



Farabaugh Engineering and Testing Inc.

Project No. T301-11

Report Date: October 6, 2011

Total Pages (inclusive): 10

ASTM E330 STRUCTURAL PERFORMANCE TESTING

16" SIDING PANEL W/ NAIL GROOVE
24 GA STEEL

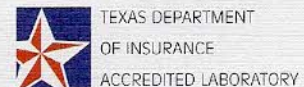
FOR

PETERSEN ALUMINUM CORP.
1005 TONNE RD.
ELK GROVE VILLAGE, IL 60007

Report Prepared By:

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Reviewed and Approved By:

Daniel G. Farabaugh

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Purpose

This test method covers the evaluation of structural performance of the referenced test specimen per ASTM E330-02, "Standard Test Method of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference" and as provided herein.

Test Dates

9-20-11 to 9-22-11

Test Specimen

Manufacturer: Petersen Aluminum Corp.
1005 Tonne Rd.
Elk Grove Village, IL 60007

Panel: 16" Siding Panel w/ Nail Groove, 24 ga steel (nominal)

Testing Apparatus

A vacuum test chamber was used with two static pressure taps located at diagonally opposite corners. A controlled blower provided a vacuum to uniformly load the specimen mock-up. Calibrated manometers were used to measure the pressure at each pressure tap. The uniform load pressure was performed in the negative direction to monitor wind uplift on the panel specimen mock-up. Calibrated deflectometers were attached to monitor panel deformation as shown.

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Installation

- The panels were installed on to 16 ga supports using #10-16 X 1" long pancake head self drill fasteners located on the panel nail groove. The panel side-joints were a tongue and groove type as shown on the attached detail.
- Plastic (4 mil thick) was employed loosely between the panels and subgirts and in the side joints to create a vacuum seal.

Procedure

- The test assembly was subjected to negative pressures to form an outward pressure at the values and time duration as shown in the attached table.
- Each pressure increment was held for at least 1 minute.
- Deflection movement of the assembly during the tests was recorded.
- Successive increments were achieved as above until failure or ultimate load was reached.

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TEST "A"

Specimen: 16" Siding Panel w/ Nail Groove, 24 ga steel

Support Spacing: 4 ft o/c

Panel Attachment to Support: #10-16 X 1" Self Drill Fasteners (1 per support)

NEGATIVE LOAD TEST

LOAD (PSF)	DEFLECTION READINGS (INCHES)					
	D-1	D-2	D-3	D-4	D-5	D-6
0.0	0	0	0	0	0	0
5.2	0.025	0.132	0.007	0.343	0.375	0.339
0.0	0	0	0	0	0.01	0.006
10.4	0.066	0.199	0.015	0.689	0.68	0.606
0.0	0.003	0.019	0	0.023	0.044	0.007
15.6	0.078	0.339	0.019	0.954	0.985	0.935
0.0	0.014	0.027	0.001	0.101	0.12	0.135
20.8	0.109	0.428	0.072	1.194	1.183	1.162
0.0	0.022	0.074	0.001	0.175	0.186	0.225
26.0	0.118	0.549	0.122	1.385	1.42	1.362
0.0	0.042	0.123	0.009	0.241	0.261	0.274
31.2	0.164	0.666	0.199	1.479	1.634	1.381
0.0	0.062	0.178	0.032	0.344	0.362	0.378
36.4	0.171	0.792	0.232	1.773	1.85	1.816
0.0	0.071	0.342	0.032	0.475	0.532	0.509
41.6	0.283	0.883	0.248	1.956	2.043	2.013
0.0	0.087	0.348	0.074	0.536	0.567	0.638
46.8	0.341	0.959	0.272	2.109	2.208	2.216
0.0	0.139	0.386	0.108	0.638	0.694	0.748
57.2	0.38	1.155	0.407	2.413	2.56	2.57
0.0	0.133	0.623	0.151	0.873	0.931	1.027
67.7	0.409	1.318	0.452	2.775	2.939	2.943
0.0	0.16	0.721	0.182	1.152	1.245	1.337

RESULTS:

Maximum Test Load = 77.4 psf (Panel pulled over fasteners)

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TEST "B"

Specimen: 16" Siding Panel w/ Nail Groove, 24 ga steel

Support Spacing: 4 ft o/c

Panel Attachment to Support: #10-16 X 1" Self Drill Fasteners (2 per support)

