

May 27, 2011

Mr. Chris Moody
Design Engineer
Storefront & Entrance
YKK AP America
1229 Highway 441 Bypass
Dublin, GA 31021

RE: YKK YHC 300 OG System Gaskets; ASTM Specifications

Dear Chris:

Tremco produces the following extrusion from our 60±5 Durometer Dense EPDM rubber compound. This material has been tested in accordance with ASTM C 864, Option II specification. The manufacturing profile drawing, material product data sheet and laboratory test report are attached for your reference.

<u>YKK p/n</u>	<u>Tremco p/n</u>
E2-0379	TR-16960E

Tremco produces the following extrusions from our 70±5 Durometer Dense SCR-900® rubber compound. This material has been tested in accordance with ASTM C 864, Option II specification. The manufacturing profile drawing, material product data sheet and laboratory test report are attached for your reference.

<u>YKK p/n</u>	<u>Tremco p/n</u>
E2-0353	TR-5146W

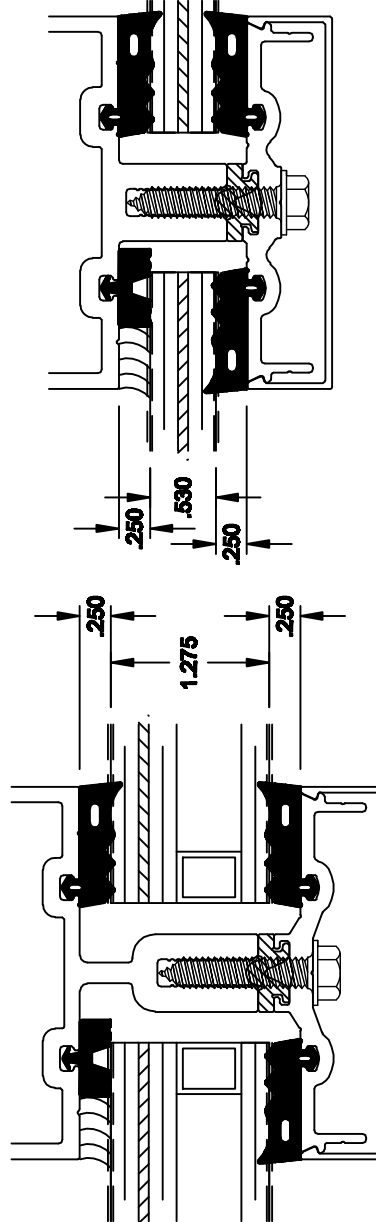
If there is anything else I can do for you, please feel free to contact me via phone, fax, or e-mail.

Sincerely,



Derek Shoup
Group Leader, Engineered Rubber Products
Direct Line: 419-207-2030
Fax: 419-289-6645
Email: dshoup@tremcoinc.com

Cc: Mr. Jim Stewart; Sales Representative
Mr. Joe Dressler; Sales Representative



The design of the gasket shown herein is the product of Tremco Incorporated. No reproduction or use of this design is authorized without the consent of Tremco Incorporated.

1		02-05-10	YHC # WA9 E2-0913	EJT
No.	Date	Description	By	
 Tremco Manufacturing Division				
1401 Jacobson Ave Ashland, Ohio 44805 U.S.A. Phone : 800-321-0307 Fax : 419-286-6946				
Customer:		Customer Part No.		
YHC		E2-0379		
Project:		Part No.		
YHC 300 OG		1		
Drawn by:	DLS	Scale:	10X	Date:
Component:	EPDM	Designed P.C.	.250	Drawing No.
Diameter:	60 ±5	Alt:	TR-16960E	
Tolerance:		±.007%		

"Progress Through Innovation, Technology
and Customer Satisfaction"



August 26, 2002

AKRON RUBBER DEVELOPMENT LABORATORY, INC.
2887 Gilchrist Road • Akron, Ohio 44305
1-800-830-ARDL • (330) 794-6600 • FAX (330) 794-6610
Website: www.ardl.com • E-mail: info@ardl.com

