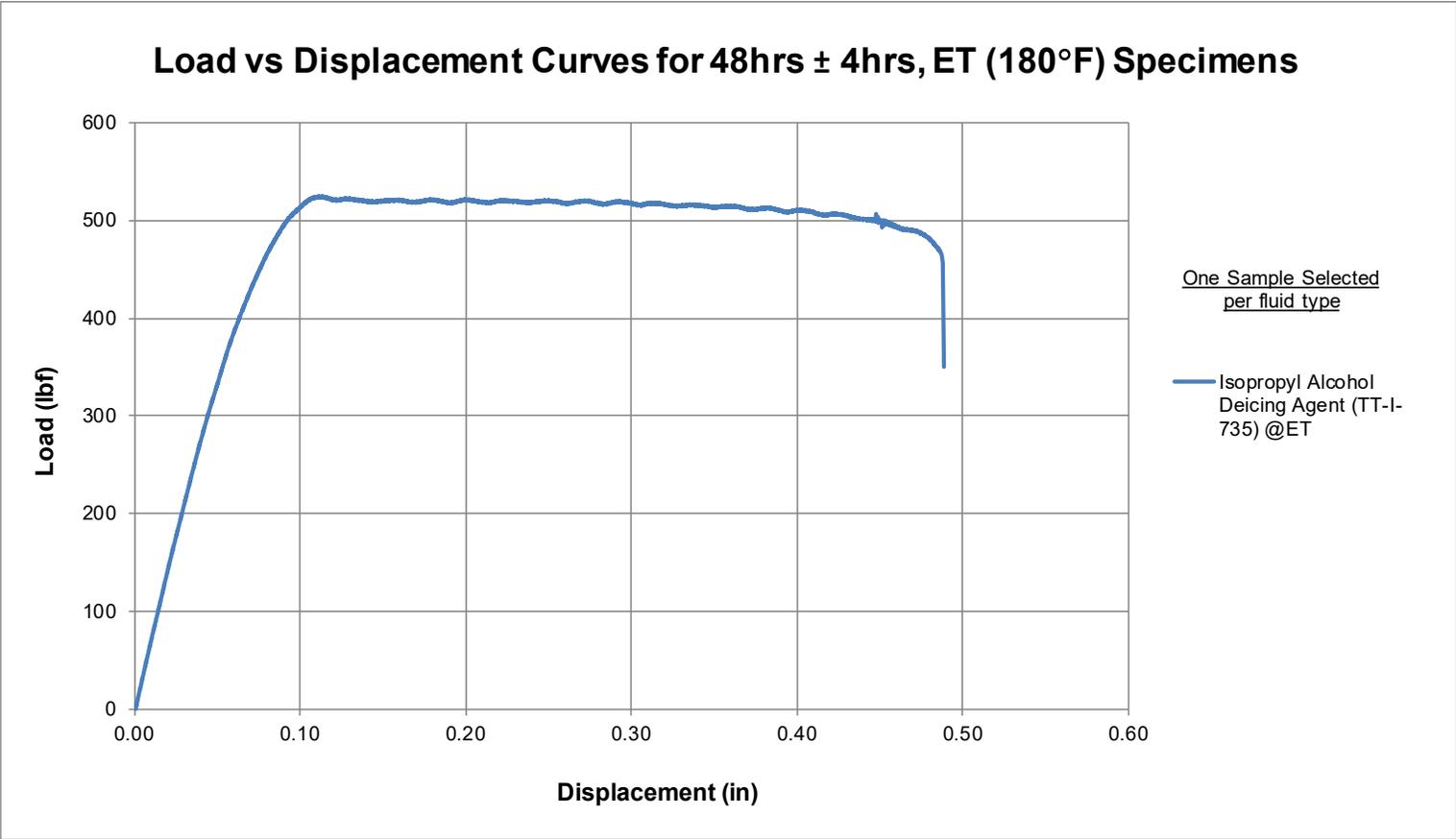


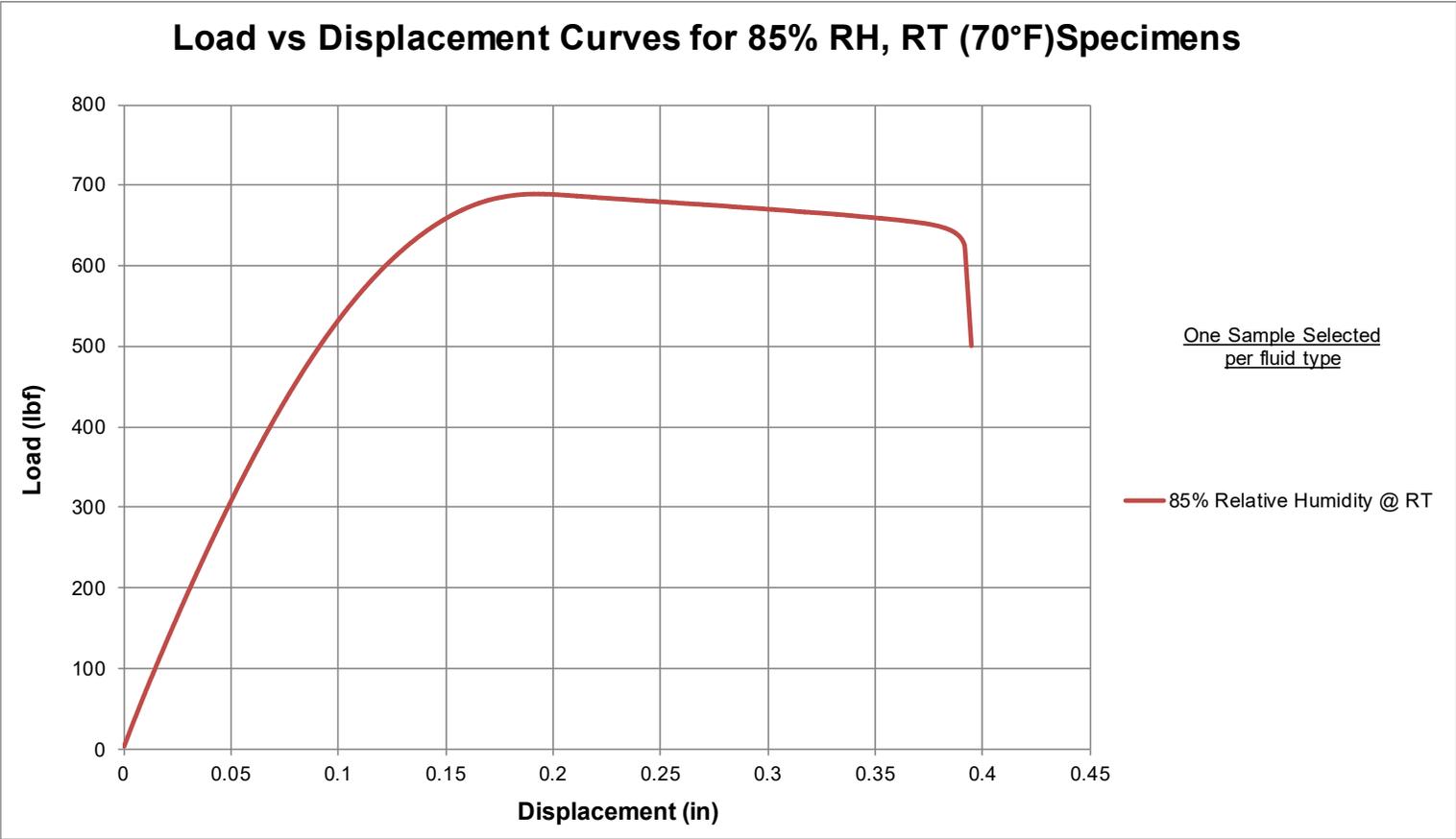


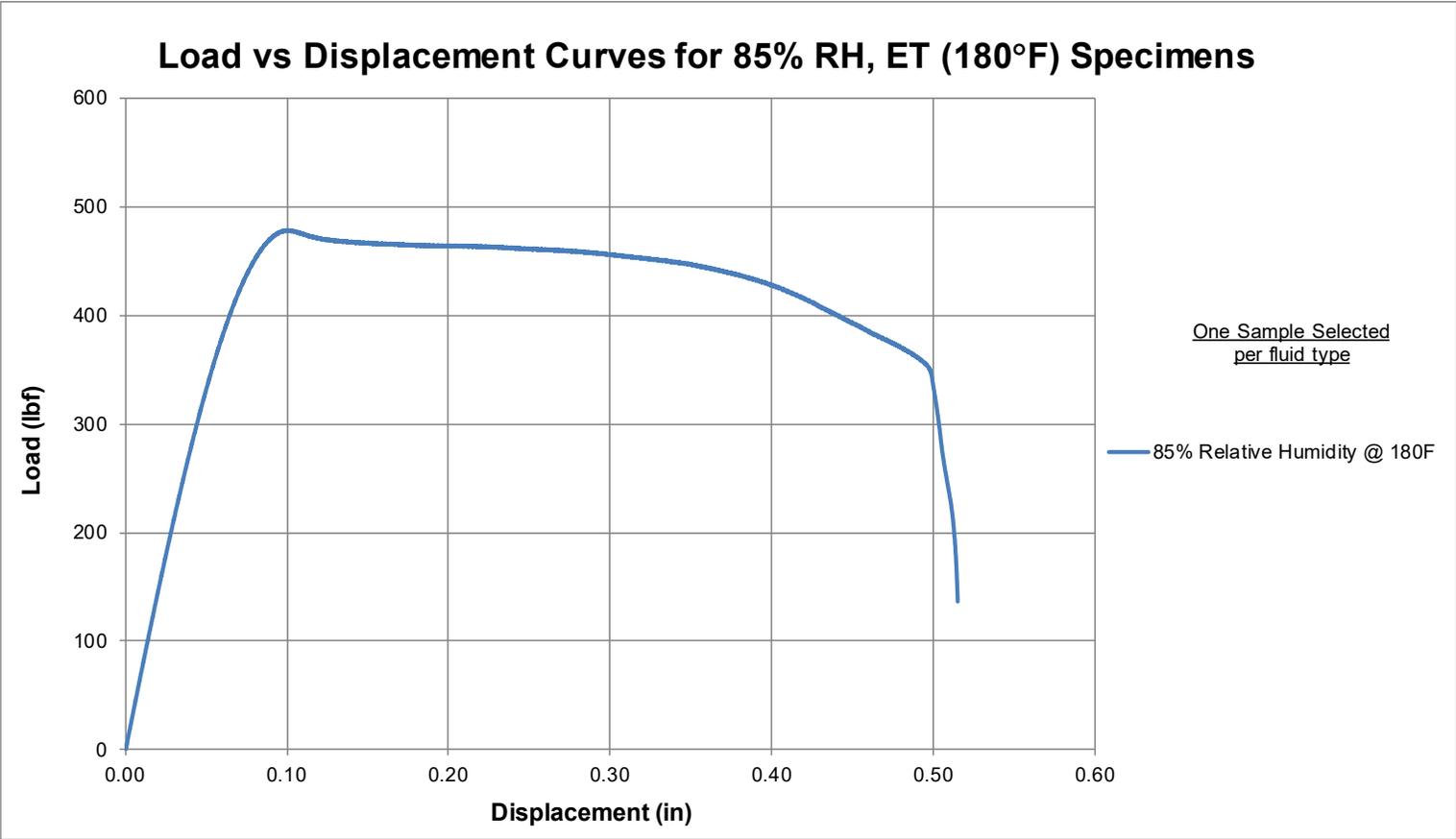






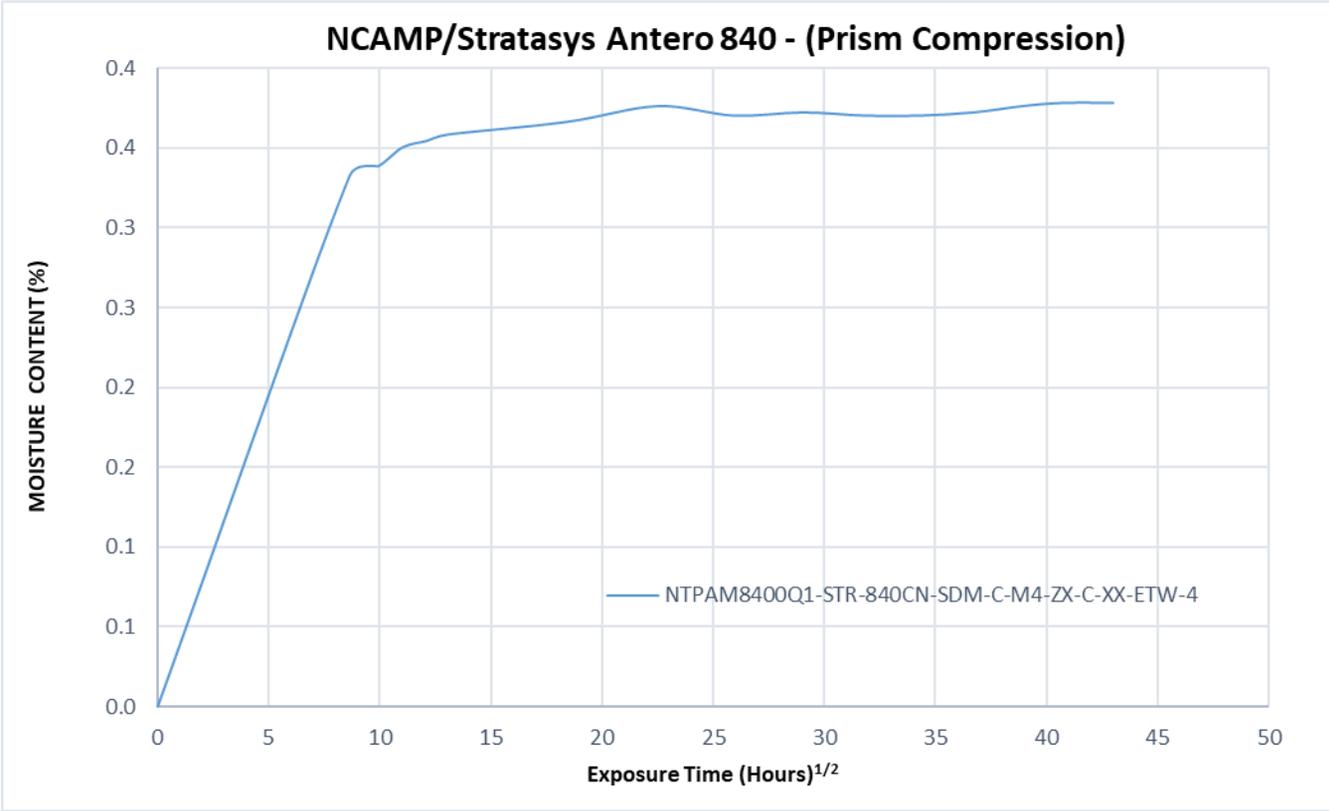




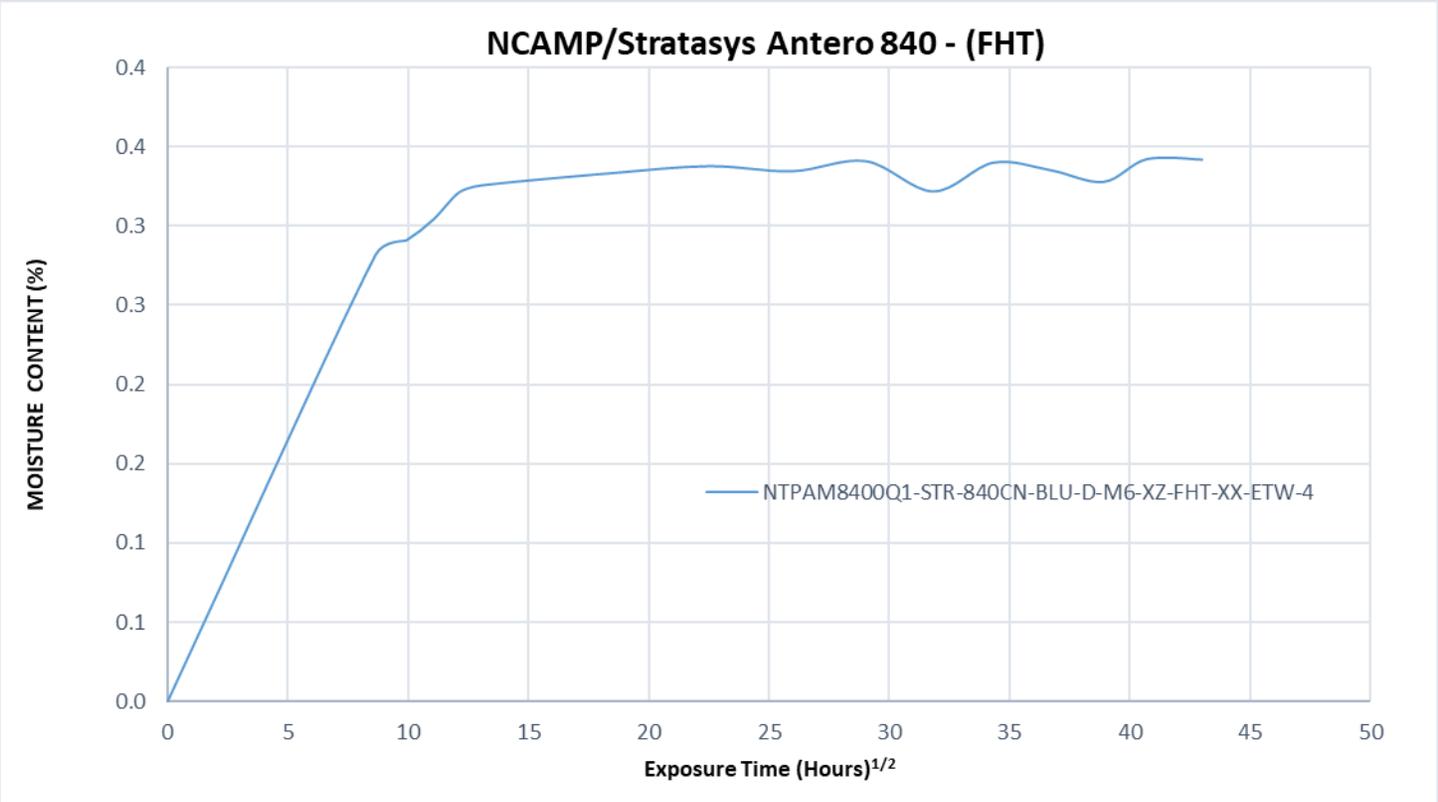


7.4 Moisture Conditioning Charts

7.4.1 Smallest Sample – Compression Prism (0.5” x 1”)



7.4.2 Largest Sample – FHT (10” x 1.5”)



8. Physical Testing

8.1 DMA Results

8.1.1 DMA Dry Batch A, B, C and D

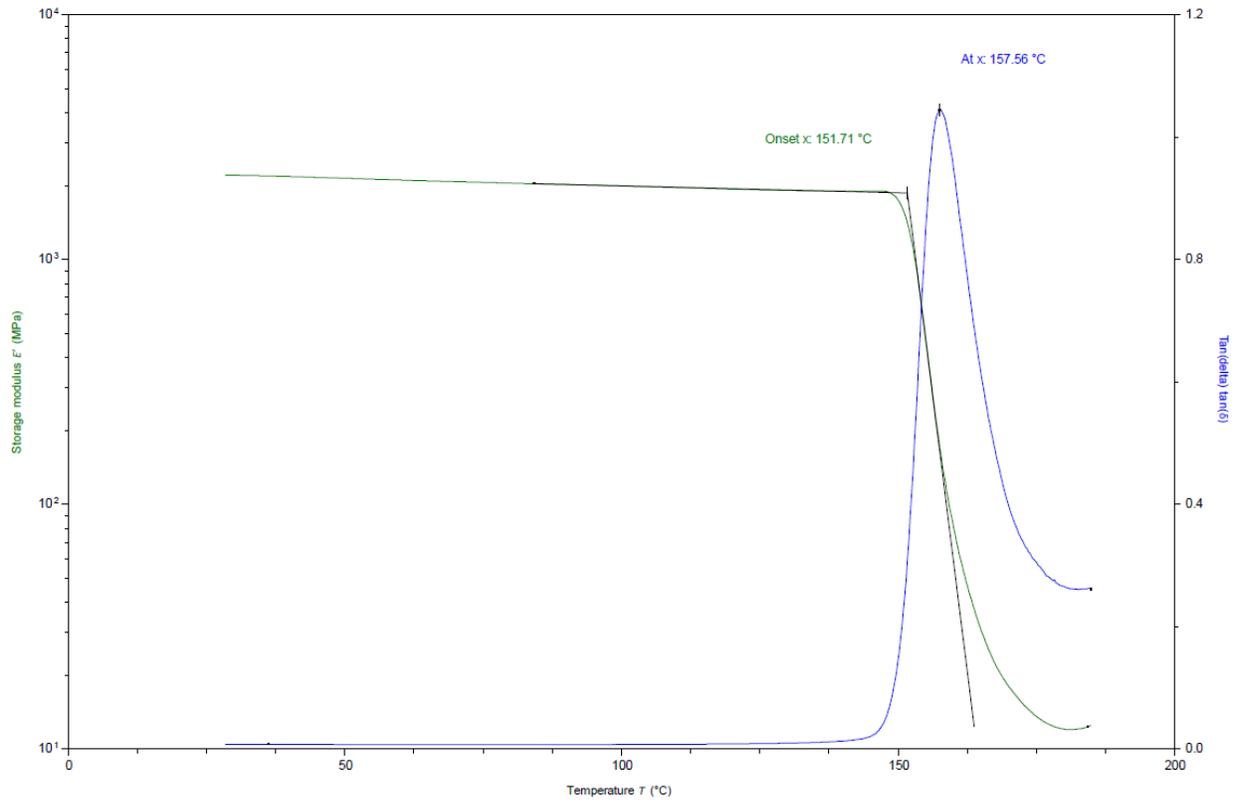
DMA Results Summary				
Additively Manufactured Antero(R) 840CN03 Qualification DMA Dry				
Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T _g [°C]	T _g [°F]	T _g [°C]	T _g [°F]
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-DMA-D	153.2	307.8	159.1	318.4
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-DMA-D	152.2	305.9	158.3	316.9
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-DMA-D	152.5	306.6	160.6	321.0
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-DMA-D	152.7	306.8	161.5	322.7
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-DMA-D	154.2	309.5	160.3	320.5
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-DMA-D	153.3	307.9	159.2	318.5
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-DMA-D	153.3	307.9	160.5	320.9
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-DMA-D	153.4	308.1	161.9	323.4
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-DMA-D	151.7	305.1	157.6	315.6
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-DMA-D	150.4	302.7	157.3	315.2
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-DMA-D	152.2	306.0	159.5	319.1
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-DMA-D	151.3	304.3	160.3	320.5
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-DMA-D	151.7	305.1	158.4	317.1
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-DMA-D	151.7	305.1	158.4	317.2
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-DMA-D	152.3	306.1	161.2	322.2
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-DMA-D	152.1	305.7	161.8	323.2
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-DMA-D	153.0	307.4	159.7	319.4
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-DMA-D	153.1	307.5	159.4	319.0
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-DMA-D	152.9	307.1	160.1	320.2