NEGATIVE LOAD TEST

LOAD (PSF)	DEFLECTION READINGS (INCHES)					
	D-1	D-2	D-3	D-4	D-5	D-6
0.0	0	0	0	0	0	0
10.4	0.121	0.208	0.023	0.627	0.609	0.613
0.0	0	0	-0.022	0.051	0.067	0.069
20.8	0.182	0.46	0.133	1.178	1.219	1.303
0.0	0.022	0.127	-0.012	0.187	0.192	0.197
31.2	0.239	0.768	0.172	1.636	1.711	1.428
0.0	0.045	0.187	0.009	0.34	0.375	0.342
41.6	0.248	0.877	0.179	2	2.069	1.961
0.0	0.076	0.294	0.033	0.539	0.577	0.511
52.0	0.266	1.06	0.25	2.375	2.432	2.279
0.0	0.095	0.418	0.108	0.769	0.808	-0.257
62.4	0.318	1.167	0.257	2.64	2.736	2.59
0.0	0.108	0.552	0.109	0.997	1.006	0.929
72.9	0.344	1.325	0.335	2.94	3.048	2.894
0.0	0.146	0.682	0.183	1.254	1.258	1.179
93.7	0.456	1.697	0.454	3.724	3.689	3.613
0.0	0.248	1.056	0.254	1.976	2.005	1.925
114.5	0.515	1.931	0.485	3.883	4.185	4.079
0.0	0.282	1.128	0.303	2.205	2.247	2.34

RESULTS:

Maximum Test Load = 122.2 psf (Panel sidejoint disengagement)

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TEST "C"

Specimen: 16" Siding Panel w/ Nail Groove, 24 ga steel

Support Spacing: 1 ft o/c

Panel Attachment to Support: #10-16 X 1" Self Drill Fasteners (1 per support)