TREMCO PART # 3162

- TEST REPORT -

PN# 49424A

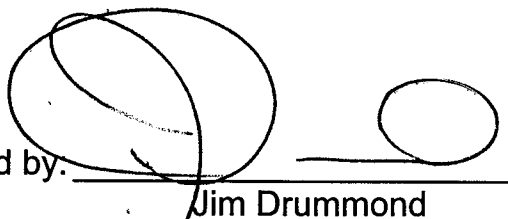
Prepared for:

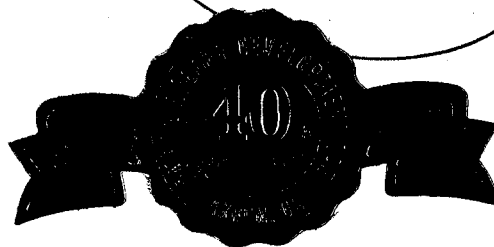
Mr. John Wegman
Tremco, Inc.
1451 Jacobson Avenue
Ashland, Ohio 44805

Prepared by:


Judy Kiefl

Approved by:


Jim Drummond



AN A2LA ACCREDITED LABORATORY
MEMBER OF ACIL: THE ASSOCIATION OF INDEPENDENT SCIENTIFIC,
ENGINEERING AND TESTING FIRMS

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EPDM

Dense Rubber Extrusions

Product Description

Tremco EPDM Dense Rubber Extrusions are fabricated into gaskets and accessories (such as setting blocks, spacers and shims) for use in sealing and glazing applications in building construction.

Metal Requirements

Tremco EPDM Dense Rubber Extrusions are manufactured to meet existing metal designs or developed with custom metal systems at the design development stage. Many profiles are available depending upon existing metal requirements.

Packaging

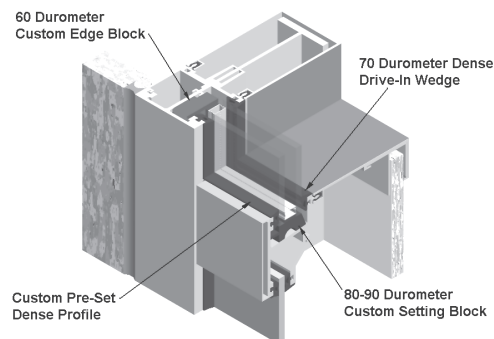
Tremco EPDM Dense Rubber Extrusions are packaged based on customer requirements, profile size, configuration and the need for molded picture frame gaskets.

Availability/Cost

Tremco EPDM Dense Rubber Extrusions are generally custom manufactured but many standard designs are available. Their availability and cost may be obtained from your local Tremco Representative, or by contacting our Customer Service Department in Ashland, Ohio, at 800-321-6357 or in Canada at 800-363-3213.

Warranty

Tremco warrants their products to be free of defects. Under this warranty, Tremco will provide, at no charge, products in containers to replace any product proven to be defective when applied, tested and cured (if applicable), in accordance with Tremco's written instructions, standards and applications recommended by Tremco as suitable for this product. User shall determine suitability of the product for their intended use and assume all risk and liability therewith. Seller shall not be liable for any injury, loss or damage, direct or consequential, arising out of the use of the product. All claims concerning product defects must be made within 12 months of shipment. Absence of such claims in writing, during this period, will constitute a waiver of all claims with respect to such product. This warranty is the user's sole remedy and is IN LIEU OF any and all other warranties expressed or implied, including but not limited to, any implied warranty of MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.



TYPICAL PHYSICAL PROPERTIES

Property	ASTM Test Method	Wedge Gaskets	Accessory Gaskets	Setting Blocks
Shore "A" Hardness	D-2240	68-71	58-62	82-85
Compression Set, 22h @ 100°C	D-395	22-28%	18-29%	26-30%
Ozone Resistance, 100 mPa				
100h @ 40°C, 20% Elongation	D-1149	No Cracks	No Cracks	No Cracks
Tensile Strength	D-412	1810-1925 psi (12.5-13.3 MPa)	1675-1750 psi (11.5-12.1 MPa)	1800-1900 psi (12.4-13.1 MPa)
Elongation @ Rupture	D-412	350-530%	375-550%	175-280%
Tear Strength	D-624	143-209 lb/in (25.0-36.6 kN/m)	160-182 lb/in (28.0-31.9 kN/m)	125-158 lb/in (21.9-27.7 kN/m)
Brittleness Temperature @ -40°C	D-746	Pass	Pass	Pass
Flame Propagation, Option II	C-1166	No Limit	No Limit	No Limit



