NRCA ROOFING MATERIALS REFERENCE & GUIDE

Volume 4
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Replace with
Volume 5 which will
be published in
August 1984

Starting August 1984
Listings of Roof Insulation Board Materials

NATIONAL ROOFING CONTRACTORS ASSOCIATION
8600 Bryn Mawr Avenue
Chicago, Illinois 60631

Foreword

The ***NRCA ROOFING MATERIALS REFERENCE & GUIDE*** is published as a service to the roofing industry. The ***GUIDE*** is a comprehensive report containing technical data and other pertinent information on roofing and waterproofing membrane products and furnishes information on the manufacturers and suppliers of these products.

An objective of the ***GUIDE*** is to provide information on those product features which will prove helpful to the user in determining the generic type of membrane which will meet his needs and the listing of other data which will assist the user in choosing specific products. This information is of particular value to those associated with the design, specification, application and use of commercial roofing systems.

The range of information included in the ***GUIDE*** is extensive and includes facts relating to product usage, warranties, company background, etc. plus technical data relating to material properties.

The scope of materials covered by this ***GUIDE*** is presently limited to BUR multi-ply specifications and those products generally referred to as sheet applied Single-Ply membranes.

The ***NRCA ROOFING MATERIALS REFERENCE & GUIDE*** program is a voluntary program and all manufacturers and suppliers of membrane materials may participate by submitting information on their company and on their products in accordance with the procedures developed for this purpose. For full details write: ***NATIONAL ROOFING CONTRACTORS ASSOCIATION, 8600 BRYN MAWR AVENUE, CHICAGO, IL 60631.***

The information contained in the ***GUIDE*** is a recording of data presented by manufacturers and suppliers through report forms provided by NRCA for this purpose. Only information submitted in accordance with these forms has been included in the ***GUIDE.***

NRCA has exercised due care in accurately recording the data as supplied by manufacturers and suppliers, but has not audited the test procedures used to secure the reported data and is not responsible for the accuracy or completeness of information as submitted.

The basis for "test results" appearing in the ***GUIDE*** are selected standards and criteria which are considered, for purposes of this program, to be the better ones available in the U.S. today. For multi-ply bituminous membrane products, the referenced documents fall into two categories: (1) ASTM material standards for the bituminous saturated reinforcing felts and (2) NBS BSS#55 Preliminary Performance Criteria for Bituminous Membrane Roofing—and includes performance parameters for tensile strength, thermal movement, and thermal shock.

The basis for "test results" relating to Single-Ply membrane products are Canadian General Standards Board (CGSB) standards. These standards were selected because they are the only **consensus** standards available in North America which cover a majority of Single-Ply products currently being marketed. The CGSB standards are: (1) 37-GP-52M (Prepublication Issue, October 1982) for Elastomeric membranes, (2) 37-GP-54M (January 1979) for Polyvinyl Chloride membranes and (3) 37-GP-56M (July 1980) for Modified Bituminous membranes. All CGSB standards are available from: Canadian Government Publishing Centre, Supply and Services Canada, Ottawa, Canada KIA 059

To provide a method of listing sheet applied Single-Ply products which are not described by the referenced CGSB standards, a list of 18 optional tests (extracted from CGSB standards 37-GP-52M and 37-GP-54M) are offered as a basis for listing these types of materials.

NOTE:
The listing (or non-listing) of a product (or manufacturer or supplier) in the *GUIDE* does not imply that NRCA approves the products nor recommends the use or non-use of any specific materials.

The fact that a material listed herein does or does not meet all of the values suggested by ASTM and Canadian standards or NBS BSS#55 criteria does not necessarily imply that it will or will not produce an acceptable roofing membrane.

NRCA does not develop standards but works toward and supports the improvement of existing standards and development of new standards by other consensus standards development organizations. As these new standards become available, the *NRCA ROOFING MATERIALS REFERENCE & GUIDE* will be updated to keep abreast of these state-of-the-art roofing standards activities by including the new standards and, where appropriate, replacing the old ones.

For listing purposes it is **not** mandatory that "test results" be provided for each of the test methods specified in the referenced standards and criteria, however, manufacturers and suppliers are encouraged to supply complete "test results" so that the users of the Guide may have access to this information. Succeeding issues of the ***GUIDE*** will permit the inclusion of additional test results as they are reported.

Comparative Testing

An important feature of the ***NRCA ROOFING MATERIALS REFERENCE & GUIDE*** program is the "Comparative Testing" program which NRCA has adopted to add credibility to the technical data supplied by the manufacturers/suppliers of listed products.

"Comparative Testing" is **not** intended either as a validation procedure or as an indicator whether the property values reported for specific products agree or not agree with those provided by the manufacturers/suppliers or those values suggested in the referenced standards or criteria cited in the Guide.

It does, however, provide for third party independent laboratories to test samples and report results of listed materials which are representative of current production in accordance with test procedures described in National Bureau of Standards, BSS#55 and Canadian CGSB standards 37-GP-52M, 37-GP-54M and 37-GP-56M.

For the first round of the continuing "Comparative Testing" program, the laboratories and test procedures selected by NRCA were:

1. Conventional Built-up Roofing (fiberglass felts and asphalt bitumen constructions only)

   Laboratory: Chicago Testing Laboratory, Inc.
   Northbrook, Illinois

   Test Procedures: Tensile Strength
   Coefficient of Expansion
   Thermal Shock

2. Modified Bitumen, PVC and Elastomeric Materials

   Laboratory: Structural Research, Inc.
   Middleton, Wisconsin

   Test Procedures: Thickness
   Tensile Strength
   Elongation
   Load Strain Product

The basis for selecting materials for this first round of "Comparative Testing" were products listed in the June 1983 issue of the Guide. Test samples were requested for those products which are identified with parentheses ( ) in the Part #2 (Test Results) sections of the Guide. Parentheses (120), enclosing a figure, indicates that a sample was requested, received and tested. Parentheses ( ), with no figure, indicates that a sample was requested from the manufacturer/supplier but was not received for testing.

It is important that the user note that neither the magnitude of the values reported herein nor the fact that the comparative values agree or do not agree with the manufacturer/supplier reported values or with those suggested in the referenced documents does not necessarily imply acceptable or non acceptable in-service performance of materials.

Publication Schedule

The Guide publication schedule thru 1985 is as follows:

Publication Month	Closing Date
August 1984	July 2, 1984
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August 1985	July 2, 1985

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Important Notes

I. **Some SI metric units** have been converted to English customary units which may be approximate conversions.

II. **Restricted Regions;** when a "Restricted Region" is indicated, refer to manufacturer's printed literature to determine geographic region boundaries.

III. **Warranty;** the manufacturer's printed literature should be referenced to determine the exact terms, limitations, conditions, exclusions and remedies offered under the material/installation warranty.

IV. **UL & FM;** UL fire resistance and FM wind resistance ratings are awarded on the basis of tests conducted on complete roofing assemblies, of which, the membrane is one component. UL Ratings and FM Approvals for specific membrane products, which have been tested in prescribed assemblies, may be determined by referencing the "UL Fire Resistance Directory" and the "FM Approval Guide."

Building codes often specify UL/FM performance ratings to which the roofing and waterproofing assembly must conform. Compliance of proposed assemblies to these specified ratings may be determined by referencing the documents referred to above.

Because of the limited space available in this publication it is impossible to list the specific roofing assembly components and attachment methods which have been utilized to secure UL or FM ratings. Therefore, all references as to whether a listed BUR specification or Single-Ply membrane has been awarded a UL or FM rating have been excluded from the *GUIDE*. This exclusion is to avoid the erroneous implication to the reader that such ratings are applicable for a material without regard to other components of the roofing assembly or the method of attachment. Refer to the "UL Fire Resistance Directory" and the "FM Approval Guide" to determine ratings which have been awarded for materials listed in this *GUIDE*.

Description of Built-Up-Roofing and Single-Ply Sheet Applied Membrane Materials

BUILT-UP BITUMINOUS MEMBRANES: a built-up bituminous membrane is the continuous semi-flexible component of a roof system whose primary function is the exclusion of water. The membrane consists of two or more alternate plies of felts, fabrics or mats which are often saturated and sometimes coated with bituminous materials, assembled in place and adhered to each other with alternate layers of bituminous products. Surfacing and parts of the substrate are not considered components of the membrane.

SINGLE-PLY SHEET APPLIED MEMBRANES

The following definitions have been provided by the Single-Ply Roofing Institute (SPRI).

I. **Modified bitumen roofing membranes** are composite sheets consisting of bitumen, modifiers, and reinforcement such as plastic film, polyester mat, glass fiber, felt, or fabric. The reinforcement may be laminated to one surface or embedded within the modified bitumen. They may be surfaced with liquid protective coatings, metallic laminates, ceramic granules, or mineral aggregate. Modified bitumen sheets may be installed loosely laid and ballasted, and partially or fully adhered with cold adhesive, hot asphalt, or by heating the membrane with a torch. The seams are sealed by torching, hot asphalt, or hot air. Some modified bitumen membranes are self-adhering; they are adhered to the substrate and to adjacent sheets at seams by pressure. Modified bitumen membranes range in thickness from 40-160 mils.

II. **Thermoplastic roofing membranes** are materials whose structures may be modified by the application of heat, that is, they can be repeatedly softened when heated and hardened when cooled. Temperatures outside the range of normal atmospheric conditions are required to effect this softening and hardening, however.

A. **PVC membranes** are composed of the thermoplastic polyvinyl chloride compounded with plasticizers and stabilizers. They may be produced by calendering, extruding, or spread coating, and may be non-reinforced, or reinforced with polyester or glass fibers through laminating or coating. PVC membranes may be installed loosely laid and ballasted, fully adhered, partially attached, or mechanically fastened. The seams are formed by heat or chemical welding, and, depending on the manufacturer, may be further treated with caulking. Thicknesses generally range from 32-48 mils.

III. **Elastomeric roofing membranes** are synthetic materials which exhibit the rubber-like characteristic of stretching under stress and then returning with force to their original shape when the stress is removed. This group of materials may be separated into two distinct types, based on the way their molecules link: vulcanized and non-vulcanized elastomers.

A. **Vulcanized membranes** are those which are cured during the manufacturing process, causing their molecular linkages to become permanent and unchangeable through exposure to either chemicals or heat. The seams of vulcanized elastomers, therefore, can be formed only through the use of adhesives.

1. **EPDM single ply membranes** are compounded from ethylene propylene diene monomer, and are usually manufactured in a calendering process. These membranes may be installed loosely laid and ballasted, fully adhered, or mechanically fastened. Seams are formed by removing the talc or mica dust coating used during manufacture to prevent the membrane from adhering to itself, and then applying a contact adhesive in the lap area. Some EPDM membranes are manufactured without talc; these materials usually utilize a splicing tape for seaming. A top coating of Hypalon™ (CSPE) is sometimes recommended. EPDM membranes generally range in thickness from 30-60 mils, depending on the manufacturer and installation method.

2. **Neoprene single ply roofing membranes** are composed of polychloroprene rubber. They are usually manufactured by calendering, and may be reinforced through laminating, or non-reinforced, depending on manufacturer. Neoprene membranes may be installed fully adhered, mechanically fastened, or loosely laid and ballasted. Seaming is performed by means of contact adhesive. A top coating of Hypalon™ (CSPE) may be used to enhance weatherability and appearance. When Hypalon coating is used, a non-staining grade of neoprene is required. Neoprene membranes range in thickness from 32-60 mils.

B. **Non-vulcanized elastomeric membranes** are those which are not cured during the manufacturing process. Sometimes these membranes are self-curing once exposed to weathering elements, meaning that their molecular linkages become permanent as they are in vulcanized membranes, such as CSPE.

1. **CSPE (chlorosulfonated polyethylene) or Hypalon™ sheets** are generally manufactured by calendering, and are usually reinforced with polyester or backed with felt or fiber backing through a laminating process. They may be installed as fully adhered, mechanically fastened, or loosely laid and ballasted membranes. Seams may be formed by chemical or heat welding before curing occurs, or with adhesive after curing takes place. Thicknesses range from 30-60 mils.

2. **CPE (chlorinated polyethylene) sheet membranes** are non-vulcanized thermoplastic elastomers produced by calendering or extruding. CPE membranes may be reinforced with polyester through laminating. They may be installed fully adhered or partially attached. Non-reinforced membranes may be utilized in loosely laid and ballasted systems. Seams may be formed by chemical- or heat-welding, or with adhesive. Thickness is usually 40-48 mils.

3. **PIB (polyisobutylene) membranes** are compounded from butyl and other synthetic rubbers, and are usually manufactured by extrusion. They are usually laminated to a fleece backing. Installation method is most commonly partially attached, but fully adhered and loosely laid and ballasted systems are also possible. Seams are self-sealing, and are usually performed by mating the edge (without fleece backing) to the adjacent sheets; end laps are sealed with PIB tape. PIB membranes are usually 60 mils thick with a 40 mil backing, making total thickness 100 mils.

4. **NBP (Nitrile Alloys)** are membranes which are compounded from butadiene - acrylonitrile co-polymers, nonvolatile polymeric plasticisers and other proprietary ingredients. Membranes are typically made by coating the compound onto a heavy duty polyester fabric. Most commonly, these membranes are installed mechanically fastened, although ballasted applications are possible if desired. Seams are hot air welded. NBP membranes range in thickness from 30 to 40 mils.

Type, Class and Grade of Single-Ply Products as Defined by CGSB Standards

MODIFIED BITUMEN (CGSB STANDARD 37-GP-56M)

Type	1.	For exposed roofing application
	1.a.	Fully adhered
	1.b.	Partially adhered
Type	2.	For covered roofing application
	2.a.	Fully adhered
	2.b.	Partially adhered
	2.c.	Loose laid
Class	A.	Granule surfaced
	B.	Metallic surfaced
	C.	Plain surfaced
Grade	1.	Standard service
	2.	Heavy duty service

POLYVINYL CHLORIDE (CGSB STANDARD 37-GP-54M)

Type	1.	Nonreinforced membrane
	2.	Reinforced membrane
Class	A.	Non-exposed membrane
	B.	Exposed membrane

ELASTOMERIC (CGSB STANDARD 37-GP-52M)

Type	1.	Nonreinforced membrane
	2.	Reinforced membrane
Class	A.	For exposed use
	B.	For non-exposed use

Test Significance Statements Relating to Test Requirements Specified in Referenced Preliminary NBS BSS #55 Criteria and Canadian CGSB Standards

Built-Up Roofing (BUR); NBS BSS#55 Preliminary Criteria	Modified Bitumens; CGSB Standard 37-GP-56M	Polyvinyl Chloride; CGSB Standard 37-GP-54M	Elastomeric; CGSB Standard 37-GP-52M	
•	•	•	•	**1. BREAKING STRENGTH, TENSILE STRENGTH, STRENGTH OF MEMBRANE** Indicates the ability of a membrane material to resist stresses induced by thermal changes, moisture content changes, substrate movements and the like. Many roofing membranes are of an anisotropic nature, hence they are tested in both machine and across-machine directions.
•				**2. THERMAL EXPANSION** A fundamental property of a material which expresses the amount of dimensional change a material will undergo when subjected to a temperature change. Generally, a membrane having the lower values are the more forgiving to thermal movements imposed in service.
•				**3. THERMAL SHOCK FACTOR** A numerical value calculated from three properties of a membrane; tensile strength, thermal expansion and load-strain modulus. It expresses the resistance of a membrane to withstand large (50-100°F) and rapid (a few hours) temperature drops to subfreezing temperatures. Generally the higher the value, the more resistant the membrane is to these large and rapid temperature changes.
	•	•		**4. THICKNESS**
•	•	•		**5. LAP JOINT STRENGTH** Indicates the ability of both factory made and field made lap joints to remain watertight. The boiling water exposure test gives some indication of the durability of the lap joint.
•	•	•		**6. ULTIMATE ELONGATION, ELONGATION AT BREAK** A measure of the ability of a membrane to stretch without rupture when it is subjected to loads imposed by building movements, moisture and thermal changes, wind vibrations and the like.
•	•	•		**7. LOW TEMPERATURE FLEXIBILITY** Indicates the ability of a membrane to resist stresses applied during application at low temperatures as well as flexural loads experienced under service conditions including wind induced vibrations.
•	•	•		**8. RESISTANCE TO ACCELERATED WEATHERING** A measure of effects of radiation, heat and moisture on the membrane. Like other accelerated aging test procedures, no numerical ratio has been established between time and performance in weather-o-meter and time and performance in service.
	•	•		**9. WATER ABSORPTION** An indication of the moisture absorption characteristics of a membrane material when exposed to areas where water collects and stands. Further, this test procedure measures the property (strength and elongation) changes which occur due to moisture content of the membrane.
•				**10. WATER RESISTANCE** The resistance of a membrane to absorb moisture where water collects and stands, an indicator of dimensional change due to the absorbed moisture.
	•			**11. LOW TEMPERATURE IMPACT** A measure of the relative resistance of membranes to withstand the impact of falling objects (icicles, tree branches, etc.) or other sudden dynamic impacts at subfreezing temperatures.
•		•		**12. DYNAMIC IMPACT** A measure of the ability of a membrane to resist the impact of falling objects without harming the water tight integrity of the membrane.

Built-Up Roofing (BUR); NBS BSS#55 Preliminary Criteria	Modified Bitumens; CGSB Standard 37-GP-56M	Polyvinyl Chloride; CGSB Standard 37-GP-54M	Elastomeric; CGSB Standard 37-GP-52M	
			•	**13. STATIC PUNCTURING** A measure of the ability of a membrane to resist slowly applied and constant loads over some period of time.
•	•			**14. WATER VAPOR TRANSMISSION, PERMEABILITY** A measure of the ability of a membrane to transmit moisture as vapor when a vapor pressure difference exists across the membrane. In some cases a high value is desireable while in others a low value is preferred.
			•	**15. GRANULE EMBEDMENT** A measure of the ability of mineral aggregate (granules) to adhere to a membrane when exposed to such abrasive conditions as walking, wind and rain erosion, and the like. Applies to granule surfaced products only.
			•	**16. THERMAL STABILITY** Measure of the ability of a membrane to resist dimensional change due to thermal cycles experienced in service.
			•	**17. CRACK BRIDGING CAPABILITY** A measure of the ability of a membrane to resist the stresses imposed by slowly moving joints in a substrate due to moisture and thermal changes as well as mechanical movements.
			•	**18. LOAD-STRAIN PRODUCT (1bf x %) (N x %)** A mathematical attempt to indicate the contribution of the two properties working in concert to the performance of the membrane. Difficult to interpret in terms of performance in service.
		•	•	**19. RESISTANCE TO HEAT AGING** Allegedly an accelerated aging test to measure the rate of deterioration of such membrane properties as strength and elongation when exposed to ambient roof conditions.
			•	**20. DIMENSIONAL CHANGE AFTER STRESS RELAXATION** A measure of the ability of membrane materials to resist shrinkage or growth after placement on the roof when inherent stresses such as those induced during the manufacturing or application process or by imposed loads during service and relieved. Due to the anisotropic behavior of most membranes, different values are given for each direction.
			•	**21. CONE PENETRATION** A measure of the ability of a membrane to resist punctures caused by ordinary roof conditions such as aggregate penetration, walking and the like.
			•	**22. DIMENSIONAL STABILITY AFTER WATER ABSORPTION** A measure of the resistance of a membrane to dimensional change such as shrinkage or growth when exposed in roof areas where water collects and stands.
			•	**23. TENSILE SET** The ability of an elastomeric (rubber like) membrane to recover its original dimensions after stretching.
			•	**24. OZONE RESISTANCE** A measure of the serviceability of a rubber like membrane when exposed to outdoor conditions especially in an urban environment.
			•	**25. TEAR RESISTANCE, TEARING STRENGTH** A measure of the resistance of a membrane under stress to the propagation of slight imperfections to proportions which may destroy the watertight integrity of the membrane.

THE CGSB STANDARDS REFERENCED IN THIS PROGRAM SPECIFY VALUES WHICH ARE APPROPRIATE FOR VARIOUS TESTS WHEN CONDUCTED IN ACCORDANCE WITH THE PRESCRIBED TEST PROCEDURES. SOME OF THESE TEST PROCEDURES REPRESENT AD HOC TEST METHODS AND SOME ARE ASTM TEST PROCEDURES. WHERE APPLICABLE, THE APPROPRIATE ASTM PROCEDURE IS NOTED WITHIN THE CGSB STANDARD.

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Index of Listed Roofing Membranes

Manufacturer or Supplier	BUILT-UP ROOFING	SINGLE-PLY							
		Modified Bitumens	**PVC** Polyvinyl Chloride	**EPDM** Ethylene Propylene Diene Monomer	**NEOPRENE** Polychloroprene	**CSPE HYPALON** Chlorosulfonated Polyethylene	**PIB** Polyisobutylene	**CPE** Chlorinated Polyethylene	**Other**
1. AGR Company **11016 Granite Street** **Charlotte, NC 28217** **704/588-1962**							Alphagard		
2. Alkor Division **Hedwin Corp.** **2950 S. Shaver** **Pasadena, TX 77502** **713/472-1431**			Alkorplan					Alkorflex 35093 Alkorflex 35094 Alkorflex 35096	
3. American Hydrotech, Inc. **541 N. Fairbanks Court** **Chicago, IL 60601** **312/337-4998**				Hydro-Seal .045 Black Hydro-Seal .045 White Hydro-Seal .060 Black Hydro-Seal .060 White					
4. The American Lubricants Co. **1227 Deeds Avenue** **Dayton, OH 45401** **513/222-2851**		Tiffany							
5. American Roofing Corp. **3100 S. California** **Chicago, IL 60608** **312/376-1110**		ARC Aluminum ARC Premium ARC Granular							
6. Apache Bldg. Products Co. **2025 E. Linden** **Linden, NJ 07036** **201/486-6723**		SAM							
7. Barra Corp. of America **190 Fairfield Avenue** **W. Caldwell, NJ 07006** **800/526-2291** **201/226-2136**			Rhenofol C-45 Rhenofol C-52 Rhenofol CV40 Rhenofol CV48						
8. The Barrett Company **901 Washington Street** **Wilmington, DE 19801** **800/647-0100**		Ram-Tough Cariphalte 200 Ram-Tough Cariphalte 306							
9. Benoit Inc. **635 North Prior** **St. Paul, MN 55104** **800/328-1436**				Benoit EPDM I White Benoit EPDM I Sunshield Benoit .045 EPDM II-Black Benoit .045 EPDM II White Benoit .060 EPDM II Black Benoit .060 EPDM II White					
10. Bond Cote Systems **3rd Street** **Pulski, VA 24301** **703/980-2262** **800/368-2160**									Nitrite Alloy Bond Grey 35
11. Bowe Co., Inc. (Dibiten) **219 Saddle River Road** **Saddle Brook, NJ 07662** **201/845-5900**		Dibiten Poly-5 Dibiten Poly-4 Dibiten Fiber-4 Dibiten Poly-4 Granular							
12. Burke Rubber Company **2250 South 10th Street** **San Jose, CA 95112** **408/297-3500**						Burkeline M-341 Burkeline M-356			
13. Carboline Building Products **350 Hanley Industrial Ct.** **St. Louis, MO 63144** **314/644-1000**				Carboline EPDM 450 Carboline EPDM 600			PIB 1000		
14. Carlisle SynTec Systems **P.O. Box 7000** **Carlisle, PA 17013** **717/245-7000**				Sure-Seal EPDM .045 Sure-Seal EPDM .060	Sure-Seal Neoprene				
15. The Celotex Corporation **1500 N. Dale Mabry** **Tampa, FL 33607** **813/871-4811**	•			Celo-1 Type I .045 Loose Laid & Ball Celo-1 Type II .060 Fully Adhered Celo-1 Type III .045 Mech. Attached Celo-1 Type III. 060 Mech. Attached					
16. Central States Assoc. Corp. **P.O. Box 65504** **West Des Moines, IA 50265** **515/224-4771**						Uniroof			

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Index of Listed Roofing Membranes *continued*

Manufacturer or Supplier	BUILT-UP ROOFING	SINGLE-PLY							
		Modified Bitumens	**PVC** Polyvinyl Chloride	**EPDM** Ethylene Propylene Diene Monomer	**NEOPRENE** Polychloroprene	**CSPE HYPALON** Chlorosulfonated Polyethylene	**PIB** Polyisobutylene	**CPE** Chloronated Polyethylene	**Other**
17. CertainTeed **Box 860** **Valley Forge, PA 19482** **215/687-5000**	•								
18. CIB/Northeast Aluminum Corp. **5858 E. Molloy Rd.** **Syracuse, NY 13211** **315/455-1216**		Alpagum Decor Alpagum Roc Alparoof A25 Alparoof S20							
19. Consolidated Prot. Coatings Corp. **1801 E. 9th Street** **Cleveland, OH 44114** **800/321-7886**		Conso-Gard Conso-Gard II							
20. Cooley Rfg. Systems Inc. **50 Eastern Avenue** **Pawtucket, RI 02860** **401/724-0490**								Cool Top 40	
21. Danosa Caribbean, Inc. **Box 13757** **Santurce Station** **San Juan, PR 00908** **809/785-4545**		Glasdan R-36 Esterdan R-36 Glasdan AL-80 Esterdan RM							
22. Dunlop Construction Products Inc. **2055 Flavelle Blvd.** **Mississauga, Ont.** **Canada, L5K 1Z8** **416/823-8200**				DunSeal .045 E101/45 Dunseal .060 E101/60 Dunseal .045 E151/45 Dunseal .060 E151/60		Dunseal Hypalon H301 Dunseal Hypalon H351			
23. Durolast Roofing, Inc. **525 Morley Drive** **Saginaw, MI 48601** **1-800/248-0280** **1-517/753-2186**									Trimeric Polymer Coated Polyester Duro-last
24. Dynamit Nobel **10 Link Drive** **Rockleigh, NJ 07647** **201/767-1660**			Trocal SMA Trocal S-60 Trocal S-48						
25. ERA Corp. **6449 Barrie Road** **Minneapolis, MN 55435** **612/925-6000**				ERA-EPDM 245 Black ERA-EPDM 260 Black ERA-EPDM 245 White ERA-EPDM 260 White					
26. Evans Products PermaGlas Division **P.O. Box E** **Corvallis, OR 97339** **503/753-1211**				Evans Products Dependable Membrane					
27. Firestone Industrial Prods. **3500 W. DePauw Blvd.** **Pyramid #3, 4th Floor** **Indianapolis, IN 46268** **800/428-4442**				Rubbergard .045 Rubbergard .060					
28. Flex-Shield Corp. **636 W. Commerce** **Gilbert, AZ 85234** **602/892-9320**		F.A.R. Mark II Flex-Shield Mark IV							
29. The Garland Co., Inc. **3800 E. 91st Street** **Cleveland, OH 44105** **216/641-7500**		Stress Ply Pitch Ply							
30. Gates Engineering Co., Inc. **100 South West Street** **Wilmington, DE 19801** **302/656-9951**				Gaco System I EPDM-45 Mils Gaco System I EPDM-60 Mils	Gaco System II Neoprene-Black Gates System II Neoprene-Gray				
31. Gedaco Ltd. **Via Busse 23** **Roverchiara (VR)** **Italy 37050** **39-442-74288** **Telex: 481032 GEDACO I** **Factory Representative:** **6 Atlas Court** **Huntington, NY** **516/271-2767** **Sales Agent:** **122 Lakeview Ave.** **Leonia, NJ 07605** **201/592-9108**		Gedagom Polyester Cont. Filament Gedagom Polyester Gedagom Velo Vetro Gedagom Velo Vetro Extra Gedagom Granipol Gedagom Granivel							

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Index of Listed Roofing Membranes *continued*