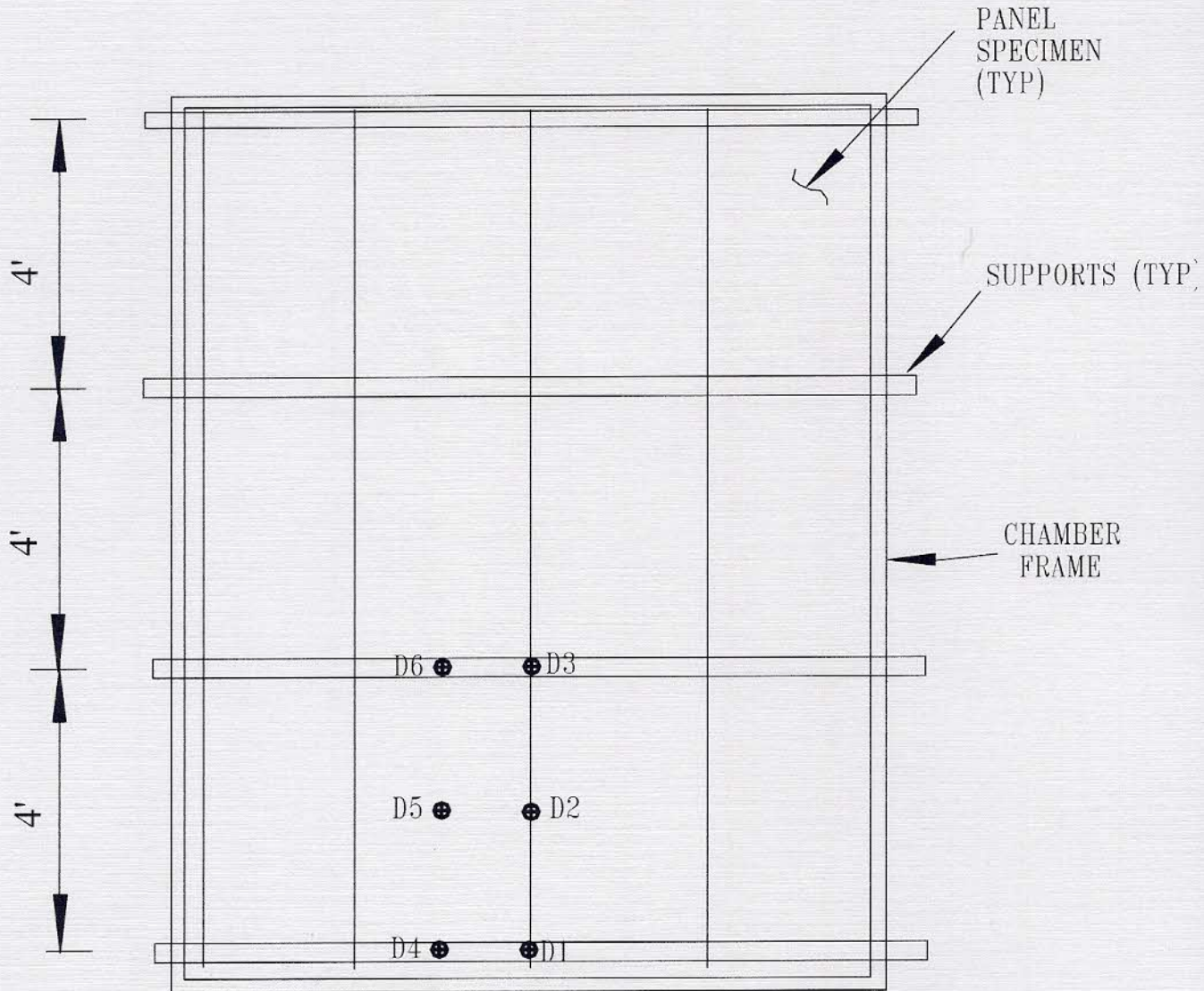
NEGATIVE LOAD TEST

LOAD (PSF)	DEFLECTION READINGS (INCHES)					
	D-1	D-2	D-3	D-4	D-5	D-6
0.0	0	0	0	0	0	0
15.6	0.031	0.049	0.012	0.721	0.723	0.731
0.0	0.009	0.002	0	0.044	0.035	0.033
31.2	0.058	0.064	0.04	1.232	1.223	1.235
0.0	0.029	0.013	0.006	0.16	0.132	0.137
46.8	0.084	0.1	0.085	1.653	1.659	1.649
0.0	0.03	0.032	0.027	0.383	0.355	0.358
62.4	0.138	0.164	0.106	2.036	2.016	2.031
0.0	0.061	0.043	0.027	0.805	0.648	0.695
78.1	0.165	0.187	0.123	2.388	2.373	2.364
0.0	0.073	0.054	0.027	1.155	1.071	1.087
93.7	0.22	0.208	0.157	2.767	2.772	2.766
0.0	0.078	0.096	0.069	1.37	1.343	1.334
109.3	0.285	0.276	0.231	3.253	3.238	3.339
0.0	0.163	0.144	0.12	1.947	1.906	1.923
124.9	0.308	0.414	0.267	3.528	3.541	3.504
0.0	0.23	0.147	0.162	2.266	2.211	2.213
145.7	0.437	0.42	0.45	3.779	3.815	3.781
0.0	0.276	0.309	0.183	2.597	2.542	2.518

RESULTS:

Maximum Test Load = 160.6 psf (Panel sidejoint disengagement)

