



June 23, 2010

HTS Report #:	PLI10F43.003.doc
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Mr. Steve Parks
 Perma-Liner Industries
 13000 Automobile Boulevard, Suite 300
 Clearwater, FL 33762

Customer Project Name:
 P.O. #: 6331
 Date Sample Received: 6/15/10
 Date Sample Tested: 6/21/10

1 Sample of cured-in-place pipe liner was delivered to HTS' laboratory for testing. The sample was tested in accordance with ASTM D695, ASTM D638 Type II, and ASTM D790 Method I Procedure A. A Support Span-to-Depth Ratio of 16 to 1 was used as specified in the test standard ASTM D790. Thickness measurements, compressive strength, tensile strength, tensile modulus, flexural stress and flexural modulus of elasticity tests were performed on the sample. Five (5) specimens were cut and tested from the sample. The results summarized and reported below are averages of the five (5) specimens. A test report for the sample is attached.

SAMPLE ID	COMPRESSIVE STRENGTH (psi) ASTM D 695	TENSILE STRENGTH (psi) ASTM D 638	TENSILE ELONGATION (%) ASTM D 638	FLEXURAL STRENGTH (psi) ASTM D 790	FLEXURAL MODULUS (psi) ASTM D 790
Navi Liner	4446	5621	6.07	12095.3	414,133

The following table contains the thickness measurements for each individual specimen tested.

MEASUREMENT OF THICKNESS FOR PIPE ASTM D 2122										
Sample ID	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	Combined Total Average/Specimen	
									in	mm
Navi Liner	.113	.114	.116	.113	.117	.122	.118	.122	0.117	3.0

Technician	K. Phouangsavanh
Time	2 hrs

Sincerely,

Larry L. McMichael
 Larry L. McMichael KP
 Vice President

This test report relates only to the items tested and shall not be reproduced except in full without approval of HTS, Inc.



COMPRESSIVE PROPERTIES OF RIGID PLASTICS (ASTM D695)

Test type: Compressive

Instron Corporation

Series IX Automated Materials Testing System 6.05

Operator name: EC

Test Date: 18 Jun 2010

Sample Identification: 10F43C31

Sample Type: ASTM

Interface Type: 42/43/4400 Series

Machine Parameters of test:

Sample Rate (pts/sec): 10.000

Humidity (%): 50

Crosshead Speed (in/min): .0500

Temperature (deg. F): 73

Dimensions:

Spec. 1 Spec. 2 Spec. 3 Spec. 4 Spec. 5

Width (in)	.55300	.56800	.55800	.56200	.55100
Thickness (in)	.11400	.11800	.11600	.12000	.11900
Spec gauge len (in)	1.5050	1.5240	1.5240	1.5020	1.5000
Platen Separ. (in)	2.0000	2.0000	2.0000	2.0000	2.0000

Out of 5 specimens, 0 excluded.

Sample comments: NAVI LINER

Specimen Number	Compres. Strength (psi)
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1	3962.
2	4764.
3	4562.
4	5079.
5	3862.

Mean: 4446.

Standard
Deviation: 522.



TENSILE PROPERTIES OF PLASTICS (ASTM D 638)

TYPE II (CIPP).

Test type: Tensile

Instron Corporation
 Series IX Automated Materials Testing System 6.05
 Test Date: 23 Jun 2010

Operator name: E. CARRILLO

Sample Identification: 10F43T31
 Interface Type: 42/43/4400 Series
 Machine Parameters of test:

Sample Type: ASTM

Sample Rate (pts/sec): 10.000
 Crosshead Speed (in/min): .2000

Humidity (%): 50
 Temperature (deg. F): 71

Dimensions:

	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 5
Width (in)	.26900	.28000	.27800	.27600	.27300
Thickness (in)	.12100	.12200	.13200	.11800	.11600
Spec gauge len (in)	2.0000	2.0000	2.0000	2.0000	2.0000
Grip distance: (in)	5.3000	5.3000	5.3000	5.3000	5.3000

Out of 5 specimens, 0 excluded.
 Sample comments: NAVI LINER

Specimen Number	ROLL DIR.	Strength at Break (psi)	Elongation at Break (%)
1		5180.	5.100
2		5720.	6.600
3		6058.	7.500
4		5987.	6.400
5		5160.	4.750
Mean:		5621.	6.070
Standard Deviation:		431.	1.131
Minimum:		5160.	4.750
Maximum:		6058.	7.500



FLEXURAL PROPERTIES OF PLASTICS (ASTM D790)

SUPPORT SPAN = 2".

Flexural 3 point bend

Instron Corporation
 Series IX Automated Materials Testing System 6.05
 Test Date: 18 Jun 2010

Operator name: E. CARRILLO

Sample Identification: 10F43-31
 Interface Type: 42/43/4400 Series
 Machine Parameters of test:

Sample Type: ASTM

Sample Rate (pts/sec): 10.000
 Crosshead Speed (in/min): .0500

Humidity (%): 50
 Temperature (deg. F): 71

Dimensions:

	Spec. 1	Spec. 2	Spec. 3	Spec. 4	Spec. 5
Width (in)	.56900	.59800	.58000	.53200	.57300
Depth (in)	.11600	.12200	.12300	.12400	.12400
Span (in)	2.0000	2.0000	2.0000	2.0000	2.0000

Out of 5 specimens, 0 excluded.

Sample comments: NAVI LINER

Specimen Number	Displment at Yield (in)	Strain at Yield (in/in)	Load at Yield (lbs)	Stress at Yield (psi)	Modulus Of Elasticity (psi)
1	.2577	.0448	29.0	11359.0	390945
2	.2213	.0405	35.5	11978.9	408934
3	.2040	.0376	35.2	12031.0	425209
4	.2538	.0472	35.8	13114.9	428493
5	.2343	.0436	35.2	11992.6	417085
Mean:	.2342	.0428	34.1	12095.3	414133.
Standard Deviation:	.0225	.0037	2.9	634.4	15019.
Minimum:	.2040	.0376	29.0	11359.0	390945.
Maximum:	.2577	.0472	35.8	13114.9	428493.