Manufacturer or Supplier	BUILT-UP ROOFING	SINGLE-PLY							
		Modified Bitumens	**PVC** Polyvinyl Chloride	**EPDM** Ethylene Propylene Diene Monomer	**NEOPRENE** Polychloroprene	**CSPE HYPALON** Chlorosulfonated Polyethylene	**PIB** Polyisobutylene	**CPE** Chlorinated Polyethylene	**Other**
32. General Tire Building Products Co. P.O. Box 875 Toledo, OH 43696-0815 419/729-3731			GenSeal ACR .045 GenSeal ACR .060	GenFlex ACR .045 GenFlex ACR .060					
33. Genstar Building Mat'ls Co. 580 Decker Drive Irving, TX 75062 214/659-9800	•	Flintlastic							
34. The Goodyear Tire & Rubber Company 1144 E. Market St. Akron, OH 44316-0001 216/796-4421				Versigard .045 Versigard .060					
35. Guaina Corp. of America & Polypren Roofing of Amer. P.O. Box 405 Paramus, NJ 07652 201/445-8876		Guaina Polyglass Guaina Polyglass Alum. Guaina Polyglass Polyester Guaina Polyglass Granular Guaina Polypren							
36. GAF Corporation 140 West 51st Street New York, NY 10021 212/621-5000	•			Gafply EP Ballasted Gafply EP Fully Adhered					
37. Hey'Di U.P.M. 2801 Crusader Circle Va. Beach, VA 23456 804/468-2200		Hey'DI ECB							
38. Hitchins Amer. Inc. P.O. Box 3449 Longwood, FL 32750 305/869-5110		Nuralite							
39. Hyload, Inc. 1006 McKnight Park Drive Pittsburgh, PA 15237 412/367-0633		Hyload 150E							
40. Index SPA Technologie Impermeabili Via G. Rossini, 22 37060 Castel d'Azzano Verona, Italy Tel. 045/512233-r.a. Telex 341146 INDEX-1		Testudo 4 Mineral Testado 4,5 Helasta/P4 Mineral Helasta P4,5 Defend 4 Mineral Defend 4,5							
41. International EPDM Rubber Roofing Systems, Inc. 4731 South Street Unit 11 Toledo, OH 43615				International Black International White International White Fire Retardant					
42. IPW Interplastic 156 Ludlow Avenue Northvale, NJ 02021 201/767-8073			Interoof "U" Interoof "B"						
43. Kelly Energy Systems Inc. P.O. Box 2583 Waterbury, CT 06723 203/575-9220				Whaleskin/81 C-EPDM Whaleskin/81 White C-EPDM Whaleskin/81 White EPDM Whaleskin/81 EPDM Whaleskin/81 Talc Free EPDM		Great White Hypalon White Great White Hypalon Black			
44. Kendall Company Polyken Roofing Systems One Federal Street Boston, MA 02101 617/423-2000				Polyken M-45 Polyken M-60					
45. The Kimmenade Corp. 12820 Pennridge Drive St. Louis, MO 63044 314/739-4594		Duralasta P Duralasta M							
46. Koppers 1050 Koppers Building Pittsburgh, PA 15219 412/227-2000	•								

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Index of Listed Roofing Membranes *continued*

Manufacturer or Supplier	BUILT-UP ROOFING	SINGLE-PLY							
		Modified Bitumens	**PVC** Polyvinyl Chloride	**EPDM** Ethylene Propylene Diene Monomer	**NEOPRENE** Polychloroprene	**CSPE HYPALON** Chlorosulfonated Polyethylene	**PIB** Polyisobutylene	**CPE** Chlorinated Polyethylene	**Other**
47. Lunday Thagard Co., Inc. **9302 S. Garfield** **South Gate, CA 90280** **213/773-4244**	•								
48. Herbert Malarkey Roofing Company **3131 N. Columbia Blvd.** **Portland, OR 97217** **503/283-1191**	•	MHP Polyester Cap MHP Glass Cap & Base							
49. Manville Bldg. Mat'ls Corp. **P.O. Box 5108** **Ken-Caryl Ranch** **Denver, CO 80217** **303/978-2000**	•			SPM 45 SPM 60					
50. Mineral Fiber Mfg. Corp. **P.O. Box 356** **313 South Sixth Street** **Cosh Octon, OH 43812** **614/622-2645**	•								
51. Nord Bitumi U.S., Inc. **960 S. Springfield Ave.** **Springfield, NJ 07081** **201/467-8669**		Poly 4							
52. Otto Fabric, Inc. **P.O. Box 18361** **Wichita, KS 67218** **316/686-2010** **800/835-3347**									Otto Single-Ply (Silicone-Fiberglass)
53. Owens-Corning Fiberglas Corp. **Fiberglas Tower** **Toledo, OH 43659** **419/248-8000**	•	Owens-Corning Derbigum HPS Owens-Corning Derbigum SP							
54. Plymouth Rubber Co., Inc. **104 Revere Street** **Canton, MA 02021** **617/828-0220**			Plyroof PVC Grey Plyroof PVC White	Plyseal EPDM	Plyshield Neoprene				
55. J & P Petroleum Products **P.O. Box 4206** **Dallas, TX 75208** **214/291-1591**		Aquashield 2001 AD							
56. Protective Coatings, Inc. **1602 Birchwood Avenue** **Fort Wayne, IN 46803** **219/422-7503**				Superoof-Black Superoof-White Superoof-Gray Superoof-White Fire Retardent					
57. PMS/Sucoflex **21203 Hawthorne Blvd.** **#5083** **Torrance, CA 90503** **213/320-3142**			Sucoflex F-132 Sucoflex F-127						
58. Reeves Bros., Inc. **P.O. Box 1531** **Spartanburg, SC 29304** **803/576-9210**				Reevetech 045 Reevetech 060					
59. Republic Powdered Metals **2628 Pearl Road** **Medina, OH 44256** **216/225-3192**							Geoflex		
60. Royal Oil Company **P.O. Box 646** **Ft. Worth, TX 76101** **817/332-7001**		Royal							
61. Rubber & Plastics Compound, Inc. **3615 23rd Street** **Long Island City, NY 11106** **212/392-6780**			Nervaply Nervaply UB						
62. Sarnafil (U.S.) Inc. **Canton Commerce Center** **P.O. Box 380** **Canton, MA 02021** **617/828-5400**			Sarnafil G21-410 Sarnafil G21-442 Sarnafil S21-327						
63. Seal-Dry/USA, Inc. **Box 486 S. OPdyke Rd.** **Pontiac, MI 48057** **313/333-2590**									Seal-Dry, Polyester Seal-Dry, Fiberglass
64. Seaman Corporation **102B N. Washington Street** **Millersburg, OH 44654** **216/674-0121**									Polyester Reinforced EPA Fibertite

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Index of Listed Roofing Membranes *continued*

Manufacturer or Supplier	BUILT-UP ROOFING	SINGLE-PLY							
		Modified Bitumens	**PVC** Polyvinyl Chloride	**EPDM** Ethylene Propylene Diene Monomer	**NEOPRENE** Polychloroprene	**CSPE HYPALON** Chlorosulfonated Polyethylene	**PIB** Polyisobutylene	**CPE** Chlorinated Polyethylene	**Other**
65. Siplast, Inc. **Hwy. 67 South** **Arkadelphia, AR 71923** **501/246-8094**			Veral (Alum. Faced) Veral (Stain/ Steel Faced) Veral (Copper Faced) Parafor-50 Paradiene-30 Paradiene-20 Paradiene-20PR Paradiene-40						
66. J.P. Stevens & Co., Inc. **26 Payson Avenue** **E. Hampton, MA 01027** **413/527-0700**						Hi Tuff Polyester Reinforced CSPE			
67. SYenergy Methods, Inc. **1367 Elmwood Avenue** **Cranston, RI 02910** **401/467-2600**				Syenergy Rubber Roof Black Syenergy Rubber Roof White Syenergy Firestop Membrane SMI Rubber Roof Black SMI Rubber Roof White					
68. SWEPCO **534 North Main Street** **Ft. Worth, TX 76101** **817/332-2336**		SWEPCO Uni + Shield							
69. Tamko **220 West 4th Street** **Joplin, MO 64802** **417/624-6644**	•	Awaplan							
70. Teltex, Inc. **Commerce Drive** **N. Branford, CT 06471** **800/243-6258**		Rhoflex							
71. Texas Refinery Corp. **One Refinery Place** **Ft. Worth, TX 76101** **817/332-1161**		Mightyplate							
72. Tremco, Inc. **10701 Shaiter Blvd.** **Cleveland, OH 44104** **216/292-5000**	•					Tremco HHP			
73. Tropical Industrial Coatings, Inc. **P.O. Box 444** **Brunswick, OH 44212** **216/273-2564** **1-800/321-8353**		Tropiseal					Tropigard		
74. U.S. Intec Inc./BRAI **P.O. Box 2845** **1212 Brai Drive** **Port Arthur Drive** **Port Arthur, TX 77640** **713/724-7024**		BRAI SP4							
75. U.S. Mineral Products Corp. **Furnace Street** **Stanhope, NJ 07874** **201/347-1200**			Flexhide 34 Flexhide 45 Flexhide LR50					Flexhide CPE	
76. W.R. Grace & Co. **62 Whittemore Avenue** **Cambridge, MA 02140** **617/876-1400**		GRM-120 GRM-230 GRM-350 GRM-500							
77. Wat-Pro, Inc. **P.O. Box 336** **Manasquan, NJ 08736** **201/528-6727**			Flagon C	Agaper-E					

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Manufacturer or Supplier	BUILT-UP ROOFING	SINGLE-PLY							
		Modified Bitumens	**PVC** Polyvinyl Chloride	**EPDM** Ethylene Propylene Diene Monomer	**NEOPRENE** Polychloroprene	**CSPE HYPALON** Chlorosulfonated Polyethylene	**PIB** Polyisobutylene	**CPE** Chloronated Polyethylene	**Other**
78. WeatherGard Roofing Systems, Inc. P.O. Box 11187 Memphis, TN 38111 901/458-2222 800/USA-EPDM				.045 Weathergard Black - Fire Retardant .055 Weathergard Black - Fire Retardant .060 Weathergard Black-Fire Retardant .045 Weathergard Black .055 Weathergard Black .060 Weathergard Black .045 Weathergard White .060 Weathergard White	.045 Weathergard Neoprene .060 Weathergard Neoprene				

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BUILT-UP ROOFING Part 1 *(See Part 2 for Technical Information)*

Celotex
1500 N. Dale Mabry
Tampa, FL 33607
813/871-4811

1. **# REGIONAL SERVICE LOCATIONS:** 6
2. **LICENSED APPLICATOR AGREEMENT** ■ YES □ NO
3. **APPLICATOR TRAINING** ■ FIELD □ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Ship to Distributors and Direct to Roofers
5. **PREFORMED ACCESSORIES AVAILABLE** □ YES ■ NO
6. **LIMITATIONS OR RESTRICTED USE:** Refer to current Celotex Built-Up Roofing, Waterproofing & Dampproofing Systems Manual in Sweets.
7. **SALES INFORMATION CONTACT:** A.G. Spingler
8. **TECHNICAL INFORMATION CONTACT:** S.A. Funk
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
Celo-Glass IV	D-2178-81A - Type IV
Vaporbar GB	NA
Celo-Glass Specification Ply	NA
Channel Vent GB	D-3672-81 Type II
Vaporbar Base Sheet	D-2626-81 Type I
Tarred Felt	D-277-81
Vented Vaporbar Base Sheet	D-2626-81 TYPE I
No. 15 Asphalt Felt	D-226-81 Type I

CertainTeed Corporation
750 East Swedesford Road
Valley Forge, PA 19482
215/687-5000

1. **# REGIONAL SERVICE LOCATIONS:** 4
2. **LICENSED APPLICATOR AGREEMENT** ■ YES □ NO
3. **APPLICATOR TRAINING** ■ FIELD □ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Roofing Distributors/Roofing Contractors
5. **PREFORMED ACCESSORIES AVAILABLE** □ YES ■ NO
6. **LIMITATIONS OR RESTRICTED USE:** See Current Commercial Roofing Systems Specifications Manual for further information.
7. **SALES INFORMATION CONTACT:** Regional Sales Office
8. **TECHNICAL INFORMATION CONTACT:** Regional Sales Office
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
Certaglass Ply Sheet	D2178-81a Type IV
No. 15 Perforated Asphalt Felt	D226-81 Type I
Roofers Base Sheet	D2626-81
Certaglass Base Sheet	None
Certaglass Venting Base Sheet	D3672,Type II
Certaglass Cap Sheet	D3909

GAF Corporation
140 W. 51st St.
New York, NY 10020
212/621-5000

1. **# REGIONAL SERVICE LOCATIONS:** 14
2. ***LICENSED APPLICATOR AGREEMENT** ■ YES □ NO
3. **APPLICATOR TRAINING** ■ FIELD □ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Distributors and Direct
5. **PREFORMED ACCESSORIES AVAILABLE** ■ YES □ NO
6. **LIMITATIONS OR RESTRICTED USE:** Refer to GAF Gafglas catalog
7. **SALES INFORMATION CONTACT:** District Sales Office
8. **TECHNICAL INFORMATION CONTACT:** District Sales Office
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
Gafglas Ply 4	D-2178 Type IV
Gafglas Ply 3	D-2178 Type III
Gafglas Mineral Surfaced Cap Sheet	D-3909
Gafglas #75 Base Sheet**	No ASTM Standard
Gafglas Base & Ply Sheet**	No ASTM Standard
Gafglas Stratavent (Vent Ply) Perforated	D-3672
Gafglas Stratavent (Vent Ply) for nailable decks	No ASTM Standard

*Qualified Applicators
**Meets Federal Specification SS-R-620B Type III

Genstar Building Materials Company
580 Decker Drive
Irving, TX 75062
214/659-9800

1. **# REGIONAL SERVICE LOCATIONS:**
2. **LICENSED APPLICATOR AGREEMENT** ■ YES □ NO
3. **APPLICATOR TRAINING** ■ FIELD □ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Independent or Company Owned
5. **PREFORMED ACCESSORIES AVAILABLE** □ YES ■ NO
6. **LIMITATIONS OR RESTRICTED USE:** See Commercial Roofing Systems Specif. Manual
7. **SALES INFORMATION CONTACT:** Don R. Hughes & C.T. Derry
8. **TECHNICAL INFORMATION CONTACT:** Don R. Hughes & C.T. Derry
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
All Weather Flaxine Base Sheet	D2626-80
Empire Base Sheet	D3158-78
Flintglas Base Sheet	None
Flintglas Ply Sheet	D2178-81a
Flintglas Cap Sheet	D3909-81
No. 15 Saturated Felt	D226-76
No. 90 Yosemite MS Buffer Sheet	D228-69

Koppers Company, Inc.
1050 Koppers Building
Pittsburgh, PA 15219
412/227-2000

1. **# REGIONAL SERVICE LOCATIONS:** 6
2. **LICENSED APPLICATOR AGREEMENT** □ YES ■ NO
3. **APPLICATOR TRAINING** ■ FIELD ■ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Direct & Distributor
5. **PREFORMED ACCESSORIES AVAILABLE** □ YES ■ NO
6. **LIMITATIONS OR RESTRICTED USE:** ½" per foot as maximum allowable slope
7. **SALES INFORMATION CONTACT:** Regional Sales Office
8. **TECHNICAL INFORMATION CONTACT:** Regional Sales Office
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
No. 15 Tarred Felt	D-227

Lunday Thagard Co., Inc.
9302 S. Garfield
South Gate, CA 90280
213/773-4244

1. **# REGIONAL SERVICE LOCATIONS:**
2. **LICENSED APPLICATOR AGREEMENT** □ YES ■ NO
3. **APPLICATOR TRAINING** ■ FIELD □ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Roofing Distributors/Roofing Contractors
5. **PREFORMED ACCESSORIES AVAILABLE** □ YES ■ NO
6. **LIMITATIONS OR RESTRICTED USE:** See Lunday Thagard Built Up Specification Manual
7. **SALES INFORMATION CONTACT:** Office
8. **TECHNICAL INFORMATION CONTACT:** George Thagard III
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
Type 15 Perf	D226-81 Type I
Type 30	D226-81 Type II
Multi Seal	D2626-81 Type I
Multi Glass Base 35	None
Type 75 Cap	D3909-80
Type 90 Cap	D249-80
Ply II-4	D2178-81 Type IV

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BUILT-UP ROOFING Part 1 *(See Part 2 for Technical Information)*

Malarkey Roofing Co.
P.O. Box 17217
Portland, Oregon 97217
503/283-1191

1. **# REGIONAL SERVICE LOCATIONS:**
2. **LICENSED APPLICATOR AGREEMENT** ■ YES □ NO
3. **APPLICATOR TRAINING** ■ FIELD □ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Distributors
5. **PREFORMED ACCESSORIES AVAILABLE** □ YES ■ NO
6. **LIMITATIONS OR RESTRICTED USE:** Refer to Malarkey Built-Up Roofing Systems Manual
7. **SALES INFORMATION CONTACT:** Jack Clenaghen
8. **TECHNICAL INFORMATION CONTACT:** Kenneth Woodside
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
Premium Ply	D2178-81-A Type IV
Premium Cap	D3909
Hi Performance Base	None
Hi Performance Cap	None

Manville Building Materials Corp.
Ken-Caryl Ranch, P.O. Box 5108
Denver, CO 80217
303/978-2784

1. **# REGIONAL SERVICE LOCATIONS:** 8
2. **LICENSED APPLICATOR AGREEMENT** ■ YES □ NO
3. **APPLICATOR TRAINING** ■ FIELD ■ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:**
5. **PREFORMED ACCESSORIES AVAILABLE** ■ YES □ NO
6. **LIMITATIONS OR RESTRICTED USE:**
7. **SALES INFORMATION CONTACT:** A.D. Sowers
8. **TECHNICAL INFORMATION CONTACT:** V. Graco
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
Glasply	D-2178-81a
GlasBase	None
Planet II	None
GlasKap	D3909-81
Ventsulation	D3672-81
Centurion	D250-81 Type IV

Mineral Fiber Mfg. Corp.
P.O. Box 356
Coshocton, OH 43812
614/622-2645

1. **# REGIONAL SERVICE LOCATIONS:**
2. **LICENSED APPLICATOR AGREEMENT** □ YES ■ NO
3. **APPLICATOR TRAINING** ■ FIELD □ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Manufacturers/Reps.
5. **PREFORMED ACCESSORIES AVAILABLE** □ YES □ NO
6. **LIMITATIONS OR RESTRICTED USE:**
7. **SALES INFORMATION CONTACT:** Robert S. Simpson
8. **TECHNICAL INFORMATION CONTACT:** Tom King
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
Duraply IV	D2178-81 Type IV
Durabase	None
Polyply	None

Owens-Corning Fiberglas
Fiberglas Tower
Toledo, OH 43659
419/248-8000

1. **# REGIONAL SERVICE LOCATIONS:** Throughout U.S.A.
2. **LICENSED APPLICATOR AGREEMENT** ■ YES □ NO
3. **APPLICATOR TRAINING** ■ FIELD ■ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Roofing Distributors/Roofing Contractors
5. **PREFORMED ACCESSORIES AVAILABLE** ■ YES □ NO
6. **LIMITATIONS OR RESTRICTED USE:** Refer to latest edition of OCF Built-up Roofing Product & Systems Catalog
7. **SALES INFORMATION CONTACT:** Local Branch Office
8. **TECHNICAL INFORMATION CONTACT:** Local Branch Office
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
Perma Ply-R	D2178-81A - Type IV
Perma Ply No. 28	None
Perma Ply No. 28 Perforated	None
Perma Cap	D3909-81
Perma Ply No. 11	D2178-81A - Type III

Tamko Asphalt Products, Inc.
220 West 4th Street
Joplin, MO 64801
417/624-6644

1. **# REGIONAL SERVICE LOCATIONS:** 10
2. **LICENSED APPLICATOR AGREEMENT** ■ YES □ NO
3. **APPLICATOR TRAINING** ■ FIELD ■ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Distributors
5. **PREFORMED ACCESSORIES AVAILABLE** □ YES ■ NO
6. **LIMITATIONS OR RESTRICTED USE:** Yes
7. **SALES INFORMATION CONTACT:** Jerry Pearman
8. **TECHNICAL INFORMATION CONTACT:** W. Kent Blanchard
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
Tri-Six	D226-82 Type III
Type 15 Perf.	D226-82 Type I
Type 30 Perf.	D226-82 Type II
Type 43 Base	D2626-81
Tam-Glass	D2178-82a
Tam Cap	D3909-81
Vapor Chan	D3672-81 Type II
Glass-Base	None
Vent-Ply	None

Tremco, Inc.
10701 Shaiter Blvd.
Cleveland, OH 44104
216/292-5000

1. **# REGIONAL SERVICE LOCATIONS:** 18
2. **LICENSED APPLICATOR AGREEMENT** ■ YES □ NO
3. **APPLICATOR TRAINING** ■ FIELD □ SEMINARS □ FACTORY
4. **METHOD OF DISTRIBUTION:** Local Sales Representatives
5. **PREFORMED ACCESSORIES AVAILABLE** ■ YES □ NO
6. **LIMITATIONS OR RESTRICTED USE:** Refer specific project to local Tremco Representative.
7. **SALES INFORMATION CONTACT:** Paul Mitchell
8. **TECHNICAL INFORMATION CONTACT:** Ken Brzozowski
9. **FELTS DATA:**

Trade Name	Applicable ASTM Standard
Burmastic Glass Ply Sheet	Federal Specification SSR 620B Type II
Therm 100 Glass Ply Sheet	D2178 Type IV
Poly Therm Ply Sheet	Proprietary (NA)

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BUILT-UP ROOFING Part 2 *(See Part 1 for General Information)*

Manufacturer	CELOTEX												CERTAIN-TEED		
Specification Number	80-GA-1-W	80-GA-1-C	80-GA-2-W	80-GA-2-C	140-W	140-C	340-W	340-C	83-GP-1-W	83-GP-1-C	82-SP-1-W	82-SP-1-C	4CG-GSW	3CG-GSW	4CG-SSW
1. DECK TYPE															
a. NAILABLE	●		●		●		●		●		●		●	●	●
b. INSULATED		●		●		●		●		●		●			
c. NON—NAILABLE		●		●		●		●		●		●			
2. SLOPE															
a. 0″-½″					●	●			●	●	●	●	●	●	●
b. ½″-3″	●	●					●	●					●	●	●
c. 3″-6″			●	●											●
3. PLIES															
a. TOTAL	4	3	4	4	4	4	4	4	4	3	4	3	4	3	4
b. BASE	1		1		1	1	1	1	1		1				
c. INTERPLY	3	3	3	4	3	3	3	3	3	3	3	3	4	3	4
d. CAP															
4. FELTS															
a. FIBERGLASS	●	●	●	●					●	●	●	●	●	●	●
b. ORGANIC					●	●	●	●							
c. ASBESTOS															
d. POLYESTER															
e. OTHER															
5. INTERPLY BITUMEN															
a. ASPHALT	●	●	●	●			●	●	●	●	●	●	●	●	●
b. COAL TAR					●	●			●	●	●	●			
6. SURFACE															
a. AGGREGATE (LBS. PER SQ. FT)	4, 3*	4, 3*			4, 3*	4, 3*	4, 3*	4, 3*	4, 3*	4, 3*	4, 3*		3,4, 4.5*	3,4, 4.5*	
b. SMOOTH-ASPHALT			●	●											
-COAL TAR															
c. EMULSION — CUT BACK			●	●											●
d. CAP SHEET															
7. APPROX. APPLIED WT. PER SQ. FT. (INCL. PLIES)															
a. AGGREGATE	6.0	5.8			6.3	6.5	6.1	6.3	6.0	5.8	5.6	5.7	5.8	5.5	
b. SMOOTH			1.7	2.0											
c. EMULSION-CUT BACK															1.4
d. CAP SHEET															
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	None	None	None	None	None	None	None	None	None	B	B
9. YR. OF FIRST COMMER'L INSTALLATION	1980	1980	1980	1980	1962	1962	1962	1962	1983	1983	1982	1982	1975	1975	1975
10. TEST RESULTS (PER BSS #55)															
a. ■ TENSILE STRENGTH — NOT LESS THAN 200 lb./in. @ 0°F—MD													335	222	335
													(347)	(264)	(347)
— NOT LESS THAN 200 lb./in. @ 0°F—XD													311	218	311
													(325)	(209)	(325)
b. ■ THERMAL EXPAN. — NOT EXCEED 40 x 10^{-6}/°F @ 0° to −30°F—MD				CELOTEX DOES NOT ENDORSE BSS #55 AS A									25	22	25
				PERFORMANCE CRITERIA FOR BUR SYSTEMS.									(21.1)	(21.0)	(21.1)
— NOT EXCEED 40 x 10^{-6}/°F @ 0° to −30°F—XD				ALL LISTED SYSTEMS HAVE A MINIMUM TENSILE									25	24	25
				STRENGTH AT 0°F OF MORE THAN 200 LBS/IN.									(25.8)	(25.9)	(25.8)
c. ■ THERMAL SHOCK — NOT LESS THAN 100°F—MD													640	705	640
													(976)	(924)	(976)
— NOT LESS THAN 100°F—XD													500	615	500
													(668)	(718)	(668)
11. LIMITATIONS OR RESTRICTED USE (SEE PART 1)															
12. WARRANTY *(See "Important Notes")*															
a. DURATION (YEARS)	10	10	10	10	10	10	10	10	10	10	10	10	10	5 & 10	10
b. RENEWABLE AFTER INSPECTION														●	
c. SCOPE OF COVERAGE (REPAIR OF LEAKS)	●	●	●	●	●	●	●	●	●	●	●	●			
MATERIAL ONLY															
WORKMANSHIP AND MATERIAL													●	●	●
d. MONETARY LIMITATION															
NONE															
ORIGINAL COST OF INSTALLATION															
$ PER SQUARE	60	60	60	60	60	60	60	60	60	60	60	60	50	35†	50
e. EXCLUSION FROM COVERAGE															
DAMAGE TO OTHER COMPONENTS													●	●	●
CONSEQUENTIAL DAMAGES													●	●	●
13.															
14.															

Note: For "Comparative Test" purposes, surfacing materials (including cap sheets) were **not included** in constructing BUR test membranes.

*Slag = 3 lb/sq ft

Gravel = 4 lb/sq ft

For information on UL and FM see Table of Contents page, Important Notes, IV.

( ) = "Comparative Test" data; see Foreword for explanation.

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BUILT-UP ROOFING Part 2 *(See Part 1 for General Information)*

CERTAINTEED CORPORATION

GENSTAR *continued→*

RB-315 GSW	4CG-GSI	3CG-GSI	4CG-SSI	3CG-GSI	415-GSI	4CG-GSC	3CG-GSC	4CG-SSC	3CG-SSC	415-GSC	CB-2CG GSW	CB-3CG GSW	CB-3CG SSW	CB-2CG MSW	3CG-MSW	2CG-MSI	3CG-MSI	2CG-MSC	3CG-MSC	3CG-SSI	AAA1-1	AAA2-1	AAA3-1	AAA4-1	AAA5-1	AAAA6-1
•											•	•	•	•	•							•		•		•
	•	•	•	•	•											•	•			•	•	•	•	•	•	•
						•	•	•	•	•								•	•		•		•		•	
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
			•	•				•	•				•	•	•	•	•	•	•	•						
4	4	3	4	3	4	4	3	4	3	4	3	4	4	4	4	3	4	3	4	3	3	3	3	3	4	4
1											1	1	1	1							3	3	3	3	1	1
3	4	3	4	3	4	4	3	4	3	4	2	3	3	2	3	2	3	2	3	3					3	3
														1	1	1	1	1	1							
	•	•	•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•			•	•		
•					•					•											•	•			•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
3,4, 4.5*	3,4, 4.5*	3,4, 4.5*			3,4, 4.5*	3,4, 4.5*	3,4, 4.5*			3,4, 4.5*	3,4, 4.5*	3,4, 4.5*									4	4	4	4	4	4
				•					•				•							•						
			•	•				•	•				•							•						
														•	•	•	•	•	•							
6.3	6.1	5.7			6.2	6.1	5.7			6.2	5.6	5.9								1.2	6	6	6	6	6	6
				1.2					1.2				1.4							1.2						
			1.6	1.2				1.6	1.2				1.4													
														2.0	1.9	1.8	2.1	1.8	2.1							
	None	B	B	B		None	B	B	B		B	None	B	B	B	B	B	B	B	B	None	None	None	None	None	None
1920	1975	1975	1975	1976	1920	1975	1975	1975	1976	1920	1978	1978	1978	1978	1978	1978	1978	1978	1978	1977						
498	335	222	335	222	425	335	222	335	222	425																
	(347)	(264)	(347)	(264)		(347)	(264)	(347)	(264)														(149)	(149)		
290	311	218	311	218	313	311	218	311	218	313																
	(325)	(209)	(325)	(209)		(325)	(209)	(325)	(209)														(123)	(123)		
5	25	22	25	22	23	25	22	25	22	23																
	(21.1)	(21.0)	(21.1)	(21.0)		(21.1)	(21.0)	(21.1)	(21.0)														(27.1)	(27.1)		
21	25	24	25	24	26	25	24	25	24	26																
	(25.8)	(25.9)	(25.8)	(25.9)		(25.8)	(25.9)	(25.8)	(25.9)														(24.7)	(24.7)		
3520	640	705	640	705	700	640	705	640	705	700																
	(976)	(924)	(976)	(924)		(976)	(924)	(976)	(924)														(565)	(565)		
990	500	615	500	615	790	500	615	500	615	790																
	(668)	(718)	(668)	(718)		(668)	(718)	(668)	(718)														(510)	(510)		
	10	5 & 10	10	5 & 10		10	5 & 10	10	5 & 10		5 & 10	10	10	10	10	5 & 10	10	5 & 10	10	5 & 10	50	50	50	50	50	50
		•		•			•	•			•					•		•	•							
	•	•	•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	50	35†	50	35†		50	35†	50	35†		35†	50	50	50	50	35†	50	35†	50	35†	20	20	20	20	20	20
	•	•	•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	•	•	•	•		•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Per CertainTeed:

1. **TENSILE STRENGTHS @ 0°F NOT LESS THAN 200 lb./in.**
2. **THERMAL EXPANSION COEFFICIENTS NOT MORE THAN 40 × 10^{-6}/°F**
3. **THERMAL SHOCK FACTORS SIGNIFICANTLY GREATER THAN 10°F**

"Genstar is currently "in test" under BSS #55 and other criteria"

Slag = 3lbs./sq. ft; Gravel = 4 lbs./sq. ft.; Crushed Rock = 4.5 lbs./sq. ft.

