

# Certificate of Analysis



## Taber Abrasion

Product Name	<b>Elastuff 110</b>
Batch Number	Part A #98278 Part B #98279
Manufacture Date	Part A - 7/29/04 Part B - 7/30/04
Test Date	10/8/04
Application/Date	9/8/04 / 160° F. material temperature at 3000 psi pump pressure
Test Method	ASTM D-4060 Abrasion Resistance of Organic Coatings by the Taber Abraser
Test Conditions	As per ASTM standard. Any deviation reported at end of certificate.

This certificate confirms that the above product was tested as per stated standard specification using calibrated equipment and qualified staff. The following test results were obtained.

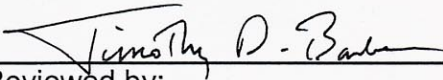
### Test Results

Parameter	Wheel	Average Wear Index
Taber Abraser	H 10	0.07

### Test conditions (if different from standard test conditions) and/or notes.

Average wear index represented as grams per 1000 cycles.  
Taber Abraser wheels/load used: H-10 / 1000g.  
Abrasion disks cut from spray out sheet.  
Results represent average of 2 samples.

Results witnessed and verified by a technical representative of GeoEngineers, Inc.

  
Reviewed by:  
Timothy D. Barber

Certificate of Analysis



Adhesion (Direct Pull)

Product Name	Elastuff 110
Batch Number	Part A #98278 Part B #98279
Manufacture Date	Part A - 7/29/04 Part B - 7/30/04
Test Date	10/6/04
Application/Date	9/8/04 / 160° F. material temperature at 3000 psi pump pressure
Test Method	ASTM D-4541 Pull Off Strength of Coatings Using Portable Adhesion Tester
Test Conditions	As per ASTM standard. Any deviation reported at end of certificate.

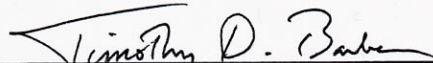
This certificate confirms that the above product was tested as per stated standard specification using calibrated equipment and qualified staff. The following test results were obtained.

Test Results

Substrate	Condition	Specimens	MPa	PSI	Primary MOF
Steel	Dry	4	6.1	885	Adhesive Coating Failure

Test conditions (if different from standard test conditions) and/or notes.  
 Specimens prepared by securing aluminum dollies with epoxy to coated steel substrate.  
 Aluminum dollies: Diameter = 0.788", Area = 0.487"  
 Measuring the force of separation from the substrate (pull-off strength) performed using DeFelsko PosiTest (model A) portable adhesion tester (lbs / in<sup>2</sup>).  
 Temperature and Humidity: 75.1° F / 37.1% RH

Results witnessed and verified by a technical representative of GeoEngineers, Inc.

  
 Reviewed by:  
 Timothy D. Barber



# Certificate of Analysis



## Tear Strength

Product Name	Elastuff 110
Batch Number	Part A #98278 Part B #98279
Manufacture Date	Part A - 7/29/04 Part B - 7/30/04
Test Date	10/8/04
Application/Date	9/8/04 / 160° F. material temperature at 3000 psi pump pressure
Test Method	ASTM D-624 Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
Test Conditions	As per ASTM standard. Any deviation reported at end of certificate.

This certificate confirms that the above product was tested as per stated standard specification using calibrated equipment and qualified staff. The following test results were obtained.

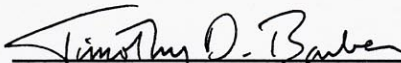
### Test Results

Parameter	Unit	Result
Tear Strength	PLI	30
	kN/m	5

### Test conditions (if different from standard test conditions) and/or notes.

Die C used for Tear strength specimens.  
Temperature and Humidity: 24.8°C / 31% RH.  
Test Equipment: Shimadzu Autograph AG-1

Results witnessed and verified by a technical representative of GeoEngineers, Inc.

  
Reviewed by:  
Timothy D. Barber

# Certificate of Analysis



## Tensile Strength

Product Name	<b>Elastuff 110</b>
Batch Number	Part A #98278 Part B #98279
Manufacture Date	Part A - 7/29/04 Part B - 7/30/04
Test Date	10/6/04
Application/Date	9/8/04 / 160° F. material temperature at 3000 psi pump pressure
Test Method	ASTM D-412 Vulcanized Rubber & Thermoplastic Elastomers
Test Conditions	As per ASTM standard. Any deviation reported at end of certificate.

This certificate confirms that the above product was tested as per stated standard specification using calibrated equipment and qualified staff. The following test results were obtained.

### Test Results

Parameter	Symbol	Unit	Result
Tensile Strength	TS	MPa	17.5
		PSI	2540
Elongation	E	%	13%

Test conditions (if different from standard test conditions) and/or notes.
Test Equipment: Shimadzu Autograph AG-1
Temperature and Humidity: 24.8°C / 31% RH.

Results witnessed and verified by a technical representative of GeoEngineers, Inc.

Reviewed by:  
Timothy D. Barber



# Certificate of Analysis



## Water Absorption (Hydrophobicity)

Product Name	Elastuff 110
Batch Number	Part A #98278 Part B #98279
Manufacture Date	Part A - 7/29/04 Part B - 7/30/04
Test Date	10/13/04
Application/Date	9/8/04 / 160° F. material temperature at 3000 psi pump pressure
Test Method	ASTM D-570 Absorption of Plastics
Test Conditions	As per ASTM standard. Any deviation reported at end of certificate.