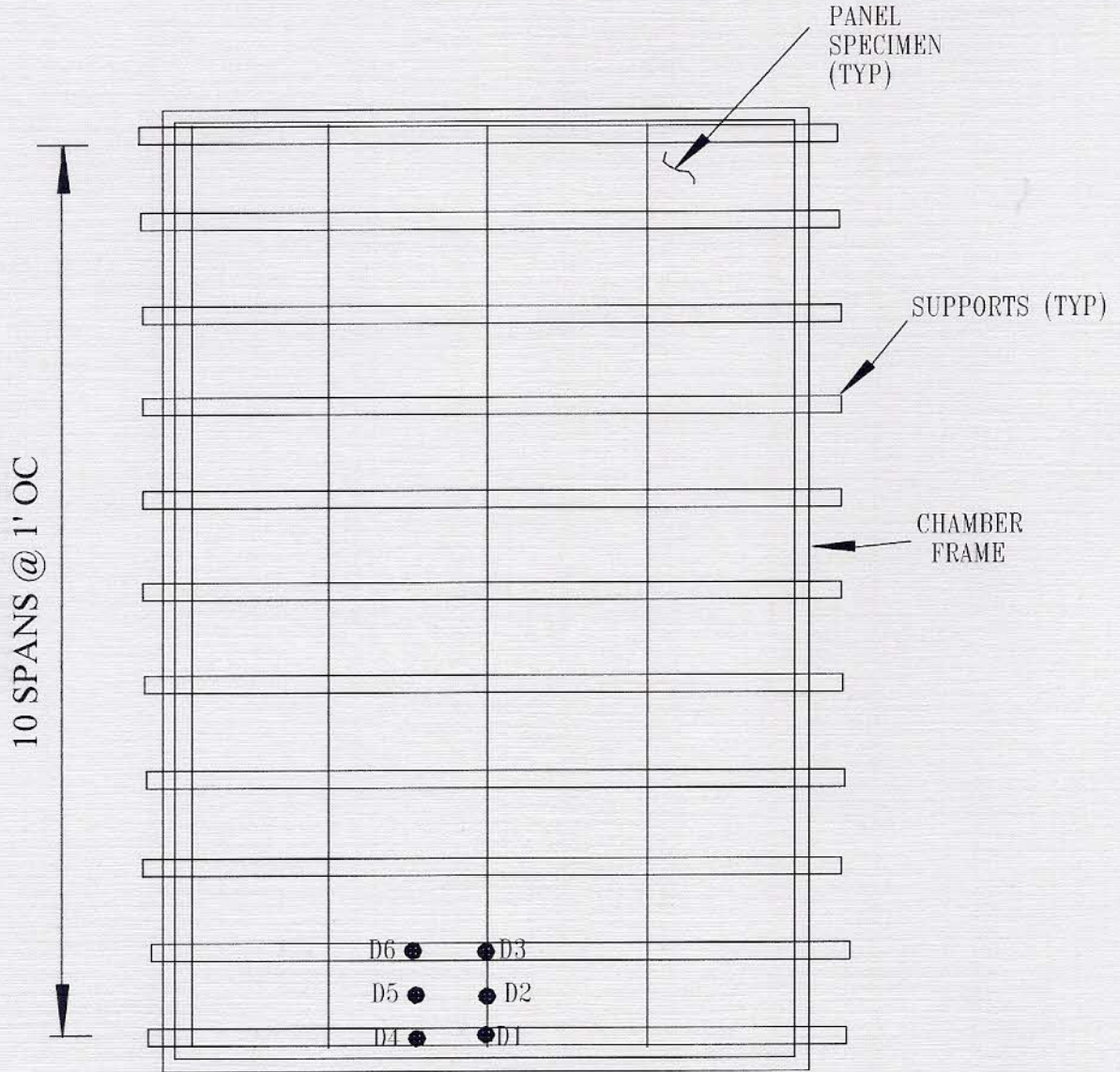
TEST "A" & "B"