†$35 First 5 years, Current $ value second 5 years

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CONVENTIONAL BUILT-UP-ROOFING Part 2 *(See Part 1 for General Information)*

Manufacturer	GENSTAR						GAF								
Specification Number	A-1-M-1	A-2-M-1	A-3-M-1	A-4-M-1	MC-3R-1	MW-3R-1	105 G	105 S	104 G	104 S-B	103 G	103 G-B	103 S	103 S-B	103 M
1. DECK TYPE															
a. NAILABLE		●		●		●									
b. INSULATED	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
c. NON—NAILABLE	●		●		●		●	●	●	●	●	●	●	●	●
2. SLOPE															
a. 0″-½″							●	●	●	●	●	●	●	●	●
b. ½″-3″							●	●	●	●	●	●	●	●	●
c. 3″-6″	●	●	●	●	●	●		●		●			●	●	●
3. PLIES															
a. TOTAL	4	4	4	4	3	3	4	4	4	4	3	3	3	3	4
b. BASE	1	1	1	1	1	1			1	1		1		1	
c. INTERPLY	2	2	2	2	2	2	4	4	3	3	3	2	3	2	3
d. CAP	1	1	1	1											1
4. FELTS															
a. FIBERGLASS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
b. ORGANIC	●	●			●	●									
c. ASBESTOS															
d. POLYESTER															
e. OTHER															
5. INTERPLY BITUMEN															
a. ASPHALT	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
b. COAL TAR															
6. SURFACE															
a. AGGREGATE (LBS. PER SQ. FT)							4,3*		4,3*		4,3*	4,3*			
b. SMOOTH-ASPHALT								●		●			●	●	
-COAL TAR															
c. EMULSION — CUT BACK					●	●		●		●			●	●	
d. CAP SHEET	●	●	●	●											●
7. APPROX. APPLIED WT. PER SQ. FT. (INCL. PLIES)															
a. AGGREGATE							6		6		6	6			
b. SMOOTH								2		2			2	2	
c. EMULSION-CUT BACK					2	2		2		2			2	2	
d. CAP SHEET	2	2	2	2											3
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	1	1	None	None	None	None	None	N	N	N	N
9. YR. OF FIRST COMMER'L INSTALLATION							1974	1974	1974	1974	1974	1974	1974	1974	1974
10. TEST RESULTS (PER BSS #55)															
a. ■ TENSILE STRENGTH — NOT LESS THAN 200 lb./in. @ 0°F—MD			(200)	(200)	(200)	(200)	(410)	(410)	(310)	(310)	(270)	(332)	(270)	(332)	(270)
— NOT LESS THAN 200 lb./in. @ 0°F—XD			(161)	(161)	(161)	(161)	(333)	(333)	(287)	(287)	(253)	(249)	(253)	(249)	(253)
b. ■ THERMAL EXPAN. — NOT EXCEED 40 x 10^{-6}/°F @ 0° to −30°F—MD			(19.0)	(19.0)	(19.0)	(19.0)	(20.2)	(20.2)	(29.2)	(29.2)	(12.9)	(15.4)	(12.9)	(15.4)	(12.9)
— NOT EXCEED 40 x 10^{-6}/°F @ 0° to −30°F—XD			(17.6)	(17.6)	(17.6)	(17.6)	(25.8)	(25.8)	(35.4)	(35.4)	(14.0)	(15.6)	(14.0)	(15.6)	(14.0)
c. ■ THERMAL SHOCK — NOT LESS THAN 100°F—MD			(568)	(568)	(568)	(568)	(644)	(644)	(390)	(390)	(1240)	(974)	(1240)	(974)	(1240)
— NOT LESS THAN 100°F—XD			(625)	(625)	(625)	(625)	(488)	(488)	(294)	(294)	(1071)	(891)	(1071)	(891)	(1071)
11. LIMITATIONS OR RESTRICTED USE (SEE PART 1)															
12. WARRANTY *(See "Important Notes")*															
a. DURATION (YEARS)	50	50	50	50	50	50	10	10	5						
b. RENEWABLE AFTER INSPECTION									5						
c. SCOPE OF COVERAGE (REPAIR OF LEAKS)															
MATERIAL ONLY							●	●							
WORKMANSHIP AND MATERIAL	●	●	●	●	●	●			●						
d. MONETARY LIMITATION															
NONE															
ORIGINAL COST OF INSTALLATION															
$ PER SQUARE	20	20	20	20	20	20	10	20	25						
e. EXCLUSION FROM COVERAGE															
DAMAGE TO OTHER COMPONENTS	●	●	●	●	●	●	●	●	●						
CONSEQUENTIAL DAMAGES	●	●	●	●	●	●	●	●	●						
13.															
14.															

"Genstar is currently "in test" under BSS #55 and other criteria."

GAF: "BSS #55 is not an accepted industry standard."

All three types of warranty are available for all specifications.

Note: For "Comparative Test" purposes, surfacing materials (including cap sheets) were **not included** in constructing BUR test membranes.

*Slag = 3 lbs./sq. ft.; Gravel = 4 lbs./sq. ft.; Crushed Stone = 4.5 lbs./sq. ft.

For information on UL and FM see Table of Contents page, Important Notes, IV.

( ) = "Comparative Test" data; see Foreword for explanation.

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BUILT-UP ROOFING Part 2 *(See Part 1 for General Information)*

GAF										KOPPERS				LUNDAY THAGARD CO., INC. *continued* →										
103 M-B	102 M	106 G	104 GN	104 SN	103 GN	103 SN	103 MN	101 MN	106 GN	220	210			LT 1-W	LT 1-C	LT2-W	LT2-C	LT3-W	LT3-C	LT4-W	LT4-C	LT5-W	LT5-C	LT6-W	LT6-C	LT7-W
			•	•	•	•	•	•	•		•			•		•		•		•		•		•		•
•	•	•								•																
•	•	•								•					•		•		•		•		•			
•	•	•	•	•	•	•	•	•	•	•	•															
•	•	•	•	•	•	•	•	•						•	•	•	•	•	•	•	•	•	•	•	•	•
•	•			•		•	•	•																		
4	3	3	4	4	3	3	4	3	3	4	4			3	3	4	4	3	3	5	5	4	4	3	3	3
1			1	1	1	1	1	1	1		1							1	1			1	1	3	3	1
2	2	3	3	3	2	2	2	1	2	4	3			3	3	4	4	2	2	5	5	3	3			2
1	1						1	1																		
•	•	•	•	•	•	•	•	•	•																	•
										•	•			•	•	•	•	•	•	•	•	•	•	•	•	•
•	•		•	•	•	•	•	•						•	•	•	•	•	•	•	•	•	•	•	•	•
		•							•	•	•															
		4,3*	4,3*		4,3*				4,3*	4	4			4	4	4	4	4	4	4	4	4	4	4	4	4
				•		•																				
				•		•																				
•	•						•	•																		
		6	6		6				6	6	6			5.5	5.7	6.0	6.2	5.8	6.0	6.4	6.6	6.2	6.4	6.3	6.5	5.6
				2		2																				
				2		2																				
3	2						3	2																		
N	N & S	None	None	None	None	N	N	N & S	None	None	None			None	None	None	None	None	None	None	None	None	None	None	None	None
1974	1974	1974	1974	1974	1974	1974	1974	1974	1974	1928	1928															
										468		*This data was derived from an NBS test of a 4 ply coal tar BUR system and presented in their report Preliminary Performance Criteria for Bituminous Membrane Roofing BSS #55.*														
(248)	(153)		(375)	(375)	(256)	(256)	(256)	(184)																		
										265																
(193)	(134)		(366)	(366)	(241)	(241)	(241)	(203)																		
										19.3																
(23.2)	(13.1)		(18.9)	(18.9)	(25.9)	(25.9)	(25.9)	(16.2)																		
										29.5																
(25.7)	(12.3)		(21.7)	(21.7)	(25.4)	(25.4)	(25.4)	(13.1)																		
										360																
(638)	(1191)		(709)	(709)	(432)	(432)	(432)	(1531)																		
										120																
(545)	(1057)		(571)	(571)	(471)	(471)	(471)	(1496)																		
												These roofing systems, when applied in strict accordance with Koppers specifications and subject to their evaluation can be guaranteed for periods up to 20 yrs — see "IMPORTANT NOTES" in this Guide.		10	10	20	20	15	15	20	20	20	20	20	20	20
														•	•	•	•	•	•	•	•	•	•	•	•	•
										•	•															
														•	•	•	•	•	•	•	•	•	•	•	•	•
														•	•	•	•	•	•	•	•	•	•	•	•	•
														•	•	•	•	•	•	•	•	•	•	•	•	•

GAF: "BSS #55 is not an accepted industry standard."

All three types of warranty are available for all specifications.

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BUILT-UP ROOFING Part 2 *(See Part 1 for General Information)*

Manufacturer	LUNDAY THAGARD CO., INC.														
Specification Number	LT7-C	LT8-W	LT8-C	LT9-W	LT9-C	LT10-W	LT11-W	LT12-W	LT12-C	LT13-W	LT13-C	LT14-W	LT14-C	LT15-W	LT15-C
1. DECK TYPE															
a. NAILABLE		●		●		●	●	●		●		●		●	
b. INSULATED															
c. NON—NAILABLE			●		●				●		●		●		●
2. SLOPE															
a. 0″-½″															
b. ½″-3″	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
c. 3″-6″															
3. PLIES															
a. TOTAL	3	4	4	3	3	3	4	3	3	3	3	4	4	3	3
b. BASE	1	1	1	3	3			2	2	1	1	1	1	2	2
c. INTERPLY	2	3	3			2	3			1	1	2	2		
d. CAP						1	1	1	1	1	1	1	1	1	1
4. FELTS															
a. FIBERGLASS	●	●	●	●	●			●	●	●	●	●	●	●	●
b. ORGANIC	●	●	●			●	●	●	●						●
c. ASBESTOS															
d. POLYESTER															
e. OTHER															
5. INTERPLY BITUMEN															
a. ASPHALT	●		●	●	●	●	●	●	●	●	●	●	●	●	●
b. COAL TAR															
6. SURFACE															
a. AGGREGATE (LBS. PER SQ. FT)	4	4	4	4	4										
b. SMOOTH-ASPHALT															
-COAL TAR															
c. EMULSION — CUT BACK															
d. CAP SHEET															
7. APPROX. APPLIED WT. PER SQ. FT. (INCL. PLIES)															
a. AGGREGATE	5.9	6.0	6.3	6.2	6.4										
b. SMOOTH															
c. EMULSION-CUT BACK															
d. CAP SHEET						1.7	2.1	2.1	2.3	1.7	1.9	2.1	2.3	2.0	2.2
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	None	None	None	None	None	None	None	None	None	None	None
9. YR. OF FIRST COMMER'L INSTALLATION															
10. TEST RESULTS (PER BSS #55)															
a. ■ TENSILE STRENGTH — NOT LESS THAN 200 lb./in. @ 0°F—MD															
— NOT LESS THAN 200 lb./in. @ 0°F—XD															
b. ■ THERMAL EXPAN. — NOT EXCEED 40×10^{-6}/°F @ 0° to -30°F—MD															
— NOT EXCEED 40×10^{-6}/°F @ 0° to -30°F—XD															
c. ■ THERMAL SHOCK — NOT LESS THAN 100°F—MD															
— NOT LESS THAN 100°F—XD															
11. LIMITATIONS OR RESTRICTED USE (SEE PART 1)															
12. WARRANTY *(See "Important Notes")*															
a. DURATION (YEARS)	20	20	20	20	20	10	15	20	20	20	20	20	20	20	20
b. RENEWABLE AFTER INSPECTION															
c. SCOPE OF COVERAGE (REPAIR OF LEAKS)															
MATERIAL ONLY	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
WORKMANSHIP AND MATERIAL															
d. MONETARY LIMITATION															
NONE															
ORIGINAL COST OF INSTALLATION															
$ PER SQUARE	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
e. EXCLUSION FROM COVERAGE															
DAMAGE TO OTHER COMPONENTS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
CONSEQUENTIAL DAMAGES	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
13.															
14.															

Note: For "Comparative Test" purposes, surfacing materials (including cap sheets) were **not included** in constructing BUR test membranes.

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For information on UL and FM see Table of Contents page, Important Notes, IV.

( ) = "Comparative Test" data; see Foreword for explanation.

BUILT-UP ROOFING Part 2 *(See Part 1 for General Information)*

	MALARKEY ROOFING COMPANY														MANVILLE *continued→*											
LT16-W	IG4	NG4	IG3	NG3	UG4	IM4	NM4	IM3	NM3	UM4	IS4	NS4	NS3	US4	GF-4GIS	GF-4GNS	GF-3GIS	GF-3GNS	GF-4GIG	GF-3GIG	GF-4GNG	GF-3GNG	GF-4GLG	GF-3GLG	GF-4GIC	GF-4GNC
•		•		•			•		•			•	•			•		•			•	•	•	•		•
	•		•		•	•		•		•	•			•	•		•		•	•					•	
	•		•			•		•							•		•		•	•					•	
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
						•	•	•	•	•	•	•	•	•	•	•	•	•							•	•
3	4	4	3	3	4	4	4	3	3	4	4	4	3	4	4	4	3	3	4	3	4	3	4	3	4	4
		1		1	1		1		1	1		1	1	1				1			1	1	1	1		1
2	4	3	3	2	3	3	2	2	1	2	4	3	2	3	4	4	3	2	4	3	3	2	3	2	3	2
1						1	1	1	1	1															1	1
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•																										
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	4	4	4	4	4														4	4	4	4	4	4		
											•	•	•	•	•	•	•	•								
											•	•	•	•	•	•	•	•								
						•	•	•	•	•															•	•
	6	6	5.5	5.5	6														5	4.5	4.6	4.5	4.6	4.5		
											1.7	1.6	1.3	1.6	1.6	1.3	1.1	1								
											1.7	1.6	1.3	1.6	1.6	1.3	1.1	1								
1.6						2.1	2.2	1.8	1.9	2															2	2
None	None	None	2,3	2,3	None	None	None	3	3	None	None	None	2,3	None				2 & 3				2 & 3		2 & 3		
	1981	1981	1981	1981	1983	1981	1981	1981	1981	1983	1982	1982	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983	1983
15	10	10	5	5	10	10	10	5	5	10	10	10	5	10	10	10	10	10	10	10	10	10	5	5	10	10
	•		•	•				•	•		•		•	•												
•																										
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	•										•															
•		50	35	35	50	50	50	35	35	50		50	35	50	75	60	50	50	75	50	60	50	35	35	75	60
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•												

"Manville does not endorse BSS #55 as a proven performance criteria for Built-Up Roofing Systems. Manville Research Engineers are currently working to establish a performance criteria for Built-Up Roofing which can realistically be used to predict actual performance expectations."

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BUILT-UP ROOFING Part 2 *(See Part 1 for General Information)*

Manufacturer	MANVILLE														
Specification Number	GF-3GIC	GF-3GNC	3GNC	4GIS	4GNS	3GIS	3GNS	4GIG	3GIG	4GNG	3GNG	4GLG	3GLG	4GIC	4GNC
1. DECK TYPE															
a. NAILABLE		●	●		●		●			●	●	●	●		●
b. INSULATED	●			●		●		●	●					●	
c. NON—NAILABLE	●														
2. SLOPE															
a. 0″-½″	●	●		●	●	●	●	●	●	●	●	●	●		
b. ½″-3″	●	●		●	●	●	●	●	●	●	●	●	●	●	●
c. 3″-6″	●	●		●	●	●	●								●
3. PLIES															
a. TOTAL	3	3	3	4	4	3	3	4	3	4	3	4	3	4	4
b. BASE			1		1		1			1	1	1	1		1
c. INTERPLY	2	2	1	4	3	3	2	4	3	3	2	3	2	3	2
d. CAP	1	1	1											1	1
4. FELTS															
a. FIBERGLASS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
b. ORGANIC															
c. ASBESTOS															
d. POLYESTER															
e. OTHER															
5. INTERPLY BITUMEN															
a. ASPHALT	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
b. COAL TAR															
6. SURFACE															
a. AGGREGATE (LBS. PER SQ. FT)								4	4	4	4	4	4		
b. SMOOTH-ASPHALT				●	●	●	●								
-COAL TAR															
c. EMULSION — CUT BACK															
d. CAP SHEET	●	●	●											●	●
7. APPROX. APPLIED WT. PER SQ. FT. (INCL. PLIES)															
a. AGGREGATE								6	5.5	5.5	5	6	5.5	2.2	2.1
b. SMOOTH				1.7	1.0	1.4	1.2								
c. EMULSION-CUT BACK				1.7	1.0	1.4	1.2								
d. CAP SHEET	1.8	1.7	1.7												
8. RESTRICTED REGIONS *(See "Important Notes")*	3	3	3				2, 3				2, 3	2, 3	2, 3		
9. YR. OF FIRST COMMER'L INSTALLATION	1983	1983	1980	1976	1978	1980	1980	1978	1978	1978	1980	1980	1980	1978	1978
10. TEST RESULTS (PER BSS #55)															
a. ■ TENSILE STRENGTH — NOT LESS THAN 200 lb./in. @ 0°F—MD				404	357	310	288	404	310	357	288				
			(147)	(367)	(376)	(293)	(274)	(367)	(293)	(376)	(274)	(376)	(274)	(293)	(274)
— NOT LESS THAN 200 lb./in. @ 0°F—XD				351	343	331	247	351	331	343	247				
			(129)	(337)	(347)	(265)	(277)	(337)	(265)	(347)	(277)	(347)	(277)	(265)	(277)
b. ■ THERMAL EXPAN. — NOT EXCEED 40 x 10^{-6}/°F @ 0° to −30°F—MD															
			(19.8)	(12.8)	(16.0)	(14.8)	(12.7)	(12.8)	(14.8)	(16.0)	(12.7)	(16.0)	(12.7)	(14.8)	(12.7)
— NOT EXCEED 40 x 10^{-6}/°F @ 0° to −30°F—XD															
			(12.2)	(13.5)	(14.8)	(14.3)	(15.5)	(13.5)	(14.3)	(14.8)	(15.5)	(14.8)	(15.5)	(14.3)	(15.5)
c. ■ THERMAL SHOCK — NOT LESS THAN 100°F—MD															
			(778)	(1109)	(1012)	(1284)	(1560)	(1109)	(1284)	(1012)	(1560)	(1012)	(1560)	(1284)	(1560)
— NOT LESS THAN 100°F—XD															
			(1262)	(1186)	(1230)	(1161)	(1110)	(1186)	(1161)	(1230)	(1110)	(1230)	(1110)	(1161)	(1110)
11. LIMITATIONS OR RESTRICTED USE (SEE PART 1)															
12. WARRANTY *(See "Important Notes")*															
a. DURATION (YEARS)	10	10	10	20	20	10	10	20	10	20	10	10	5	20	20
b. RENEWABLE AFTER INSPECTION															
c. SCOPE OF COVERAGE (REPAIR OF LEAKS)															
MATERIAL ONLY															
WORKMANSHIP AND MATERIAL	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
d. MONETARY LIMITATION															
NONE				●	●	●		●	●	●				●	●
ORIGINAL COST OF INSTALLATION															
$ PER SQUARE	50	50	75				75				75	75	35		
e. EXCLUSION FROM COVERAGE															
DAMAGE TO OTHER COMPONENTS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
CONSEQUENTIAL DAMAGES															
13.															
14.															

Note: For "Comparative Test" purposes, surfacing materials (including cap sheets) were **not included** in constructing BUR test membranes.

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For information on UL and FM see Table of Contents page, Important Notes, IV.

( ) = "Comparative Test" data; see Foreword for explanation.

BUILT-UP ROOFING Part 2 *(See Part 1 for General Information)*

	MINERAL FIBER MFG. CO.								OWENS-CORNING FIBERGLAS																		*continued →*
3GIC	43-GAW	43-GSW	43-GAC	44-GSC	52-PAW	52-PSW	52-PSC	52-PAC	33-TG	33-TC	43-TS	33-FG	33-FC	43-FS	33-IS	43-NG	3P-IG	4P-IG	3P-XG	33-IG	43-IG	33-IC	43-IC	43-IS	33-XG	33-XC
	•	•			•	•										•											
•			•	•			•	•	•	•	•	•	•	•	•		•	•		•	•	•	•	•		
			•	•			•	•											•						•	•
									•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•
		•		•						•	•		•	•	•							•	•	•		•
3	4	4	3	4	3	3	2	2	2	3	3	3	4	4	3	4	3	4	3	3	4	4	5	4	3	4
	1	1			1							1	1	1		1			1							
2	3	3	3	4	2	2	2	2	2	2	3	2	2	3	3	3	3	4	2	3	4	3	4	4	3	3
1										1												1	1			1
•	•	•	•	•					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
					•	•	•	•																		
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•				•	•	•	•	•	•	•
																	•	•	•							
	4		4		4			4	4			4				4	4	4	4	4	4				4	
		•		•							•			•	•									•		
		•		•		•	•				•			•	•									•		
•										•			•									•	•			•
	6	2	6	2	5	2	2	6	5.5			5.5				6	6	6.5	6	5.5	6				5.5	
											1.5			1.5	1.5										1.5		
											1.5			1.5	1.5										1.5		
1.9										2			2									2	2.4			2
3									1	1	1															
1978	1976	1976	1976	1976	1982	1982	1982	1982	1965	1965	1965	1965	1965	1965	1965	1965	1973	1973	1973	1965	1965	1965	1965	1965	1965	1965
									166	166	226	226	226	264	238	283	216	316	216	238	337	238	337	337	238	238
(184)	(343)	(343)	(292)	(382)					(157)	(157)	(216)	(226)	(226)	(340)	(216)	(315)				(216)	(315)	(216)	(315)	(315)	(216)	(216)
									198	198	224	224	224	356	321	320	263	442	263	321	431	321	431	431	321	321
(167)	(257)	(257)	(241)	(333)					(176)	(176)	(258)	(238)	(238)	(385)	(258)	(334)				(258)	(334)	(258)	(334)	(334)	(258)	(258)
									23.3	23.3	17.4	17.4	17.4	19.9	19.7	19.1	17.4	20.4	17.4	19.7	19.0	19.7	19.0	19.0	19.7	19.7
(10.5)	(23.5)	(23.5)	(18.8)	(21.7)					(17.0)	(17.0)	(15.6)	(21.8)	(21.8)	(24.5)	(15.6)	(17.4)				(15.6)	(17.4)	(15.6)	(17.4)	(17.4)	(15.6)	(15.6)
									24.0	24.0	13.6	13.6	13.6	17.5	12.9	25.2	13.2	14.4	13.2	12.9	15.2	12.9	15.2	15.2	12.9	12.9
(11.6)	(27.9)	(27.9)	(16.8)	(21.3)					(20.1)	(20.1)	(17.4)	(21.1)	(21.1)	(23.0)	(17.4)	(13.8)				(17.4)	(13.8)	(17.4)	(13.8)	(13.8)	(17.4)	(17.4)
									663	663	663	928	928	685	661	670	754	652	754	661	725	661	725	725	661	661
(1543)	(687)	(687)	(840)	(866)					(906)	(906)	(692)	(743)	(743)	(465)	(692)	(770)				(692)	(770)	(692)	(770)	(770)	(692)	(692)
									645	645	645	1332	1332	1038	1294	616	959	705	959	1294	1174	1294	1174	1174	1294	1294
(1258)	(523)	(523)	(810)	(883)					(716)	(716)	(736)	(729)	(729)	(596)	(736)	(1130)				(736)	(1130)	(736)	(1130)	(1130)	(736)	(736)
5									10	10	10	10	10	10	10	10	10	20	10	10	20	10	20	20	10	10
•									•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
									•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
35																										
•									•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
									•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

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BUILT-UP ROOFING Part 2 *(See Part 1 for General Information)*

Manufacturer	OWENS-CORNING FIBERGLAS														
Specification Number	43-XS	33-NG	33-NC	43-NS	30-IG	30-IC	30-TG	30-TC	40-TS	40-XG	30-XC	40-XS	30-NG	30-NC	40-NS
1. DECK TYPE															
a. NAILABLE		●	●	●									●	●	●
b. INSULATED					●	●	●	●	●						
c. NON—NAILABLE	●									●	●	●			
2. SLOPE															
a. 0″-½″	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
b. ½″-3″	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
c. 3″-6″	●		●	●		●		●	●		●	●		●	●
3. PLIES															
a. TOTAL	4	3	4	4	3	4	2	3	3	3	4	4	3	4	4
b. BASE													1	1	1
c. INTERPLY	4	3	3	4	3	3	2	2	3	3	3	4	2	2	3
d. CAP			1			1		1			1			1	
4. FELTS															
a. FIBERGLASS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
b. ORGANIC															
c. ASBESTOS															
d. POLYESTER															
e. OTHER															
5. INTERPLY BITUMEN															
a. ASPHALT	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
b. COAL TAR															
6. SURFACE															
a. AGGREGATE (LBS. PER SQ. FT)		4			4		4			4			4		
b. SMOOTH-ASPHALT	●			●					●			●			●
-COAL TAR															
c. EMULSION — CUT BACK	●			●					●			●			●
d. CAP SHEET			●			●		●			●			●	
7. APPROX. APPLIED WT. PER SQ. FT. (INCL. PLIES)															
a. AGGREGATE		5.5			5.5		5.5			5.5			5.5		
b. SMOOTH	1.5			1					1.5			1.5			1
c. EMULSION-CUT BACK	1.5			1					1.5			1.5			1
d. CAP SHEET			2			2		2			2			2	
8. RESTRICTED REGIONS *(See "Important Notes")*					1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2
9. YR. OF FIRST COMMER'L INSTALLATION	1965	1965	1965	1965	1959	1959	1959	1959	1959	1959	1959	1959	1959	1959	1959
10. TEST RESULTS (PER BSS #55)															
a. ■ TENSILE STRENGTH — NOT LESS THAN 200 lb./in. @ 0°F—MD	337	238	238	337											
	(315)	(216)	(216)	(315)	(212)	(216)	(143)	(143)	(217)	(217)	(217)	(300)			(300)
— NOT LESS THAN 200 lb./in. @ 0°F—XD	431	321	321	431											
	(334)	(258)	(258)	(334)	(163)	(258)	(106)	(106)	(163)	(177)	(177)	(230)			(230)
b. ■ THERMAL EXPAN. — NOT EXCEED 40 x 10^{-6}/°F @ 0° to −30°F—MD	19.0	19.7	19.7	19.0											
	(17.4)	(15.6)	(15.6)	(17.4)	(21.9)	(15.6)	(13.0)	(13.0)	(21.8)	(23.4)	(23.4)	(21.1)			(21.1)
— NOT EXCEED 40 x 10^{-6}/°F @ 0° to −30°F—XD	15.2	12.9	12.9	15.2											
	(13.8)	(17.4)	(17.4)	(13.8)	(25.2)	(17.4)	(15.4)	(15.4)	(25.2)	(24.9)	(24.9)	(25.3)			(25.3)
c. ■ THERMAL SHOCK — NOT LESS THAN 100°F—MD	725	661	661	725											
	(770)	(692)	(692)	(770)	(624)	(692)	(1431)	(1431)	(624)	(658)	(658)	(711)			(711)
— NOT LESS THAN 100°F—XD	1174	1294	1294	1174											
	(1130)	(736)	(736)	(1130)	(460)	(736)	(1130)	(1130)	(460)	(707)	(707)	(751)			(751)
11. LIMITATIONS OR RESTRICTED USE (SEE PART 1)															
12. WARRANTY *(See "Important Notes")*															
a. DURATION (YEARS)	10	10	10	10	20	20	20	20	20	20	20	20	20	20	20
b. RENEWABLE AFTER INSPECTION															
c. SCOPE OF COVERAGE (REPAIR OF LEAKS)															
MATERIAL ONLY					●	●	●	●	●	●	●	●	●	●	●
WORKMANSHIP AND MATERIAL	●	●	●	●											
d. MONETARY LIMITATION															
NONE	●	●	●	●											
ORIGINAL COST OF INSTALLATION															
$ PER SQUARE					20	20	20	20	20	20	20	20	20	20	20
e. EXCLUSION FROM COVERAGE															
DAMAGE TO OTHER COMPONENTS	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
CONSEQUENTIAL DAMAGES	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
13.															
14.															