Tremco Commercial Sealants & Waterproofing

3735 Green Road, Beachwood, OH 44122 // Phone: 216.292.5000 // 800.321.7906
 220 Wicksteed Avenue, Toronto, ON M4H 1G7 // Phone: 416.421.3300 // 800.363.3213
 1451 Jacobson Avenue, Ashland OH 44805 // Phone: 419.289.2050 // 800.321.6357



Page 1 of 2- PN# 49424A

August 26, 2002

Mr. John Wegman
Tremco, Inc.
1451 Jacobson Avenue
Ashland, Ohio 44805

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2887 Gilchrist Road • Akron, Ohio 44305
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Website: www.ardl.com • E-mail: info@ardl.com

SUBJECT: Physical testing on material submitted by the above company.

RECEIVED: Five (5) slabs and six (6) compression buttons identified as WJT 7523.

ORIGINAL PHYSICAL PROPERTIES, ASTM D 412-98a, D 2240-02
Die C dumbbells tested at 20 in/min.

	<u>RESULTS</u>	<u>REQUIREMENTS</u>	<u>PASS/FAIL</u>
Shore A Durometer, points	63	60 ± 5	Pass
Tensile Strength, psi	1800	1600 min.	Pass
Ultimate Elongation, %	560	250 min.	Pass

HEAT-AGED PROPERTIES, ASTM D 573-99
Specimens aged 70 hrs. @ 100°C in a forced air oven.

	<u>RESULTS</u>	<u>REQUIREMENTS</u>	<u>PASS/FAIL</u>
Durometer, point change	+5	+10 max.	Pass
Tensile Strength, % change	-6.9	-15 max.	Pass
Elongation, % change	-31.2	-40 max.	Pass

COMPRESSION SET, ASTM D 395-98, METHOD B
Specimens aged 22 hrs. @ 100°C, 25% deflection, ½ hr. recovery.

	<u>RESULTS</u>	<u>REQUIREMENTS</u>	<u>PASS/FAIL</u>
Compression Set, %	18.1	30 max.	Pass

August 26, 2002

Mr. John Wegman
Tremco, Inc.

OZONE RESISTANCE, ASTM D 1149-99

Test specimens per ASTM D 518-99, Method A

Specimens exposed 100 hrs. @ 100 pphm @ 40°C, 20% elongation.

Observations made at 7x magnification.

<u>RESULTS</u>	<u>REQUIREMENTS</u>	<u>PASS/FAIL</u>
No cracks	No cracks	Pass

LOW TEMPERATURE BRITTLINESS, ASTM D 2137-94(00), METHOD A

Five modified T-50 specimens conditioned 3 min. @ -40°C in methanol, then tested per Para. 9.3.2.

<u>RESULTS</u>	<u>REQUIREMENTS</u>	<u>PASS/FAIL</u>
No cracks	No specimen shall crack	Pass

TEAR RESISTANCE, ASTM D 624-00, DIE C

Specimens tested at 20 in/min.

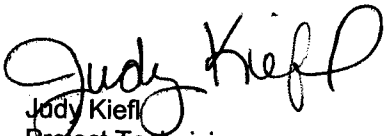
	<u>RESULTS</u>	<u>REQUIREMENTS</u>	<u>PASS/FAIL</u>
Tear Strength, ppi	165	150 min.	Pass

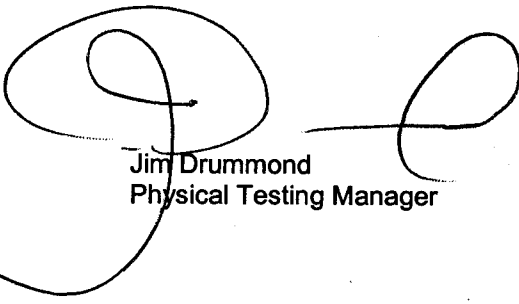
STAINING OF SURFACE, ASTM D 925-88(00), METHOD B