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-DMA-D	153.4	308.1	162.5	324.5
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-DMA-D	153.5	308.3	158.9	318.0
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-DMA-D	153.7	308.6	159.1	318.4
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-DMA-D	153.3	308.0	159.5	319.0
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-DMA-D	153.2	307.7	160.5	320.9
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-DMA-D	152.8	307.1	158.9	318.1
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-DMA-D	153.0	307.3	159.5	319.2
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-DMA-D	152.6	306.7	160.6	321.1
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-DMA-D	152.9	307.2	162.1	323.7
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-DMA-D	153.1	307.5	158.9	318.1
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-DMA-D	153.2	307.7	159.3	318.7
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-DMA-D	153.6	308.4	161.5	322.7
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-DMA-D	153.5	308.2	162.3	324.2
Average	152.8	307.0	160.0	319.9
Standard Deviation	0.8000	1.430	1.370	2.470

Sample: NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-DMA-D
Size: 35.00000 x 12.68000 x 2.66000 mm
Procedure name: Oscillation Temperature Ramp

DMA850

File: NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-DMA-D
Operator: Zheng
Run Date: 2/28/2025 10:37:59 AM
Instrument: DMA 850-0399

NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-DMA-D

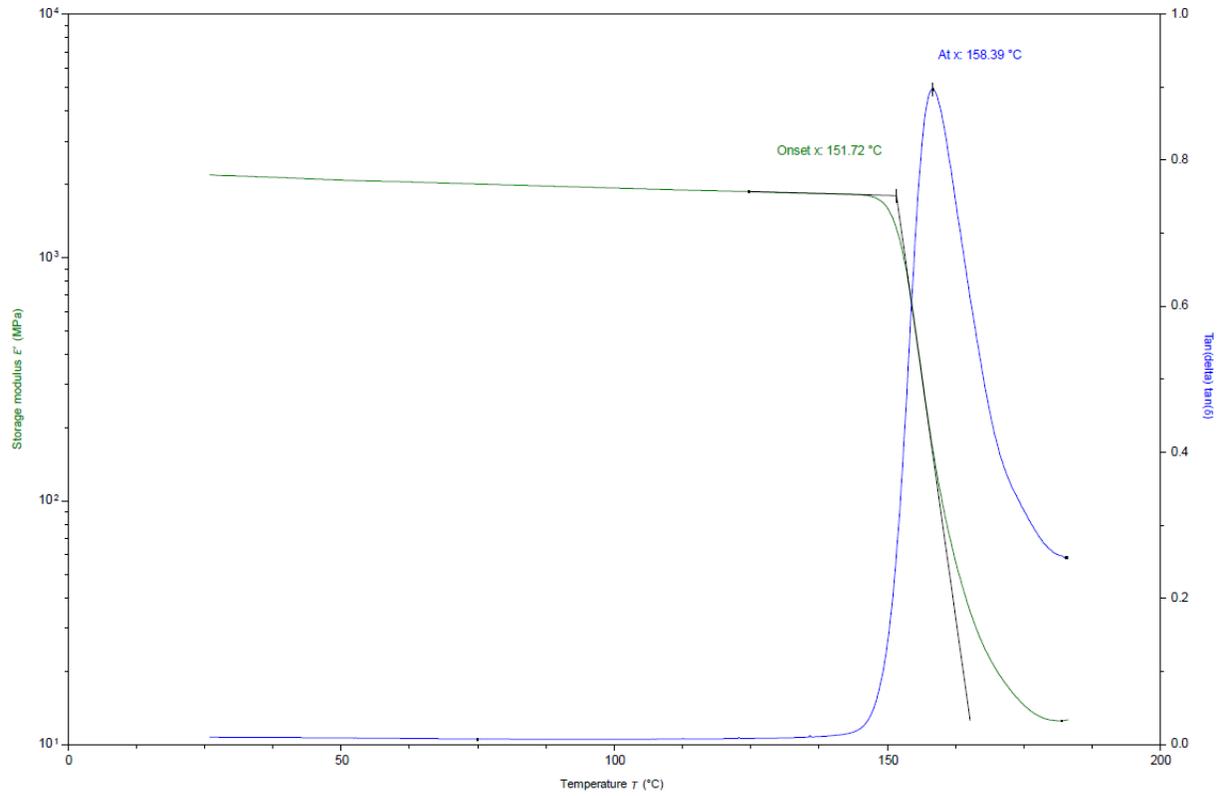


Sample: NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-DMA-D
Size: 35.00000 x 12.89000 x 2.53000 mm
Procedure name: Oscillation Temperature Ramp

DMA850

File: NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-DMA-D
Operator: Ping
Run Date: 1/17/2025 9:39:25 AM
Instrument: DMA 850-0399

NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-DMA-D

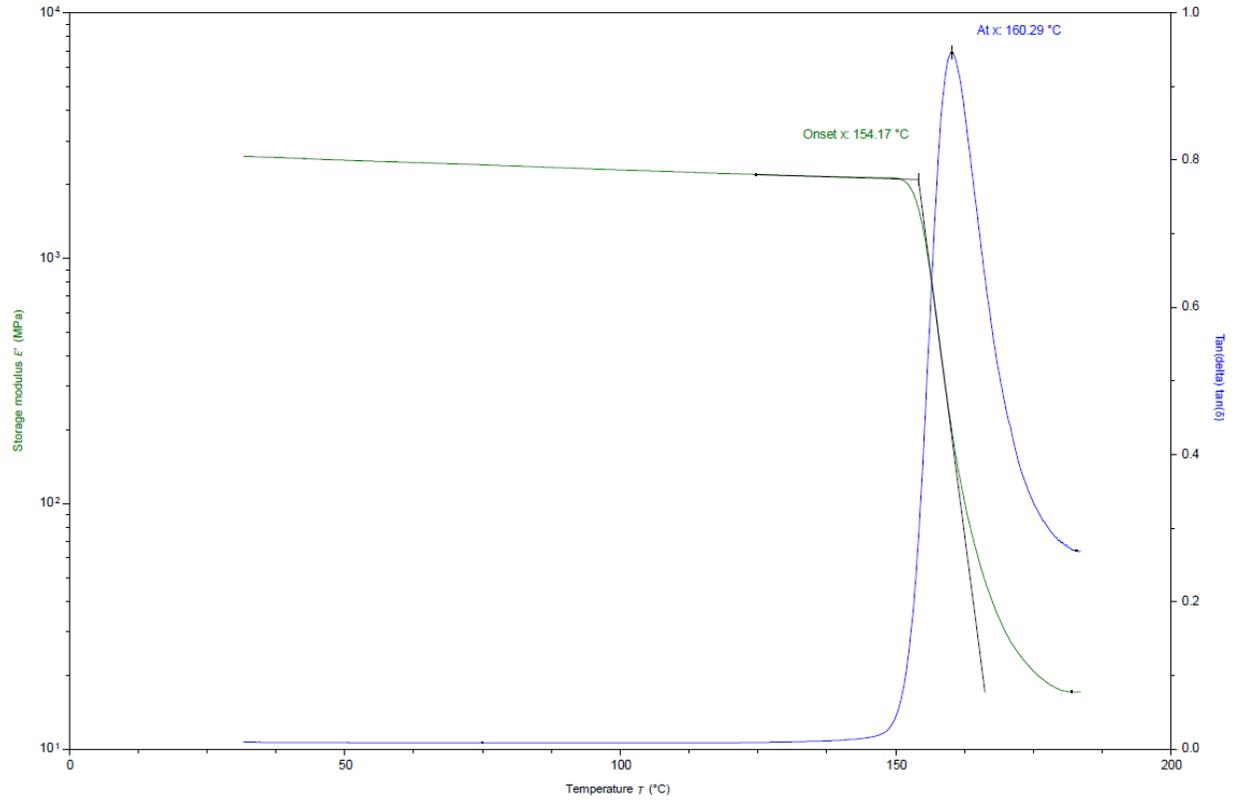


Sample: NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-DMA-D
Size: 35.00000 x 12.68000 x 2.56000 mm
Procedure name: Oscillation Temperature Ramp

DMA850

File: NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-DMA-D
Operator: Ping
Run Date: 1/14/2025 2:41:48 PM
Instrument: DMA 850-0399

NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-DMA-

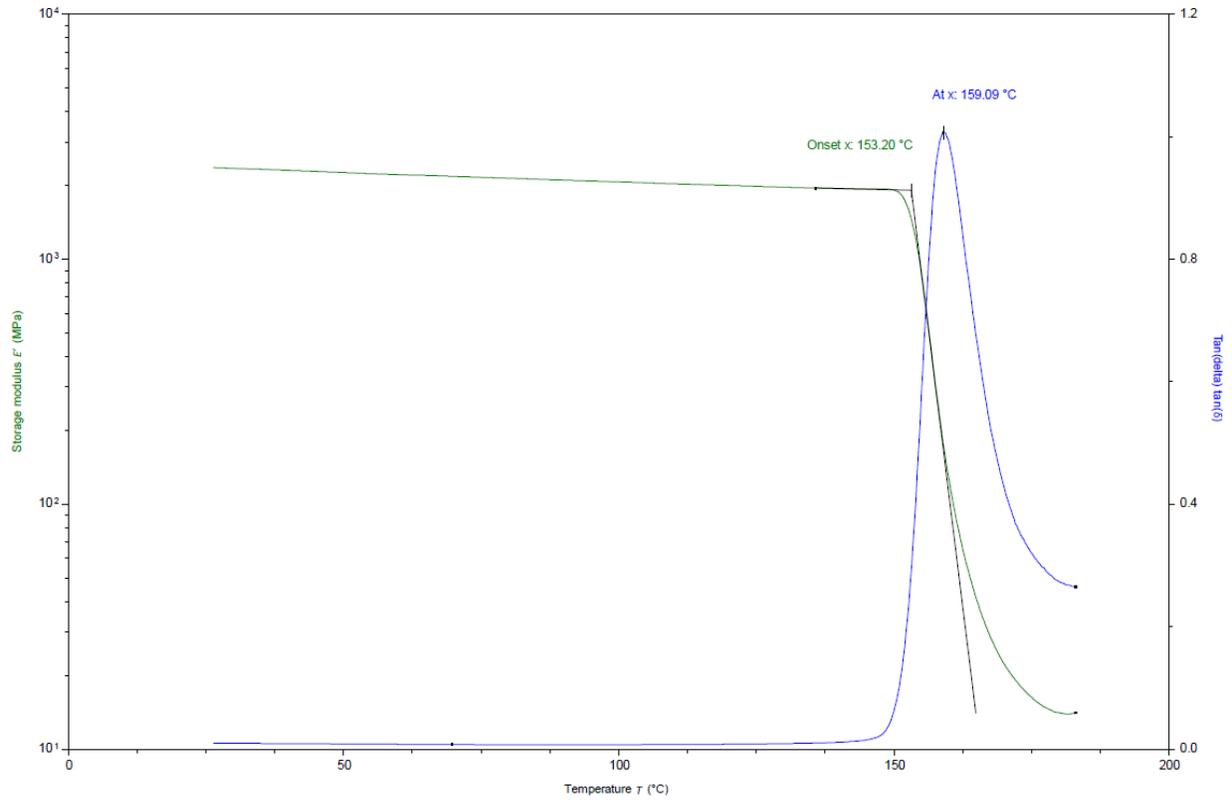


Sample: NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-DMA-D
Size: 35.00000 x 12.70000 x 2.62000 mm
Procedure name: Oscillation Temperature Ramp

DMA850

File: NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-DMA-D
Operator: Ping
Run Date: 2/6/2025 9:50:29 AM
Instrument: DMA 850-0399

NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-DMA-D



8.1.2 DMA Wet Batch A, B, C and D

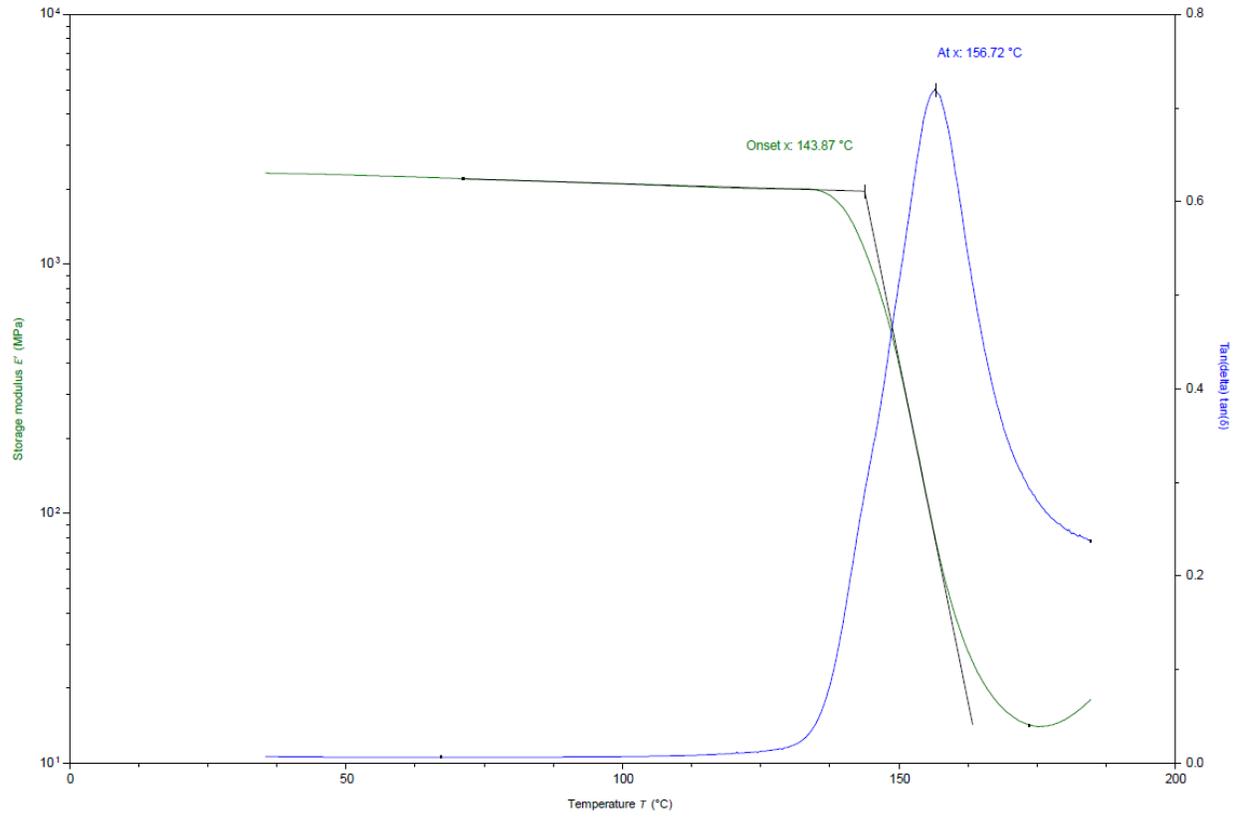
DMA Results Summary				
Additively Manufactured Antero(R) 840CN03 Qualification DMA Wet				
Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T _g [°C]	T _g [°F]	T _g [°C]	T _g [°F]
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-DMA-W	148.3	299.0	157.1	314.8
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-DMA-W	145.0	293.0	157.3	315.2
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-DMA-W	144.5	292.1	157.1	314.8
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-DMA-W	146.0	294.7	158.2	316.8
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-DMA-W	144.8	292.6	157.4	315.3
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-DMA-W	140.4	284.6	157.3	315.1
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-DMA-W	141.0	285.9	156.5	313.7
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-DMA-W	141.2	286.1	155.8	312.5
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-DMA-W	143.9	291.0	156.7	314.1
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-DMA-W	141.8	287.3	156.9	314.4
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-DMA-W	142.4	288.3	156.9	314.4
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-DMA-W	144.0	291.2	156.8	314.3
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-DMA-W	145.8	294.5	157.5	315.5
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-DMA-W	142.7	288.8	156.9	314.5
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-DMA-W	142.8	289.1	157.8	316.1
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-DMA-W	143.6	290.4	157.6	315.7
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-DMA-W	144.3	291.7	156.7	314.1
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-DMA-W	144.2	291.5	157.3	315.1
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-DMA-W	143.1	289.5	156.5	313.8
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-DMA-W	145.3	293.5	158.0	316.4
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-DMA-W	147.5	297.5	156.7	314.1
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-DMA-W	144.5	292.2	157.3	315.1
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-DMA-W	143.7	290.7	156.5	313.7
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-DMA-W	146.0	294.8	158.2	316.7
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-DMA-W	147.2	297.0	157.4	315.4
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-DMA-W	144.3	291.7	157.7	315.8
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-DMA-W	144.2	291.5	157.0	314.7
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-DMA-W	144.7	292.4	157.9	316.3
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-DMA-W	145.2	293.3	157.4	315.3
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-DMA-W	142.6	288.7	156.9	314.5
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-DMA-W	143.4	290.1	156.7	314.1
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-DMA-W	144.2	291.6	158.1	316.5
Average	144.1	291.4	157.2	315.0
Standard Deviation	1.810	3.260	0.5600	1.010

Sample: 840CN-NGC-A-M1-XY-DMA-WET
Size: 35.00000 x 12.69000 x 2.62000 mm
Procedure name: Oscillation Temperature Ramp

DMA850

File: 840CN-NGC-A-M1-XY-DMA-WET
Operator: Ping
Run Date: 9/4/2024 12:27:43 PM
Instrument: DMA 850-0399

840CN-NGC-A-M1-XY-DMA-WET

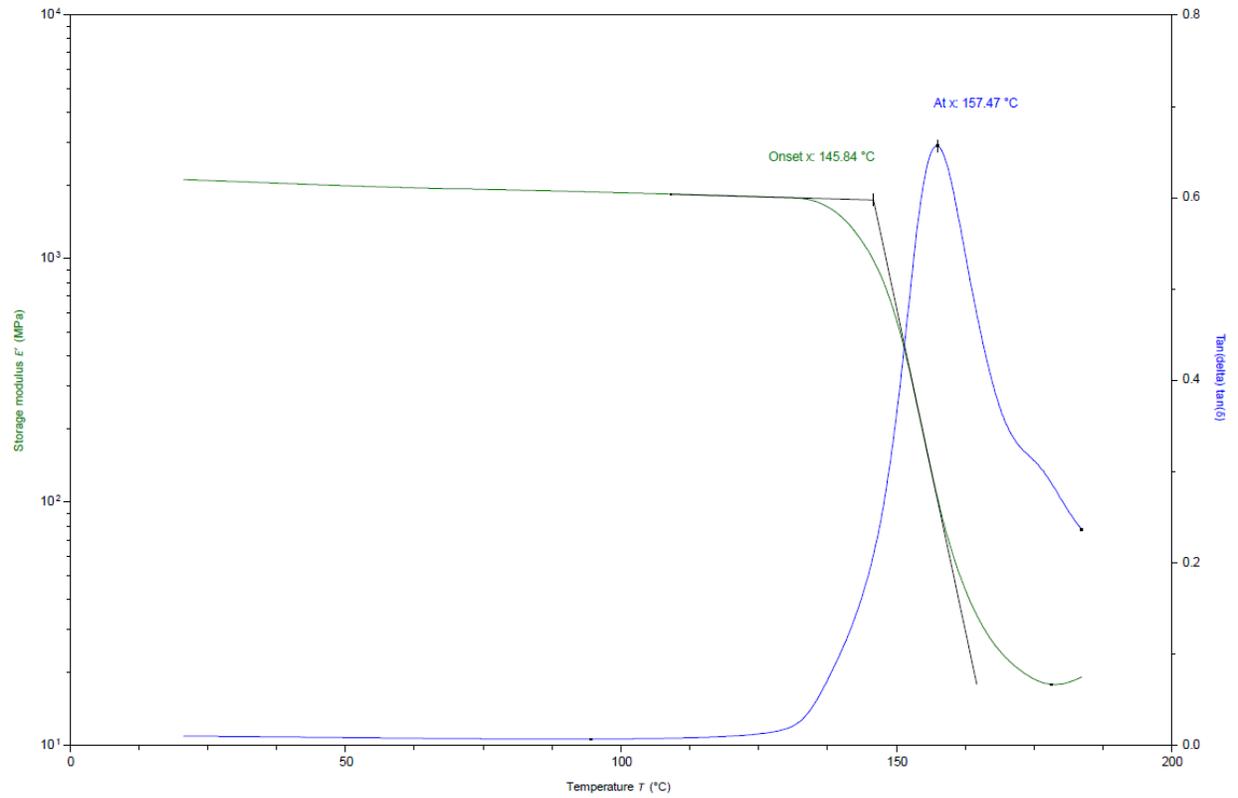


Sample: NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-DMA-W
Size: 35.00000 x 12.91000 x 2.52000 mm
Procedure name: Oscillation Temperature Ramp

DMA850

File: NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-DMA-W
Operator: Ping
Run Date: 3/4/2025 8:21:59 AM
Instrument: DMA 850-0399

NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-DMA-W

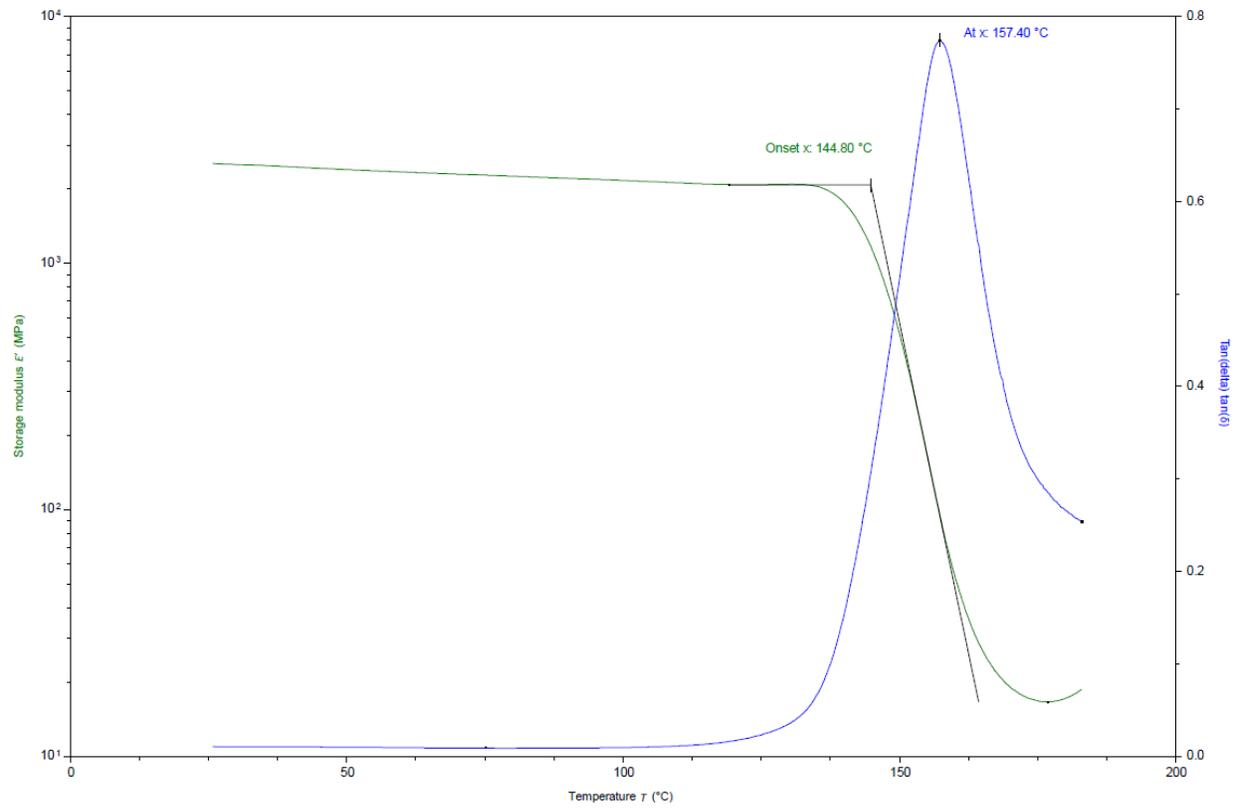


Sample: NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-DMA-W
Size: 35.00000 x 12.69000 x 2.59000 mm
Procedure name: Oscillation Temperature Ramp

DMA850

File: NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-DMA-W
Operator: Ping
Run Date: 1/16/2025 9:07:23 AM
Instrument: DMA 850-0399

NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-DMA-

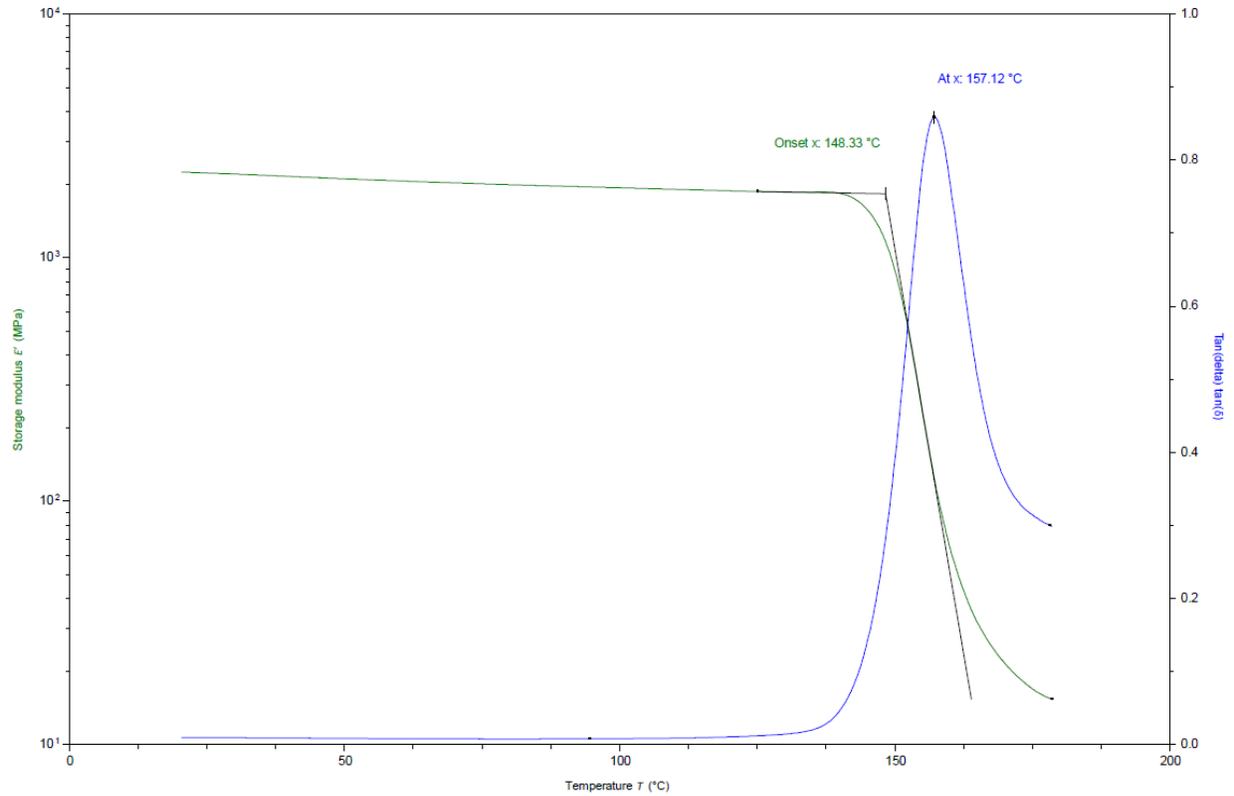


Sample: NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-DMA-W
Size: 35.00000 x 12.68000 x 2.59000 mm
Procedure name: Oscillation Temperature Ramp

DMA850

File: NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-DMA-W
Operator: Ping
Run Date: 3/24/2025 3:48:06 PM
Instrument: DMA 850-0399

NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-DMA-W



8.2 TMA Ambient Batch A, B, C and D

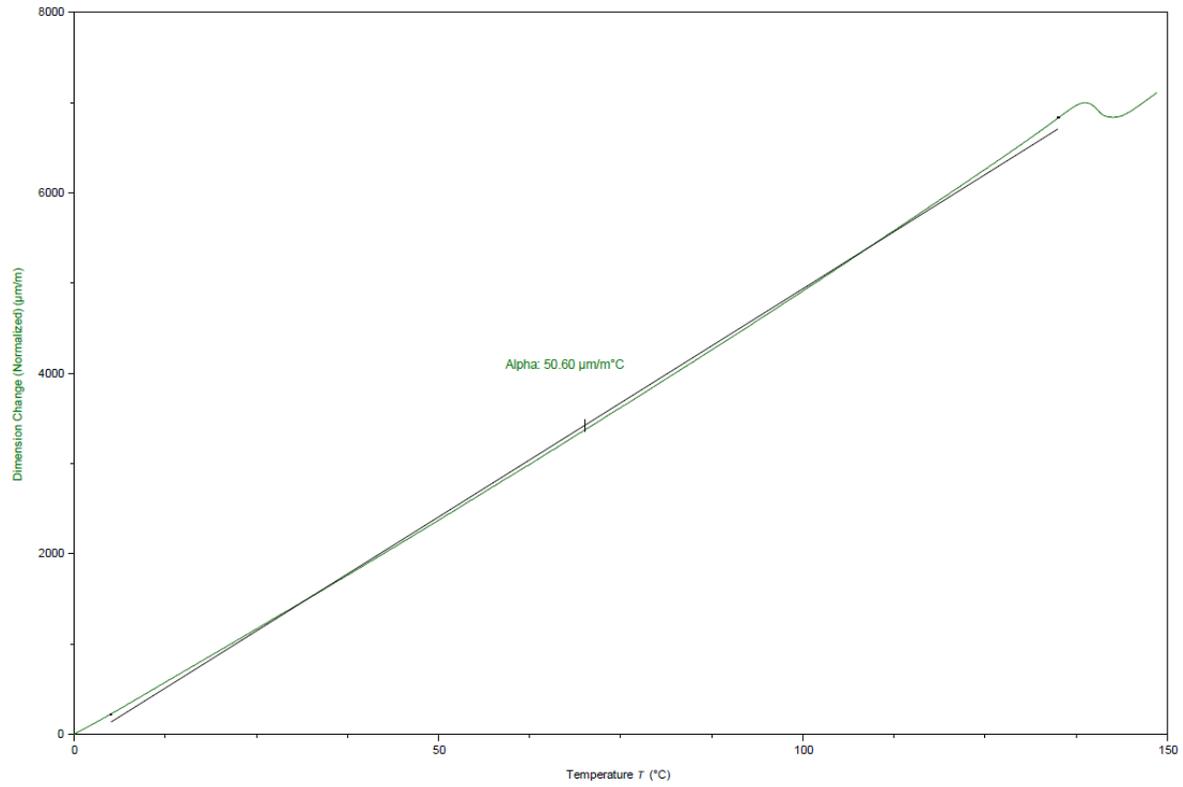
TMA Results Summary		
Stratasys Additively Manufactured Antero(R) 840CN03 Qualification TMA		
Sample ID	Coefficient of Thermal Expansion	
	α [$\mu\text{m}/(\text{m}\cdot^\circ\text{C})$]	α [$\mu\text{in}/(\text{in}\cdot^\circ\text{F})$]
NTPAMB400Q1-STR-840CN-NGC-A-M1-XY-TMA	50.60	28.11
NTPAMB400Q1-STR-840CN-NGC-A-M1-XZ-TMA	50.45	28.03
NTPAMB400Q1-STR-840CN-NGC-A-M1-ZX-TMA	58.37	32.43
NTPAMB400Q1-STR-840CN-NGC-A-M1-Z45-TMA	54.51	30.28
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-XY-TMA	49.61	27.56
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-XZ-TMA	49.69	27.61
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-ZX-TMA	58.00	32.22
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-Z45-TMA	53.27	29.59
NTPAMB400Q1-STR-840CN-SDM-C-M4-XY-TMA	49.74	27.63
NTPAMB400Q1-STR-840CN-SDM-C-M4-XZ-TMA	50.49	28.05
NTPAMB400Q1-STR-840CN-SDM-C-M4-ZX-TMA	56.55	31.42
NTPAMB400Q1-STR-840CN-SDM-C-M4-Z45-TMA	53.31	29.62
NTPAMB400Q1-STR-840CN-SDM-D-M4-XY-TMA	50.35	27.97
NTPAMB400Q1-STR-840CN-SDM-D-M4-XZ-TMA	51.53	28.63
NTPAMB400Q1-STR-840CN-SDM-D-M4-ZX-TMA	58.80	32.67
NTPAMB400Q1-STR-840CN-SDM-D-M4-Z45-TMA	54.90	30.50
Average	53.14	29.52
Standard Deviation	3.333	1.852

Sample: NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TMA
Method: Temperature Ramp @ 5C/min
Operator: Ping

Instrument/Date: TMA450,3/18/2025 10:32:16 AM
Initial Length: 10.03891 mm
Project: Stratasys Antero 840 TMA

File: X:\Data\TMA\Stratasys\2025\Antero_840\NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TMA.tri

NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-TMA

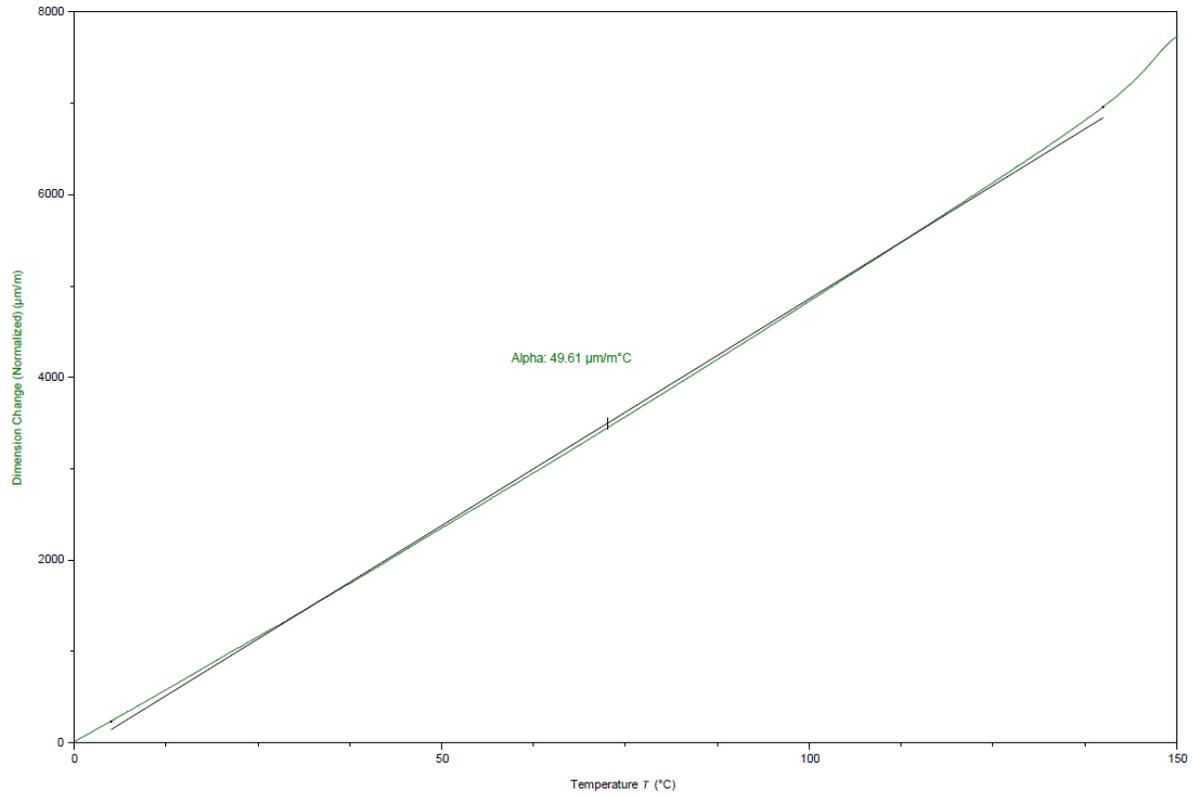


TA Instruments Trios V5.6.0.87

Sample: NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-TMA
Method: Temperature Ramp @ 5C/min
Operator: Ping
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Instrument/Date: TMA450, 1/31/2025 12:26:43 PM
Initial Length: 10.12548 mm
Project: Stratasys Antero 840 TMA

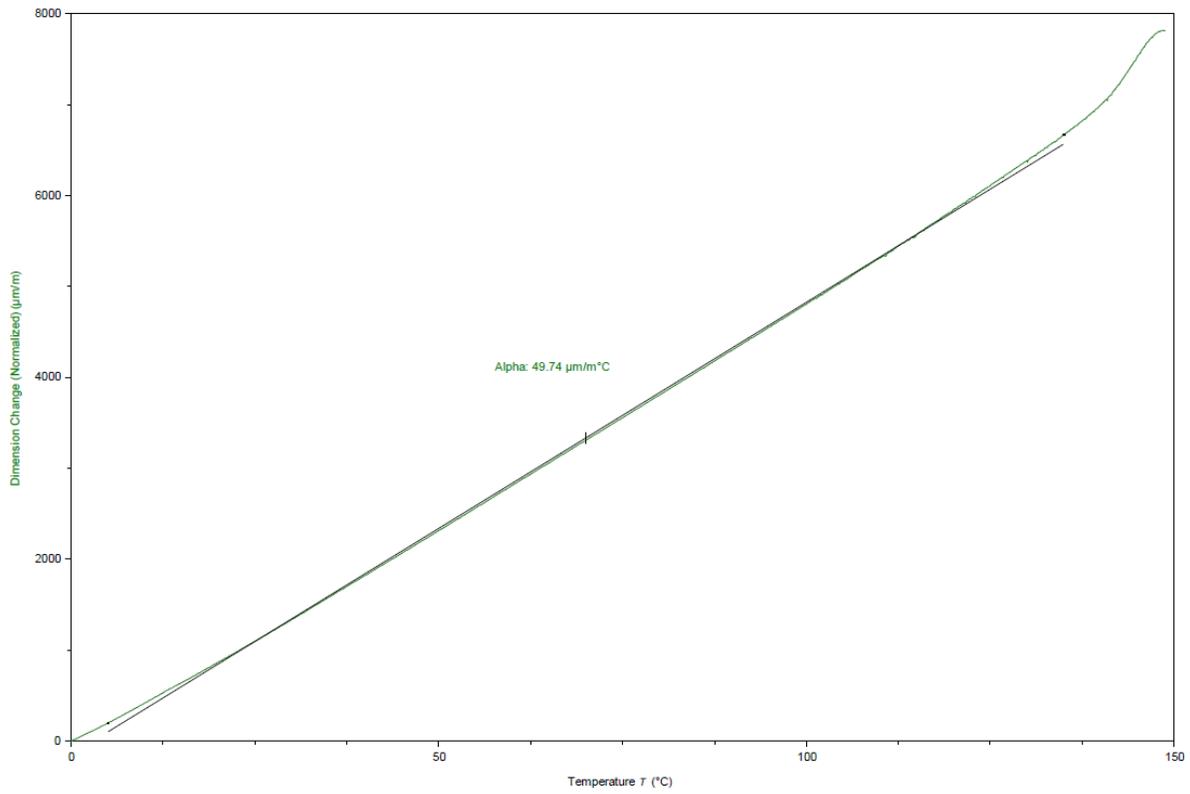
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-TMA



Sample: NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-TMA
Method: Temperature Ramp @ 5C/min
Operator: Ping
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Instrument/Date: TMA450.5/1/2025 9:28:44 AM
Initial Length: 10.07484 mm
Project: Stratasys Antero 840 TMA

NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-TMA

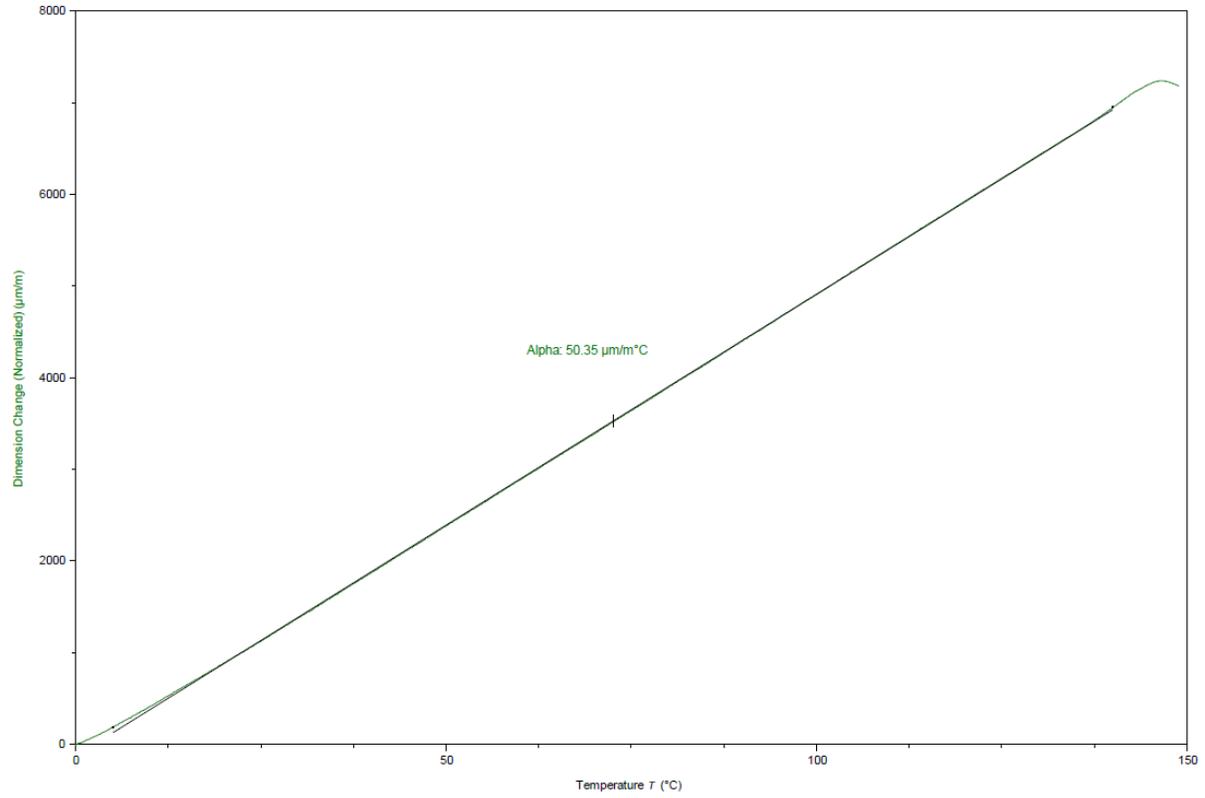


Sample: NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-TMA
Method: Temperature Ramp @ 5C/min
Operator: Ping