Note: For "Comparative Test" purposes, surfacing materials (including cap sheets) were **not included** in constructing BUR test membranes.

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BUILT-UP ROOFING Part 2 *(See Part 1 for General Information)*

OWENS-CORNING					TAMKO														TREMCO					
40-IS	30-FG	30-FC	40-FS	40-NG	301	401	403	412	501	502	503	504	505	506	512	514	515	516	521	522	BURMASTIC (1)	BURMASTIC (2)	THERM 100 (1)	THERM 100 (2)	THERM 200 (1)	THERM 200 (2)
				•				•							•	•	•	•			•	•	•	•	•	•
•	•	•	•		•	•	•		•	•	•	•	•	•							•	•	•	•	•	•
																			•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•		•			•		•	•		•		•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•		•			•		•	•		•		•	•	•	•	•	•
•		•	•																		•	•	•	•	•	•
3	3	4	4	4	3	4	4	4	3	4	4	3	4	4	4	4	4	4	3	4	3	3	3	3	3	3
	1	1	1	1		1		1						1	1	1	1	1								
3	2	2	3	3	3	3	4	3	3	3	4	3	4	3	2	3	3	3	3	3						
		1								1					1					1						
•	•	•	•	•					•	•	•	•	•	•	•	•	•	•	•	•	3	3	3	3		
					•	•	•	•																		
																									3	3
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	(3) •	(3) •	(4) •	(4) •	(4) •	(4) •
	4			4	4	4	4	4	4		4			4		4	4		4		0.6	4.0	0.6	4.0	0.6	4.0
•			•									•	•					•								
•			•									•	•					•								
		•								•					•					•						
	5.5			6	6	6.5	6	6	6		6			6		6	7		6		2.3	5.7	1.8	5.2	1.6	5.0
1			1.5									1.5	2					1.5								
1			1.5									1.5	2					1.5								
		2								2					2					2						
1,2	1,2	1,2	1,2	1,2								2														
1959	1959	1959	1959	1959																	1978	1978	1982	1982	1983	1983
																					415	415	320	320	310	310
(217)	(227)	(227)	(273)	(295)					(264)	(264)	(338)	(264)	(338)	(338)	(265)	(390)	(326)	(390)								
																					300	300	350	350	240	240
(163)	(170)	(170)	(213)	(188)					(241)	(241)	(281)	(241)	(281)	(317)	(267)	(301)	(268)	(301)								
																					18.3	18.3	20	20	25	25
(21.8)	(21.2)	(21.2)	(20.7)	(19.1)					(16.5)	(16.5)	(21.4)	(16.5)	(21.4)	(22.7)	(28.8)	(17.2)	(32.0)	(17.2)								
																					36.1	36.1	35	35	25	25
(25.2)	(27.0)	(27.0)	(23.3)	(20.8)					(13.3)	(13.3)	(16.4)	(13.3)	(16.4)	(26.6)	(18.9)	(18.8)	(27.8)	(18.8)								
																					700	700	4500	4500	4500	4500
(654)	(792)	(792)	(763)	(827)					(824)	(824)	(695)	(824)	(695)	(581)	(438)	(1000)	(475)	(1000)								
																					700	700	2500	2500	2500	2500
(460)	(644)	(644)	(687)	(750)					(953)	(953)	(671)	(953)	(671)	(451)	(677)	(755)	(424)	(755)								
20	20	20	20	20	5&10	5&10	5&10	5&10	5&10	5&10	5&10	5&10	5&10	5&10	5&10	5&10	5&10	5&10	5&10	5&10	10	10	10	10	10	10
					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
•	•	•	•	•																						
					•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
																					•	•	•	•	•	•
20	20	20	20	20	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•						
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•									

(1) Granule Surfacing
(2) Gravel Surfacing
(3) Modified Asphalt — Cold Applied
(4) Modified Asphalt — Hot Applied

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MODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

PRODUCT NAME►	TIFFANY	ARC ALUMINUM	ARC PREMIUM	ARC GRANULAR	SAM	RAM-TOUGH CARIPHALTE 200
1. PRODUCT DESCRIPTION						
a) Thickness (mils)	150	160	160	175	75	118
b) Top surface	Modified Bitumen	Aluminum	Plain	Mineral	Polypropylene	Sand
c) Reinforcement	Polyester non-woven fabric	Fiberglass	Polyester	Polyester	Polypropylene	Polyester non-woven
d) Reinforcement						
e) Color	Black	Aluminum	Black	Optional	Grey-Black	Black
f) Installed wt. (lbs. per sq. ft. w/o ballast)	.88	.88	.88	.96	.40	.50
2. COATING REQUIRED	Alum.	None	None	None	Yes	
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Torch	Torch	Torch	Torch	Self-Adhering	Hot Asphalt
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)					●	
b) Partially adhered-method	●					
c) Fully adhered-method	●	Torch	Torch	Torch	Self-Adhering	Hot Asphalt
d) Protected Membrane Roofing Assembly			●			Hot Asphalt
6. MINIMUM SLOPE	Dead Level	Positive Drain	Dead Level	Positive Drain	Dead Level	To Drain
7. USE OVER						
a) Perlite	●*	●*	●*	●*		●
b) Urethane	●*	●*	●*	●*	●	Consult Barrett
c) Wood fibre	●*	●*	●*	●*		●
d) Fibre glass	●*	●*	●*	●*	●	●
e) Expanded polystyrene		●*	●*	●*		
f) Felt faced composites	●*	●*	●*	●*	●	●
g) Other	*Overlayment Required	*Overlayment Required	*Overlayment Required	*Overlayment Required	Concrete, Wd, BUR Other M/B	Isocyanurate, foamed glass, insulating concretes
8. RESTRICTED REGIONS *(See "Important Notes")*					None	None
9. WORKABLE TEMP RANGE	0°F-115°F	15°F-115°F	0°F-115°F	0°F-115°F	40°F-120°F	40°F-120°F
10. FLASHING MATERIAL	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same Material
11. FLASHING METHOD	Torch	Torch	Torch	Torch	Self-Adhering	Hot Asphalt
12. PRE-FORMED ACCESS AVAILABLE	No	No	No	No	None	Not Required
13. COUNTRY OF ORIGIN	Italy	Italy	Italy	Italy	USA	France
14. COUNTRY OF MANUFACTURE	USA	USA	USA	USA	USA	Canada
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)	1967	1968	1968	1968		1968
b) U.S.A. (Year, City-first installed)	1978-Detroit	1981-Chicago	1981-Chicago	1981-Chicago	1979-Greenville	1978
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign	None					5,000,000
b) U.S.A.	48,000	6,000	70,000	6,000	10,000	10,000
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	6 Uncoated 12 Alum. Coated	10	10	10	5	10
b) Renewable after inspection	+4 yrs. (Alum. Coat)				5 + 5	
c) Scope of coverage (repair of leaks)						
c.1 Material only	●	●	●	●		
c.2 Workmanship & material		●	●	●	●	●
d) Monetary limitation						
d.1 None					●	
d.2 Original cost of installation		●	●	●		●
d.3 $ per square						
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●		●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE						
19.						
20.						
21. METHOD OF DISTRIB.	Sales Force	Distributors			Direct/Some Distrs.	Distributors/Direct
22. # REGIONAL SERVICE LOCATIONS	Throughout USA	48			50	15
23. LICENSED APPLICATOR AGREEMENT	No	Yes			Yes	Yes
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Field, Seminars	Field, Seminars			Field, Seminars	Factory & Field Seminars
25. SALES INFORMATION; CONTACT	Tom Girard	Bud Jansen			Bob Finnegan	Tim Barrett
26. TECHNICAL INFORMATION; CONTACT	Tom Girard	Pino Vidozzi			Pete Shark	Ray McNulty
COMPANY►	THE AMERICAN LUBRICANTS COMPANY	AMERICAN ROOFING CORPORATION			APACHE	THE BARRETT COMPANY

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MODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

RAM-TOUGH CARIPHALTE 306	DIBITEN POLY-5	DIBITEN POLY-4	DIBITEN FIBER-4	DIBITEN POLY-4 GRANULAR	ALPAGUM DECOR	ALPAGUM ROC	ALPHAROOF A25	ALPHAROOF S20
157	175	157	157	172	155	155	90	90
Ceramic Granule	Smooth	Smooth	Smooth	Granular	Slate Granules	Film	Slate Granules	Film
Fiberglass	Polyester	Polyester	Fiberglass	Polyester	Polyester	Polyester	Polyester Glass	Weaved Glass
					Fiberglass	Fiberglass		
Any	Black	Black	Black	White-Grey	Grey & Optional	Black/Grey	Grey & Optional	Black
.90	1.10	.88	.88	1.05	.84	.72	100	100
None	None	None	None	None	None	None	None	None
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
Hot Asphalt	Torched	Torched	Torched	Torched	Torch	Torch	Torch	Torch
						●	●	●
	Torch	Torch	Torch	Torch			●	●
Hot Asphalt	Torch	Torch	Torch	Torch	●		●	●
Hot Asphalt						●	●	●
To Drain	Dead Level	Dead Level	Dead Level	Dead Level	1/8"/ft	Dead Level	Dead Level	Dead Level
●	●	●	●	●	●	●	●	
Consult Barrett	●	●	●	●				
●	●	●	●	●			●	
●	●	●	●	●	●	●	●	
	●	●	●	●				
●	●	●	●	●				
Isocyanurate, foamed glass, insulating concretes	Wood, metal concrete, protection board	Wood, metal concrete, protection board	Wood, metal concrete, protection board	Wood, metal concrete, protection board	Concrete, wood	Concrete, wood	Wood, Concrete	
None	None	None	Southern states	None	None	None	None	None
40°F-120°F	20°F-120°F	20°F-120°F	20°F-120°F	20°F-120°F	15°F-120°F	15°F-120°F	15°F-120°F	15°F-120°F
Same Material	Same Mat'l	Same Material	Same Material	Same Material	Alpagorge	Alpagorge	Alpagorge	Alpagorge
Hot Asphalt	Torched	Torched	Torched	Torched	Torch	Torch	Torch	Torch
Not Required	None	None	None	None	Unnecessary	Unnecessary	NA	NA
France	Italy	Italy	Italy	Italy	France	France	France	France
Canada	Italy	Italy	Italy	Italy	France	France	France	France
1968	1969	1969	1969	1978	1978	1978	1983	1983
1978	1978-New Jersey	1978-New Jersey	1978-New Jersey	1978-New Jersey				
5,000,000	410,000	7,000,000	1,500,000	500,000	200,000	200,000	2,000	2,000
10,000	75,000	400,000	110,000	50,000				
10	12	10	7	10	10	10	5	5
					No	No		
					●	●	●	●
●	●	●	●	●			●	●
					●	●	●	●
●	●	●	●	●				●
●	●	●	●	●	●	●		
●	●	●	●	●	●	●		
	See Specifications	See Specifications	See Specifications	See Specifications	Contact CIB	Contact CIB	None	None

Distributors/Direct	Distributors	Distributors
15	5	
Yes	No	Yes
Factory & Field Seminars	Field, Seminars	Yes
Tim Barrett	Charles Whitley	Stan Scott
Ray McNulty	Elmer Favaro	Joe Gualdieri
THE BARRETT COMPANY	BOWE COMPANY, INC. (DIBITEN)	CIB/NORTHEAST ALUMINUM CORP.

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MODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

PRODUCT NAME►	CONSO-GARD	CONSO-GARD II	GLASDAN R-36	ESTERDAN R-36	GLASDAN AL-80	ESTERDAN RM
1. PRODUCT DESCRIPTION						
a) Thickness (mils)	118	157	140	140	140	140
b) Top surface	Plain	Plain	Bitumen	Bitumen	Aluminum	Mineral Granules
c) Reinforcement	Polyester	Polyester	Glass Fiber	Polyester	Glass Fiber	Polyester
d) Reinforcement						
e) Color	Black	Black	Black	Black	Aluminum	White & Other Mineral Colors
f) Installed wt. (lbs. per sq. ft. w/o ballast)	.60	.90	.77	.77	.77	.77
2. COATING REQUIRED	Yes	Yes	Fibrated Emulsion, Second Membrane or Ballast	Fibrated Emulsion, Second Membrane or Ballast	None	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Torch	Torch	Torch or Hot Asphalt	Torch or Hot Asphalt	Torch or Hot Asphalt	Torch or Hot Asphalt
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)	10 lb.	10 lb.				
b) Partially adhered-method	●	●				
c) Fully adhered-method	●	●	Torch or Hot Asphalt	Torch or Hot Asphalt	Torch or Hot Asphalt	Torch or Hot Asphalt
d) Protected Membrane Roofing Assembly	●	●				
6. MINIMUM SLOPE	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
7. USE OVER						
a) Perlite	●	●	●	●	●	●
b) Urethane	●	●	●	●	●	●
c) Wood fibre	Base Sht. Required	Base Sht. Required	●	●	●	●
d) Fibre glass	●	●	●	●	●	●
e) Expanded polystyrene			●	●	●	●
f) Felt faced composites	●	●	●	●	●	●
g) Other	Wood, metal concrete	Wood, metal concrete				
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	None	None
9. WORKABLE TEMP RANGE	40°F-115°F	40°F-115°F	14°F-120°F	14°F-120°F	14°F-120°F	14°F-120°F
10. FLASHING MATERIAL	Same Mat'l	Same Mat'l	Glasdan AL-80 or Esterdan RM	Glasdan AL-80 or Esterdan RM	Same Mat'l or Esterdan RM	Same Mat'l or Glasdan AL-80
11. FLASHING METHOD	Torch	Torch	Torch and Hot Asphalt	Torch or Hot Asphalt	Torch or Hot Asphalt	Torch or Hot Asphalt
12. PRE-FORMED ACCESS AVAILABLE	No	No	No	No	No	No
13. COUNTRY OF ORIGIN	USA	USA	Puerto Rico USA	Puerto Rico USA	Puerto Rico USA	Puerto Rico USA
14. COUNTRY OF MANUFACTURE	USA	USA	Puerto Rico USA	Puerto Rico USA	Puerto Rico USA	Puerto Rico USA
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)						
b) U.S.A. (Year, City-first installed)	1980-Cleveland	1980-Cleveland	1979-San Juan, P.R.	1979-San Juan, P.R.	1979-San Juan, P.R.	1979-San Juan, P.R.
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign						
b) U.S.A.	500,000	200,000	5,000	5,000	4,000	8,000
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	10	5 & 10	5 & 10	5 & 10	5 & 10
b) Renewable after inspection			●	●	●	●
c) Scope of coverage (repair of leaks)						
c.1 Material only	●	●				
c.2 Workmanship & material			●	●	●	●
d) Monetary limitation						
d.1 None						
d.2 Original cost of installation			●	●	●	●
d.3 $ per square			●	●	●	●
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE			See Specifications	See Specifications	See Specifications	See Specifications
19.						
20.						
21. METHOD OF DISTRIB.	Direct		Distributors			
22. # REGIONAL SERVICE LOCATIONS			2			
23. LICENSED APPLICATOR AGREEMENT	No		Yes			
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Yes		Seminars — on job training			
25. SALES INFORMATION; CONTACT	F. Malloy		Manuel del Rio			
26. TECHNICAL INFORMATION; CONTACT	G. Kurtzhals		Rogelio Mur			
COMPANY►	CONSOLIDATED PROTECTIVE COATINGS CORPORATION		DANOSA CARIBBEAN, INC.			

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MODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

F.A.R. MARK II	FLEX-SHIELD MARK IV	STRESSPLY	PITCHPLY	GEDAGOM POLYESTER CONT. FILAMENT	GEDAGOM POLYESTER	GEDAGOM VELO/VETRO	GEDAGOM VELO/VETRO EXTRA	GEDAGOM GRANIPOL
75	160	80	60	160	160	160	160	160
Polypropylene	Modified Bitumen			Modified Bitumen	Modified Bitumen	Modified Bitumen	Modified Bitumen	Slate Chip
Polypropylene	Polyester	2 plies woven glass	Unreinforced	Polyester non-woven fabric	Polyester	Fiberglass	Special Fiberglass	Polyester non-woven fabric
Black	Black	Black	Black	Black	Black	Black	Black	Grey-Green
.40	.88	1.65 lbs.*	1.50 lbs.*	.88	.88	.88	.88	.88
Coating or Gravel	Recommended	Gravel or Alum.	Gravel	Aluminum or Gravel	Aluminum or Gravel	Aluminum or Gravel	Aluminum or Gravel	None
●	Yes	●	●	●	●	●	●	●
●	Yes	●	●	●	●	●	●	●
Self Adhering	Torch	Bitumen/Adhesive	Bitumen/Adhesive	Torch	Torch	Torch	Torch	Torch
	Torch							
Self Adhering	Torch	●	●	Torch	Torch	Torch	Torch	Torch
	Torch	●	●					
Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
	●			●	●	●	●	●
●	●	●	●	●	●	●	●	●
BUR, Concrete, Wood, EPDM								
None				None	None	None	None	None
40°F-120°F	0°F-110°F	35°F-120°F	35°F-120°F	0°F-120°F	0°F-120°F	10°F-120°F	10°F-120°F	10°F-120°F
Same Mat'l	Same	Same Mat'l	Same Mat'l	Same Material	Same Material	Same Material	Same Material	Same Material
Self Adhering	Torch	Bitumen/Adhesive	Bitumen/Adhesive	Torch	Torch	Torch	Torch	Torch
Not Required	No	No	Yes	No	No	No	No	No
USA	Italy	USA	England	Italy	Italy	Italy	Italy	Italy
USA	USA	USA	USA	Italy	Italy	Italy	Italy	Italy
	1967		1965	1970	1970	1970	1970	1970
1979-Greenville	1976-Detroit	1978-Cleveland	1976-Cleveland	1981-New Jersey	None	None	None	None
	15,000,000		5,000,000+	4,687,500	>2,000,000	>1,000,000	>1,500,000	>500,000
6,000	100,000	75,000	80,000+	4,000	None	None	None	None
5	5,10	10	10	10	10	10	10	10
5+5	+5							
●	●	●	●	●	●	●	●	●
		None	●	●	●	●	●	●
●	●							
	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●

Direct/Distrs.	Company Sales Force	Distributors
	58	Pending
Yes	Yes	
Field, Seminars	Field, Seminars	Field Seminar (Pending)
Charles Carroll	Richard DeBacco	Henry Russo
Charles Carroll	Joseph Fogel	Henry Russo
FLEX-SHIELD CORP.	THE GARLAND COMPANY, INC.	GEDACO, LTD. (ITALY)

*includes gravel

continued→

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MODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

PRODUCT NAME►	GEDAGOM GRANIVEL	FLINTLASTIC	GUAINA POLYGLASS	GUAINA POLYGLASS ALUMINUM	GUAINA POLYGLASS POLYESTER	GUAINA POLYGLASS GRANULAR
1. PRODUCT DESCRIPTION						
a) Thickness (mils)	160	104	158	160	160	170
b) Top surface	Slate Chip	Granules	Plain	Aluminum	Plain	Mineral
c) Reinforcement	Special Fiberglass	PVA & Glass Mat.	Fiberglass	Fiberglass	Polyester	Polyester or Fiberglass
d) Reinforcement						
e) Color	Grey-Green	Grey-Green	Black	Aluminum	Black	Red, White, Grey, Slate, Brown
f) Installed wt. (lbs. per sq. ft. w/o ballast)	.88	.148 lbs. Min. - 2 Ply Sys.	.88	.88	.88	.95
2. COATING REQUIRED	None		None	None	None	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Torch	Hot Mop	Torch	Torch	Torch	Torch
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)						
b) Partially adhered-method						
c) Fully adhered-method	Torch	Hot Mop	Torch	Torch	Torch	Torch
d) Protected Membrane Roofing Assembly						
6. MINIMUM SLOPE	Dead Level		Dead Level	Dead Level	Dead Level	Dead Level
7. USE OVER						
a) Perlite	●	●*	●	●	●	●
b) Urethane	●	●*	●	●	●	●
c) Wood fibre	●	●*	●	●	●	●
d) Fibre glass	●	●*	●	●	●	●
e) Expanded polystyrene	●		●	●	●	●
f) Felt faced composites	●	●*	●	●	●	●
g) Other		Isocyanurate*, Cellular Glass,* *Always use with a coated base sheet in a 2-ply construction	Any skinned insulation, wood, metal, concrete, protection board	Any skinned insulation, wood, metal, concrete, protection board	Any skinned insulation, wood, metal, concrete, protection board	Any skinned insulation, wood, metal, concrete, protection board
8. RESTRICTED REGIONS *(See "Important Notes")*	None		None	None	None	None
9. WORKABLE TEMP RANGE	10°F-120°F	10°F-120°F	10°F-120°F	10°F-120°F	10°F-120°F	10°F-120°F
10. FLASHING MATERIAL	Same Material	Same Material	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l
11. FLASHING METHOD	Torch	Hot Adhesive	Torch	Torch	Torch	Torch
12. PRE-FORMED ACCESS AVAILABLE	No		No	No	No	No
13. COUNTRY OF ORIGIN	Italy	Holland	Italy	Italy	Italy	Italy
14. COUNTRY OF MANUFACTURE	Italy	Holland	Italy	Italy	Italy	Italy
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)	1970	1972	1960	1960	1960	1960
b) U.S.A. (Year, City-first installed)	None	1980-Jersey City	1978-New Jersey	1978-New Jersey	1978-New Jersey	1978-New Jersey
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign	>300,000	>100,000	>1,000,000	>1,000,000	>1,000,000	>1,000,000
b) U.S.A.	None	<20,000	50,000	50,000	75,000	50,000
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	10	10	10	10	10
b) Renewable after inspection						
c) Scope of coverage (repair of leaks)						
c.1 Material only						
c.2 Workmanship & material	●	●	●	●	●	●
d) Monetary limitation						
d.1 None	●		●	●	●	●
d.2 Original cost of installation						
d.3 $ per square		100				
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE						
19.						
20.						
21. METHOD OF DISTRIB.	Distributors	Distributors	Distributors			
22. # REGIONAL SERVICE LOCATIONS	Pending	3	23			
23. LICENSED APPLICATOR AGREEMENT		Yes	No			
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Field Seminar (Pending)	Field,Seminars	Field, Seminars			
25. SALES INFORMATION; CONTACT	Henry Russo	C.T. Derry	B. Mitzman			
26. TECHNICAL INFORMATION; CONTACT	Henry Russo	D.R. Hughes	B. Mitzman			
COMPANY►	GEDACO, LTD. (ITALY)	GENSTAR BUILDING MATERIALS COMPANY	GUAINA CORPORATION OF AMERICA & POLYPREN ROOFING OF AMERICA			

For information on UL and FM see Table of Contents page, Important Notes, IV.

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MODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

GUAINA POLYPREN	HEY 'DI ECB	NURALITE	HYLOAD 150E	TESTUDO 4	MINERAL TESTUDO 4,5	HELASTA/P 4	MINERAL HELASTA P 4,5	DEFEND 4
83	83	100	60	160	172	160	175	160
Plain		Asphalt	Black	Smooth	Granular	Smooth	Granular	Smooth
Non-woven Fiber	Non-woven Fiberglass	Mineral Fibres	Dispersed	Spunbond Polyester	IDEM	IDEM	IDEM	Fiberglass
			Fiber					
Black	Black	Black *Turns Grey w/Aging	Black	Black	Various	Black	Various	Black
.50	.50	.50	.40	.88	.99	.88	.99	.88
None	None	None	None	Optional Alum. paint	None	Optional Alum. paint	None	Optional Alum. paint
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
Hot Air	Hot Air Welding	Torch	Hot Asphalt	Torch	Torch	Torch	Torch	Torch
10 lbs	10 lbs			10		10		
Hot Asphalt	Hot Asphalt	Spot Adhered		Torch	Torch	Torch	Torch	Torch
Hot Asphalt	Hot Asphalt		Hot Asphalt	Torch	Torch	Torch	Torch	Torch
Dead Level	Dead Level		Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
●	●		●	●	●	●	●	●
●	●	●*	●	●	●	●	●	●
●	●		●	●	●	●	●	●
●	●		●	●	●	●	●	●
●	●	●*		●	●	●	●	●
●	●		●	●	●	●	●	●
Any skinned insulation, wood, metal, concrete, protection board		Concrete, insulating concrete *Rigid skinned insulation	Glass fiber base sheet	Felt base sheet when required	Felt base sheet when required	Felt base sheet when required	Felt base sheet when required	Felt base sheet when required
None	●	None	None	None	None	None	None	None
−30°F-150°F	−30°F-150°F	No Restrictions	40°F-110°F	40°F-120°F	40°F-120°F	40°F-120°F	40°F-120°F	40°F-120°F
Same Mat'l	ECB Cold Adhesive	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l
Torch	Hot Asphalt	Adhesive	Hot Asphalt/Mastic	Torch	Torch	Torch	Torch	Torch
Yes	Yes	No	No	None	None	None	None	None
Italy	W. Germany	England	England	Italy	Italy	Italy	Italy	Italy
Italy	USA	England	USA	Italy	Italy	Italy	Italy	Italy
1960	1964	1947	1965	1978	1978	1978	1978	1978
1978-New Jersey	1982-St. Louis	1978-Orlando	1976-Cleveland	1980,New York	1980,New York			1980,New York
>1,000,000	Approx. 10,000,000	2-3 Million	>5,000,000	1,200,000	800,000	200,000	100,000	2,000,000
50,000	5,000	150,000	100,000	30,000	1,000			15,000
10	10	10-Labor 25-Material	10	10	10	10	10	10
				●	●	●	●	●
●	●	●	●					
●	●	●	●					
				●	●	●	●	●
	●							
●	●	●	●	●	●	●	●	●
●		●	●	●	●	●	●	●
	See Literature							
Distributors	Distributors	Hitchins Amer.	Distributors	Distributors				
23	12	4	4	3				
No	Yes	Yes	No	No				
Field, Seminars	Field, Seminars, Factory	Seminars & Field Training	Field	Field, Seminars				
B. Mitzman	Robert R. Reid	Dick Bray	Alex W. Harkness					
B. Mitzman	Robert R. Reid	Matt Shane	Roger Bonafont					
GUAINA CORPORATION OF AMERICA & POLYPREN ROOFING OF AMERICA	HEY 'DI UPM CORPORATION	HITCHINS AMERICA INC.	HYLOAD, INC.	INDEX SPA, TECHNOLOGIE IMPERMEABILI AMERICAN WEATHERPROOFING, HAWAIIAN GARDEN, CA TECHNICOTE CORPORATION, MEMPHIS, TN RAPID SYSTEMS, CUMMING, GA				

continued →

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MODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

PRODUCT NAME►	MINERAL DEFEND 4,5	DURALASTA P	DURALASTA M	AQUASHIELD 2001 AD	MHP POLYESTER CAP	MHP GLASS CAP
1. PRODUCT DESCRIPTION						
a) Thickness (mils)	172	160	160	60±5	100	100
b) Top surface	Granular	Optional	Slate Chip	Polyethylene	Granule	Granule
c) Reinforcement	Fiberglass	Polyester	Polyester	Polyester	Polyester	Fiberglass
d) Reinforcement				Polyester		
e) Color	Various	Black	Green/Blue	Grey/Black	White	White
f) Installed wt. (lbs. per sq. ft. w/o ballast)	.99	1.0	1.0	.80	1.0	.80
2. COATING REQUIRED	None	Surfacing	None	Yes	None	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Torch	Torch/Hot Asphalt	Torch/Hot Asphalt	Self-Adhered	Hot Asphalt	Hot Asphalt
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast lbs. per sq. ft.)						
b) Partially adhered-method	Torch	Torch/Hot Asphalt	Torch/Hot Asphalt			
c) Fully adhered-method	Torch	Torch/Hot Asphalt	Torch/Hot Asphalt	Primer	Hot Asphalt	Hot Asphalt
d) Protected Membrane Roofing Assembly		Torch/Hot Asphalt	Torch/Hot Asphalt			
6. MINIMUM SLOPE	Dead Level	Dead Level	Dead Level	Dead Level	¼''	¼''
7. USE OVER						
a) Perlite	●	●*	●*	●	●	●
b) Urethane	●	●*	●*			
c) Wood fibre	●	●*	●*	●	●	●
d) Fibre glass	●	●*	●*	●	●	●
e) Expanded polystyrene	●	●*	●*			
f) Felt faced composites	●	●*	●*		●	●
g) Other	Felt base sheet when required	*Ctd glass fib. base sht. attached to insul. or existing rfg. membrane	*Ctd. glass fib. base sht. attached to insul. or existing rfg. membrane	Concrete, Steel		
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None		None	None
9. WORKABLE TEMP RANGE	40°F-120°F	30°F-120°F	30°F-120°F	40°F Min.	20°F-100°F	40°F-100°F
10. FLASHING MATERIAL	ECB	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l
11. FLASHING METHOD	Torch	Torch/Hot Asphalt	Torch/Hot Asphalt	Primer	Hot Asphalt	Hot Asphalt
12. PRE-FORMED ACCESS AVAILABLE	None	No	No	Yes	Unnecessary	Unnecessary
13. COUNTRY OF ORIGIN	Italy	Netherlands	Netherlands	USA	W. Germany	
14. COUNTRY OF MANUFACTURE	Italy	Germany	Germany	USA	USA	USA
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)	1978	1978	1978			
b) U.S.A. (Year, City-first installed)		1982,St. Louis	1982,St. Louis		1982-Seattle	1982-Spokane
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign	1,000,000	60,000	70,000			
b) U.S.A.	600	4,000	10,000			
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	10	10	10	5 or 10	5 or 10
b) Renewable after inspection					Yes	Yes
c) Scope of coverage (repair of leaks)						
c.1 Material only	●	●	●	●		
c.2 Workmanship & material		●	●		●	●
d) Monetary limitation						
d.1 None		●	●		●	●
d.2 Original cost of installation	●			●		
d.3 $ per square						
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE						
19.						
20.						
21. METHOD OF DISTRIB.	Distributors	Distrs./Contrs.		Direct	Distributors	
22. # REGIONAL SERVICE LOCATIONS	3	5				
23. LICENSED APPLICATOR AGREEMENT	No	Yes		Yes	●	
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Field,Seminars	Field		Field, Factory, Seminars	Field & Factory	
25. SALES INFORMATION; CONTACT		Hugo Landheer		R. Wood	Jack Clenaghen	
26. TECHNICAL INFORMATION; CONTACT		Hugo Landheer		R.Wood	Kenneth E. Woodside	
COMPANY►	INDEX SPA	THE KIMMENADE CORPORATION		J & P PETROLEUM PRODUCTS	HERBERT MALARKEY ROOFING CO.	