● DEFLECTION POINT

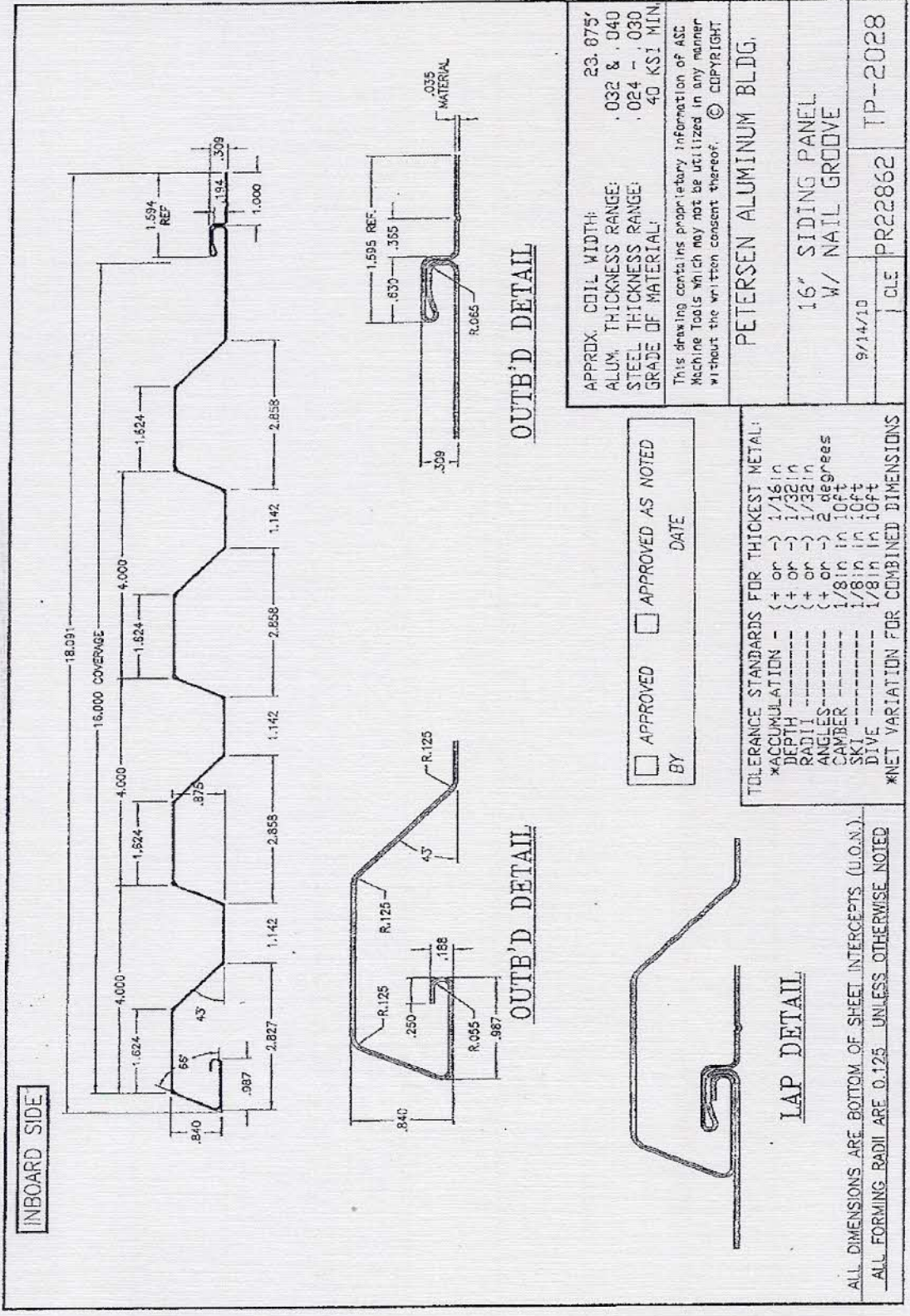
TEST ASSEMBLY

TEST "C"



● DEFLECTION POINT

TEST ASSEMBLY



INBOARD SIDE

OUTB'D DETAIL

OUTB'D DETAIL

LAP DETAIL

APPROX. COIL WIDTH:	23.875'
ALUM. THICKNESS RANGE:	.032 & .040
STEEL THICKNESS RANGE:	.024 - .030
GRADE OF MATERIAL:	40 KSI MIN
This drawing contains proprietary information of ASC Machine Tools which may not be utilized in any manner without the written consent thereof. © COPYRIGHT	
PETERSEN ALUMINUM BLDG.	
16" SIDING PANEL W/ NAIL GROOVE	
9/14/10	PR22862
CLE	TP-2028

APPROVED APPROVED AS NOTED
BY _____ DATE _____

TOLERANCE STANDARDS FOR THICKEST METAL:

*ACCUMULATION	(+ or -)	1/16 in
DEPTH	(+ or -)	1/32 in
RADII	(+ or -)	1/32 in
ANGLES	(+ or -)	2 degrees
CAMBER	(+ or -)	1/8 in in 10ft
SKI	(+ or -)	1/8 in in 10ft
DIVE	(+ or -)	1/8 in in 10ft
*NET VARIATION FOR COMBINED DIMENSIONS		

ALL DIMENSIONS ARE BOTTOM OF SHEET INTERCEPTS (U.O.N.)
ALL FORMING RADII ARE 0.125 UNLESS OTHERWISE NOTED

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TENSILE TEST REPORT

Client: Petersen Aluminum Corp.
1005 Tonne Rd.
Elk Grove Village, IL 60007

Test Date: September 27, 2011

Test Method: ASTM A370-10

Material Description: 16" Siding Panel w/ Nail Groove, 24 ga steel

Sample No.	Width (in)	Thickness (in)	Yield Load (lb)	Max. Load (lb)	0.2% Offset Yield Strength (psi)	Tensile Strength (psi)	Elongation (% in 2 inches)
0067-11	0.495	0.022	498.8	627.8	45,809	57,651	30.7

Equipment Used: Tensile Machine #QT7-061196-020
Caliper #081410113-1
Extensometer #10311744D
Micrometer #52-222-001