Instrument/Date: TMA450, 4/23/2025 2:00:11 PM
Initial Length: 10.05822 mm
Project: Stratasys Antero 800 TMA

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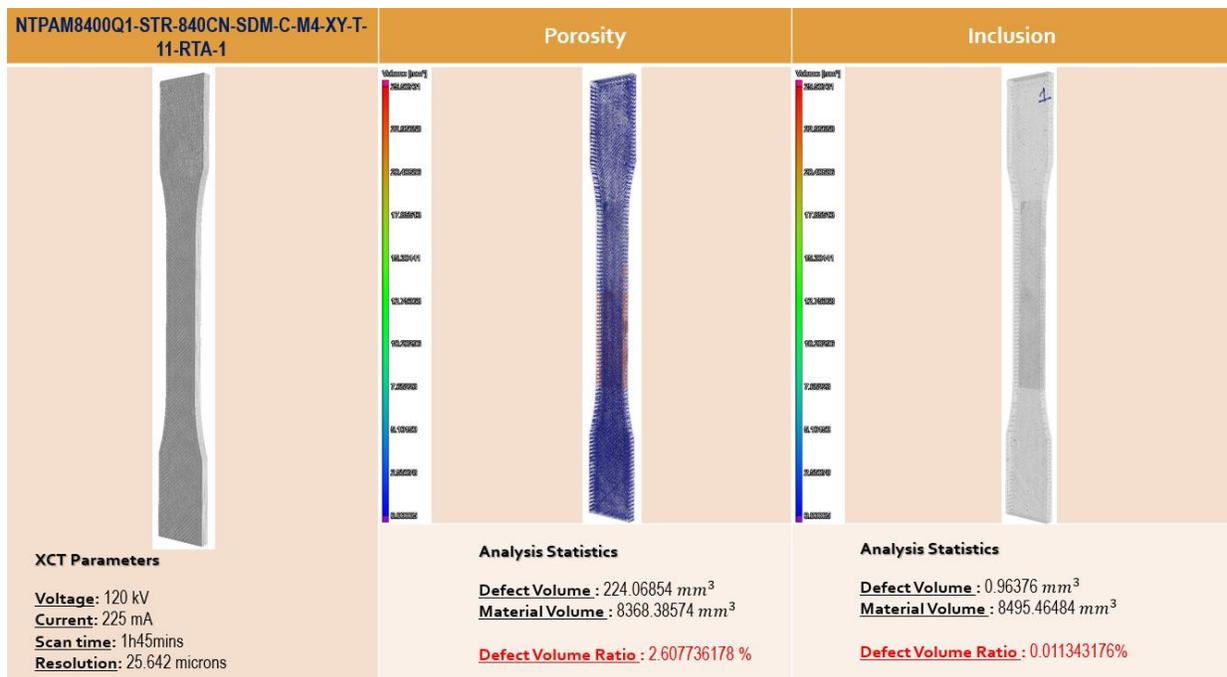
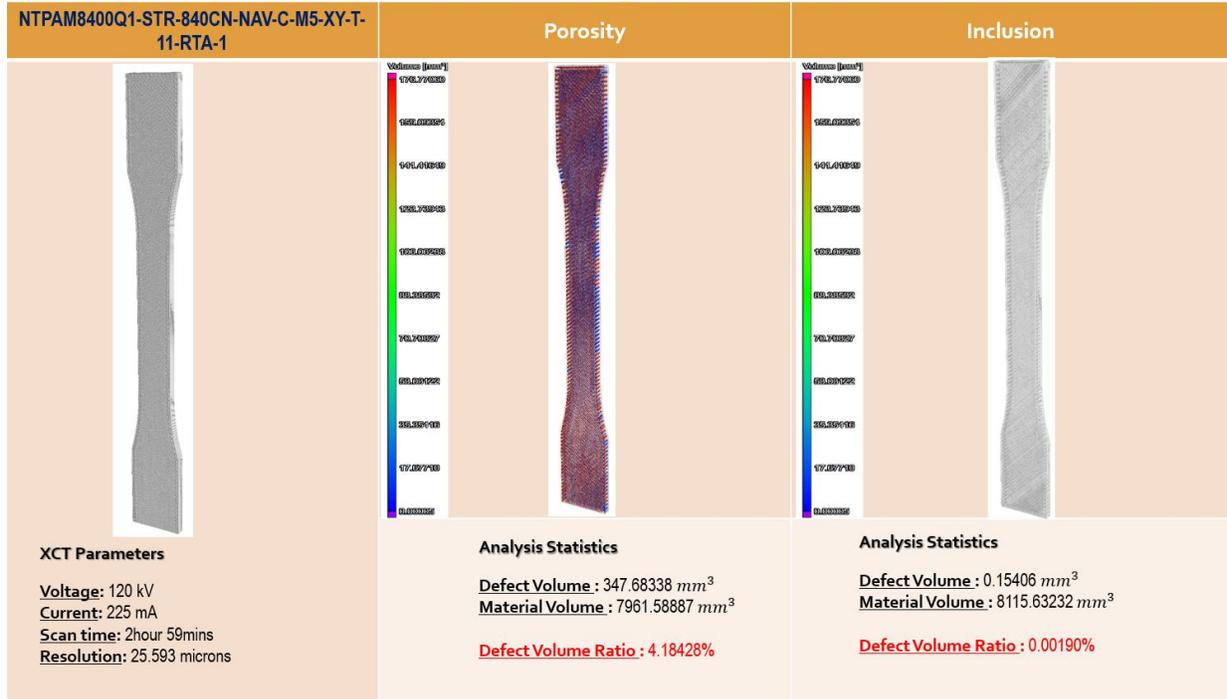
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-TMA



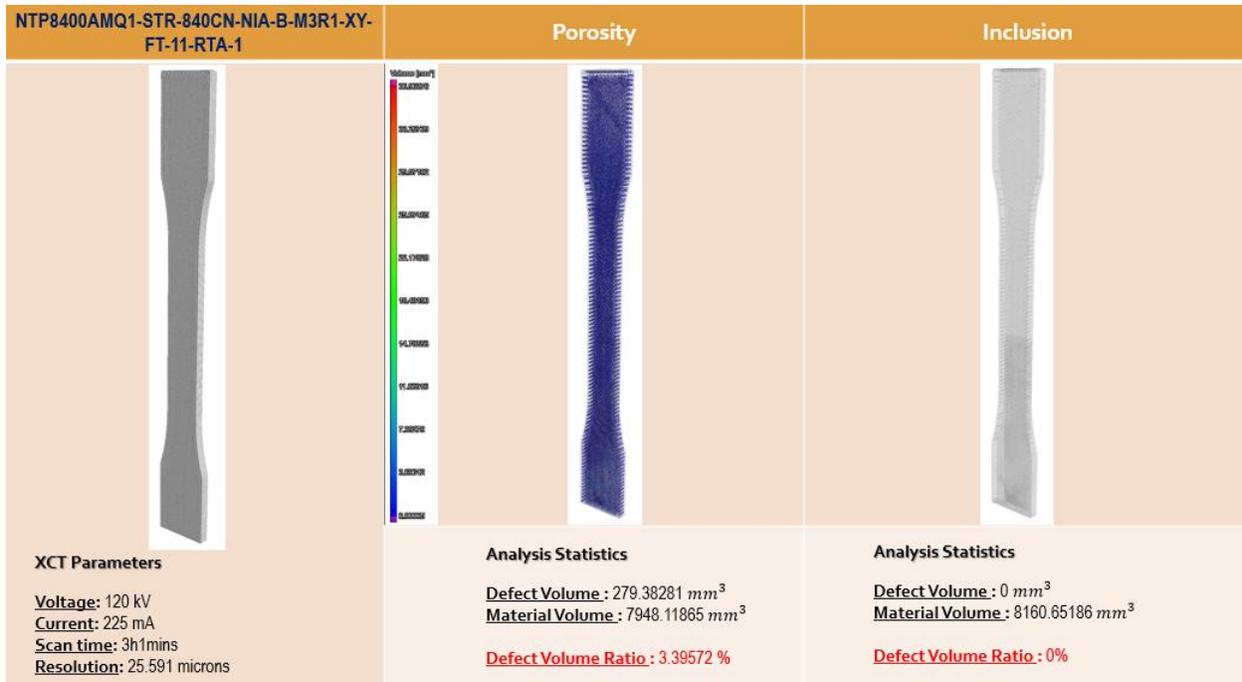
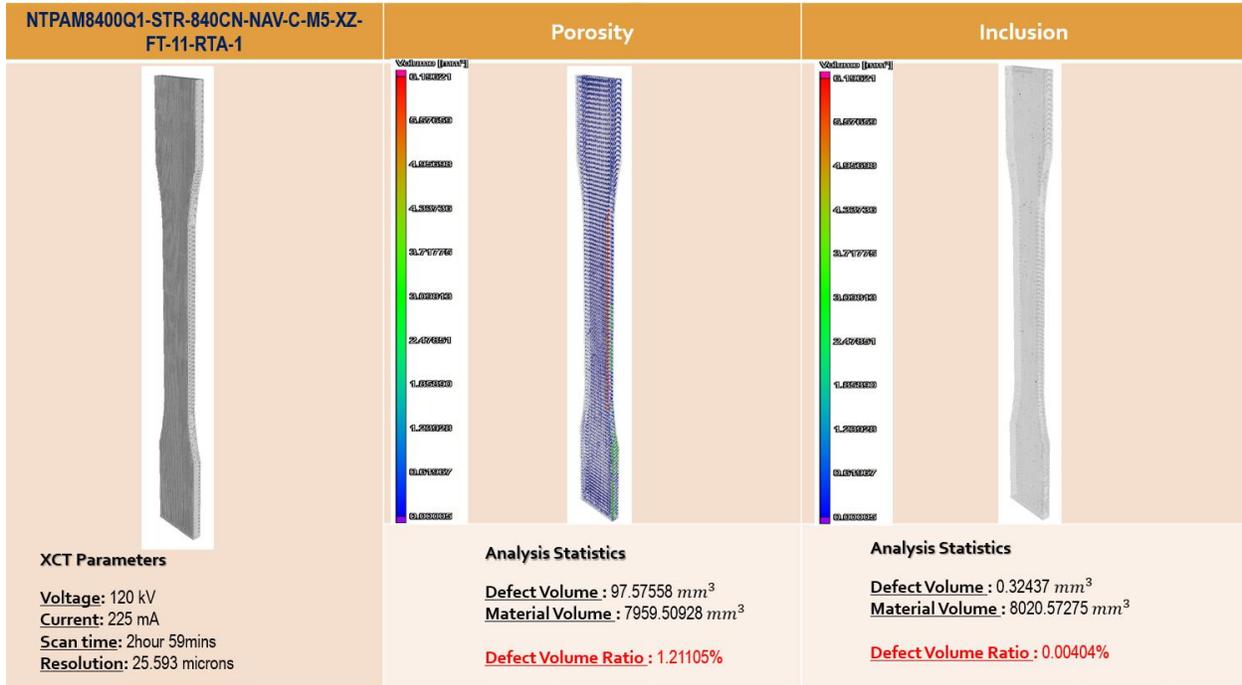
8.3 X-Ray CT, Defect Content Analysis

CT scan images and data are presented for the purpose of reference only and should not be used for any other purpose.

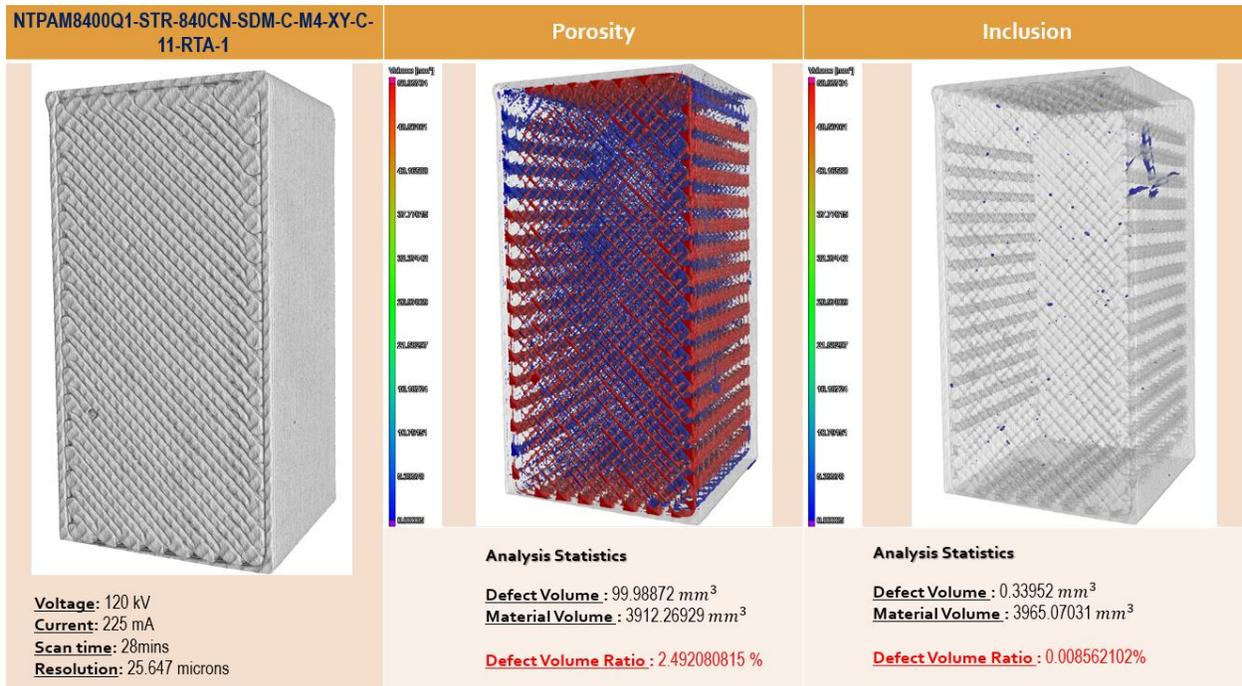
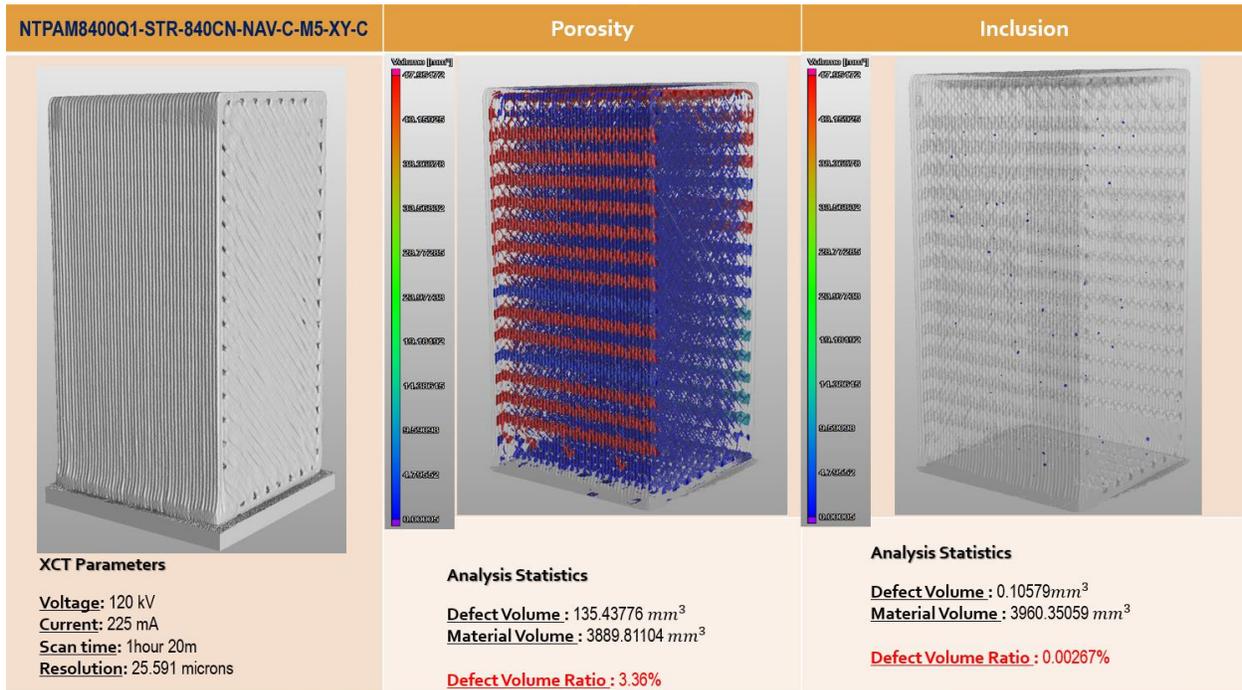
8.3.1 XY Tension