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MODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

POLY 4	OWENS-CORNING DERBIGUM HPS	OWENS-CORNING DERBIGUM SP	ROYAL	VERAL (ALUMINUM FACED)	VERAL (STAIN/STEEL)	VERAL (COPPER)	PARAFOR-50	PARADIENE-30
160	160	160	150	130	130	130	150	95
Modified Bitumen	Modified Bitumen	Modified Bitumen	Modified Bitumen	Aluminum	Stain/Steel	Copper	Mineral	Mineral
Polyester	Polyester	Polyester	Polyester Non-Woven Fabric	Glass Scrim	Glass Scrim	Glass Scrim	Polyester	Glass Mat
	Glasfiber Mat/Web	Glasfiber Mat		N/A	N/A	N/A	N/A	N/A
Black	Black	Black	Black	Aluminum	Stain/Steel	Copper	Various	Various
0.88	1.0	1.0	.88	.86	.86	.86	1.47	.77
Aluminum (As recommended)	None	None	Aluminum	None	None	None	None	None
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
Torch	Torch	Torch	Torch	Hot/Torch	Hot/Torch	Hot/Torch	Hot/Torch	
Torch			●					
Torch	Torch	Torch	Torch	Hot/Torch	Hot/Torch	Hot/Torch	Hot/Torch	Hot Asphalt
Torch								Hot Asphalt
Dead Level	Dead Level	Dead Level	Dead Level	½ Inch	½ Inch	½ Inch	½ Inch	Dead Level
●	●*	●*	●	●	●	●	●	
●	●*	●*	●					
●	●*	●*	●	●	●	●	●	
●	●	●	●	●	●	●	●	
●	●*	●*						
●	●*	●*	●					
	*Overlayment Required	*Overlayment Required		Cellular Glass Always use with fiberglass basesheet as a system	Cellular Glass Always use with fiberglass basesheet as a system	Cellular Glass Always use with fiberglass basesheet as a system	Cellular Glass	Always use with Paradiene 20 as a System
	1,2,3	2,3						
0°F-110°F	25°F-140°F	25°F-140°F	15°F-115°F					
Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same/Veral	Veral
Torch	Torch	Torch	Torch	Torch	Torch	Torch	Torch	Torch
No	No	No	No	Unnecessary	Unnecessary	Unnecessary	Unnecessary	Unnecessary
Italy	Italy	Italy	Italy	France	France	France	France	France
USA	USA	USA	USA	France	France	France	France	USA
1967			1961					1968
1976-Detroit	1981-Kansas City	1978-Valley Forge, PA	1978-Detroit					1979-Jacksonville
15,000,000		15,000,000	None					
100,000	400,000	100,000	19,000					
5 10	10	10	6	10	10	10	10	10
+5			+6 Yrs. (Alum. Coat)	No	No	No	No	No
●			●					
●	●	●		●	●	●	●	●
	●	●		●	●	●	●	●
● ●	●	●	●	●	●	●	●	●
● ●	●	●	●	●	●	●	●	●
				Contact Siplast	Contact Siplast	Contact Siplast	Contact Siplast	Contact Siplast

Distributors	Distr./Direct	Sales Force	Direct
4	Throughout USA	Throughout USA	5
Yes	Yes	No	Yes
Field, Seminars	Field, Seminars	Field, Seminars	Field, Seminars
John Butler	Local Branch Office	Pat Pate	J. Mollenhoff
John Butler	Local Branch Office	Royal Oil Company	G. Baumgardner
NORD BITUMI U.S., INC.	**OWENS-CORNING FIBERGLAS CORPORATION**	**ROYAL OIL COMPANY**	**SIPLAST, INC.**

continued →

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MODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

PRODUCT NAME►	PARADIENE-20	PARADIENE 20PR	PARADIENE 40	SWEPCO UNI+ SHIELD	AWAPLAN	RHOFLEX
1. PRODUCT DESCRIPTION						
a) Thickness (mils)	90	90	137	150	160	160
b) Top surface	Plain	Plain		Modified Asphalt	Granule	Can Be Coated
c) Reinforcement	Glass Mat	Fiberglass	Fiberglass Mat	Polyester	Polyester	Polyester
d) Reinforcement	N/A	Polyester	Fiberglass Scrim			
e) Color	Black	Black	Various	Black	White/Black	Black
f) Installed wt. (lbs. per sq. ft. w/o ballast)	.48	.48	1.06	.88	1.05	.88
2. COATING REQUIRED	Paradiene 30	Paradiene 30	None		Emulsion for UL Approval	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Hot Asphalt	Hot Asphalt			Hot Asphalt/Torch	Torch
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)						
b) Partially adhered-method	Hot Asphalt	Hot Asphalt		●		
c) Fully adhered-method	Hot Asphalt	Hot Asphalt	Hot Asphalt	●	Hot Asphalt or Torch	Torch
d) Protected Membrane Roofing Assembly	Hot Asphalt	Hot Asphalt	Hot Asphalt			DOW IRMA
6. MINIMUM SLOPE	Dead Level	Dead Level		¼"	¼" per ft.	Dead Level
7. USE OVER						
a) Perlite	●	●	●	●	●	●
b) Urethane				●	Consult Tamko	●
c) Wood fibre	●	●	●	●	●	●
d) Fibre glass	●	●	●	●	●	●
e) Expanded polystyrene					Consult Tamko	●
f) Felt faced composites				●	●	●
g) Other	Cellular Glass Always use with Paradiene 30 as a System	Cellular Glass, Always Use With Paradiene 30 As A System	Always Use With Irex-xp As A System	●		●
8. RESTRICTED REGIONS *(See "Important Notes")*					None	Alaska
9. WORKABLE TEMP RANGE				5°F-125°F	Consult Tamko	0°F-130°F
10. FLASHING MATERIAL	Veral	Veral	Veral	Same Mat'l	Same Mat'l	Same Mat'l
11. FLASHING METHOD	Torch	Torch	Torch	Torch	Hot Asphalt/Torch	Torch
12. PRE-FORMED ACCESS AVAILABLE	Unnecessary	Unnecessary	Unnecessary	Unnecessary	Unnecessary	No
13. COUNTRY OF ORIGIN	France	France	France		W. Germany	Italy
14. COUNTRY OF MANUFACTURE	USA	USA	USA	USA	USA	USA & Italy
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)	1968			1963	1970	1970
b) U.S.A. (Year, City-first installed)	1979-Jacksonville			1981-Fort Worth	1978-Grand Rapids	1977-Westchester
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign					Not Available	Millions
b) U.S.A.				Hundreds of Thousands	Not Reported	Hundreds of Thousands
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	10	10	12	5 or 10	10 + 5
b) Renewable after inspection	No	No	No	Yes	After 5 Yrs.	●
c) Scope of coverage (repair of leaks)						
c.1 Material only				●		
c.2 Workmanship & material	●	●	●	●	●	●
d) Monetary limitation						
d.1 None	●	●	●	Yes		●
d.2 Original cost of installation				●		
d.3 $ per square				●	100	
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●		●
18. LIMITATIONS OR RESTRICTED USE	Contact Siplast	Contact Siplast	Contact Siplast	Contact SWEPCO		
19.						
20.						
21. METHOD OF DISTRIB.	Direct			Direct	Distributors	Distributors
22. # REGIONAL SERVICE LOCATIONS	5			Every State	10	22
23. LICENSED APPLICATOR AGREEMENT	Yes				●	Yes
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Field, Seminars			Factory & Field Seminars	Seminars	Field, Seminars
25. SALES INFORMATION; CONTACT	J. Mollenhoff			J. Ashworth	J. Pearman	Gardner Rowbotham
26. TECHNICAL INFORMATION; CONTACT	G. Baumgardner			Riad Nimri	Kent Blanchard	Mat Bockh
COMPANY►	SIPLAST, INC.			SOUTHWESTERN PETROLEUM CORPORATION	TAMKO ASPHALT PRODUCTS, INC.	TELTEX, INC.

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MODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

MIGHTYPLATE	TROPISEAL	BRAI SP4	GRM-120	GRM-230	GRM-350	GRM-500		
150	157	150	50	50	50	40		
Modified Bitumen	Modified Bitumen	Modified Bitumen	Polyethylene	Polyethylene	Polyethylene	Polyvinyl Fluoride		
Polyester Non-Woven Fabric	Non-Woven Polyester	Polyester	Alum. Foil			Polyethylene		
						Alum. Foil		
Black	Grey/Black	Black	Gray/Black	Gray/Black	Grey/Black	White		
.88	.88	.88	.34	.34	.34	.30		
Aluminum	Recommended But Not Required	Aluminum	White	Gravel	Insul. Board	None		
●	●	●	●	●	●	●		
●	●	●	●	●	●	●		
Torch	Torch	Torch	Self-adhesive	Self-adhesive	Self-adhesive	Self-adhesive		
	10							
●	Torch		Nailed Laps	Nailed Laps		Nailed Laps		
●	Torch	Torch	Self-adhesive	Self-adhesive	Self-adhesive	Self-adhesive		
					Self-adhesive			
Dead Level	Dead Level	Dead Level	To Drain	To Drain	To Drain	To Drain		
●	●	●	●	●		●		
●	●	●						
	●*	●	●	●		●		
●	●	●	●	●		●		
	●*	●	●	●		●		
●	●	●						
	*Base Sheet Over Non-prefaced Insulation		Isocyanurate, Foamed Glass	Isocyanurate, Foamed Glass	Concrete, Gypsum, Plywood	Isocyanurate Foamed Glass		
	None	None	None	None	None	None		
0°F-120°F	0°F-125°F	0°F-120°F	40°F-120°F	40°F-120°F	40°-120°F	40°-120°F		
Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	Same Mat'l	GRM-120 or GRM-500	Same Mat'l		
Torch	Torch	Torch	Self-adhesive	Self-adhesive	Self-adhesive	Self-adhesive		
No	No	No	No	No	No	No		
Italy	Italy	Italy	USA	USA	USA	USA		
USA	USA	USA	USA	USA	USA	USA		
1961	1965	1961			1971-Toronto			
1981-Fort Worth	1979-Michigan	1978-Detroit	1979-Phoenix	1975-Toledo	1972-Boston	1980-Glenview		
1,000		10,000,000						
Thousands	>100,000	117,500	>250,000	>250,000	<250,000	<250,000		
12	5 or 10	12	5 or 10	5,10,15	10	5 or 10		
No	No	No						
●	●							
		●	●	●	●	●		
	●	●	●	●	●	●		
●	●	●	●	●	●	●		
●	●	●	●	●	●	●		
Contact TRC					Only in PRMA Systems			
Sales Force	Sales Force/Distrs.	Distributors	Direct Sale					
Throughout USA & Canada	2	12	5					
Yes	Yes	Yes	Yes					
Field, Seminars Factory	Field, Seminars	Seminars, Factory	Field, Regional Seminars					
Leroy Groce	Tropical	Bailey King	Regional Office					
Mark Buse	Tropical	Craig Noble	Regional Office					
TEXAS REFINERY CORPORATION	TROPICAL INDUSTRIAL COATINGS, INC.	U.S. INTEC, INC.	W. R. GRACE & CO.					

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-56M	TIFFANY			ARC ALUMINUM			ARC PREMIUM		
	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
	2a	C	2	1a,2a	B	1	1a,2a	C	1 & 2
1. BREAKING STRENGTH									
GRADE 1-Min. 66 lbf (294N)	MD NA lbf XD NA lbf			MD 106 (97) lbf XD 71 (123) lbf			MD 164 (279) lbf XD 134 (201) lbf		
GRADE 2-Min. 176 lbf (785N)	MD 208 (277) lbf XD 180.4 (225) lbf			MD 106 lbf XD 71 lbf			MD 164 (279) lbf XD 134 (201) lbf		
2. ULTIMATE ELONGATION (ELONGATION AT BREAK)									
GRADE 1-Min. 4.0%	MD NA % XD NA %			MD 40 (62) % XD 38 (59) %			MD 58 (65) % XD 81 (75) %		
GRADE 2-Min. 8.0%	MD 72.38 (64) % XD 64.76 (74) %			MD 40 % XD 38 %			MD 58 (65) % XD 81 (75) %		
3. LOAD STRAIN PRODUCT [BREAK STRENGTH (N) x ULTIMATE ELONGATION (%)]									
GRADE 1-If breaking strength is not met; 19400	NA (NA)			NA (NA)			NA		
GRADE 1-If breaking strength is met; 2940	NA (NA)			18,840 (26,620)			42,300 (66,790)		
GRADE 2-Min. 14700	66,968 (74,540)			18,840			42,300 (66,790)		
4. WATER RESISTANCE									
Shall not absorb more than 1.0g. of water	0.0 g.			<1.0 g.			<1.0 g.		
Dimensional change shall not exceed ± 1.0%	MD 1.0 % XD 1.0 %			MD <1.0 % XD <1.0 %			MD <1.0 % XD <1.0 %		
5. LOW TEMP FLEXIBILITY — 4 out of 5 samples will pass water tightness test									
TYPE 1-After testing at – 22°F (– 30°C) (Pass/Fail)	NA			Pass			Pass		
TYPE 2-After testing at – 14°F (– 10°C) (Pass/Fail)	Pass			Pass			Pass		
6. WATER VAPOR TRANSMISSION									
Max. 1.0g./m² x 24h.	0.06 g.			0.132 g.			0.132 g.		
7. THERMAL STABILITY									
TYPE 1, CLASS B ONLY-Expansion or contraction less than 1 mm/m between 10 and 30 cycles	NA mm.			mm.			NA mm.		
8. DYNAMIC IMPACT (PUNCTURING) Pass water tightness test after energy impact of:									
GRADE 1 - 1.8 ft. lbf (2.45J) (Pass/Fail)	NA			Pass			Pass		
GRADE 2 - 3.6 ft. lbf (4.9J) (Pass/Fail)	Pass			NA			Pass		
9. STATIC PUNCTURING									
TYPE 1-After 1 hr. at 55 lbf (245N) shall pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
10. LAP JOINT STRENGTH									
5 Day Conditioning									
GRADE 1-Min. 66 lbf (294N)	MD NA lbf XD NA lbf			MD 84 lbf XD 76 lbf			MD 128 lbf XD 104 lbf		
GRADE 2-Min. 176 lbf (785N)	MD 166.32 lbf XD lbf			MD 84 lbf XD 76 lbf			MD 128 lbf XD 104 lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
Immersion at 50°C for 5 Days									
GRADE 1-Min. 66 lbf (294N)	MD NA lbf XD NA lbf			MD 99 lbf XD 73 lbf			MD 155 lbf XD 137 lbf		
GRADE 2-Min. 176 lbf (785N)	MD 176.8 lbf XD lbf			MD 99 lbf XD 73 lbf			MD 155 lbf XD 137 lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
Immersion at 50°C for 5 Days Plus Freeze Thaw Cycles									
GRADE 1-Min 66 lbf (294N)	MD NA lbf XD NA lbf			MD 95 lbf XD 63 lbf			MD 155 lbf XD 129 lbf		
GRADE 2-Min 176 lbf (785N)	MD 175.48 lbf XD lbf			MD 95 lbf XD 63 lbf			MD 155 lbf XD 129 lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
11. GRANULE EMBEDMENT									
CLASS A ONLY-Max. 0.5 g. loss	NA g.			NA g.			NA g.		
12. ACCELERATED WEATHERING									
TYPE 1 ONLY-after prescribed no. of cycles (approx. 90 days) Shall not show cracking or blistering (Pass/Fail)	Pass								
Retain 90% of breaking strength, Test 1	MD 92 % XD 92 %			MD % XD %			MD % XD %		
Retain 90% of elongation at break, Test 2	MD 66.15 % XD 59.58 %			MD % XD %			MD % XD %		
13. CRACK BRIDGING CAPABILITY									
Shall show no cracking, splitting or loss of adhesion **TYPE 1.a. and 1.b.**-at – 22°F (– 30°C) (Pass/Fail)	NA								
TYPE 2.a. and 2.b.-at – 14° (– 10°C) (Pass/Fail)	Pass								
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction NOTE: Blank lines = applicable data not reported by manufacturer.	**THE AMERICAN LUBRICANTS CO.**			**AMERICAN ROOFING CORP.**					

( ) = "Comparative Test" data; see Foreword for explanation.

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

ARC GRANULAR			SAM			RAM-TOUGH CARIPHALTE 200			RAM-TOUGH CARIPHALTE 306			DIBITEN POLY-5			DIBITEN POLY-4		
Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
1a,2a	A	1 & 2	1a	C	1	2a	C	2	1a	a	1	1a,2a	C	2	1a,2a	C	2
MD 158 (304) lbf XD 124 (224) lbf			MD 108.9 (143.2) lbf XD 122.6 (157.0) lbf			MD ____ lbf XD ____ lbf			MD 110.5 lbf XD 92.5 lbf			MD NA lbf XD NA lbf			MD NA (NA) lbf XD NA (NA) lbf		
MD 158 (304) lbf XD 124 (224) lbf			MD NA (NA) lbf XD NA (NA) lbf			MD 302 lbf XD 240 lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD 208 (282) lbf XD 180.4 (181) lbf		
MD 89 (60) % XD 106 (66) %			MD 64.9 (80) % XD 59.3 (83) %			MD ____ % XD ____ %			MD 7.6 % XD 7.6 %			MD NA % XD NA %			MD NA (NA) % XD NA (NA) %		
MD 89 (60) % XD 106 (66) %			MD NA (NA) % XD NA (NA) %			MD 38 % XD 45 %			MD ____ % XD ____ %			MD 50 % XD 50 %			MD 48 (41) % XD 48 (56) %		
NA			NA (NA)									NA			NA (NA)		
62,600 (66,010)			32,385 (51,030)						3,739			NA			NA (NA)		
62,600 (66,010)			NA (NA)			51,110									(45,020)		
<1.0 g.			0.3 g.			.6 g.			.36 g.			0.0 g.			0.0 g.		
MD <1.0 % XD <1.0 %			MD 0.5 % XD 0.6 %			MD .02 % XD .13 %			MD .0 % XD .5 %			MD 0.8 % XD 0.8 %			MD 1.0 % XD 1.0 %		
Pass									Pass								
Pass			NA			Pass						Pass			Pass		
0.132 g.			0.69 g.			.11 g.			.129 g.			0.062 g.			0.062 g.		
NA mm.			NA mm.			NA mm.			NA mm.			NA mm.			NA mm.		
Pass			Pass						Pass			NA			NA		
Pass			NA			NA						Pass			Pass		
Pass			Pass			NA			NA			Pass			Pass		
MD 168 lbf XD 130 lbf			MD 68.8 lbf XD 77.6 lbf			MD ____ lbf XD ____ lbf			MD 87.5 lbf XD ____ lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
MD 168 lbf XD 130 lbf			MD NA lbf XD NA lbf			MD 399 lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD 178.5 lbf XD ____ lbf			MD 171.8 lbf XD ____ lbf		
Pass						Pass			Pass			Pass			Pass		
MD 140 lbf XD 123 lbf			MD 85.1 lbf XD 86.8 lbf			MD ____ lbf XD ____ lbf			MD 78 lbf XD ____ lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
MD 140 lbf XD 123 lbf			MD NA lbf XD NA lbf			MD 213 lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD 185.6 lbf XD ____ lbf			MD 177.3 lbf XD ____ lbf		
Pass						Pass			Pass			Pass			Pass		
MD 164 lbf XD 127 lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD 74 lbf XD ____ lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
MD 164 lbf XD 127 lbf			MD NA lbf XD NA lbf			MD 214 lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD 188.4 lbf XD ____ lbf			MD 174.9 lbf XD ____ lbf		
Pass						Pass			Pass			Pass			Pass		
.01g/cm² g.			NA g.			NA g.			NA g.			NA g.			NA g.		
			Pass			NA			NA			Pass			Pass		
MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD 190.1 % XD 166.0 %			MD 190.1 % XD 166.0 %		
MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD 65.9 % XD 59.35 %			MD 65.9 % XD 59.4 %		
									Pass								
			NA			Pass						Pass			Pass		
AMERICAN ROOFING CORP.			APACHE			THE BARRETT COMPANY						BOWE COMPANY, INC. (DIBITEN)					

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-56M	DIBITEN FIBER-4			DIBITEN POLY-4 GRANULAR			ALPAGUM DECOR		
	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
	1a,2a	C	1	1a	A	2	1a	A	2
1. BREAKING STRENGTH									
GRADE 1-Min. 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD NA (NA) lbf XD NA (NA) lbf			MD NA lbf XD NA lbf		
GRADE 2-Min. 176 lbf (785N)	MD NA lbf XD NA lbf			MD 208 (230) lbf XD 180.4 (142) lbf			MD 191 lbf XD 178 lbf		
2. ULTIMATE ELONGATION (ELONGATION AT BREAK)									
GRADE 1-Min. 4.0%	MD 10 % XD 10 %			MD NA (NA) % XD NA (NA) %			MD NA % XD NA %		
GRADE 2-Min. 8.0%	MD NA % XD NA %			MD 48 (57) % XD 48 (61) %			MD 50 % XD 55 %		
3. LOAD STRAIN PRODUCT [BREAK STRENGTH (N) x ULTIMATE ELONGATION (%)]									
GRADE 1-If breaking strength is not met; 19400				NA (NA)			NA		
GRADE 1-If breaking strength is met; 2940				NA (NA)			NA		
GRADE 2-Min. 14700	NA			(38,840)			42,500		
4. WATER RESISTANCE									
Shall not absorb more than 1.0g. of water	0.0 g.			0.0 g.			0.1 g.		
Dimensional change shall not exceed ± 1.0%	MD ____ % XD ____ %			MD 1.0 % XD 1.0 %			MD 0.0 % XD 0.0 %		
5. LOW TEMP FLEXIBILITY — 4 out of 5 samples will pass water tightness test									
TYPE 1-After testing at – 22 °F (– 30 °C) (Pass/Fail)							Pass		
TYPE 2-After testing at – 14 °F (– 10 °C) (Pass/Fail)	Pass			NA			NA		
6. WATER VAPOR TRANSMISSION									
Max. 1.0g./m² x 24h.	0.062 g.			0.062 g.			____ g.		
7. THERMAL STABILITY									
TYPE 1, CLASS B ONLY-Expansion or contraction less than 1 mm/m between 10 and 30 cycles	NA mm.			NA mm.			NA mm.		
8. DYNAMIC IMPACT (PUNCTURING)									
Pass water tightness test after energy impact of:									
GRADE 1 - 1.8 ft. lbf (2.45J) (Pass/Fail)	NA			NA			NA		
GRADE 2 - 3.6 ft. lbf (4.9J) (Pass/Fail)	Pass			Pass			Pass		
9. STATIC PUNCTURING									
TYPE 1-After 1 hr. at 55 lbf (245N) shall pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
10. LAP JOINT STRENGTH									
5 Day Conditioning									
GRADE 1-Min. 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 2-Min. 176 lbf (785N)	MD 171.8 lbf XD ____ lbf			MD 171.8 lbf XD ____ lbf			MD 191 lbf XD 178 lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
Immersion at 50°C for 5 Days									
GRADE 1-Min. 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 2-Min. 176 lbf (785N)	MD 177.3 lbf XD ____ lbf			MD 177.3 lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass			Pass					
Immersion at 50°C for 5 Days Plus Freeze Thaw Cycles									
GRADE 1-Min 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 2-Min 176 lbf (785N)	MD 174.9 lbf XD ____ lbf			MD 174.9 lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass			Pass					
11. GRANULE EMBEDMENT									
CLASS A ONLY-Max. 0.5 g. loss	NA g.			0.1 g.			Pass g.		
12. ACCELERATED WEATHERING									
TYPE 1 ONLY-after prescribed no. of cycles (approx. 90 days)									
Shall not show cracking or blistering (Pass/Fail)	Pass			Pass					
Retain 90% of breaking strength, Test 1	MD 190.1 % XD 166.0 %			MD 190.1 % XD 166.0 %			MD ____ % XD ____ %		
Retain 90% of elongation at break, Test 2	MD 65.9 % XD 65.9 %			MD 65.9 % XD 59.4 %			MD ____ % XD ____ %		
13. CRACK BRIDGING CAPABILITY									
Shall show no cracking, splitting or loss of adhesion									
TYPE 1.a. and 1.b.-at – 22 °F (– 30 °C) (Pass/Fail)							Pass		
TYPE 2.a. and 2.b.-at – 14 ° (– 10 °C) (Pass/Fail)	Pass			Pass			NA		
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction NOTE: Blank lines = applicable data not reported by manufacturer.	**BOWE COMPANY, INC. (DIBITEN)**						**CIB/NORTHEAST ALUMINUM CORP.**		

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

ALPAGUM ROC			ALPHAROOF A25			ALPHAROOF S20			CONSO-GARD			CONSO-GARD II			GLASDAN R36		
Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
2a,2c	C	2	1a	A	2	2AC	C	2	1a,1b,2a,2b,2c	C	1	1a,1b,2a,2b,2c	C	2	2a	C	1
MD NA lbf XD NA lbf MD 191 lbf XD 178 lbf			MD ___ lbf XD ___ lbf MD 190 lbf XD 178 lbf			MD ___ lbf XD ___ lbf MD 190 lbf XD 178 lbf			MD 67.2 (266) lbf XD 44.8 (189) lbf MD NA (NA) lbf XD NA (NA) lbf			MD NA (NA) lbf XD NA (NA) MD ___ (231) lbf XD ___ (193)			MD ___ (97) lbf XD ___ (107) lbf MD NA (NA) lbf XD NA (NA) lbf		
MD NA % XD NA % MD 50 % XD 55 %			MD ___ % XD ___ % MD 21 % XD 20 %			MD ___ % XD ___ % MD 21 % XD 20 %			MD 35 (62) % XD ___ (64) % MD NA (NA) % XD NA (NA) %			MD NA (NA) % XD NA (NA) % MD ___ (60) % XD ___ (60) %			MD ___ (35) % XD ___ (48) % MD NA (NA) % XD NA (NA) %		
NA NA 42,500			16,000			16,000			(NA) (53,540) NA (NA)			NA (NA) NA (NA) (51,320)			(NA) (14,950) NA (NA)		
0.1 g. MD 0.0 % XD 0.0 %			0.1 g. MD 0.0 % XD 0.0 %			0.1 g. MD 0.0 % XD 0.0 %			nil g. MD nil % XD nil %			g. MD ___ % XD ___ %			g. MD ___ % XD ___ %		
NA Pass									Pass			Pass			NA Pass		
g.			.045 g.			.045 g.			g.			g.			0.024 g.		
NA mm.			mm.			mm.			mm.			mm.			NA mm.		
NA Pass									Pass NA			NA Pass			Pass		
NA									Pass			Pass			NA		
MD NA lbf XD NA lbf MD 191 lbf XD 178 lbf Pass			MD ___ lbf XD ___ lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD NA lbf XD NA lbf			MD NA lbf XD NA lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD NA lbf XD NA lbf Pass		
MD NA lbf XD NA lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD NA lbf XD NA lbf			MD NA lbf XD NA lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD NA lbf XD NA lbf Pass		
MD NA lbf XD NA lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD NA lbf XD NA lbf			MD NA lbf XD NA lbf MD ___ lbf XD ___ lbf			MD ___ lbf XD ___ lbf MD NA lbf XD NA lbf Pass		
NA g.			g.			g.			NA g.			NA g.			NA g.		
NA MD NA % XD NA % MD NA % XD NA %			MD ___ % XD ___ % MD ___ % XD ___ %			MD ___ % XD ___ % MD ___ % XD ___ %			MD ___ % XD ___ % MD ___ % XD ___ %			MD ___ % XD ___ % MD ___ % XD ___ %			Pass MD NA % XD NA % MD NA % XD NA %		
NA Pass															NA		
CIB NORTHEAST ALUMINUM CORP.									CONS. PROT. COATINGS CORP.						DANOSA CARIBBEAN, INC.		

