



Momentum Technologies, Inc.
 1507 Boettler Road
 Uniontown, Ohio 44685
 ☎ 330/896-5900 Fax 330/896-9943

Date: **October 11, 2002**
 MTi Project No.: **EX16E2A**
 Fax No.: **717-245-7053**

TECHNICAL SERVICE REPORT

Carlisle Syntec, Inc.
 ATTN.: **Joe Malpezzi**
 P.O. Box 7000
 Carlisle, PA 17013

Project ID: **EX16E2A** Reference #: Date: **October 11, 2002**

Accreditations



ICBO

ISO/IEC 17025

N.E.S. Listed
 NER-TL625



Accredited Independent
 Testing Laboratory

Associations



Roof Coating
 Manufacturers
 Association

Abstract:

Analysis as described of provided Ecostae Majestic Shingle.

Results:

<u>DESCRIPTION</u>	<u>METHOD</u>	<u>RESULT</u>
<u>Initial</u>		
Temperature Cycling	ICBO AC07	No cracking, No delamination
Flexural Strength	ASTM D 790 (Procedure A, Test Method 1)	4.76 lbf
Breaking Strength	ASTM D 638	91 lbf
Tensile Strength	ASTM D 638	1123 psi
Elongation at Break	ASTM D 638	34%
<u>Post Accelerated Aging</u>		
Visual	G26-2000 hrs.	Slight Fading, No Cracking
Flexural Strength	ASTM D 790 (Procedure A, Test Method 1)	4.46 lbf
Breaking Strength	ASTM D 638	108 lbf
Tensile Strength	ASTM D 638	1115 psi
Elongation at Break	ASTM D 638	27.1%



Momentum Technologies, Inc.

Carlisle Syntec Inc. – JX19H2A
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<u>Attached:</u>	<ul style="list-style-type: none">• Flexural Strength Curves• Tensile Strength Curves
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If you have any questions or would like to have more open conversations do not hesitate to contact me at 330/896-5900.

Sincerely,

Joseph W. Mellott
Vice President, Technology

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MTi Laboratory Services

Company: Carlisle Syntech Inc. Sample EX16E2A-Original tensile strength
 Lab name: Momentum Technologies Inc. Number of specimens: 5
 Operator ID: J.G.Elliott Temperature: 75°F
 Test date: 10/15/02 Humidity: 50%

Note 1: ASTM D-638 Tensile Strength Speed 1: 0.20 in/min

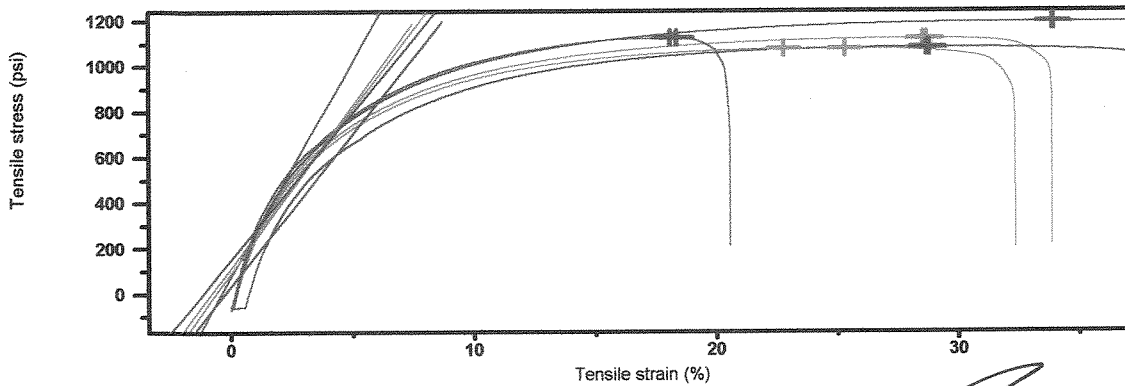
Note 2:

Note 3:

Results

	Tensile Strength (psi)	Max load (lbf)	Break Elongation (%)	Modulus of Elasticity (psi)	Secant Modulus (psi)	Poisson's Ratio
1	1124.693	90.538	33.813	13856.813	25210.723	-
2	1127.346	93.006	20.560	18833.975	29087.661	-
3	1079.877	95.299	32.293	14648.705	24402.354	-
4	1196.649	91.843	42.714	12850.413	26456.385	-
5	1085.808	81.979	39.521	13317.999	9781.455	-
Mean	1122.875	90.533	33.780	14701.581	22987.716	
S.D.	46.606	5.092	8.511	2404.903	7592.583	
Minimum	1079.877	81.979	20.560	12850.413	9781.455	
Maximum	1196.649	95.299	42.714	18833.975	29087.661	
Range	116.771	13.321	22.154	5983.562	19306.207	

Curves



Tested By 
 Laboratory Technician

Approved By 
 Vice President Of Technology

MTi Laboratory Services

Company: Carlisle Syntech Inc. Sample EX16E2A-Aged tensile strength
 Lab name: Momentum Technologies Inc. Number of specimens: 5
 Operator ID: J.G.Elliott Temperature: 75°F
 Test date: 10/15/02 Humidity: 50%

Note 1: ASTM D-638 Tensile Strength Speed 1: 0.20 in/min

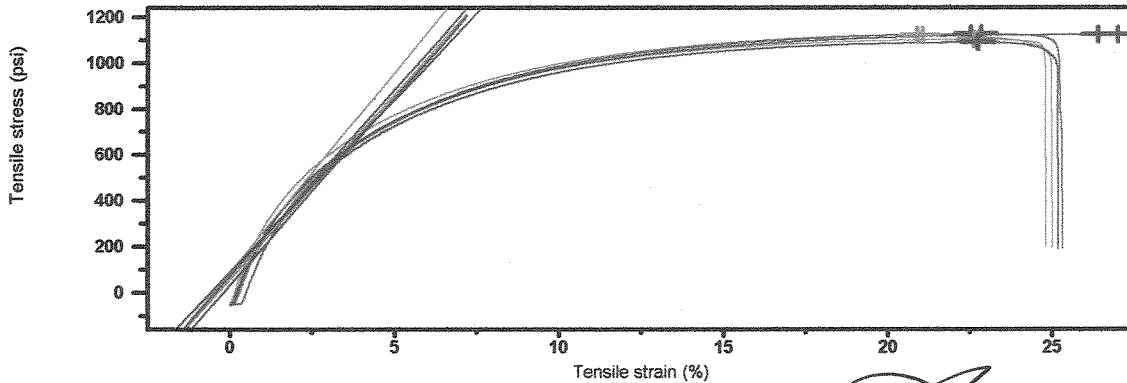
Note 2:

Note 3:

Results

	Tensile Strength (psi)	Max load (lbf)	Break Elongation (%)	Modulus of Elasticity (psi)	Secant Modulus (psi)	Poisson's Ratio
1	1123.894	101.431	24.988	17330.240	28653.697	-
2	1128.317	96.471	25.305	16147.360	24727.271	-
3	1104.266	120.641	24.791	16022.507	23259.558	-
4	1126.408	123.060	35.307	14941.580	24563.462	-
5	1092.445	99.686	25.164	16234.846	18084.764	-
Mean	1115.066	108.258	27.111	16135.307	23857.750	
S.D.	15.894	12.564	4.586	847.883	3805.930	
Minimum	1092.445	96.471	24.791	14941.580	18084.764	
Maximum	1128.317	123.060	35.307	17330.240	28653.697	
Range	35.872	26.589	10.516	2388.660	10568.933	

Curves



Tested By 
 Laboratory Technician

Approved By 
 Vice President Of Technology

MTi Laboratory Services

Company: Name: EX16E2A-xenon aged
Lab name: Momentum Technologies Inc. Number of specimens: 5
Operator ID: J.G.Elliott Temperature: 75°F
Test date: 9/27/02 Humidity: 50%