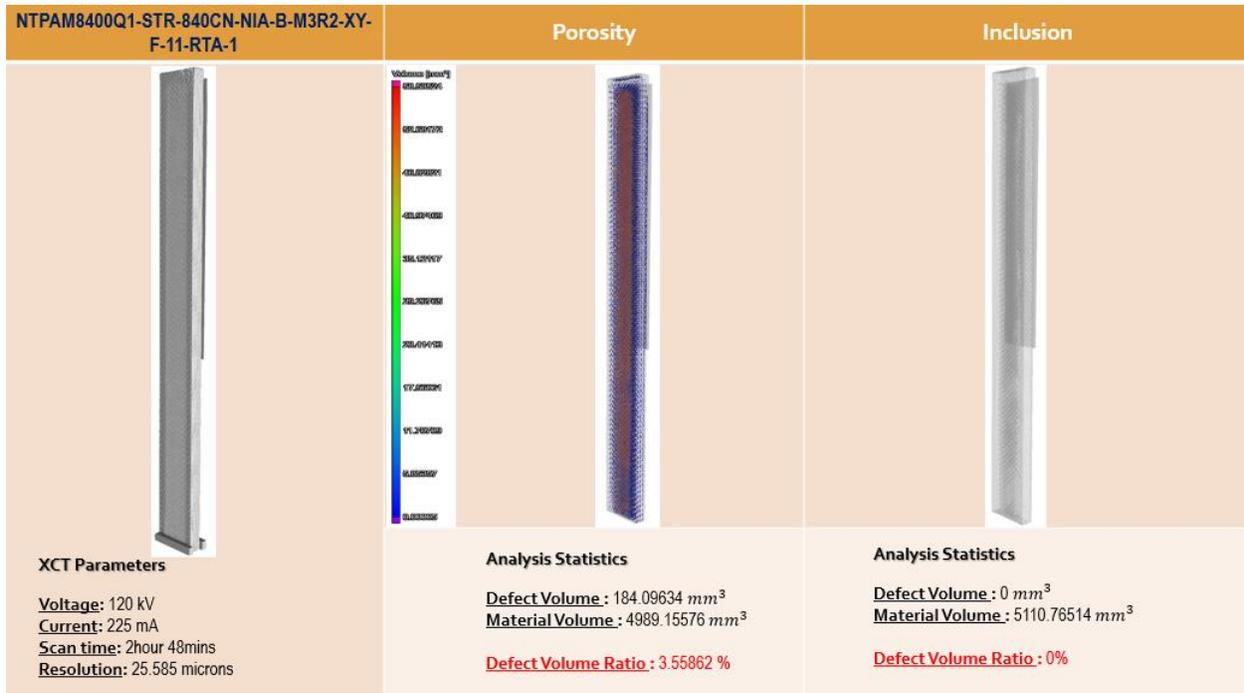
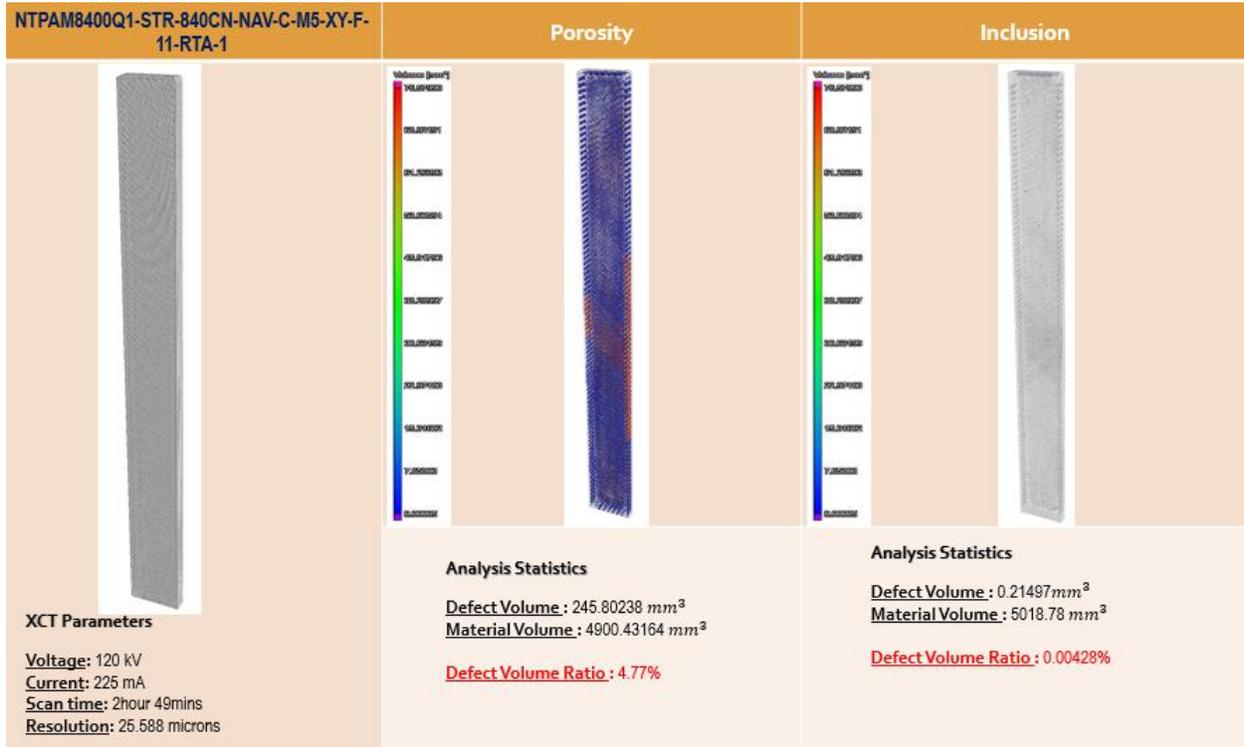
8.3.2 XY Fatigue Tension



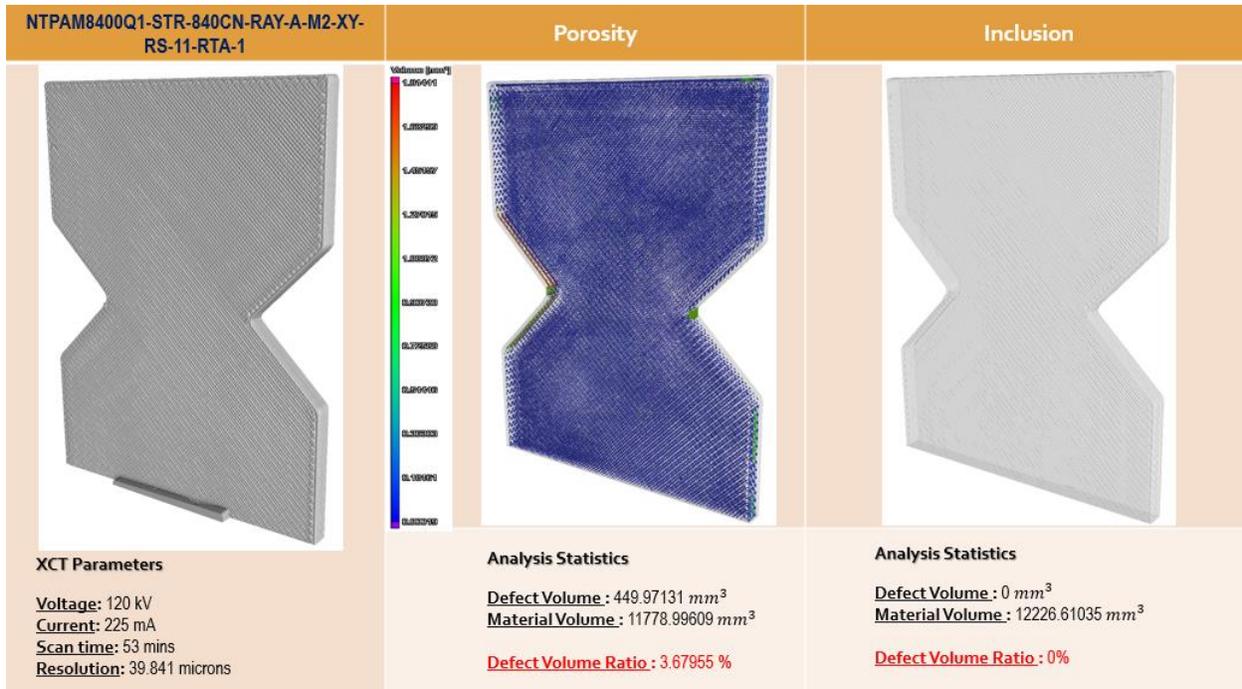
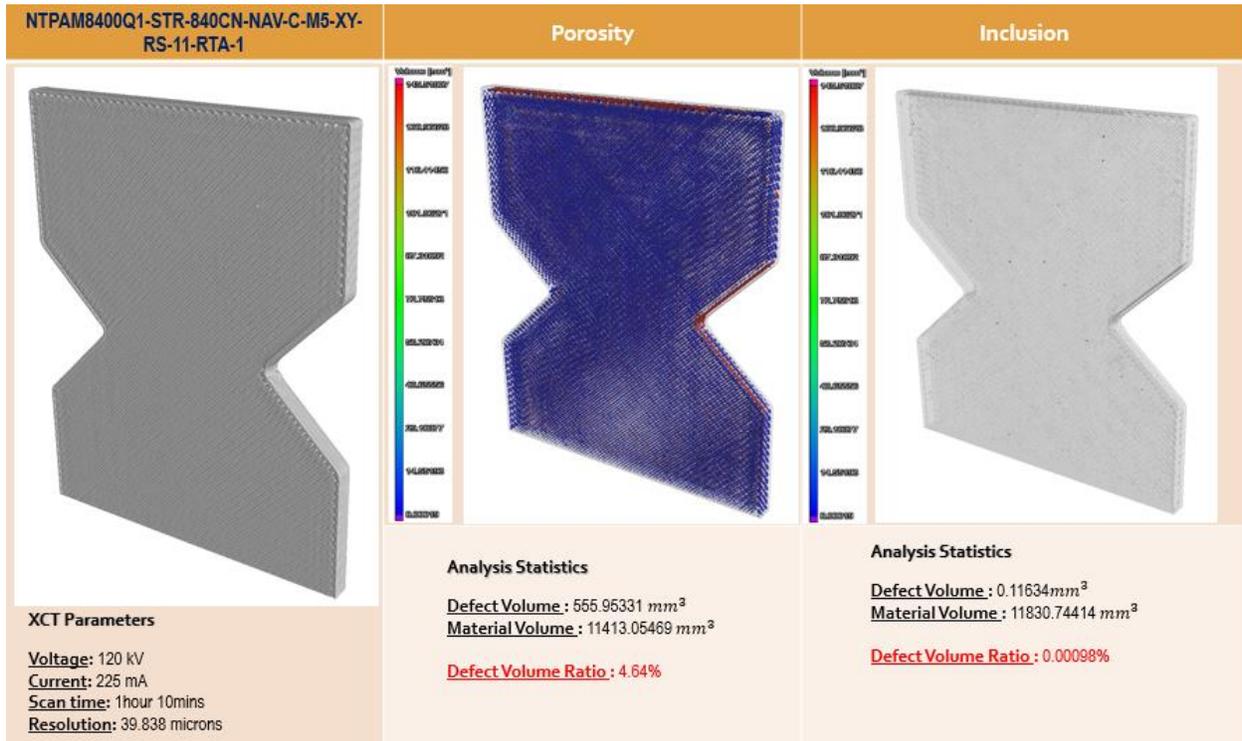
8.3.3 XY Compression Prism



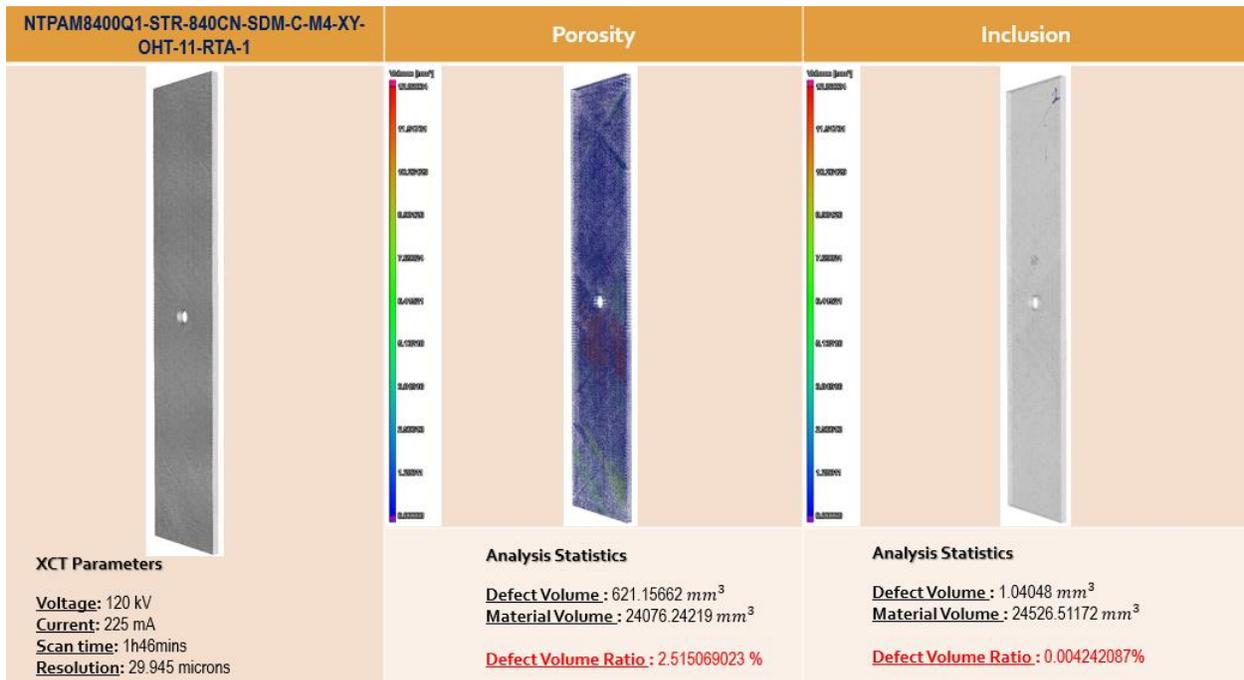
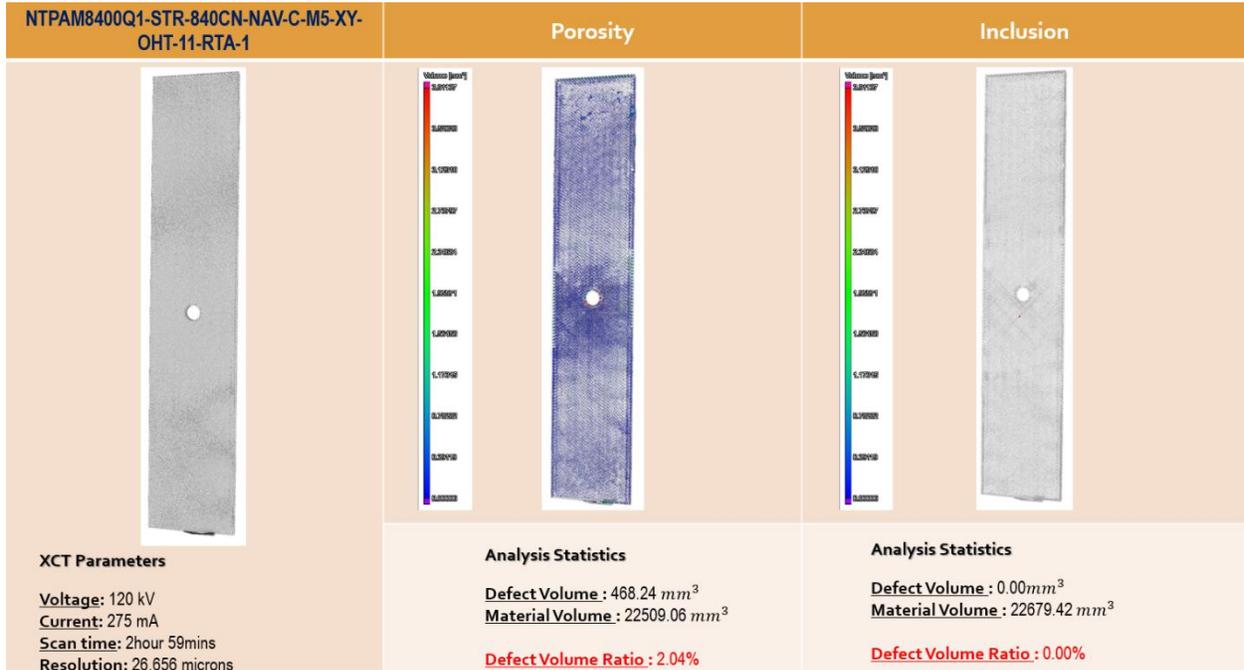
8.3.4 XY Flex Procedure B