Procedure: ½" x 1" specimens exposed 48 hrs. ten inches below a 275 W, type RS UV bulb

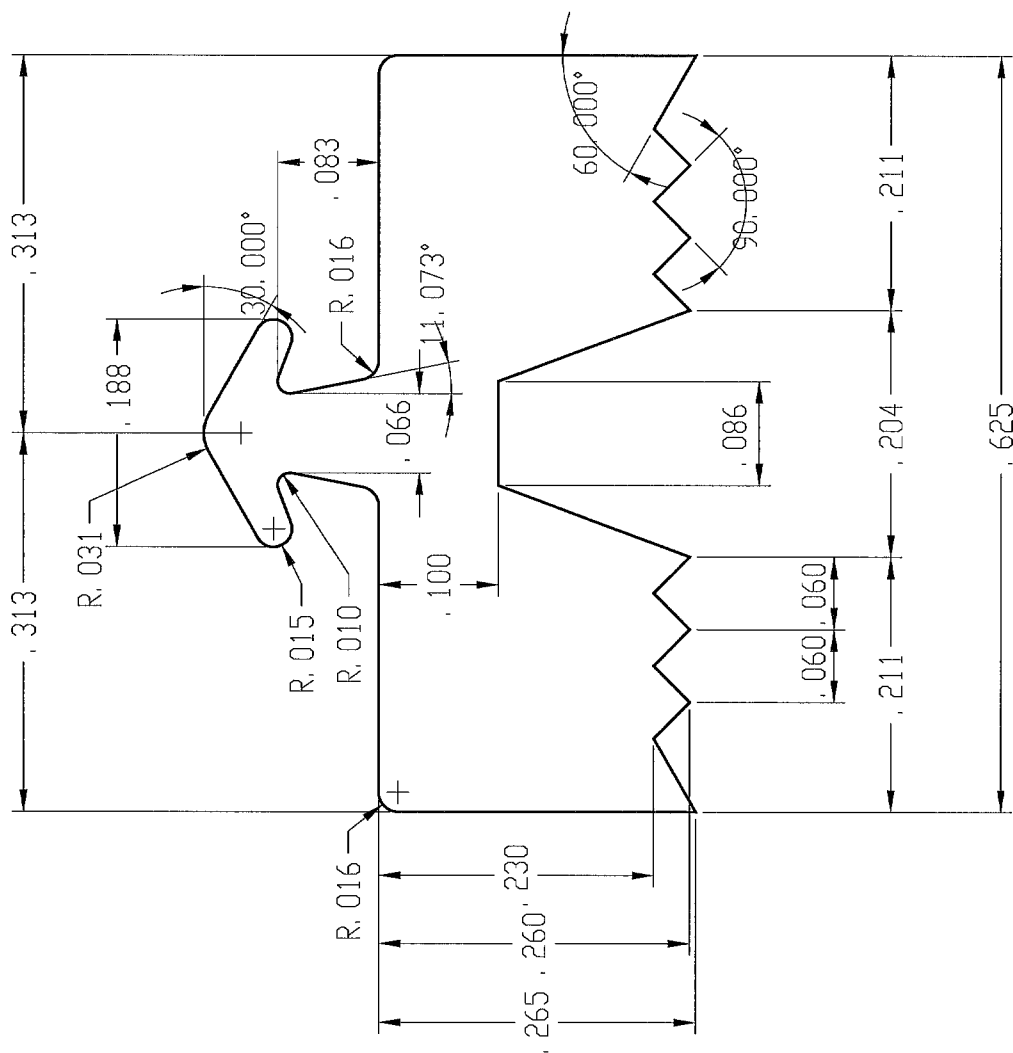
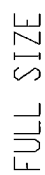
Test Surface: White Automotive Grade Enamel

<u>RESULTS</u>	<u>REQUIREMENTS</u>	<u>PASS/FAIL</u>
No migration stain	No migration stain	Pass


Judy Kiefl
Project Technician
AKRON RUBBER DEVELOPMENT LABORATORY, INC.


Jim Drummond
Physical Testing Manager

V# 49424A
JJD/sc



THE DESIGN OF THE GASKET SHOWN HEREIN IS THE PRODUCT OF TREMCO, INC. NO REPRODUCTION OR USE OF THIS DESIGN IS AUTHORIZED WITHOUT THE CONSENT OF TREMCO.