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-56M	ESTERDAN R-36			GLASDAN AL-80			ESTERDAN RM		
	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
	2a	C	2	1a	B	1	1a	A	2
1. BREAKING STRENGTH									
GRADE 1-Min. 66 lbf (294N)	MD NA (NA) lbf XD NA (NA) lbf			MD (143) lbf XD (139) lbf			MD NA (NA) lbf XD NA (NA) lbf		
GRADE 2-Min. 176 lbf (785N)	MD (245) lbf XD (179) lbf			MD NA (NA) lbf XD NA (NA) lbf			MD (239) lbf XD (168) lbf		
2. ULTIMATE ELONGATION (ELONGATION AT BREAK)									
GRADE 1-Min. 4.0%	MD NA (NA) % XD NA (NA) %			MD (36) % XD (48) %			MD NA (NA) % XD NA (NA) %		
GRADE 2-Min. 8.0%	MD (75) % XD (83) %			MD NA (NA) % XD NA (NA) %			MD (60) % XD (67) %		
3. LOAD STRAIN PRODUCT [BREAK STRENGTH (N) x ULTIMATE ELONGATION (%)]									
GRADE 1-If breaking strength is not met; 19400	NA (NA)			(NA)			NA (NA)		
GRADE 1-If breaking strength is met; 2940	NA (NA)			(22,740)			NA (NA)		
GRADE 2-Min. 14700	(66,350)			NA			(49,980)		
4. WATER RESISTANCE									
Shall not absorb more than 1.0g. of water	g.			g.			g.		
Dimensional change shall not exceed ± 1.0%	MD % XD %			MD % XD %			MD % XD %		
5. LOW TEMP FLEXIBILITY — 4 out of 5 samples will pass water tightness test									
TYPE 1-After testing at – 22°F (– 30°C) (Pass/Fail)	NA			Pass					
TYPE 2-After testing at – 14°F (– 10°C) (Pass/Fail)	Pass			NA			Pass		
6. WATER VAPOR TRANSMISSION									
Max. 1.0g./m² x 24h.	0.065 g.			0.024 g.			0.065 g.		
7. THERMAL STABILITY									
TYPE 1, CLASS B ONLY-Expansion or contraction less than 1 mm/m between 10 and 30 cycles	NA mm.			NA mm.			NA mm.		
8. DYNAMIC IMPACT (PUNCTURING)									
Pass water tightness test after energy impact of:									
GRADE 1 - 1.8 ft. lbf (2.45J) (Pass/Fail)	NA						NA		
GRADE 2 - 3.6 ft. lbf (4.9J) (Pass/Fail)	Pass			Pass			Pass		
9. STATIC PUNCTURING									
TYPE 1-After 1 hr. at 55 lbf (245N) shall pass water tightness test (Pass/Fail)	NA						NA		
10. LAP JOINT STRENGTH									
5 Day Conditioning									
GRADE 1-Min. 66 lbf (294N)	MD NA lbf XD NA lbf			MD lbf XD lbf			MD NA lbf XD NA lbf		
GRADE 2-Min. 176 lbf (785N)	MD lbf XD lbf			MD NA lbf XD NA lbf			MD lbf XD lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
Immersion at 50°C for 5 Days									
GRADE 1-Min. 66 lbf (294N)	MD NA lbf XD NA lbf			MD lbf XD lbf			MD NA lbf XD NA lbf		
GRADE 2-Min. 176 lbf (785N)	MD lbf XD lbf			MD NA lbf XD NA lbf			MD lbf XD lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
Immersion at 50°C for 5 Days Plus Freeze Thaw Cycles									
GRADE 1-Min 66 lbf (294N)	MD NA lbf XD NA lbf			MD lbf XD lbf			MD NA lbf XD NA lbf		
GRADE 2-Min 176 lbf (785N)	MD lbf XD lbf			MD NA lbf XD NA lbf			MD lbf XD lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
11. GRANULE EMBEDMENT									
CLASS A ONLY-Max. 0.5 g. loss	NA g.			NA g.			g.		
12. ACCELERATED WEATHERING									
TYPE 1 ONLY-after prescribed no. of cycles (approx. 90 days)									
Shall not show cracking or blistering (Pass/Fail)	Pass			Pass			Pass		
Retain 90% of breaking strength, Test 1	MD NA % XD NA %			MD % XD %			MD % XD %		
Retain 90% of elongation at break, Test 2	MD NA % XD NA %			MD % XD %			MD % XD %		
13. CRACK BRIDGING CAPABILITY									
Shall show no cracking, splitting or loss of adhesion									
TYPE 1.a. and 1.b.-at – 22°F (– 30°C) (Pass/Fail)									
TYPE 2.a. and 2.b.-at – 14° (– 10°C) (Pass/Fail)	NA			NA			NA		

LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction

NOTE: Blank lines = applicable data not reported by manufacturer.

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

F.A.R. MARK II			FLEX-SHIELD MARK IV			STRESSPLY			PITCHPLY			GEDAGOM POLYESTER CONT. FILAMENT			GEDAGOM POLYESTER		
Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
					2		C	1 & 2		C	1 & 2						
MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD 318 ( ) lbf XD 324 ( ) lbf			MD 247 ( ) lbf XD 157 ( ) lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
MD ____ lbf XD ____ lbf			MD 208 lbf XD 180 lbf			MD 318 ( ) lbf XD 324 ( ) lbf			MD 247 ( ) lbf XD 157 ( ) lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
MD ____ % XD ____ %			MD ____ % XD ____ %			MD *340 ( ) % XD *240 ( ) %			MD 100 ( ) % XD 120 ( ) %			MD ____ % XD ____ %			MD ____ % XD ____ %		
MD ____ % XD ____ %			MD 72.4 % XD 64.8 %			MD *340 ( ) % XD *240 ( ) %			MD 100 ( ) % XD 120 ( ) %			MD ____ % XD ____ %			MD ____ % XD ____ %		
			NA			NA ( )			NA ( )								
			NA			14,170 ( )			132,000 ( )								
						14,170 ( )			( )								
____ g.			0.0 g.			____ g.			0.051 g.			____ g.			____ g.		
MD ____ % XD ____ %			MD 1.0 % XD 1.0 %			MD ____ % XD ____ %			MD −0.5 % XD 0.0 %			MD ____ % XD ____ %			MD ____ % XD ____ %		
			NA														
			Pass														
____ g.			.06 g.			____ g.			0.5 g.			____ g.			____ g.		
____ mm.			NA mm.			NA mm.			NA mm.			____ mm.			____ mm.		
			NA														
			Pass														
			Pass														
MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
MD ____ lbf XD ____ lbf			MD 166 lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
			Pass														
MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
MD ____ lbf XD ____ lbf			MD 176 lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
			Pass														
MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
MD ____ lbf XD ____ lbf			MD 175 lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
			Pass														
____ g.			NA g.			NA g.			NA g.			____ g.			____ g.		
			Pass			Pass			Pass								
MD ____ % XD ____ %			MD 92 % XD 92 %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
MD ____ % XD ____ %			MD 66 % XD 59 %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
			NA														
			Pass														
FLEX-SHIELD CORP.						THE GARLAND CO., INC.						GEDACO, LTD. (ITALY)					

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-56M	GEDAGOM VELO VETRO			GEDAGOM VELO VETRO EXTRA			GEDAGOM GRANIPOL		
	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
					C				
1. BREAKING STRENGTH									
GRADE 1-Min. 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 2-Min. 176 lbf (785N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
2. ULTIMATE ELONGATION (ELONGATION AT BREAK)									
GRADE 1-Min. 4.0%	MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
GRADE 2-Min. 8.0%	MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
3. LOAD STRAIN PRODUCT [BREAK STRENGTH (N) x ULTIMATE ELONGATION (%)]									
GRADE 1-If breaking strength is not met; 19400									
GRADE 1-If breaking strength is met; 2940									
GRADE 2-Min. 14700									
4. WATER RESISTANCE									
Shall not absorb more than 1.0g. of water	____ g.			____ g.			____ g.		
Dimensional change shall not exceed ± 1.0%	MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
5. LOW TEMP FLEXIBILITY — 4 out of 5 samples will pass water tightness test									
TYPE 1-After testing at – 22 °F (– 30 °C) (Pass/Fail)									
TYPE 2-After testing at – 14 °F (– 10 °C) (Pass/Fail)									
6. WATER VAPOR TRANSMISSION									
Max. 1.0g./m² x 24h.	____ g.			____ g.			____ g.		
7. THERMAL STABILITY									
TYPE 1, CLASS B ONLY-Expansion or contraction less than 1 mm/m between 10 and 30 cycles	____ mm.			____ mm.			____ mm.		
8. DYNAMIC IMPACT (PUNCTURING) Pass water tightness test after energy impact of:									
GRADE 1 - 1.8 ft. lbf (2.45J) (Pass/Fail)									
GRADE 2 - 3.6 ft. lbf (4.9J) (Pass/Fail)									
9. STATIC PUNCTURING									
TYPE 1-After 1 hr. at 55 lbf (245N) shall pass water tightness test (Pass/Fail)									
10. LAP JOINT STRENGTH									
5 Day Conditioning									
GRADE 1-Min. 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 2-Min. 176 lbf (785N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)									
Immersion at 50°C for 5 Days									
GRADE 1-Min. 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 2-Min. 176 lbf (785N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)									
Immersion at 50°C for 5 Days Plus Freeze Thaw Cycles									
GRADE 1-Min 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 2-Min 176 lbf (785N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)									
11. GRANULE EMBEDMENT									
CLASS A ONLY-Max. 0.5 g. loss	____ g.			____ g.			____ g.		
12. ACCELERATED WEATHERING									
TYPE 1 ONLY-after prescribed no. of cycles (approx. 90 days) Shall not show cracking or blistering (Pass/Fail)									
Retain 90% of breaking strength, Test 1	MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
Retain 90% of elongation at break, Test 2	MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
13. CRACK BRIDGING CAPABILITY									
Shall show no cracking, splitting or loss of adhesion									
TYPE 1.a. and 1.b.-at – 22 °F (– 30 °C) (Pass/Fail)									
TYPE 2.a. and 2.b.-at – 14 ° (– 10 °C) (Pass/Fail)									
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	**GEDACO, LTD. (ITALY)**								
NOTE: Blank lines = applicable data not reported by manufacturer.									

( ) = "Comparative Test" data; see Foreword for explanation.

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

GEDAGOM GRANIVEL			FLINTLASTIC			GUAINA POLYGLASS			GUAINA POLYGLASS ALUM.			GUAINA POLYGLASS POLYESTER			GUAINA POLYGLASS GRANULAR		
Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
			1a	A	1	1a,2a	C	1 & 2	1a,2a	B	1	1a,2a	C	1	1a,2a	A	1 & 2
MD ____ lbf XD ____ lbf			MD 177 ( ) lbf XD 150 ( ) lbf			MD 162 ( ) lbf XD 132 ( ) lbf			MD 105 ( ) lbf XD 70 ( ) lbf			MD 110 ( ) lbf XD 478 ( ) lbf			MD 156 ( ) lbf XD 122 ( ) lbf		
MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD 162 ( ) lbf XD 132 ( ) lbf			MD 105 ( ) lbf XD 70 ( ) lbf			MD 110 ( ) lbf XD 478 ( ) lbf			MD 156 ( ) lbf XD 122 ( ) lbf		
MD ____ % XD ____ %			MD 4.35 ( ) % XD 4.0 ( ) %			MD 56 ( ) % XD 80 ( ) %			MD 39 ( ) % XD 37 ( ) %			MD 36 ( ) % XD 43 ( ) %			MD 87 ( ) % XD 104 ( ) %		
MD ____ % XD ____ %			MD NA % XD NA %			MD 56 ( ) % XD 80 ( ) %			MD 39 ( ) % XD 37 ( ) %			MD 36 ( ) % XD 43 ( ) %			MD 87 ( ) % XD 104 ( ) %		
			NA			NA			NA			NA			NA		
			3,466 ( )			42,200 ( )			18,840 ( )			18,765 ( )			62,500 ( )		
			NA			42,200 ( )			18,840 ( )			18,765 ( )			62,500 ( )		
____ g.			0.5 g.			<1.0 g.			<1.0 g.			<1.0 g.			<1.0 g.		
MD ____ % XD ____ %			MD 0.0 % XD 0.0 %			MD <1.0 % XD <1.0 %			MD <1.0 % XD <1.0 %			MD <1.0 % XD <1.0 %			MD <1.0 % XD <1.0 %		
			Pass			Pass			Pass			Pass			Pass		
			Pass			Pass			Pass			Pass			Pass		
____ g.			0.51 g.			0.132 g.			0.132 g.			0.132 g.			0.132 g.		
____ mm.			NA mm.			NA mm.			____ mm.			NA mm.			NA mm.		
			Pass			Pass			Pass			Pass			Pass		
			NA			Pass			NA			Pass			Pass		
			Pass			Pass			Pass			Pass			Pass		
MD ____ lbf XD ____ lbf			MD 140 lbf XD 100 lbf			MD 126 lbf XD 102 lbf			MD 82 lbf XD 74 lbf			MD 166 lbf XD 440 lbf			MD 166 lbf XD 128 lbf		
MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD 126 lbf XD 102 lbf			MD 82 lbf XD 74 lbf			MD 166 lbf XD 440 lbf			MD 166 lbf XD 128 lbf		
			Pass			Pass			Pass			Pass			Pass		
MD ____ lbf XD ____ lbf			MD 130 lbf XD 90 lbf			MD 153 lbf XD 135 lbf			MD 97 lbf XD 73 lbf			MD 142 lbf XD 390 lbf			MD 138 lbf XD 121 lbf		
MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD 153 lbf XD 135 lbf			MD 97 lbf XD 73 lbf			MD 142 lbf XD 390 lbf			MD 138 lbf XD 121 lbf		
			Pass			Pass			Pass			Pass			Pass		
MD ____ lbf XD ____ lbf			MD 130 lbf XD 90 lbf			MD 153 lbf XD 127 lbf			MD 93 lbf XD 61 lbf			MD 143 lbf XD 400 lbf			MD 162 lbf XD 125 lbf		
MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD 153 lbf XD 127 lbf			MD 93 lbf XD 61 lbf			MD 143 lbf XD 400 lbf			MD 162 lbf XD 125 lbf		
			Pass			Pass			Pass			Pass			Pass		
____ g.			0.1 g.			NA g.			NA g.			NA g.			.01g/cm² g.		
			Pass														
MD ____ % XD ____ %			MD 96 % XD 95 %			MD ____ % XD ____ %			MD 17 % XD 17 %			MD ____ % XD ____ %			MD ____ % XD ____ %		
MD ____ % XD ____ %			MD 94 % XD 92 %			MD ____ % XD ____ %			MD 17 % XD 17 %			MD ____ % XD ____ %			MD ____ % XD ____ %		
			Pass														
			NA														
GEDACO, LTD. (ITALY)			GENSTAR			GUAINA											

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-56M	GUAINA POLYPREN			HEY'DI ECB			NURALITE		
	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
								A	1
1. BREAKING STRENGTH									
GRADE 1-Min. 66 lbf (294N)	MD ( ) lbf	XD ( ) lbf		MD lbf	XD lbf		MD (149) lbf	XD (117) lbf	
GRADE 2-Min. 176 lbf (785N)	MD ( ) lbf	XD ( ) lbf		MD lbf	XD lbf		MD (NA) lbf	XD (NA) lbf	
2. ULTIMATE ELONGATION (ELONGATION AT BREAK)									
GRADE 1-Min. 4.0%	MD ( ) %	XD ( ) %		MD %	XD %		MD (2.3) %	XD (2.1) %	
GRADE 2-Min. 8.0%	MD ( ) %	XD ( ) %		MD %	XD %		MD (NA) %	XD (NA) %	
3. LOAD STRAIN PRODUCT [BREAK STRENGTH (N) x ULTIMATE ELONGATION (%)]									
GRADE 1-If breaking strength is not met; 19400							(NA)		
GRADE 1-If breaking strength is met; 2940	( )						(1100)		
GRADE 2-Min. 14700	( )						(NA)		
4. WATER RESISTANCE									
Shall not absorb more than 1.0g. of water	g.			g.			g.		
Dimensional change shall not exceed ± 1.0%	MD %	XD %		MD %	XD %		MD %	XD %	
5. LOW TEMP FLEXIBILITY — 4 out of 5 samples will pass water tightness test									
TYPE 1-After testing at – 22°F (– 30°C) (Pass/Fail)									
TYPE 2-After testing at – 14°F (– 10°C) (Pass/Fail)									
6. WATER VAPOR TRANSMISSION									
Max. 1.0g./m² x 24h.	g.			g.			g.		
7. THERMAL STABILITY									
TYPE 1, CLASS B ONLY-Expansion or contraction less than 1 mm/m between 10 and 30 cycles	mm.			mm.			NA mm.		
8. DYNAMIC IMPACT (PUNCTURING)									
Pass water tightness test after energy impact of:									
GRADE 1 - 1.8 ft. lbf (2.45J) (Pass/Fail)									
GRADE 2 - 3.6 ft. lbf (4.9J) (Pass/Fail)							NA		
9. STATIC PUNCTURING									
TYPE 1-After 1 hr. at 55 lbf (245N) shall pass water tightness test (Pass/Fail)									
10. LAP JOINT STRENGTH									
5 Day Conditioning									
GRADE 1-Min. 66 lbf (294N)	MD lbf	XD lbf		MD lbf	XD lbf		MD lbf	XD lbf	
GRADE 2-Min. 176 lbf (785N)	MD lbf	XD lbf		MD lbf	XD lbf		MD NA lbf	XD NA lbf	
GRADE 1 & 2-Pass water tightness test (Pass/Fail)									
Immersion at 50°C for 5 Days									
GRADE 1-Min. 66 lbf (294N)	MD lbf	XD lbf		MD lbf	XD lbf		MD lbf	XD lbf	
GRADE 2-Min. 176 lbf (785N)	MD lbf	XD lbf		MD lbf	XD lbf		MD NA lbf	XD NA lbf	
GRADE 1 & 2-Pass water tightness test (Pass/Fail)									
Immersion at 50°C for 5 Days Plus Freeze Thaw Cycles									
GRADE 1-Min 66 lbf (294N)	MD lbf	XD lbf		MD lbf	XD lbf		MD lbf	XD lbf	
GRADE 2-Min 176 lbf (785N)	MD lbf	XD lbf		MD lbf	XD lbf		MD NA lbf	XD NA lbf	
GRADE 1 & 2-Pass water tightness test (Pass/Fail)									
11. GRANULE EMBEDMENT									
CLASS A ONLY-Max. 0.5 g. loss	g.			g.			g.		
12. ACCELERATED WEATHERING									
TYPE 1 ONLY-after prescribed no. of cycles (approx. 90 days)									
Shall not show cracking or blistering (Pass/Fail)									
Retain 90% of breaking strength, Test 1	MD %	XD %		MD %	XD %		MD %	XD %	
Retain 90% of elongation at break, Test 2	MD %	XD %		MD %	XD %		MD %	XD %	
13. CRACK BRIDGING CAPABILITY									
Shall show no cracking, splitting or loss of adhesion									
TYPE 1.a. and 1.b.-at – 22°F (– 30°C) (Pass/Fail)									
TYPE 2.a. and 2.b.-at – 14° (– 10°C) (Pass/Fail)									
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction NOTE: Blank lines = applicable data not reported by manufacturer.	**GUAINA**			**HEY 'DI UPM CORP.**			**HITCHINS AMER. INC.**		

( ) = "Comparative Test" data; see Foreword for explanation.

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

HYLOAD 150E			TESTUDO 4			MINERAL TESTUDO 4,5			HELASTA/P 4			MINERAL HELASTA P 4,5			DEFEND 4		
Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
2a	A	1 & 2															
MD 250 (192) lbf XD 160 (138) lbf MD 250 (192) lbf XD 160 (138) lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf		
MD 150 (150) % XD 150 (191) % MD 150 (150) % XD 150 (191) %			MD ____ % XD ____ % MD ____ % XD ____ %			MD ____ % XD ____ % MD ____ % XD ____ %			MD ____ % XD ____ % MD ____ % XD ____ %			MD ____ % XD ____ % MD ____ % XD ____ %			MD ____ % XD ____ % MD ____ % XD ____ %		
NA (NA) 166,000 (117,750) 166,000 (117,750)																	
0.051 g. MD 0.5 % XD ____ %			____ g. MD ____ % XD ____ %			____ g. MD ____ % XD ____ %			____ g. MD ____ % XD ____ %			____ g. MD ____ % XD ____ %			____ g. MD ____ % XD ____ %		
NA Pass																	
0.5 g.			____ g.			____ g.			____ g.			____ g.			____ g.		
NA mm.			____ mm.			____ mm.			____ mm.			____ mm.			____ mm.		
Pass																	
Pass																	
MD ____ lbf XD 176 lbf MD ____ lbf XD 176 lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf		
MD ____ lbf XD 158 lbf MD ____ lbf XD 158 lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf		
MD ____ lbf XD 157 lbf MD ____ lbf XD 157 lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf		
____ g.			____ g.			____ g.			____ g.			____ g.			____ g.		
Pass MD NA % XD NA % MD NA % XD NA %			MD ____ % XD ____ % MD ____ % XD ____ %			MD ____ % XD ____ % MD ____ % XD ____ %			MD ____ % XD ____ % MD ____ % XD ____ %			MD ____ % XD ____ % MD ____ % XD ____ %			MD ____ % XD ____ % MD ____ % XD ____ %		
NA																	
HYLOAD INC.			INDEX SPA, TECHNOLOGIE IMPERMEABILI														

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-56M	MINERAL DEFEND 4,5			DURALASTA P			DURALASTA M		
	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
				2a,2b	A	2	2a,2b	C	2
1. BREAKING STRENGTH									
GRADE 1-Min. 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 2-Min. 176 lbf (785N)	MD ____ lbf XD ____ lbf			MD ( ) lbf XD ( ) lbf			MD ( ) lbf XD ( ) lbf		
2. ULTIMATE ELONGATION (ELONGATION AT BREAK)									
GRADE 1-Min. 4.0%	MD ____ % XD ____ %			MD NA % XD NA %			MD NA % XD NA %		
GRADE 2-Min. 8.0%	MD ____ % XD ____ %			MD 475 ( ) % XD 362 ( ) %			MD 475 ( ) % XD 362 ( ) %		
3. LOAD STRAIN PRODUCT [BREAK STRENGTH (N) x ULTIMATE ELONGATION (%)]									
GRADE 1-If breaking strength is not met; 19400				NA			NA		
GRADE 1-If breaking strength is met; 2940				NA			NA		
GRADE 2-Min. 14700				( )			( )		
4. WATER RESISTANCE									
Shall not absorb more than 1.0g. of water	____ g.			____ g.			____ g.		
Dimensional change shall not exceed ± 1.0%	MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
5. LOW TEMP FLEXIBILITY — 4 out of 5 samples will pass water tightness test									
TYPE 1-After testing at – 22 °F (– 30 °C) (Pass/Fail)				NA			NA		
TYPE 2-After testing at – 14 °F (– 10 °C) (Pass/Fail)									
6. WATER VAPOR TRANSMISSION									
Max. 1.0g./m² x 24h.	____ g.			____ g.			____ g.		
7. THERMAL STABILITY									
TYPE 1, CLASS B ONLY-Expansion or contraction less than 1 mm/m between 10 and 30 cycles	____ mm.			NA ____ mm.			NA ____ mm.		
8. DYNAMIC IMPACT (PUNCTURING)									
Pass water tightness test after energy impact of:									
GRADE 1 - 1.8 ft. lbf (2.45J) (Pass/Fail)				NA			NA		
GRADE 2 - 3.6 ft. lbf (4.9J) (Pass/Fail)									
9. STATIC PUNCTURING									
TYPE 1-After 1 hr. at 55 lbf (245N) shall pass water tightness test (Pass/Fail)				NA			NA		
10. LAP JOINT STRENGTH									
5 Day Conditioning									
GRADE 1-Min. 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 2-Min. 176 lbf (785N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)									
Immersion at 50°C for 5 Days									
GRADE 1-Min. 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 2-Min. 176 lbf (785N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)									
Immersion at 50°C for 5 Days Plus Freeze Thaw Cycles									
GRADE 1-Min 66 lbf (294N)	MD ____ lbf XD ____ lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 2-Min 176 lbf (785N)	MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)									
11. GRANULE EMBEDMENT									
CLASS A ONLY-Max. 0.5 g. loss	____ g.			____ g.			NA ____ g.		
12. ACCELERATED WEATHERING									
TYPE 1 ONLY-after prescribed no. of cycles (approx. 90 days)									
Shall not show cracking or blistering (Pass/Fail)				NA			NA		
Retain 90% of breaking strength, Test 1	MD ____ % XD ____ %			MD NA % XD NA %			MD NA % XD NA %		
Retain 90% of elongation at break, Test 2	MD ____ % XD ____ %			MD NA % XD NA %			MD NA % XD NA %		
13. CRACK BRIDGING CAPABILITY									
Shall show no cracking, splitting or loss of adhesion									
TYPE 1.a. and 1.b.-at – 22 °F (– 30 °C) (Pass/Fail)				NA			NA		
TYPE 2.a. and 2.b.-at – 14 ° (– 10 °C) (Pass/Fail)									
	INDEX SPA TECHNOLOGIE IMPERMEABILI			**THE KIMMENADE CORP.**					

LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction

NOTE: Blank lines = applicable data not reported by manufacturer.

( ) = "Comparative Test" data; see Foreword for explanation.