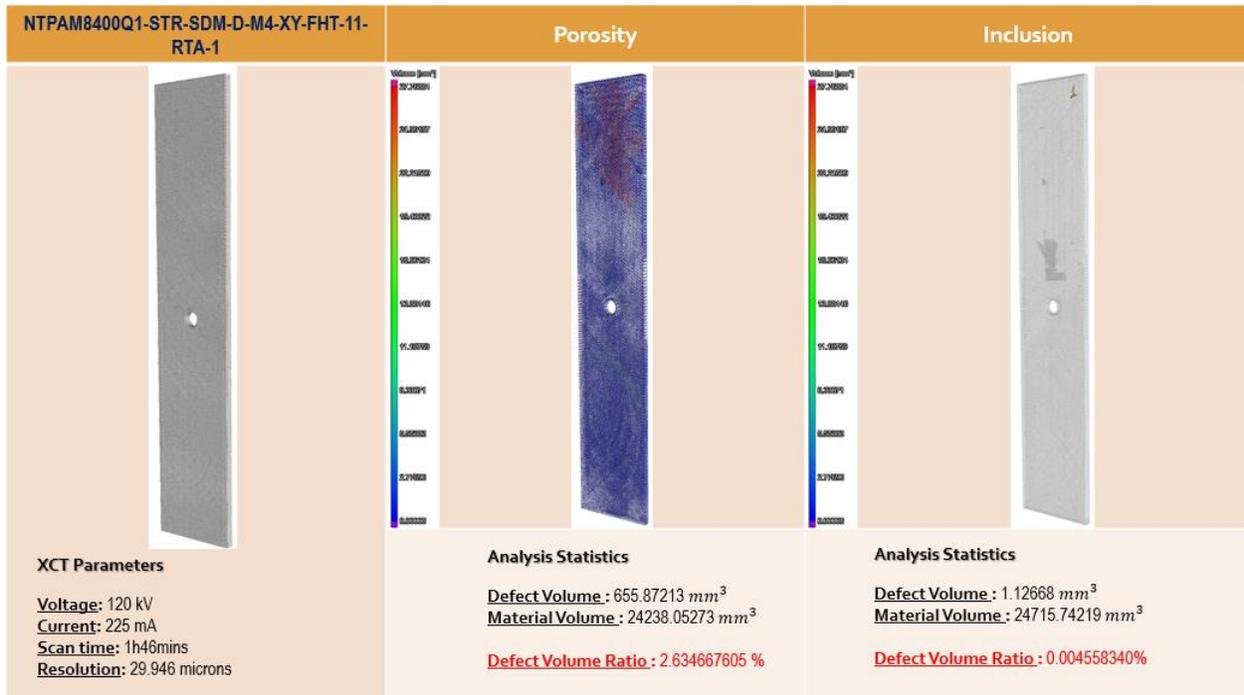
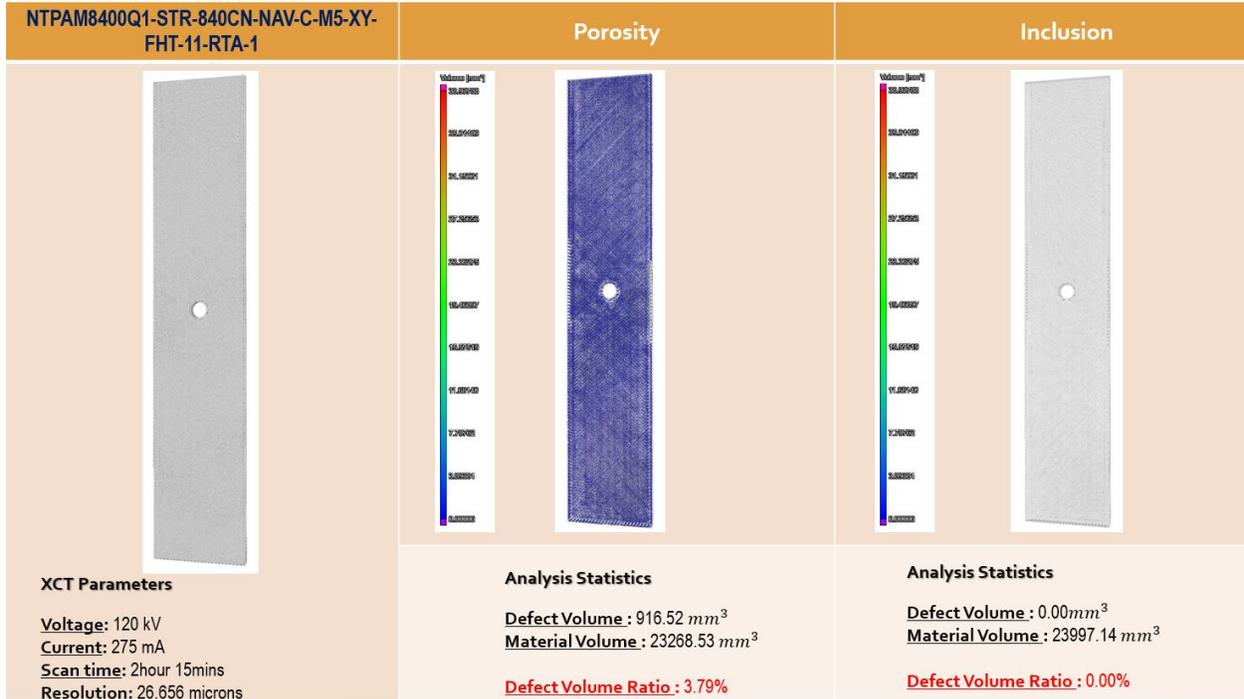
8.3.5 XY Rail Shear



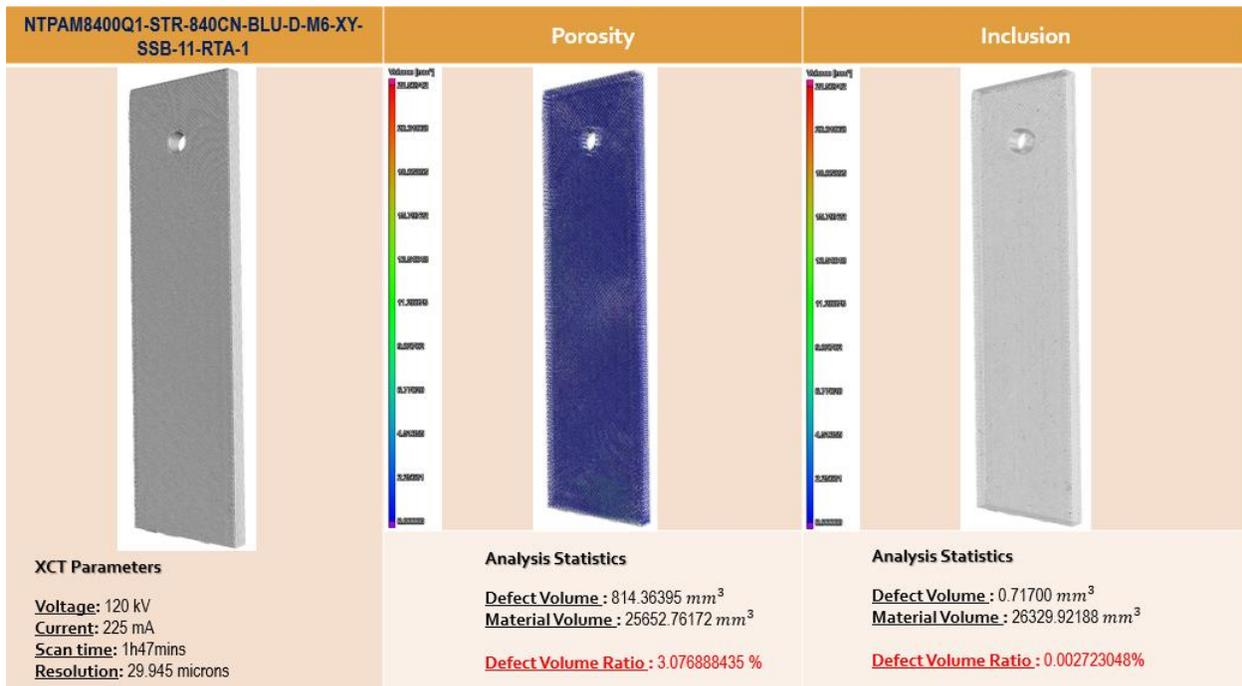
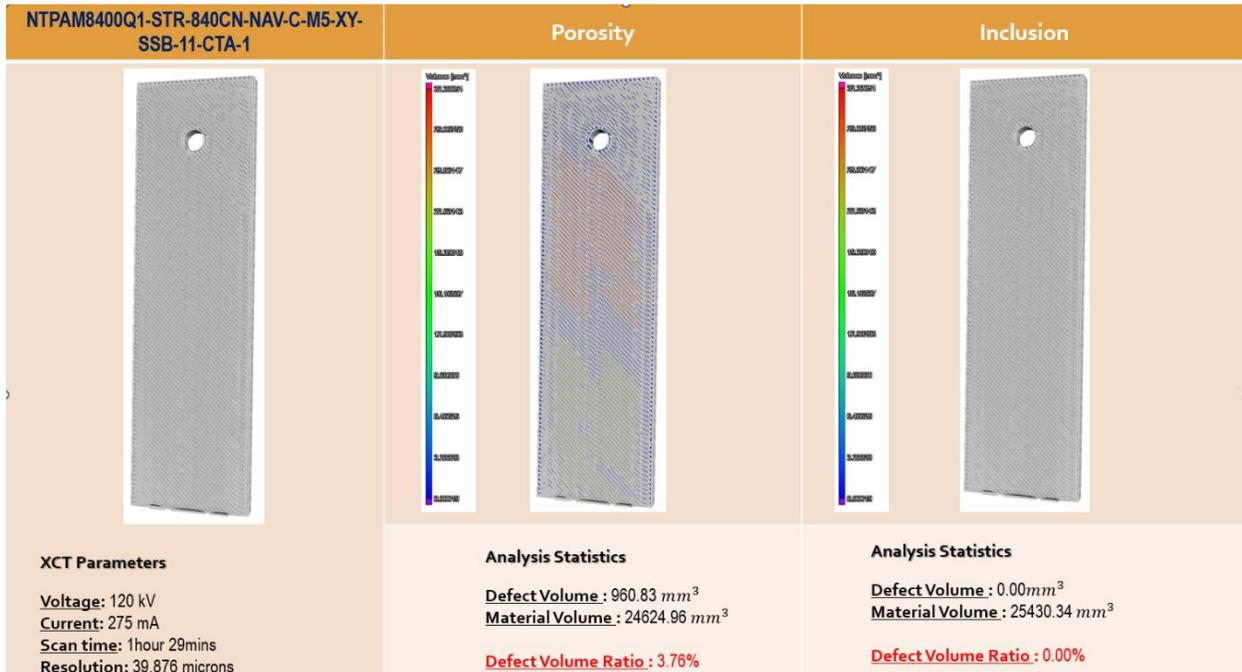
8.3.6 XY Open Hole Tension



8.3.7 XY Filled Hole Tension



8.3.8 XY Single Shear Bearing Procedure C



8.4 Flammability Results

8.4.1 Vertical Burn Flammability Test

**FAR 25.853 (a) Appendix F, Part I, (a) 1, (i): 60 sec,
Vertical Burn Flammability Test**
Stratays Additively Manufactured Antero(R) 840CN03 Qualification

Specimen ID	Flame Extinguish Time (sec)	Burning Length (in)	Drip Extinguishing Time (sec)	Average Flame Extinguish Time (sec)	Average Burning Length (in)	Average Drip Extinguishing Time (sec)	Pass/Fail
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FLM-RTA-1	0	0.3750	0 - No Drip				
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-FLM-RTA-2	2	1.063	0 - No Drip				
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-FLM-RTA-3	0	0.6250	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FLM-RTA-1	2	0.7500	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-FLM-RTA-2	2	0.6875	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-FLM-RTA-3	5	0.7500	0 - No Drip	1.833	0.8594	0 - No Drip	Pass
NTPAM8400Q1-STR-840CN-SDM- C-M4-XY-FLM-RTA-1	0	1.000	0 - No Drip				
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-FLM-RTA-2	0	1.000	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM- C-M4-XY-FLM-RTA-3	0	1.188	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FLM-RTA-1	4	1.188	0 - No Drip				
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-FLM-RTA-2	3	0.5000	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-FLM-RTA-3	4	1.188	0 - No Drip				
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FLM-RTA-1	3	1.313	0 - No Drip				
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-FLM-RTA-2	0	1.063	0 - No Drip				
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-FLM-RTA-3	0	1.313	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FLM-RTA-1	0	1.000	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-FLM-RTA-2	4	0.9375	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-FLM-RTA-3	4	1.125	0 - No Drip	4.167	1.417	0 - No Drip	Pass
NTPAM8400Q1-STR-840CN-SDM- C-M4-XZ-FLM-RTA-1	8	2.250	0 - No Drip				
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-FLM-RTA-2	8	1.438	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM- C-M4-XZ-FLM-RTA-3	14	2.563	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FLM-RTA-1	0	1.563	0 - No Drip				
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-FLM-RTA-2	9	0.8750	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-FLM-RTA-3	0	1.563	0 - No Drip				
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FLM-RTA-1	3	0.9375	0 - No Drip				
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-FLM-RTA-2	7	1.188	0 - No Drip				
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-FLM-RTA-3	0	0.9375	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FLM-RTA-1	5	1.250	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-FLM-RTA-2	3	1.188	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-FLM-RTA-3	3	1.000	0 - No Drip	5.667	1.354	0 - No Drip	Pass
NTPAM8400Q1-STR-840CN-SDM- C-M4-ZX-FLM-RTA-1	13	1.750	0 - No Drip				
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-FLM-RTA-2	0	1.063	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM- C-M4-ZX-FLM-RTA-3	13	1.563	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FLM-RTA-1	12	2.188	0 - No Drip				
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-FLM-RTA-2	4	0.8125	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FLM-RTA-3	5	2.375	0 - No Drip				
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FLM-RTA-1	5	1.000	0 - No Drip				
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-FLM-RTA-2	0	1.000	0 - No Drip				
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-FLM-RTA-3	0	1.000	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FLM-RTA-1	10	1.000	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-FLM-RTA-2	7	0.9375	0 - No Drip				
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-FLM-RTA-3	3	1.063	0 - No Drip	4.500	1.333	0 - No Drip	Pass
NTPAM8400Q1-STR-840CN-SDM- C-M4-Z45-FLM-RTA-1	0	1.688	0 - No Drip				
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-FLM-RTA-2	2	1.125	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM- C-M4-Z45-FLM-RTA-3	10	1.875	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-FLM-RTA-1	5	2.375	0 - No Drip				
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-FLM-RTA-2	0	0.7500	0 - No Drip				
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-FLM-RTA-3	12	2.188	0 - No Drip				