[illegible]

SCR-900

Silicone Compatible Rubber

Product Description

SCR-900 Silicone Compatible Rubber Extrusions are fabricated into gaskets and accessories (such as wedges, pre-set spacers, weatherstripping, setting blocks and shims) for use in glazing applications and other building joint applications.

Metal Requirements

SCR-900 Rubber Extrusions are manufactured to meet existing metal designs or developed with custom metal systems at the design development stage. Many profiles are available depending upon existing metal requirements.

Packaging

SCR-900 Rubber Extrusions are packaged based on customer requirements, profile size, configuration and the need for molded picture frame gaskets.

Availability/Cost

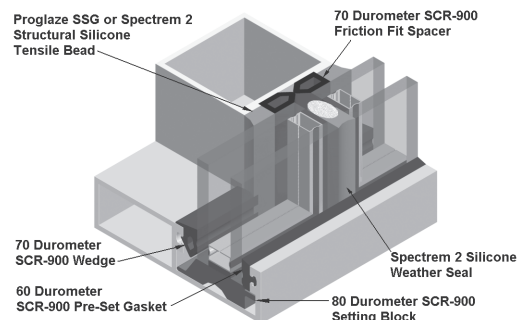
SCR-900 Rubber Extrusions are generally custom manufactured but many standard designs are available. Their availability and cost may be obtained from your local Tremco Field Representative, or by contacting our Customer Service Department in Ashland, Ohio, at 800-321-6357 or in Canada at 800-363-3213.

Warranty

Tremco warrants their products to be free of defects. Under

this warranty, Tremco will provide, at no charge, products in containers to replace any product proven to be defective when applied, tested and cured (if applicable), in accordance with Tremco's written instructions, standards and applications recommended by Tremco as suitable for this product.

User shall determine suitability of the product for their intended use and assume all risk and liability therewith. Seller shall not be liable for any injury, loss or damage, direct or consequential, arising out of the use of the product. All claims concerning product defects must be made within 12 months of shipment. Absence of such claims in writing, during this period, will constitute a waiver of all claims with respect to such product. This warranty is the user's sole remedy and is IN LIEU OF any and all other warranties expressed or implied, including but not limited to, any implied warranty of MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.



TYPICAL PHYSICAL PROPERTIES

Per ASTM C 864 Requirements

PROPERTY	Test Method	60±5 Durometer	70±5 Durometer	80±5 Durometer
Shore "A" Hardness	D-2240	64	71	80
Compression Set, 22 h @ 100°C	D-395	14.6%	11.9%	10.0%
Ozone Resistance, 100 mPa, 100 h @ 40°C, 20% Elongation	D-1149	No Cracks	No Cracks	No Cracks
Tensile Strength	D-412	1850 psi (12.7 MPa)	2004 psi (13.8 MPa)	2240 psi (15.4MPa)
Elongation @ Rupture	D-412	260%	263%	250%
Heat aging, 70 h, 100°C	D 573			
Hardness increase, max points		+2	+2	+2
Change in tensile strength, max %		+7.7	+3.4	-1
Change in elongation, max, %		-6.2	-9.6	-4
Tear Strength	D-624	165 lb/in (28.9 kN/m)	143 lb/in (25.0 kN/m)	150 lb/in (26.2 kN/m)
Brittleness Temperature @ -40°C	D-746	PASS	PASS PASS	
Nonstaining	D 925	No Migratory Stain	No Migratory Stain	No Migratory Stain
Flame Propagation, Option II	C-1166	No Limit	No Limit	No Limit



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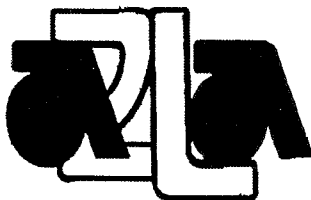


Project #: 59153
Customer: TREMCO, INC. - ASHLAND, OH
Compound: 535 / 70 DURO
Chemist: SinchalM
Order #: 59153-1
Specs: C864 SPEC

Excel Polymers LLC
Development Laboratory
14330 Kinsman Road
Burton, OH 44021-0366