This certificate confirms that the above product was tested as per stated standard specification using calibrated equipment and qualified staff. The following test results were obtained.

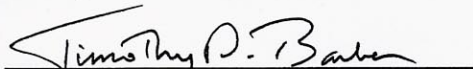
### Test Results

Parameter	Result
Days Immersed	% Water Absorption
7	3.3%

Test conditions (if different from standard test conditions) and/or notes.

1"x 2"x 0.032" samples cut from free film, weighed, and immersed in deionized water bath. Reconditioning section of standard not recorded.

Results witnessed and verified by a technical representative of GeoEngineers, Inc.



Reviewed by:

Timothy D. Barber

# Certificate of Analysis



## Gardner Impact

Product Name	<b>Elastuff 110</b>
Batch Number	Part A #98278 Part B #98279
Manufacture Date	Part A - 7/29/04 Part B - 7/30/04
Test Date	10/13/04
Application/Date	9/8/04 / 160° F. material temperature at 3000 psi pump pressure.
Test Method	ASTM D-2794 Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
Test Conditions	As per ASTM standard. Any deviation reported at end of certificate.

This certificate confirms that the above product was tested as per stated standard specification using calibrated equipment and qualified staff. The following test results were obtained.

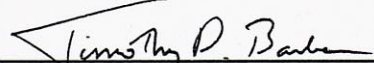
### Test Results

Impact Resistance		Inch-pounds
Intrusion		160
Extrusion		20

### Test conditions (if different from standard test conditions) and/or notes.

Indenter: 4 pound steel punch with .625" hemispherical head.  
Electrical pin hole detector used to verify integrity of coating after impact.  
Average coating thickness: .041"  
Substrate: Steel Thickness: .073"  
Coatings spray applied to steel panels.

Results witnessed and verified by a technical representative of GeoEngineers, Inc.

  
\_\_\_\_\_  
Reviewed by:  
Timothy D. Barber



# Certificate of Analysis



## Shore Hardness

Product Name	<b>Elastuff 110</b>
Batch Number	Part A #98278 Part B #98279
Manufacture Date	Part A - 7/29/04 Part B - 7/30/04
Test Date	11/12/04
Application/Date	9/8/04 / 160° F. material temperature at 3000 psi pump pressure
Test Method	ASTM D-2240 Rubber Property - Durometer Hardness
Test Conditions	As per ASTM standard. Any deviation reported at end of certificate.

This certificate confirms that the above product was tested as per stated standard specification using calibrated equipment and qualified staff. The following test results were obtained.

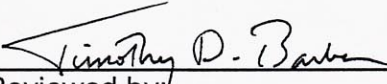
### Test Results

Parameter	Result	Result	
		Type A	Type D
Hardness value		95	60

### Test conditions (if different from standard test conditions) and/or notes.

Temperature and Humidity: 23° c / 35.3%  
Shore Type A 42193-A  
Shore Type D 41945-D

Results witnessed and verified by a technical representative of GeoEngineers, Inc.

  
Reviewed by:  
Timothy D. Barber

Certificate of Analysis



Mandrel Bend Test of Attached Organic Coatings

Product Name	Elastuff 110
Batch Number	Part A #98278 Part B #98279
Manufacture Date	Part A - 7/29/04 Part B - 7/30/04
Test Date	11/12/04
Application/Date	9/8/04 / 160° F. material temperature at 3000 psi pump pressure
Test Method	ASTM D-522 Mandrel Bend Test of Attached Organic Coatings
Test Conditions	As per ASTM standard. Any deviation reported at end of certificate.

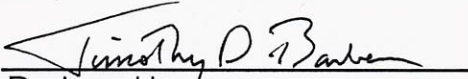
This certificate confirms that the above product was tested as per stated standard specification using calibrated equipment and qualified staff. The following test results were obtained.

Test Results

Mandrel Size	25° C	-20° C
1/2"	Pass	Pass

Test conditions (if different from standard test conditions) and/or notes.  
 Specimens: 0.5" wide x .038" thick free film.  
 Specimens tested as unattached free film.

Results witnessed and verified by a technical representative of GeoEngineers, Inc.

  
 Reviewed by:  
 Timothy D. Barber



## Certificate of Analysis

### Permeance

Product Name	<b>Elastuff 110</b>
Batch Number	Part A #98278 Part B #98279
Manufacture Date	Part A - 7/29/04 Part B - 7/30/04
Test Date	11/12/04
Application/Date	9/8/04 / 160° F. material temperature at 3000 psi pump pressure
Test Method	ASTM D-1653 Water Vapor Transmission of Organic Coating Films Method B
Test Conditions	As per ASTM standard. Any deviation reported at end of certificate.

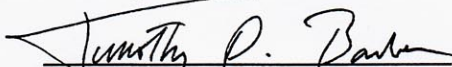
This certificate confirms that the above product was tested as per stated standard specification using calibrated equipment and qualified staff. The following test results were obtained.

#### Test Results

Parameter	Avg. Thickness	Unit	Result
Permeance	.056"	g / Pa·s·m <sup>2</sup>	1.47E-07

Test conditions (if different from standard test conditions) and/or notes.
Results represent units as per ASTM E-96 Results represent average taken from 4 samples. Temperature and Humidity: 23° C. / 50% RH. Samples cut from films produced from spray out. Sample Cure Time: 34 days at ambient lab temperatures.

Results witnessed and verified by a technical representative of GeoEngineers, Inc.

  
 Reviewed by:  
 Timothy D. Barber