Passing Criteria:
Average Flame Extinguish Time: <15 sec
Average Burning Length: <6 in
Average Drip Extinguish Time: <3 sec

Sample Dimension: 12" x 3" x 0.13"

*All coupons were printed at the center of the printer

8.4.2 Smoke Density Test

**FAR 25.853 (d) Appendix F, Part V,
Smoke Density Test**
Stratays Additively Manufactured Antero(R) 840CN03 Qualification

Specimen ID	D _s @ 1.5min	D _s @ 4.0min	D _s Max	Average D _s Max	Pass/Fail
NTPAMB400Q1-STR-840CN-NGC-A-M1-XY-NBS-RTA-1	0	0	0	0.5833	Pass
NTPAMB400Q1-STR-840CN-RAY-A-M2-XY-NBS-RTA-2	0	1	1		
NTPAMB400Q1-STR-840CN-NGC-A-M1-XY-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-XY-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-NIA-B-M3R2-XY-NBS-RTA-2	0	2	2		
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-XY-NBS-RTA-3	0	1	1		
NTPAMB400Q1-STR-840CN-SDM-C-M4-XY-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-NAV-C-M5-XY-NBS-RTA-2	0	2	2		
NTPAMB400Q1-STR-840CN-SDM-C-M4-XY-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-SDM-D-M4-XY-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-BLU-D-M6-XY-NBS-RTA-2	0	0	1		
NTPAMB400Q1-STR-840CN-SDM-D-M4-XY-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-NGC-A-M1-XZ-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-RAY-A-M2-XZ-NBS-RTA-2	0	1	1		
NTPAMB400Q1-STR-840CN-NGC-A-M1-XZ-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-XZ-NBS-RTA-1	0	1	1		
NTPAMB400Q1-STR-840CN-NIA-B-M3R2-XZ-NBS-RTA-2	0	2	2		
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-XZ-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-SDM-C-M4-XZ-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-NAV-C-M5-XZ-NBS-RTA-2	0	2	2		
NTPAMB400Q1-STR-840CN-SDM-C-M4-XZ-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-SDM-D-M4-XZ-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-BLU-D-M6-XZ-NBS-RTA-2	0	0	0		
NTPAMB400Q1-STR-840CN-SDM-D-M4-XZ-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-NGC-A-M1-ZX-NBS-RTA-1	0	0	0	0.3333	Pass
NTPAMB400Q1-STR-840CN-RAY-A-M2-ZX-NBS-RTA-2	0	1	1		
NTPAMB400Q1-STR-840CN-NGC-A-M1-ZX-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-ZX-NBS-RTA-1	0	1	1		
NTPAMB400Q1-STR-840CN-NIA-B-M3R2-ZX-NBS-RTA-2	0	1	1		
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-ZX-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-SDM-C-M4-ZX-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-NAV-C-M5-ZX-NBS-RTA-2	0	1	1		
NTPAMB400Q1-STR-840CN-SDM-C-M4-ZX-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-SDM-D-M4-ZX-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-BLU-D-M6-ZX-NBS-RTA-2	0	0	0		
NTPAMB400Q1-STR-840CN-SDM-D-M4-ZX-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-NGC-A-M1-Z45-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-RAY-A-M2-Z45-NBS-RTA-2	0	1	1		
NTPAMB400Q1-STR-840CN-NGC-A-M1-Z45-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-Z45-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-NIA-B-M3R2-Z45-NBS-RTA-2	0	1	1		
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-Z45-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-SDM-C-M4-Z45-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-NAV-C-M5-Z45-NBS-RTA-2	0	0	1		
NTPAMB400Q1-STR-840CN-SDM-C-M4-Z45-NBS-RTA-3	0	0	0		
NTPAMB400Q1-STR-840CN-SDM-D-M4-Z45-NBS-RTA-1	0	0	0		
NTPAMB400Q1-STR-840CN-BLU-D-M6-Z45-NBS-RTA-2	0	0	0		
NTPAMB400Q1-STR-840CN-SDM-D-M4-Z45-NBS-RTA-3	0	0	0		

Average Passing Criteria:
D_s Max <200

Sample Size: 2.9" x 2.9" x
0.13"

*All coupons were printed at the center of the printer

8.4.3 Heat Release Test

**FAR 25.853 (d) Appendix F, Part IV,
Heat Release Test**
Stratasy's Additively Manufactured Antero(R) 840CN03 Qualification

Specimen ID	Total HR at 2 min (kW/min/m ²)	Peak HR (kW/m ²)	Peak Time (sec)	Average Total HR at 2 min (kWmin/m ²)	Average Peak HR (kW/m ²)	Pass/Fail
NTPAMB400Q1-STR-840CN-NGC-A-M1-XY-HRP-RTA-1	0	54.05	253			
NTPAMB400Q1-STR-840CN-RAY-A-XY-HRP-RTA-2	0	43.08	294			
NTPAMB400Q1-STR-840CN-NGC-A-M1-XY-HRP-RTA-3	0.02000	51.36	294			
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-XY-HRP-RTA-1	0.01000	56.71	300			
NTPAMB400Q1-STR-840CN-NIA-B-M3R2-XY-HRP-RTA-2	4.670	53.84	300			
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-XY-HRP-RTA-3	0.2900	49.14	200			
NTPAMB400Q1-STR-840CN-SDM-C-M4-XY-HRP-RTA-1	0.08000	48.16	293	0.5383	52.45	Pass
NTPAMB000Q1-STR-800NA-NAV-C-M5-XY-HRP-RTA-2	0.2000	67.39	300			
NTPAMB400Q1-STR-840CN-SDM-C-M4-XY-HRP-RTA-3	0	44.88	291			
NTPAMB400Q1-STR-840CN-SDM-D-M4-XY-HRP-RTA-1	1.130	51.97	300			
NTPAMB400Q1-STR-840CN-BLU-D-M6-XY-HRP-RTA-2	0	58.56	300			
NTPAMB400Q1-STR-840CN-SDM-D-M4-XY-HRP-RTA-3	0.06000	50.31	293			
NTPAMB400Q1-STR-840CN-NGC-A-M1-XZ-HRP-RTA-1	0	88.39	293			
NTPAMB400Q1-STR-840CN-RAY-A-XZ-HRP-RTA-2	1.560	61.85	300			
NTPAMB400Q1-STR-840CN-NGC-A-M1-XZ-HRP-RTA-3	0	101.5	299			
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-XZ-HRP-RTA-1	0.04000	104.8	300			
NTPAMB400Q1-STR-840CN-NIA-B-M3R2-XZ-HRP-RTA-2	2.660	120.8	300			
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-XZ-HRP-RTA-3	0.2100	86.95	275			
NTPAMB400Q1-STR-840CN-SDM-C-M4-XZ-HRP-RTA-1	0	93.93	297	0.5533	99.03	Fail
NTPAMB000Q1-STR-800NA-NAV-C-M5-XZ-HRP-RTA-2	2.170	132.7	298			
NTPAMB400Q1-STR-840CN-SDM-C-M4-XZ-HRP-RTA-3	0	107.7	300			
NTPAMB400Q1-STR-840CN-SDM-D-M4-XZ-HRP-RTA-1	0	97.56	300			
NTPAMB400Q1-STR-840CN-BLU-D-M6-XZ-HRP-RTA-2	0	85.70	300			
NTPAMB400Q1-STR-840CN-SDM-D-M4-XZ-HRP-RTA-3	0	106.5	300			
NTPAMB400Q1-STR-840CN-NGC-A-M1-ZX-HRP-RTA-1	0	100.4	298			
NTPAMB400Q1-STR-840CN-RAY-A-ZX-HRP-RTA-2	0.2200	72.68	295			
NTPAMB400Q1-STR-840CN-NGC-A-M1-ZX-HRP-RTA-3	0	77.36	300			
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-ZX-HRP-RTA-1	0.03000	111.2	300			
NTPAMB400Q1-STR-840CN-NIA-B-M3R2-ZX-HRP-RTA-2	0	117.6	300			
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-ZX-HRP-RTA-3	0.05000	92.49	300			
NTPAMB400Q1-STR-840CN-SDM-C-M4-ZX-HRP-RTA-1	0	87.15	300	0.02667	94.76	Fail
NTPAMB000Q1-STR-800NA-NAV-C-M5-ZX-HRP-RTA-2	0.01000	106.4	297			
NTPAMB400Q1-STR-840CN-SDM-C-M4-ZX-HRP-RTA-3	0	96.27	300			
NTPAMB400Q1-STR-840CN-SDM-D-M4-ZX-HRP-RTA-1	0.000	100.3	300			
NTPAMB400Q1-STR-840CN-BLU-D-M6-ZX-HRP-RTA-2	0	61.38	299			
NTPAMB400Q1-STR-840CN-SDM-D-M4-ZX-HRP-RTA-3	0.01000	114.0	300			
NTPAMB400Q1-STR-840CN-NGC-A-M1-Z45-HRP-RTA-1	0	5.650	295			
NTPAMB400Q1-STR-840CN-RAY-A-Z45-HRP-RTA-2	0.01000	49.77	300			
NTPAMB400Q1-STR-840CN-NGC-A-M1-Z45-HRP-RTA-3	0	7.290	300			
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-Z45-HRP-RTA-1	0	68.60	300			
NTPAMB400Q1-STR-840CN-NIA-B-M3R2-Z45-HRP-RTA-2	0.01000	113.6	300			
NTPAMB400Q1-STR-840CN-NIA-B-M3R1-Z45-HRP-RTA-3	0.1200	88.92	300			
NTPAMB400Q1-STR-840CN-SDM-C-M4-Z45-HRP-RTA-1	0	97.52	298	0.04667	68.46	Fail
NTPAMB000Q1-STR-800NA-NAV-C-M5-Z45-HRP-RTA-2	0.4200	87.48	300			
NTPAMB400Q1-STR-840CN-SDM-C-M4-Z45-HRP-RTA-3	0	65.37	299			
NTPAMB400Q1-STR-840CN-SDM-D-M4-Z45-HRP-RTA-1	0	86.47	300			
NTPAMB400Q1-STR-840CN-BLU-D-M6-Z45-HRP-RTA-2	0	71.50	300			
NTPAMB400Q1-STR-840CN-SDM-D-M4-Z45-HRP-RTA-3	0	79.33	300			

Passing Criteria:
Average maximum heat release rate during the 5-minute tests < 65 kW/m²
Average total heat released during the first 2 minutes will not exceed 65 kW min/m²

Sample Size: 5.94" x 5.94" x 0.13"

*All coupons were printed at the center of the printer

8.5 Relative Density

D792-20 Specific Gravity (Relative Density)							
Sample Name	W1 [g]	W2 [g]	Water Temp. [°C]	Water Density at Temp. [g/cc]	Specific Gravity	Specimen Density [g/cc]	Specimen Density [lbm/in3]
NTPAM8400Q1-STR-840CN-NGC-A-M1-XY-DEN-RTA-1	2.598	0.5294	22.30	0.9977	1.256	1.253	0.04527
NTPAM8400Q1-STR-840CN-NGC-A-M1-XZ-DEN-RTA-1	2.646	0.5548	22.30	0.9977	1.265	1.262	0.04561
NTPAM8400Q1-STR-840CN-NGC-A-M1-ZX-DEN-RTA-1	2.617	0.5334	22.30	0.9977	1.256	1.253	0.04527
NTPAM8400Q1-STR-840CN-NGC-A-M1-Z45-DEN-RTA-1	2.612	0.5290	22.30	0.9977	1.254	1.251	0.04520
NTPAM8400Q1-STR-840CN-RAY-A-M2-XY-DEN-RTA-1	2.656	0.5543	23.10	0.9975	1.264	1.261	0.04554
NTPAM8400Q1-STR-840CN-RAY-A-M2-XZ-DEN-RTA-1	2.698	0.5849	23.10	0.9975	1.277	1.274	0.04601
NTPAM8400Q1-STR-840CN-RAY-A-M2-ZX-DEN-RTA-1	2.663	0.5611	22.90	0.9976	1.267	1.264	0.04566
NTPAM8400Q1-STR-840CN-RAY-A-M2-Z45-DEN-RTA-1	2.655	0.5644	23.00	0.9975	1.270	1.267	0.04577
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XY-DEN-15-RTA-1	2.613	0.5305	22.70	0.9976	1.255	1.252	0.04522
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-XZ-DEN-15-RTA-1	2.650	0.5522	22.70	0.9976	1.263	1.260	0.04553
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-ZX-DEN-15-RTA-1	2.618	0.5381	22.50	0.9977	1.259	1.256	0.04537
NTPAM8400Q1-STR-840CN-NIA-B-M3R1-Z45-DEN-15-RTA-1	2.609	0.5296	22.60	0.9976	1.255	1.252	0.04522
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XY-DEN-RTA-1	2.605	0.5530	22.80	0.9976	1.270	1.266	0.04575
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-XZ-DEN-RTA-1	2.635	0.5576	23.00	0.9975	1.268	1.265	0.04571
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-ZX-DEN-RTA-1	2.607	0.5399	22.80	0.9976	1.261	1.258	0.04546
NTPAM8400Q1-STR-840CN-NIA-B-M3R2-Z45-DEN-RTA-1	2.606	0.5370	23.10	0.9975	1.260	1.256	0.04539
NTPAM8400Q1-STR-840CN-SDM-C-M4-XY-DEN-RTA-1	2.648	0.5364	23.70	0.9974	1.254	1.251	0.04519
NTPAM8400Q1-STR-840CN-SDM-C-M4-XZ-DEN-RTA-1	2.657	0.5606	23.70	0.9974	1.267	1.264	0.04567
NTPAM8400Q1-STR-840CN-SDM-C-M4-ZX-DEN-RTA-1	2.634	0.5443	23.70	0.9974	1.260	1.257	0.04542
NTPAM8400Q1-STR-840CN-SDM-C-M4-Z45-DEN-RTA-1	2.637	0.5429	23.70	0.9974	1.259	1.256	0.04538
NTPAM8400Q1-STR-840CN-NAV-C-M5-XY-DEN-RTA-1	2.589	0.5205	21.60	0.9979	1.252	1.249	0.04512
NTPAM8400Q1-STR-840CN-NAV-C-M5-XZ-DEN-RTA-1	2.628	0.5502	21.60	0.9979	1.265	1.262	0.04560
NTPAM8400Q1-STR-840CN-NAV-C-M5-ZX-DEN-RTA-1	2.589	0.5325	21.60	0.9979	1.259	1.256	0.04538
NTPAM8400Q1-STR-840CN-NAV-C-M5-Z45-DEN-RTA-1	2.586	0.5289	21.50	0.9979	1.257	1.254	0.04532
NTPAM8400Q1-STR-840CN-SDM-D-M4-XY-DEN-RTA-1	2.614	0.5410	23.50	0.9974	1.261	1.258	0.04544
NTPAM8400Q1-STR-840CN-SDM-D-M4-XZ-DEN-RTA-1	2.647	0.5601	23.50	0.9974	1.268	1.265	0.04571
NTPAM8400Q1-STR-840CN-SDM-D-M4-ZX-DEN-RTA-1	2.631	0.5477	23.50	0.9974	1.263	1.260	0.04551
NTPAM8400Q1-STR-840CN-SDM-D-M4-Z45-DEN-RTA-1	2.630	0.5460	23.50	0.9974	1.262	1.259	0.04548
NTPAM8400Q1-STR-840CN-BLU-D-M6-XY-DEN-RTA-1	2.607	0.5225	24.90	0.9971	1.251	1.247	0.04505
NTPAM8400Q1-STR-840CN-BLU-D-M6-XZ-DEN-RTA-1	2.602	0.5419	24.80	0.9971	1.263	1.259	0.04550
NTPAM8400Q1-STR-840CN-BLU-D-M6-ZX-DEN-RTA-1	2.588	0.5323	24.90	0.9971	1.259	1.255	0.04535
NTPAM8400Q1-STR-840CN-BLU-D-M6-Z45-DEN-RTA-1	2.585	0.5265	25.10	0.9970	1.256	1.252	0.04523
AVERAGE (composite)					1.261	1.258	0.04545
STANDARD DEVIATION					0.0060	0.0060	0.0002
COEFF. OF VARIATION					0.4778	0.4783	0.4783
Minimum					1.251	1.247	0.04505
Maximum					1.277	1.274	0.04601
Number of Specimens					32	32	32

9. Deviations/Program Test Notes

N/A