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

AQUASHIELD 2001 AD			MHP POLYESTER CAP			MHP GLASS CAP			POLY-4			OWENS-CORNING DERBIGUM HPS			OWENS CORNING DERBIGUM SP		
Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
2a	C	1 & 2	1a	A					1a,1b,2a,2b,2c	C	1 & 2						
MD 318 (56) lbf XD 324 (55) lbf			MD 123 lbf XD 91 lbf			MD ____ lbf XD ____ lbf			MD ____ (281) lbf XD ____ (186) lbf			MD ____ (NA) lbf XD ____ (NA) lbf			MD ____ (192) lbf XD ____ (159) lbf		
MD 318 (56) lbf XD 324 (55) lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ (281) lbf XD ____ (186) lbf			MD ____ (347) lbf XD ____ (404) lbf			MD ____ (NA) lbf XD ____ (NA) lbf		
MD 300 (243) % XD ____ (183) %			MD 26 % XD 42 %			MD ____ % XD ____ %			MD ____ (64) % XD ____ (62) %			MD ____ (NA) % XD ____ (NA) %			MD ____ (28) % XD ____ (22) %		
MD 300 (243) % XD ____ (183) %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ (64) % XD ____ (62) %			MD ____ (18) % XD ____ (17) %			MD ____ (NA) % XD ____ (NA) %		
(45,160)									(NA)			(NA)			(NA)		
(NA)			14,200						(51,590)			(NA)			(15,470)		
(45,160)									(51,590)			(27,840)			(NA)		
____ g.			.67 g.			____ g.			____ g.			____ g.			____ g.		
MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
Pass			Pass														
Pass																	
.1 max g.			____ g.			____ g.			____ g.			____ g.			____ g.		
NA mm.			____ mm.			____ mm.			____ mm.			____ mm.			____ mm.		
Pass																	
MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
NA g.			____ g.			____ g.			____ g.			____ g.			____ g.		
NA																	
MD NA % XD NA %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
MD NA % XD NA %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
Pass																	
Pass																	
J & P PETROLEUM PRODUCTS			HERBERT MALARKEY ROOFING CO.						NORD BITUMI U.S. INC.			OWENS-CORNING					

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-56M	ROYAL SINGLE-PLY			VERAL (ALUMINUM FACED)			VERAL (STAIN/STEEL)		
	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
	2a	C	2	1a	B	1	1a	B	1
1. BREAKING STRENGTH									
GRADE 1-Min. 66 lbf (294N)	MD NA lbf XD NA lbf			MD 139 lbf XD 137 lbf			MD 677 lbf XD 676 lbf		
GRADE 2-Min. 176 lbf (785N)	MD 208 ( ) lbf XD 180.4 ( ) lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
2. ULTIMATE ELONGATION (ELONGATION AT BREAK)									
GRADE 1-Min. 4.0%	MD NA % XD NA %			MD 4.0 ( ) % XD 5.0 ( ) %			MD 3.0 ( ) % XD 3.0 ( ) %		
GRADE 2-Min. 8.0%	MD 72.38 ( ) % XD 64.76 ( ) %			MD NA % XD NA %			MD NA % XD NA %		
3. LOAD STRAIN PRODUCT [BREAK STRENGTH (N) x ULTIMATE ELONGATION (%)]									
GRADE 1-If breaking strength is not met; 19400	NA			NA			NA		
GRADE 1-If breaking strength is met; 2940	NA			3,613 ( )			9,039 ( )		
GRADE 2-Min. 14700	66,968 ( )			NA			NA		
4. WATER RESISTANCE									
Shall not absorb more than 1.0g. of water	0.0 g.			0.10 g.			0.10 g.		
Dimensional change shall not exceed ± 1.0%	MD 1.0 % XD 1.0 %			MD % XD %			MD % XD %		
5. LOW TEMP FLEXIBILITY — 4 out of 5 samples will pass water tightness test									
TYPE 1-After testing at – 22 °F (– 30 °C) (Pass/Fail)	NA								
TYPE 2-After testing at – 14 °F (– 10 °C) (Pass/Fail)	Pass			NA			NA		
6. WATER VAPOR TRANSMISSION									
Max. 1.0g./m² x 24h.	0.06 g.			g.			g.		
7. THERMAL STABILITY									
TYPE 1, CLASS B ONLY-Expansion or contraction less than 1 mm/m between 10 and 30 cycles	NA mm.			mm.			mm.		
8. DYNAMIC IMPACT (PUNCTURING)									
Pass water tightness test after energy impact of:									
GRADE 1 - 1.8 ft. lbf (2.45J) (Pass/Fail)	NA								
GRADE 2 - 3.6 ft. lbf (4.9J) (Pass/Fail)	Pass			NA			NA		
9. STATIC PUNCTURING									
TYPE 1-After 1 hr. at 55 lbf (245N) shall pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
10. LAP JOINT STRENGTH									
5 Day Conditioning									
GRADE 1-Min. 66 lbf (294N)	MD NA lbf XD NA lbf			MD 169 lbf XD 173 lbf			MD 169 lbf XD 173 lbf		
GRADE 2-Min. 176 lbf (785N)	MD 166.32 lbf XD lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass			Pass			Pass		
Immersion at 50°C for 5 Days									
GRADE 1-Min. 66 lbf (294N)	MD NA lbf XD NA lbf			MD lbf XD lbf			MD lbf XD lbf		
GRADE 2-Min. 176 lbf (785N)	MD 176.8 lbf XD lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass								
Immersion at 50°C for 5 Days Plus Freeze Thaw Cycles									
GRADE 1-Min 66 lbf (294N)	MD NA lbf XD NA lbf			MD lbf XD lbf			MD lbf XD lbf		
GRADE 2-Min 176 lbf (785N)	MD 175.48 lbf XD lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass								
11. GRANULE EMBEDMENT									
CLASS A ONLY-Max. 0.5 g. loss	NA g.			NA g.			NA g.		
12. ACCELERATED WEATHERING									
TYPE 1 ONLY-after prescribed no. of cycles (approx. 90 days)									
Shall not show cracking or blistering (Pass/Fail)	Pass								
Retain 90% of breaking strength, Test 1	MD 92 % XD 92 %			MD % XD %			MD % XD %		
Retain 90% of elongation at break, Test 2	MD 66.95 % XD 59.58 %			MD % XD %			MD % XD %		
13. CRACK BRIDGING CAPABILITY									
Shall show no cracking, splitting or loss of adhesion									
TYPE 1.a. and 1.b.-at – 22 °F (– 30 °C) (Pass/Fail)	NA						NA		
TYPE 2.a. and 2.b.-at – 14 ° (– 10 °C) (Pass/Fail)	Pass			NA			NA		

LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction

NOTE: Blank lines = applicable data not reported by manufacturer.

( ) = "Comparative Test" data; see Foreword for explanation.

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continued →

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

VERAL (COPPER FACED)			PARAFOR-50			PARADIENE-30			PARADIENE-20			PARADIENE-20 PR			PARADIENE 40		
Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
1a	B	1	1a	A	2	1a	A	1	2a,2b	C	1	1		1			
MD 139 ( ) lbf XD 137 ( ) lbf MD NA lbf XD NA lbf			MD NA lbf XD NA lbf MD 223 ( ) lbf XD 185 ( ) lbf			MD 91 ( ) lbf XD 71 ( ) lbf MD NA lbf XD NA lbf			MD 72 ( ) lbf XD 67 ( ) lbf MD NA lbf XD NA lbf			MD 93 lbf XD 75 lbf MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf		
MD 4.0 ( ) % XD 5.0 ( ) % MD NA % XD NA %			MD NA % XD NA % MD 68.2 ( ) % XD 72.8 ( ) %			MD 24 ( ) % XD 24 ( ) % MD NA % XD NA %			MD 29 ( ) % XD 27 ( ) % MD NA % XD NA %			MD 68 % XD 84 % MD NA % XD NA %			MD ____ % XD ____ % MD ____ % XD ____ %		
NA 3,557 ( ) NA			NA NA 82,104 ( )			NA 9,801 ( ) NA			NA 9393 ( ) NA			NA 27,936 NA					
0.10 g. MD ____ % XD ____ %			0.30 g. MD <1.0 % XD <1.0 %			0.23 g. MD ____ % XD ____ %			0.30 g. MD ____ % XD ____ %			0.30 g. MD 0.51 % XD 0.51 %			g. MD ____ % XD ____ %		
NA NA			NA Pass			Pass NA			NA Pass			NA Pass			Pass NA		
____ g.			____ g.			____ g.			____ g.			____ g.			____ g.		
____ mm.			NA mm.			NA mm.			NA mm.			____ mm.			____ mm.		
NA NA			NA Pass			NA			NA			NA			NA		
Pass			Pass			Pass			Pass			Pass			Pass		
MD 169 lbf XD 173 lbf MD NA lbf XD NA lbf Pass			MD NA lbf XD NA lbf MD 194 lbf XD ____ lbf Pass			MD 70 lbf XD 69 lbf MD NA lbf XD NA lbf Pass			MD 74 lbf XD 72 lbf MD NA lbf XD NA lbf Pass			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf		
MD ____ lbf XD ____ lbf MD NA lbf XD NA lbf			MD NA lbf XD NA lbf MD 189 lbf XD ____ lbf Pass			MD ____ lbf XD ____ lbf MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf		
MD ____ lbf XD ____ lbf MD NA lbf XD NA lbf			MD NA lbf XD NA lbf MD 177 lbf XD ____ lbf Pass			MD ____ lbf XD ____ lbf MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf MD ____ lbf XD ____ lbf		
NA g.			<1.0 g.			<1.0 g.			NA g.			NA g.			<1.0 g.		
____ MD ____ % XD ____ % MD ____ % XD ____ %			Pass MD 90 % XD 90 % MD 97 % XD 97 %			____ MD ____ % XD ____ % MD ____ % XD ____ %			NA MD NA % XD NA % MD NA % XD NA %			NA MD NA % XD NA % MD NA % XD NA %			____ MD ____ % XD ____ % MD ____ % XD ____ %		
____ NA			NA Pass			____ NA			NA			NA			____ NA		
SIPLAST, INC.																	

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-56M	SWEPCO UNI + SHIELD			AWAPLAN			RHOFLEX		
	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
	2a,2b	C	2	1a	A	1	1a,2a,2b,2c	C	1
1. BREAKING STRENGTH									
GRADE 1-Min. 66 lbf (294N)	MD NA (NA) lbf XD NA (NA) lbf			MD 130 (289) lbf XD 129 (244) lbf			MD ( ) lbf XD ( ) lbf		
GRADE 2-Min. 176 lbf (785N)	MD 210 (289) lbf XD 176 (213) lbf			MD NA (NA) lbf XD NA (NA) lbf			MD NA lbf XD NA lbf		
2. ULTIMATE ELONGATION (ELONGATION AT BREAK)									
GRADE 1-Min. 4.0%	MD NA (NA) % XD NA (NA) %			MD 69 (73) % XD 65 (72) %			MD 57 ( ) % XD 57 ( ) %		
GRADE 2-Min. 8.0%	MD 70 (61) % XD 65 (64) %			MD NA (NA) % XD NA (NA) %			MD NA % XD NA %		
3. LOAD STRAIN PRODUCT [BREAK STRENGTH (N) x ULTIMATE ELONGATION (%)]									
GRADE 1-If breaking strength is not met; 19400	NA (NA)			NA (NA)			( )		
GRADE 1-If breaking strength is met; 2940	NA (NA)			40,000 (77,730)			( )		
GRADE 2-Min. 14700	(60,670)			NA (NA)			NA		
4. WATER RESISTANCE									
Shall not absorb more than 1.0g. of water	0.0 g.			g.			g.		
Dimensional change shall not exceed ± 1.0%	MD Pass % XD Pass %			MD % XD %			MD % XD %		
5. LOW TEMP FLEXIBILITY — 4 out of 5 samples will pass water tightness test									
TYPE 1-After testing at – 22 °F (– 30 °C) (Pass/Fail)	NA			Pass					
TYPE 2-After testing at – 14 °F (– 10 °C) (Pass/Fail)	Pass			NA					
6. WATER VAPOR TRANSMISSION									
Max. 1.0g./m² x 24h.	0.1 g.			.08 g.			0.78 g.		
7. THERMAL STABILITY									
TYPE 1, CLASS B ONLY-Expansion or contraction less than 1 mm/m between 10 and 30 cycles	NA mm.			NA mm.			NA mm.		
8. DYNAMIC IMPACT (PUNCTURING)									
Pass water tightness test after energy impact of:									
GRADE 1 - 1.8 ft. lbf (2.45J) (Pass/Fail)	NA			Pass					
GRADE 2 - 3.6 ft. lbf (4.9J) (Pass/Fail)	Pass			NA			NA		
9. STATIC PUNCTURING									
TYPE 1-After 1 hr. at 55 lbf (245N) shall pass water tightness test (Pass/Fail)	Pass			Pass					
10. LAP JOINT STRENGTH									
5 Day Conditioning									
GRADE 1-Min. 66 lbf (294N)	MD NA lbf XD NA lbf			MD lbf XD lbf			MD lbf XD lbf		
GRADE 2-Min. 176 lbf (785N)	MD 166 lbf XD lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass								
Immersion at 50°C for 5 Days									
GRADE 1-Min. 66 lbf (294N)	MD NA lbf XD NA lbf			MD lbf XD lbf			MD lbf XD lbf		
GRADE 2-Min. 176 lbf (785N)	MD 177 lbf XD lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass								
Immersion at 50°C for 5 Days Plus Freeze Thaw Cycles									
GRADE 1-Min 66 lbf (294N)	MD NA lbf XD NA lbf			MD lbf XD lbf			MD lbf XD lbf		
GRADE 2-Min 176 lbf (785N)	MD 176 lbf XD lbf			MD NA lbf XD NA lbf			MD NA lbf XD NA lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass								
11. GRANULE EMBEDMENT									
CLASS A ONLY-Max. 0.5 g. loss	NA g.			<1.0 g.			NA g.		
12. ACCELERATED WEATHERING									
TYPE 1 ONLY-after prescribed no. of cycles (approx. 90 days)									
Shall not show cracking or blistering (Pass/Fail)	Pass			Pass					
Retain 90% of breaking strength, Test 1	MD 90.1 % XD 92.0 %			MD 92 % XD 92 %			MD % XD %		
Retain 90% of elongation at break, Test 2	MD 92.0 % XD 92.0 %			MD 100 % XD 100 %			MD % XD %		
13. CRACK BRIDGING CAPABILITY									
Shall show no cracking, splitting or loss of adhesion									
TYPE 1.a. and 1.b.-at – 22 °F (– 30 °C) (Pass/Fail)	NA								
TYPE 2.a. and 2.b.-at – 14 ° (– 10 °C) (Pass/Fail)	Pass			NA					
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction NOTE: Blank lines = applicable data not reported by manufacturer.	**SWEPCO**			**TAMKO**			**TELTEX, INC.**		

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

MIGHTYPLATE			TROPISEAL			BRAI SP4			GRM 120			GRM 230			GRM 350		
Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
1a,2a	C	2	2a	C	2	2a	C	2	1a,1b	C	1	2a,2b	C	1	2a	C	1
MD NA (NA) lbf XD NA (NA) lbf MD 208 (291) lbf XD 180.4 (212) lbf			MD NA (NA) lbf XD NA (NA) lbf MD 200+ (283) lbf XD 180+ (217) lbf			MD NA lbf XD NA lbf MD 208 ( ) lbf XD 180.4 ( ) lbf			MD 102 (137) lbf XD 122 (147) lbf MD NA (NA) lbf XD NA (NA) lbf			MD 102 (132) lbf XD 105 (135) lbf MD NA (NA) lbf XD NA (NA) lbf			MD 51 (66) lbf XD 75 (86) lbf MD NA (NA) lbf XD NA (NA) lbf		
MD NA (NA) % XD NA (NA) % MD 72.38 (70) % XD 64.76 (75) %			MD NA (NA) % XD NA (NA) % MD 72.4 (64) % XD 64.8 (70) %			MD NA % XD NA % MD 72.38 ( ) % XD 64.76 ( ) %			MD 210 (283) % XD 151 (223) % MD NA (NA) % XD NA (NA) %			MD 169 (253) % XD 139 (225) % MD NA (NA) % XD NA (NA) %			MD 215 (358) % XD 138 (214) % MD NA (NA) % XD NA (NA) %		
NA (NA) NA (NA) 66,968 (70,500)			NA (NA) NA (NA) (67,500)			NA NA ( )			NA (NA) 95,550 (145,430) NA (NA)			NA (NA) 76,900 (135,570) NA (NA)			49,000 (NA) NA (81,600) NA (NA)		
0.0 g. MD 1.0 % XD 1.0 %			0.0 g. MD <1.0 % XD <1.0 %			0.0 g. MD 1.0 % XD 1.0 %			0.04 g. MD 0.0 % XD 0.0 %			0.04 g. MD 0.0 % XD 0.3 %			0.08 g. MD 0.0 % XD 0.3 %		
Pass			NA Pass			NA Pass			Pass NA			NA Pass			NA Pass		
0.06 g.			0.06 g.			0.06 g.			g.			g.			g.		
NA mm.			NA mm.			NA mm.			NA mm.			NA mm.			NA mm.		
NA Pass			NA Pass			NA Pass			Pass NA			Pass NA			Pass NA		
Pass						Pass			Pass			NA			NA		
MD NA lbf XD NA lbf MD 166.32 lbf XD lbf Pass			MD NA lbf XD NA lbf MD 166 lbf XD lbf Pass			MD NA lbf XD NA lbf MD 166.32 lbf XD lbf Pass			MD 93 lbf XD 93 lbf MD NA lbf XD NA lbf Pass			MD 93 lbf XD 93 lbf MD NA lbf XD NA lbf Pass			MD 81 lbf XD 81 lbf MD NA lbf XD NA lbf Pass		
MD NA lbf XD NA lbf MD 176.8 lbf XD lbf Pass			MD NA lbf XD NA lbf MD 176 lbf XD lbf Pass			MD NA lbf XD NA lbf MD 176.8 lbf XD lbf Pass			MD 105 lbf XD 105 lbf MD NA lbf XD NA lbf Pass			MD 105 lbf XD 105 lbf MD NA lbf XD NA lbf Pass			MD 90 lbf XD 90 lbf MD NA lbf XD NA lbf Pass		
MD NA lbf XD NA lbf MD 175.48 lbf XD lbf Pass			MD NA lbf XD NA lbf MD 175 lbf XD lbf Pass			MD NA lbf XD NA lbf MD 175.48 lbf XD lbf Pass			MD 111 lbf XD 111 lbf MD NA lbf XD NA lbf Pass			MD 111 lbf XD 111 lbf MD NA lbf XD NA lbf Pass			MD 93 lbf XD 93 lbf MD NA lbf XD NA lbf Pass		
NA g.			NA g.			NA g.			NA g.			NA g.			NA g.		
Pass MD 92 % XD 92 % MD 91 % XD 92 %			Pass MD 91.2 % XD 92.1 % MD 91.4 % XD 92.1 %			Pass MD 92 % XD 92 % MD 66.15 % XD 59.58 %			MD % XD % MD % XD %			NA MD NA % XD NA % MD NA % XD NA %			NA MD NA % XD NA % MD NA % XD NA %		
Pass			NA Pass			NA Pass			Pass NA			NA Pass			NA Pass		
TEXAS REFINERY CORP.			TROPICAL			U.S. INTEC INC.			W.R. GRACE & CO.								

continued →

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MODIFIED BITUMENS Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-56M	GRM 500								
	Type	Class	Grade	Type	Class	Grade	Type	Class	Grade
	1a,1b	C	1						
1. BREAKING STRENGTH									
GRADE 1-Min. 66 lbf (294N)	MD 150 (141) lbf XD 168 (152) lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 2-Min. 176 lbf (785N)	MD NA (NA) lbf XD NA (NA) lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
2. ULTIMATE ELONGATION (ELONGATION AT BREAK)									
GRADE 1-Min. 4.0%	MD 164 (202) % XD 109 (151) %			MD ____ % XD ____ %			MD ____ % XD ____ %		
GRADE 2-Min. 8.0%	MD NA (NA) % XD NA (NA) %			MD ____ % XD ____ %			MD ____ % XD ____ %		
3. LOAD STRAIN PRODUCT [BREAK STRENGTH (N) x ULTIMATE ELONGATION (%)]									
GRADE 1-If breaking strength is not met; 19400	NA (NA)								
GRADE 1-If breaking strength is met; 2940	109,700 (102,510)								
GRADE 2-Min. 14700	NA (NA)								
4. WATER RESISTANCE									
Shall not absorb more than 1.0g. of water	0.07 g.			____ g.			____ g.		
Dimensional change shall not exceed ± 1.0%	MD 0.0 % XD 0.0 %			MD ____ % XD ____ %			MD ____ % XD ____ %		
5. LOW TEMP FLEXIBILITY — 4 out of 5 samples will pass water tightness test									
TYPE 1-After testing at – 22 °F (– 30 °C) (Pass/Fail)	Pass								
TYPE 2-After testing at – 14 °F (– 10 °C) (Pass/Fail)	NA								
6. WATER VAPOR TRANSMISSION									
Max. 1.0g./m² x 24h.	____ g.			____ g.			____ g.		
7. THERMAL STABILITY									
TYPE 1, CLASS B ONLY-Expansion or contraction less than 1 mm/m between 10 and 30 cycles	NA mm.			____ mm.			____ mm.		
8. DYNAMIC IMPACT (PUNCTURING)									
Pass water tightness test after energy impact of:									
GRADE 1 - 1.8 ft. lbf (2.45J) (Pass/Fail)	Pass								
GRADE 2 - 3.6 ft. lbf (4.9J) (Pass/Fail)	NA								
9. STATIC PUNCTURING									
TYPE 1-After 1 hr. at 55 lbf (245N) shall pass water tightness test (Pass/Fail)	Pass								
10. LAP JOINT STRENGTH									
5 Day Conditioning									
GRADE 1-Min. 66 lbf (294N)	MD 104 lbf XD 104 lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 2-Min. 176 lbf (785N)	MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass								
Immersion at 50°C for 5 Days									
GRADE 1-Min. 66 lbf (294N)	MD 121 lbf XD 121 lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 2-Min. 176 lbf (785N)	MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass								
Immersion at 50°C for 5 Days Plus Freeze Thaw Cycles									
GRADE 1-Min 66 lbf (294N)	MD 122 lbf XD 122 lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 2-Min 176 lbf (785N)	MD NA lbf XD NA lbf			MD ____ lbf XD ____ lbf			MD ____ lbf XD ____ lbf		
GRADE 1 & 2-Pass water tightness test (Pass/Fail)	Pass								
11. GRANULE EMBEDMENT									
CLASS A ONLY-Max. 0.5 g. loss	NA g.			____ g.			____ g.		
12. ACCELERATED WEATHERING									
TYPE 1 ONLY-after prescribed no. of cycles (approx. 90 days)									
Shall not show cracking or blistering (Pass/Fail)									
Retain 90% of breaking strength, Test 1	MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
Retain 90% of elongation at break, Test 2	MD ____ % XD ____ %			MD ____ % XD ____ %			MD ____ % XD ____ %		
13. CRACK BRIDGING CAPABILITY									
Shall show no cracking, splitting or loss of adhesion									
TYPE 1.a. and 1.b.-at – 22 °F (– 30 °C) (Pass/Fail)	Pass								
TYPE 2.a. and 2.b.-at – 14 ° (– 10 °C) (Pass/Fail)	NA								
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	W.R. GRACE & CO.								
NOTE: Blank lines = applicable data not reported by manufacturer.									

( ) = "Comparative Test" data; see Foreword for explanation.

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PVC POLYVINYL CHLORIDE Part 1 *(See Part 2 for Test Results)*

PRODUCT NAME ►	ALKORPLAN	RHENOFOL C-45	RHENOFOL C-52	RHENOFOL CV40	RHENOFOL CV48	TROCAL SMA
1. PRODUCT DESCRIPTION						
a) Reinforcement	None	None	None	Polyester	Polyester	None
b) Color	Grey	Pale Grey	White	Pale Grey	Pale Grey/White	Beige
c) Installed wt. (lbs. per sq. ft. w/o ballast)	.33	.30	.336	.266	.327	.30
2. COATING REQUIRED	None	None	None	None	None	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Solvent/Heat	Solvent/Heat	Solvent/Heat	Solvent/Heat	Solvent/Heat	Solvent/Heat
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)	10	10		10		10 lbs. Min.
b) Partially adhered-method			Mech. Fastened		Mech. Fastened	
c) Fully adhered-method						
d) Protected Membrane Roofing Assembly	●	●	●	●	●	●
6. MINIMUM SLOPE	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
7. USE OVER						
a) Perlite	●	●	●	●	●	●
b) Urethane	●	●	●	●	●	●
c) Wood fibre	●	●	●	●	●	●
d) Fibre glass	●	●	●	●	●	●
e) Expanded polystyrene	●	●	●	●	●	●
f) Felt faced composites	●	●	●	●	●	With Slipsheet
g) Other	Polyisocyanurates					See Specifications
8. RESTRICTED REGIONS *(See "Important Notes")*	Tropical Climate	See Literature	See Literature	See Literature	See Literature	See Literature
9. WORKABLE TEMP RANGE	0°F-115°F	0°F-120°F	0°F-120°F	0°F-120°F	0°F-120°F	0°F-120°F
10. FLASHING MATERIAL	PVC Coated Metal	PVC Coated Metal	PVC Coated Metal, White	PVC Coated Metal	PVC Coated Metal, Grey or White	PVC Coated Metal or Reinforced Membrane
11. FLASHING METHOD	Solvent/Heat	Solvent/Heat	Solvent/Heat	Solvent/Heat	Solvent/Heat	Solvent/Heat
12. PRE-FORMED ACCESS AVAILABLE	Yes	Yes	Yes	Yes	Yes	Yes
13. COUNTRY OF ORIGIN	Belgium	W. Germany	W. Germany	W. Germany	W. Germany	W. Germany
14. COUNTRY OF MANUFACTURE	Belgium	W. Germany/USA	W. Germany/USA	W. Germany/USA	W. Germany/USA	USA
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)	1970	1966	1980	1966	1966	1971
b) U.S.A. (Year, City-first installed)	1980-Lincoln, NE	1976-Indianapolis	1982	1976	1976	1977-New York
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign	Not Available	1,500,000 All Types	1,500,000 All Types	1,500,000 All Types	1,500,000 All Types	>20,000,000
b) U.S.A.	50,000	100,000	1,000	27,000	108,000	>10,000,000
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	5/10	5/10	5/10	5/10	10
b) Renewable after inspection						●
c) Scope of coverage (repair of leaks)						
c.1 Material only						●
c.2 Workmanship & material	●	●	●	●	●	●
d) Monetary limitation						
d.1 None	●	●	●	●	●	●
d.2 Original cost of installation						●
d.3 $ per square						
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE	Coal Tar See Chem. Resistance List	Coal Tar, Oils, Animal Fats (applicable with proper procedures)	Coal Tar, Oils, Animal Fats (applicable with proper procedures)	Coal Tar, Oils, Animal Fats (applicable with proper procedures)	Coal Tar, Oils, Animal Fats (applicable with proper procedures)	Coal Tar See Chemical Resistance List
19.						
20.						
21. METHOD OF DISTRIB.	Mfgr/Reps.	Direct to Contr.				Manufacturer/Reps.
22. # REGIONAL SERVICE LOCATIONS	5	9				4
23. LICENSED APPLICATOR AGREEMENT	Yes	Yes				Yes
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	On Job Training	Factory, Field				Field, Seminars
25. SALES INFORMATION; CONTACT	Office	Customer Service				Sales Aid Group
26. TECHNICAL INFORMATION; CONTACT	Office	Technical Service				Technical Service
COMPANY►	ALKOR-DIVISION, HEDWIN CORP.	BARRA CORPORATION OF AMERICA, INC.				DYNAMIT NOBEL

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PVC POLYVINYL CHLORIDE Part 1 *(See Part 2 for Test Results)*

TROCAL S-60	TROCAL S-48*	GENSEAL ACR	INTEROOF "U"	INTEROOF "B"	PLYROOF PVC GREY	PLYROOF PVC WHITE	SUCOFLEX F132	SUCOFLEX F127
None	None	None	None	None	None	None	Fiberglass	Polyester
Egg Shell	Egg Shell	Grey/Black	Grey	Grey	Grey	White	Light Grey	Light Grey
.30	.30	.30	.40	.30	.32	.32	.33	.37
None	None		None	None	None	None	None	None
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
Solvent/Heat	Solvent/Heat	Solvent	Solvent/Thermal	Solvent/Thermal	Solvent/Heat	Solvent/Heat	Hot Air Weld	Hot Air Weld
		●		12	10-13	10-13	10-12	
●	●	●	●		Batten	Batten	●	Mech. Fastened
		●					●	
					●	●	●	
Dead Level	Dead Level		Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●		●	●	●	●	●
●	●	●*	●	●	●	●	●	●
●	●	●	●	●	●	●		
See Specifications	See Specifications	Cyanurates *Slipsheet			Approval of Plyroof Tech. Dept.	Approval of Plyroof Tech. Dept.	Concrete, Plywood, Consult Mfgr.	Concrete, Plywood, Consult Mfgr.
See Literature	See Literature	See Manufacturer	None	None	None	None	None	None
0°F-120°F	0°F-120°F	See Manufacturer	0°F-110°F	0°F-100°F	5°F-120°F	5°F-120°F	0°F-120°F	0°F-120°F
PVC Coated Metal or Reinforced Membrane	PVC Coated Metal or Reinforced Membrane	Membrane	PVC Coated Metal	PVC Coated Metal	PVC Coated Metal	PVC Coated Metal	PVC Clad Metal and F132 Membrane	PVC Clad Metal and F132 Membrane
Solvent/Heat	Solvent/Heat	See Manufacturer	Solvent/Heat	Solvent/Heat	Solvent/Heat	Solvent/Heat	Hot Air Weld	Hot Air Weld
Yes	Yes		Yes	Yes	No	No	Yes	Yes
W. Germany	W. Germany	USA	Austria	Austria	USA	USA	Switzerland	Switzerland
USA/W. Germany	USA/W. Germany	USA	Austria	Austria	USA	USA	Switzerland	Switzerland
1966			1970	1968			1966	1969
1971-New York	1982-USA	1980	1982-Los Angeles	1982-Detroit	1975-Pueblo	1981-Franklin	1980-Hawthorne	1980-El Segundo
>15,000,000							Consult Mfgr.	Consult Mfgr.
>5,000,000		21,000			488,000	26,500	400,000	Consult Mfgr.
10	10	10	10	10	10	10	10	10
●	●	No			No	No		
●	●	●						
●	●	●	●	●	●	●	●	●
●	●	●	●	●			●	●
●	●	●			●	●		
●	●				●	●		
●	●			●	●	●		
Coal Tar - See Chemical Resistance List	Coal Tar - See Chemical Resistance List	Coal Tar	Coal Tar	Coal Tar	Coal Tar	Coal Tar	Bitumen, Oils, Animal Fats (applicable w/ proper procedures*)	Bitumen, Oils, Animal Fats (applicable w/ proper procedures*)
Manufacturer/Reps		Distributors	Direct		Direct		Direct	
4		8			4		6	
Yes		Yes	Yes		Yes		Yes	
Field, Seminars		Field, Seminars	Field		Field		Factory, Field	
Sales Aid Group		T. Clapperton	Michael Haas		Charles Taft		Glenn Taylor, Dir. Mktg.	
Technical Service		K. Russell	R. Coursey		Steve Condren		Brad Ellis, Tech. Dir.	
DYNAMIT NOBEL		GENERAL TIRE BLDG. PRODUCTS CO.	IPW INTERPLASTIC		PLYMOUTH RUBBER COMPANY, INC.		PMS/SUCOFLEX	
*48 mil Version of Trocal/S-60							*Consult Mfgr.	