Cure Slab 10 Min. @ 350 °F
Cure Button 30 Min. @ 350 °F

Original Physicals	SPEC	RESULT
D412-06a Tensile.....	1800 PSI MIN	2048 PSI
Elongation.....	200% MIN	217%
D2240-05 Durometer Shore A.....	70 +/-5 PT	72 PT
D624-00 Tear Die C.....		
TStrength.....	100 LBF/IN MIN	162 LBF/IN
D395-03 Compression Set 22 Hrs. @ 100 °C	SPEC	RESULT
Thickness Change (C/S).....		
Thickness % Change.....	30% MAX	6.7%
D573-04 Heat Aging in Air 70 Hrs. @ 100 °C	SPEC	RESULT
Tensile.....		
Tensile % Change.....	15% MAX	4%
Elongation % Change.....	40% MAX	8%
Durometer Shore A.....		
Durometer Change.....	10 PT MAX	1 PT
D925-88-B Migration Stain.....		PASS
D1149-07 Ozone Method B-Procedure B1..... 100 Hrs. @ 40 °C ; 100 mPA OF OZONE Conditioned for 24 Hrs before exposure SAMPLES STRAINED 20%	NO CRACKS	PASS
D2137-05 Brittleness Point Method A	SPEC	RESULT
Brittleness 3 Min. @ -40 °C.....		PASS



THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

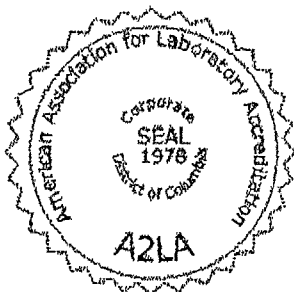
A2LA has accredited

EXCEL POLYMERS, LLC
Burton, OH

for technical competence in the field of
Mechanical Testing

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 "General Requirements for the Competence of Testing and Calibration Laboratories" and any additional program requirements in the identified field of testing.

Presented this 27th day of July 2005.



Peter M. Meyer

President
For the Accreditation Council
Certificate Number 0121.01
Valid to June 30, 2007
Revised May 9, 2007

For tests or types of tests to which this accreditation applies,
please refer to the laboratory's Mechanical Scope of Accreditation.

SCOPE OF ACCREDITATION TO ISO/IEC 17025-1999

EXCEL POLYMERS, LLC
BURTON DEVELOPMENT LABORATORY
14330 Kinsman Road
Burton, OH 44021-0366
Lynn McIntyre Phone: 440 834 5539

MECHANICAL

Valid To: June 30, 2007

Certificate Number: 0121.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following automotive tests on rubber:

✓ ASTM D297	Specific Gravity (Section 16.3)
ASTM D395	Rubber Property - Compression Set (Part B)
✓ ASTM D412	Rubber Properties in Tension (Strength, Modulus & Elongation)
✓ ASTM D471	Rubber Property - Effect of Liquids
ASTM D518	Rubber Deterioration - Surface Cracking
ASTM D573	Rubber Deterioration in an Air Oven
ASTM D575	Rubber Properties in Compression
ASTM D624	Rubber Property - Tear Resistance
ASTM D865	Rubber Deterioration by Heating in Air (Test Tube Enclosure)
ASTM D925	Rubber Property - Staining of Surfaces (Methods A & B)
ASTM D1149	Rubber Deterioration - Surface Ozone Cracking (Flat Specimens)
ASTM D1171	Rubber Deterioration - Surface Ozone Cracking (Triangular)
ASTM D1229	Rubber Property - Compression Set at Low Temperatures
✓ ASTM D1646	Viscosity & Vulcanization Characteristics (Mooney Viscometer)
✓ ASTM D2084	Rubber Property - Vulcanization (Oscillating Disk Cure Meter)
ASTM D2137	Rubber Property - Brittleness Point
ASTM D2240	Rubber Property - Durometer Hardness (Shore A)
ASTM D2632	Rubber Property - Resilience (Vertical Rebound)
✓ ASTM D5289	Rubber Property - Vulcanization (Moving Die Cure Meter)

Burton Development Laboratory

Test Method 01001 Procedures for Mixing Compounds and Preparing Vulcanized Sheets