Note 1: ASTM C-209 Transverse Strength Speed 1: 0.11 in/min

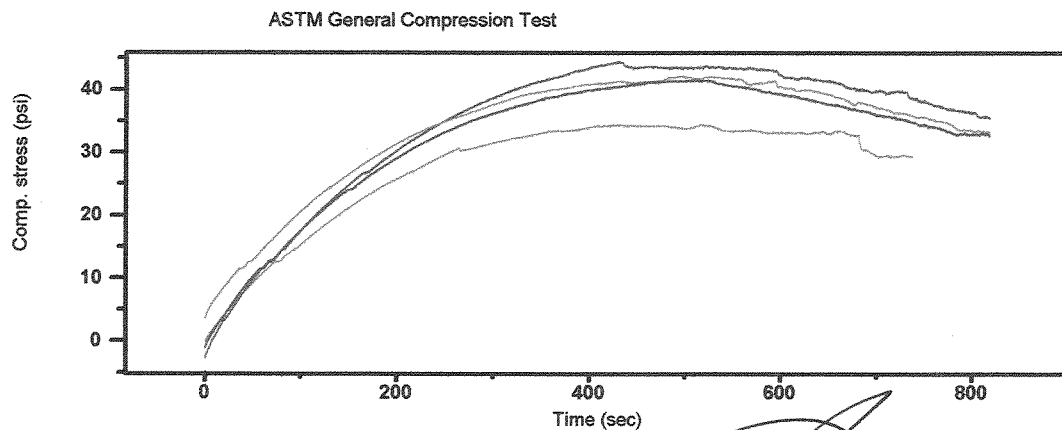
Note 2:

Note 3:

Results

	Maximum Load (lbf)	Extension Max load (in)	Flex stress (Psi)
1	5.16	0.88	1253.76
2	3.46	0.79	1037.43
3	4.46	0.79	1337.55
4	4.64	0.91	1181.01
5	4.57	0.96	1161.93
Mean	4.46	0.86	1194.34
S.D.	0.62	0.07	111.68
Minimum	3.46	0.79	1037.43
Maximum	5.16	0.96	1337.55
Range	1.70	0.17	300.12

Curves



Tested By JCE
Laboratory Technician

Approved By [Signature]
Vice President Of Technology

MTi Laboratory Services

Company: Name: EX16E2A
Lab name: Momentum Technologies Inc. Number of specimens: 5
Operator ID: J.G.Elliott Temperature: 75°F
Test date: 7/30/02 Humidity: 50%

Note 1: ASTM C-209 Transverse Strength Speed 1: 0.11 in/min

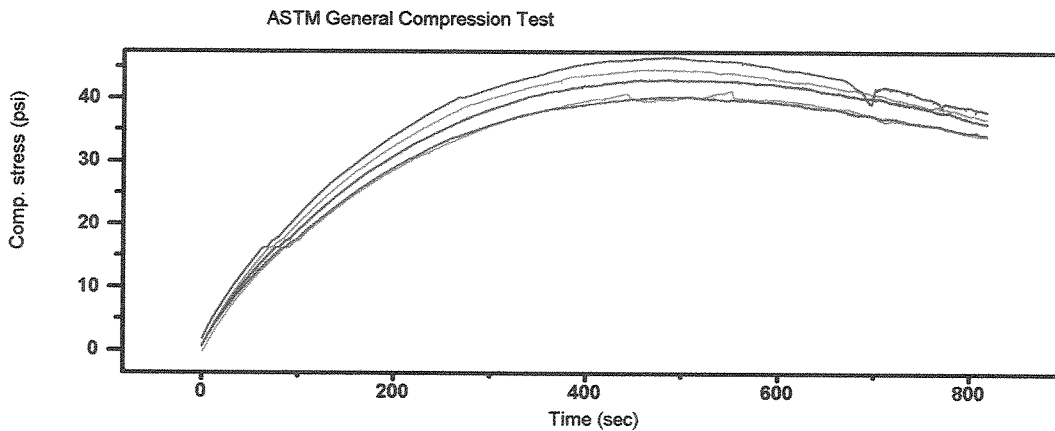
Note 2:

Note 3:

Results

	Maximum Load (lbf)	Extension Max load (in)	Flex stress (Psi)
1	4.56	1.01	1129.56
2	4.45	0.90	1103.08
3	4.92	0.86	1220.31
4	5.14	0.90	1274.25
5	4.75	0.88	1177.23
Mean	4.76	0.91	1180.89
S.D.	0.28	0.06	68.87
Minimum	4.45	0.86	1103.08
Maximum	5.14	1.01	1274.25
Range	0.69	0.15	171.17

Curves



Tested By JGE
Laboratory Technician

Approved By [Signature]
Vice President Of Technology