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PVC POLYVINYL CHLORIDE Part 1 *(See Part 2 for Test Results)*

PRODUCT NAME ►	NERVAPLY	NERVAPLY UB	SARNAFIL G21-410	SARNAFIL S21-327	SARNAFIL G21-442	FLEXHIDE 34
1. PRODUCT DESCRIPTION						
a) Reinforcement	None	None	Fiberglass	Polyester	Fiberglass	None
b) Color	Slate	Bone	Grey & Asst'd	Grey	Grey	Light Grey
c) Installed wt. (lbs. per sq. ft. w/o ballast)	.36	.49	.33	.33	.33	.23
2. COATING REQUIRED	None	None	None	None	None	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Solvent/Heat	Solvent/Heat	Hot Air Weld	Hot Air Weld	Hot Air Weld	Solvent/Heat
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)	10				10	10
b) Partially adhered-method	Loose Laid	Bar/Strip/Washer		Mech. Fastened		
c) Fully adhered-method		No	●			
d) Protected Membrane Roofing Assembly	No	No			●	●
6. MINIMUM SLOPE	1:12	6:12+	Dead Level	Dead Level	Dead Level	Dead Level
7. USE OVER						
a) Perlite	●	●			●	●
b) Urethane	●	●	●	●	●	●
c) Wood fibre	●	●	●	●	●	●
d) Fibre glass	●	●		●	●	●
e) Expanded polystyrene	●	●		With Slipsheet	With Slipsheet	●
f) Felt faced composites	●	●				●
g) Other						Isocyanurate, Extruded Polystyrene
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	None	None
9. WORKABLE TEMP RANGE	5°F-140°F	5°F-140°F	0°F-120°F	0°F-120°F	0°F-120°F	
10. FLASHING MATERIAL	Self or PVC Metal	Self or PVC Metal	G21-410	G21-410	G21-442	Coated Metal
11. FLASHING METHOD	Solvent/Heat	Solvent/Heat	Adhesive & Heat Weld	Adhesive & Heat Weld	Adhesive & Heat Weld	Solvent/Heat
12. PRE-FORMED ACCESS AVAILABLE	No	No	Yes	Yes	Yes	Yes
13. COUNTRY OF ORIGIN	USA	USA	Switzerland	Switzerland	Switzerland	USA
14. COUNTRY OF MANUFACTURE	USA	USA	USA	USA	USA	USA
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)			1964	1964	1964	
b) U.S.A. (Year, City-first installed)	1980-NY City	1980-Flint, MI	1975-New Hampshire	1978-Illinois	1977-Massachusetts	1978-Stanhope
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign	None	None	NA	NA	NA	
b) U.S.A.	80,000	70,000	Thousands	Thousands	Thousands	<100,000
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	10	10	10	10	5 or 10
b) Renewable after inspection	●	●	No	No	No	
c) Scope of coverage (repair of leaks)			●	●	●	
c.1 Material only						
c.2 Workmanship & material	●	●	●	●	●	●
d) Monetary limitation						
d.1 None	●	●				
d.2 Original cost of installation						●
d.3 $ per square	$3.00	$3.00	Replacement Value	Replacement Value	Replacement Value	
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE	Coal Tar	Needs Separate Sheet	Bitumen, Oils Animal Fats	Bitumen, Oils Animal Fats	Bitumen, Oils, Animal Fats	Petroleum, Coal Tar Products See Specifications
19.						
20.						
21. METHOD OF DISTRIB.	Direct & Distributor		Direct			Licensed Contractors Only
22. # REGIONAL SERVICE LOCATIONS	2		6			1
23. LICENSED APPLICATOR AGREEMENT	Yes		Yes			Yes
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Field		Factory, Field, Seminars			Field, Seminars, Factory
25. SALES INFORMATION; CONTACT	J. Klaus		Ruth Warshaw			S. Steck
26. TECHNICAL INFORMATION; CONTACT	J. Lynch		Ed Stewart			F. Neuwirth
COMPANY►	RUBBER PLASTICS COMPOUND COMPANY, INC.		SARNAFIL (U.S.) INC.			U.S. MINERAL PRODUCTS CO.

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PVC POLYVINYL CHLORIDE Part 1 *(See Part 2 for Test Results)*

FLEXHIDE 45	FLEXHIDE LR 50*	FLAGON C						
None	Polyester	None						
Light Grey	Light Grey or White	Grey						
.30	.32							
None	None	None						
●	●	●						
●	●	●						
Solvent/Heat	Solvent/Heat	Solvent/Heat						
10		10						
	Mech. Fastened							
●								
Dead Level	Dead Level	Dead Level						
●	●	●						
●	●	●						
●	●	●						
●	●	●						
●	●	●						
●	●	●						
Isocyanurate, Extruded Polystyrene	Isocyanurate, Extruded Polystyrene							
None	None	None						
		0°F-120°F						
Coated Metal	Coated Metal	PVC/PVC Ctd. Metal						
Solvent/Heat	Solvent/Heat	Solvent/Heat						
Yes	Yes	Yes						
USA	USA	Italy						
USA	USA	USA						
		1963						
1980-Stanhope	1978-Stanhope	1978						
		800,000						
<50,000	<30,000	400,000						
5 or 10*	5 or 10	10						
		●						
●	●	●						
		●						
●	●							
●	●							
●	●	●						
Petroleum, Coal Tar Products See Specifications	Petroleum, Coal Tar Products See Specifications	Coal Tar						
Licensed Contractors Only		Direct, Distributors						
1		7						
Yes		Yes						
Field, Seminars, Factory		Field, Seminars						
S. Steck		201/528-6727						
F. Neuwirth		201/528-6727						
U.S. MINERAL PRODUCTS COMPANY		WAT PRO, INC.						

*PVC with woven polyester reinforcing fabric. See page 50 for Test Results.

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PVC Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-54M	ALKORPLAN Type 1	ALKORPLAN Class A	RHENOFOL C-45 Type 1	RHENOFOL C-45 Class A	RHENOFOL C-52 Type 1	RHENOFOL C-52 Class A,B
1. THICKNESS						
TYPE 1-Min. 39 mils (1.0 mm)	48 ( ) mils		45 (44) mils		52 (51) mils	
TYPE 2-Min. 47 mils (1.2 mm)	NA mils		NA (NA) mils		NA (NA) mils	
TYPE 1 & 2-No measured thickness lower than 3 mils (.08 mm) below nominal thickness (Pass/Fail)	Pass ( )		(Pass)		(Pass)	
2. TENSILE STRENGTH						
TYPE 1-Shall not be less than 1700 psi (11.7 MPa)	MD 2800 ( ) psi	XD 2800 ( ) psi	MD (2856) psi	XD (2742) psi	MD (2671) psi	XD (2430) psi
TYPE 2-Shall not be less than 1500 psi (10.3 MPa)	MD NA psi	XD NA psi	MD NA (NA) psi	XD NA (NA) psi	MD NA (NA) psi	XD NA (NA) psi
3. LAP JOINT STRENGTH						
Before boiling condition:						
Shall not be less than 75% of the breaking strength of the material (Test 2)	MD %	XD %	MD %	XD %	MD %	XD %
No shearing of lap joint shall occur (Pass/Fail)	Pass					
After one week in boiling water:						
Shall show no delamination (Pass/Fail)	Pass					
Shall not be less than 70% of the breaking strength of the material (Test 2)	MD %	XD %	MD %	XD %	MD %	XD %
4. ELONGATION AT BREAK						
Shall not be less than 250%	MD <350 ( ) %	XD <350 ( ) %	MD (290) %	XD (283) %	MD (305) %	XD (318) %
5. LOW TEMPERATURE IMPACT						
Shall not have more than 2 specimens out of 10 fail (Pass/Fail)	Pass					
6. RESISTANCE TO HEAT AGING						
No decrease in tensile strength as received (Test 2)	MD psi	XD psi	MD psi	XD psi	MD psi	XD psi
Elongation at break shall not change by more than 30% of value as received (Test 4)	MD <30 %	XD <30 %	MD %	XD %	MD %	XD %
Shall show no delamination (Pass/Fail)	Pass					
7. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking at −22°F (−30°C) (Pass/Fail)	Pass		Pass		Pass	
8. RESISTANCE TO ACCELERATED WEATHERING						
CLASS B ONLY — after exposure to accelerated weathering:						
Shall not show cracking, blistering or color change (Pass/Fail)			NA			
Elongation at break shall not be reduced by more than 5.0% as received	MD <5 %	XD <5 %	MD NA %	XD NA %	MD %	XD %
Shall pass low temperature impact test (Pass/Fail)	Pass		NA			
Shall pass low temperature flexibility test (Pass/Fail)	Pass		NA			
9. PERMEABILITY (WATER VAPOR TRANSMISSION)						
Max. 4.0 g./m² in 24h.	2.35 g		2.7 g		g	
10. WATER ABSORPTION						
Shall not absorb a mass of water greater than 2.0%	1.0 %		%		%	
Elongation at break shall not be less than 90% of elongation at break as measured in test 4	MD %	XD %	MD %	XD %	MD %	XD %
The tensile strength will not be less than that of the tensile strength as measured in test 2	MD psi	XD psi	MD psi	XD psi	MD psi	XD psi
11. DIMENSIONAL CHANGE						
Without loading: **TYPE 1**-Shall not change more than 2.0%	MD <1.5 %	XD <1.5 %	MD %	XD %	MD %	XD %
TYPE 2-Shall not change more than 0.5%	MD NA %	XD NA %	MD NA %	XD NA %	MD NA %	XD NA %
With loading: Shall not change more than 0.5%	%		%		%	
Shall not change more than 0.2%	%		%		%	
12. CONE PENETRATION						
Shall not penetrate thru at less than 7 psi (30N) force	psi		psi		psi	
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	**ALKOR-DIVISION, HEDWIN CORP.**		**BARRA CORPORATION OF AMERICA, INC.**			
NOTE: Blank lines = applicable data not reported by manufacturer.						

( ) = "Comparative Test" data; see Foreword for explanation.

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PVC Part 2: Test Results *(See Part 1 for General Information)*

RHENOFOL CV40	RHENOFOL CV48	TROCAL SMA	TROCAL S-60	TROCAL S-48	GEN SEAL ACR
Type / Class	Type / Class	Type / Class	Type / Class	Type / Class	Type / Class
2 / A,B	2 / A,B	1 / A	1 / B	1 / B	1 / B
NA (NA) mils 40 (39) mils (Pass)	NA (NA) mils 48 (48) mils (Pass)	48 (46) mils NA (NA) mils Pass (Pass)	60 mils NA mils Pass	48 mils NA mils Pass	45 (41) mils NA (NA) mils Pass ( )
MD NA (NA) psi XD NA (NA) psi MD (2080) psi XD (2172) psi	MD NA (NA) psi XD NA (NA) psi MD (2688) psi XD (2750) psi	MD >2130 (2488) psi XD (2729) psi MD NA (NA) psi XD NA (NA) psi	MD >2130 psi XD psi MD psi XD psi	MD >2130 psi XD psi MD psi XD psi	MD 1800 (2166) psi XD 1900 (2113) psi MD NA (NA) psi XD NA (NA) psi
MD % XD % MD % XD %	MD % XD % MD % XD %	MD >75 % XD % Pass Pass MD >70 % XD %	MD >75 % XD % Pass Pass MD >70 % XD %	MD >75 % XD % Pass Pass MD >70 % XD %	MD >75 % XD >75 % Pass Pass MD >70 % XD >70 %
MD (178) % XD (117) %	MD (190) % XD (112) %	MD >300 (298) % XD (408) %	MD >300 % XD %	MD >300 % XD %	MD 300 (270) % XD 300 (285) %
		Pass	Pass	Pass	
MD psi XD psi MD % XD %	MD psi XD psi MD % XD %	MD >2130 psi XD psi MD 300 % XD % Pass	MD >2130 psi XD psi MD >300 % XD % Pass	MD >2130 psi XD psi MD >300 % XD % Pass	MD 1890 psi XD 1995 psi MD −6 % XD −6 % Pass
Pass	Pass	Pass	Pass	Pass	Pass
MD % XD %	MD % XD %	Pass MD <5 % XD % Pass Pass	Pass MD <5 % XD % Pass Pass	Pass MD <5 % XD % Pass Pass	Pass MD % XD % Pass
g.	g.	>4.0 g.	>4.0 g.	>4.0 g.	<1.0 g.
% MD % XD % MD psi XD psi	% MD % XD % MD psi XD psi	<0.2 % MD >90 % XD % MD >2130 psi XD psi	<0.2 % MD >90 % XD % MD >2130 psi XD psi	<0.2 % MD >90 % XD % MD >2130 psi XD psi	<1.0 % MD 90 % XD 90 % MD psi XD psi
MD NA % XD NA % MD % XD % % % %	MD NA % XD NA % MD % XD % % % %	MD <0.5 % XD % MD NA % XD NA % % % %	MD <0.5 % XD % MD NA % XD NA % % % %	MD <0.5 % XD % MD NA % XD % % % %	MD <1.0 % XD <1.0 % MD NA % XD NA % % % %
psi	psi	>7 psi	>7 psi	>7 psi	>7 psi
BARRA CORPORATION OF AMERICA, INC.		DYNAMIT NOBEL			GENERAL TIRE & RUBBER

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PVC Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-54M	INTEROOF "U" Type 1	INTEROOF "U" Class B	INTEROOF "B" Type 1	INTEROOF "B" Class B	PLYROOF PVC GREY Type 1	PLYROOF PVC GREY Class B
1. THICKNESS						
TYPE 1-Min. 39 mils (1.0 mm)	( ) mils		( ) mils		45 (50) mils	
TYPE 2-Min. 47 mils (1.2 mm)	NA mils		NA mils		NA (NA) mils	
TYPE 1 & 2-No measured thickness lower than 3 mils (.08 mm) below nominal thickness (Pass/Fail)	( )		( )		Pass (Pass)	
2. TENSILE STRENGTH						
TYPE 1-Shall not be less than 1700 psi (11.7 MPa)	MD ( ) psi	XD ( ) psi	MD ( ) psi	XD ( ) psi	MD 2147 (2437) psi	XD 1873 (2206) psi
TYPE 2-Shall not be less than 1500 psi (10.3 MPa)	MD NA psi	XD NA psi	MD NA psi	XD NA psi	MD NA (NA) psi	XD NA (NA) psi
3. LAP JOINT STRENGTH						
Before boiling condition:						
Shall not be less than 75% of the breaking strength of the material (Test 2)	MD %	XD %	MD %	XD %	MD 76.0 %	XD 83.5 %
No shearing of lap joint shall occur (Pass/Fail)						
After one week in boiling water:						
Shall show no delamination (Pass/Fail)						
Shall not be less than 70% of the breaking strength of the material (Test 2)	MD %	XD %	MD %	XD %	MD 74 %	XD 75 %
4. ELONGATION AT BREAK						
Shall not be less than 250%	MD ( ) %	XD ( ) %	MD ( ) %	XD ( ) %	MD 260 (285) %	XD 255 (298) %
5. LOW TEMPERATURE IMPACT						
Shall not have more than 2 specimens out of 10 fail (Pass/Fail)	Pass		Pass		Pass	
6. RESISTANCE TO HEAT AGING						
No decrease in tensile strength as received (Test 2)	MD psi	XD psi	MD psi	XD psi	MD 1976 psi	XD 1779 psi
Elongation at break shall not change by more than 30% of value as received (Test 4)	MD %	XD %	MD %	XD %	MD 9 %	XD 20 %
Shall show no delamination (Pass/Fail)					Pass	
7. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking at – 22 °F (– 30 °C) (Pass/Fail)	Pass		Pass		Pass	
8. RESISTANCE TO ACCELERATED WEATHERING						
CLASS B ONLY — after exposure to accelerated weathering:						
Shall not show cracking, blistering or color change (Pass/Fail)	Pass		Pass		Pass	
Elongation at break shall not be reduced by more than 5.0% as received	MD %	XD %	MD %	XD %	MD 3.5 %	XD 4.0 %
Shall pass low temperature impact test (Pass/Fail)					Pass	
Shall pass low temperature flexibility test (Pass/Fail)					Pass	
9. PERMEABILITY (WATER VAPOR TRANSMISSION)						
Max. 4.0 g./m² in 24h.	1.03 g		1.03 g		2.24 g	
10. WATER ABSORPTION						
Shall not absorb a mass of water greater than 2.0%	%		%		0.93 %	
Elongation at break shall not be less than 90% of elongation at break as measured in test 4	MD %	XD %	MD %	XD %	MD 91 %	XD 90 %
The tensile strength will not be less than that of the tensile strength as measured in test 2	MD psi	XD psi	MD psi	XD psi	MD 1867 psi	XD 1773 psi
11. DIMENSIONAL CHANGE						
Without loading: **TYPE 1**-Shall not change more than 2.0%	MD %	XD %	MD %	XD %	MD 2.5 %	XD 1.0 %
TYPE 2-Shall not change more than 0.5%	MD NA %	XD NA %	MD NA %	XD NA %	MD NA %	XD NA %
With loading: Shall not change more than 0.5%	%		%		%	
Shall not change more than 0.2%	%		%		%	
12. CONE PENETRATION						
Shall not penetrate thru at less than 7 psi (30N) force	psi		psi		9 psi	
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction NOTE: Blank lines = applicable data not reported by manufacturer.	**IPW INTERPLASTIC**				**PLYMOUTH RUBBER COMPANY INC.**	

( ) = "Comparative Test" data; see Foreword for explanation.

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PVC Part 2: Test Results *(See Part 1 for General Information)*

PLYROOF PVC WHITE		SUCOFLEX F132		SUCOFLEX F127		NERVAPLY		NERVAPLY UB		SARNAFIL G21-410	
Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class
1	B	2	B	2	B	2	A & B	2	A & B	2	B
45 (50) mils		NA (NA) mils		NA (NA) mils		NA (NA) mils		NA (NA) mils		NA (NA) mils	
NA (NA) mils		48, 60, 90 ( ) mils		48 ( ) mils		48 (48) mils		48 (53) mils		47 (48) mils	
Pass (Pass)		Pass ( )		Pass ( )		Pass (Pass)		Pass (Pass)		Pass (Pass)	
MD 2147 (2302) psi XD 1873 (2048) psi		MD NA psi XD NA psi		MD NA psi XD NA psi		MD NA (NA) psi XD NA (NA) psi		MD NA (NA) psi XD NA (NA) psi		MD NA (NA) psi XD NA (NA) psi	
MD NA (NA) psi XD NA (NA) psi		MD 1557 ( ) psi XD 1528 ( ) psi		MD 3070 ( ) psi XD 3085 ( ) psi		MD 2390 (2723) psi XD (2530) psi		MD 2640 (2951) psi XD (2803) psi		MD 1566 (1651) psi XD 1523 (1579) psi	
MD 76.0 % XD 83.5 %		MD 8.4 % XD %		MD % XD %		MD % XD %		MD % XD %		MD 103 % XD %	
		Pass		Pass		Pass		Pass		Pass	
		Pass		Pass		Pass		Pass		Pass	
MD 74 % XD 75 %		MD 8.4 % XD %		MD % XD %		MD % XD %		MD % XD %		MD 105 % XD %	
MD 260 (295) % XD 255 (298) %		MD 263 ( ) % XD 253 ( ) %		MD % XD %		MD 325 (298) % XD (310) %		MD 325 (303) % XD (305) %		MD 292 (329) % XD 264 (288) %	
Pass		Pass		Pass		Pass		Pass		Pass	
MD 1976 psi XD 1779 psi		MD 1556 psi XD 1556 psi		MD 3069 psi XD 3084 psi		MD 2490 psi XD psi		MD 2772 psi XD psi		MD 1625 psi XD psi	
MD 9 % XD 20 %		MD 236 % XD 252 %		MD % XD %		MD 7 % XD %		MD 7 % XD %		MD 295.8 % XD %	
Pass		Pass		Pass		Pass		Pass		Pass	
Pass		Pass		Pass		Pass		Pass		Pass	
Pass		Pass		Pass		Pass		Pass		Pass	
MD 3.5 % XD 4.0 %		MD % XD %		MD % XD %		MD 7.6 % XD 0.4 %		MD 7.6 % XD %		MD % XD 4.7 %	
Pass		Pass		Pass		Pass		Pass		Pass	
Pass		Pass		Pass		Pass		Pass		Pass	
2.24 g.		1.8 g.		1.8 g.		0.3 g.		0.3 g.		1.21 g.	
0.93 %		%		%		%		%		1.29 %	
MD 91 % XD 90 %		MD 251 % XD 241 %		MD % XD %		MD % XD %		MD % XD %		MD 267.9 % XD %	
MD 1867 psi XD 1773 psi		MD 1556 psi XD 1484 psi		MD psi XD psi		MD psi XD psi		MD psi XD psi		MD 1610 psi XD psi	
MD 2.5 % XD 1.0 %		MD NA % XD NA %		MD NA % XD NA %		MD NA % XD NA %		MD NA % XD NA %		MD NA % XD NA %	
MD NA % XD NA %		MD .04 % XD .02 %		MD .04 % XD .02 %		MD 0.4 % XD 0.3 %		MD 0.4 % XD 0.3 %		MD 0.039 % XD 0.0196 %	
%		.05 %		.03 %		0.4 %		0.4 %		0.032 %	
%		.02 %		.05 %		0.18 %		0.18 %		0.061 %	
9 psi		psi		psi		psi		psi		10.6 psi	
PLYMOUTH RUBBER CO. INC.		PMS/SUCOFLEX		RUBBER PLASTICS COMPOUND CO., INC.						SARNAFIL (U.S.) INC.	

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PVC Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-54M	SARNAFIL S21-327 Type 2	SARNAFIL S21-327 Class B	SARNAFIL G21-442 Type 2	SARNAFIL G21-442 Class A	FLEXHIDE 34 Type 1	FLEXHIDE 34 Class A
1. THICKNESS						
TYPE 1-Min. 39 mils (1.0 mm)	NA (NA) mils		NA (NA) mils		(34) mils	
TYPE 2-Min. 47 mils (1.2 mm)	47 (49) mils		(47) mils		NA (NA) mils	
TYPE 1 & 2-No measured thickness lower than 3 mils (.08 mm) below nominal thickness (Pass/Fail)	Pass (Pass)					
2. TENSILE STRENGTH						
TYPE 1-Shall not be less than 1700 psi (11.7 MPa)	MD NA (NA) psi XD NA (NA) psi		MD NA (NA) psi XD NA (NA) psi		MD (2927) psi XD (2873) psi	
TYPE 2-Shall not be less than 1500 psi (10.3 MPa)	MD 2770 (3365) psi XD 3090 (3306) psi		MD (1818) psi XD (1755) psi		MD NA (NA) psi XD NA (NA) psi	
3. LAP JOINT STRENGTH						
Before boiling condition:						
Shall not be less than 75% of the breaking strength of the material (Test 2)	MD 107 % XD %		MD % XD %		MD % XD %	
No shearing of lap joint shall occur (Pass/Fail)	Pass					
After one week in boiling water:						
Shall show no delamination (Pass/Fail)	Pass					
Shall not be less than 70% of the breaking strength of the material (Test 2)	MD 94.2 % XD %		MD % XD %		MD % XD %	
4. ELONGATION AT BREAK						
Shall not be less than 250%	MD (84) % XD (83) %		MD (309) % XD (307) %		MD (248) % XD (303) %	
5. LOW TEMPERATURE IMPACT						
Shall not have more than 2 specimens out of 10 fail (Pass/Fail)	Pass					
6. RESISTANCE TO HEAT AGING						
No decrease in tensile strength as received (Test 2)	MD 2800 psi XD psi		MD psi XD psi		MD psi XD psi	
Elongation at break shall not change by more than 30% of value as received (Test 4)	MD % XD %		MD % XD %		MD % XD %	
Shall show no delamination (Pass/Fail)	Pass					
7. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking at – 22 °F (– 30 °C) (Pass/Fail)	Pass					
8. RESISTANCE TO ACCELERATED WEATHERING						
CLASS B ONLY — after exposure to accelerated weathering:						
Shall not show cracking, blistering or color change (Pass/Fail)	Pass		NA		NA	
Elongation at break shall not be reduced by more than 5.0% as received	MD % XD %		MD NA % XD NA %		MD NA % XD NA %	
Shall pass low temperature impact test (Pass/Fail)	Pass		NA		NA	
Shall pass low temperature flexibility test (Pass/Fail)	Pass		NA		NA	
9. PERMEABILITY (WATER VAPOR TRANSMISSION)						
Max. 4.0 g./m² in 24h.	1.44 g		g		g	
10. WATER ABSORPTION						
Shall not absorb a mass of water greater than 2.0%	1.5 %		%		%	
Elongation at break shall not be less than 90% of elongation at break as measured in test 4	MD % XD %		MD % XD %		MD % XD %	
The tensile strength will not be less than that of the tensile strength as measured in test 2	MD 2915 psi XD psi		MD psi XD psi		MD psi XD psi	
11. DIMENSIONAL CHANGE						
Without loading: **TYPE 1**-Shall not change more than 2.0%	MD NA % XD NA %		MD NA % XD NA %		MD % XD %	
TYPE 2-Shall not change more than 0.5%	MD 0.004 % XD 0.064 %		MD % XD %		MD NA % XD NA %	
With loading: Shall not change more than 0.5%	0.031 %		%		%	
Shall not change more than 0.2%	0.052 %		%		%	
12. CONE PENETRATION						
Shall not penetrate thru at less than 7 psi (30N) force	12.17 psi		psi		psi	
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	**SARNAFIL (U.S.) INC.**				**U.S. MINERAL PRODUCTS CO.**	
NOTE: Blank lines = applicable data not reported by manufacturer.						

continued →

) = "Comparative Test" data; see Foreword for explanation.

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PVC Part 2: Test Results *(See Part 1 for General Information)*

FLEXHIDE 45		FLAGON C			
Type	Class	Type	Class	Type	Class
1	A	1,2	A & B		
(46) mils NA (NA) mils		48 (50) mils 48 (50) mils Pass (Pass)		mils mils	
MD (2925) psi XD (2635) psi MD NA (NA) psi XD NA (NA) psi		MD 2600 (2915) psi XD 2600 (2837) psi MD (2915) psi XD (2837) psi		MD psi XD psi MD psi XD psi	
MD % XD % MD % XD %		MD 80 % XD 80 % Pass MD % XD %		MD % XD % MD % XD %	
MD (280) % XD (300) %		MD 350 (320) % XD 350 (323) %		MD % XD %	
		Pass			
MD psi XD psi MD % XD %		MD −3 psi XD −3 psi MD −3,0 % XD −3,0 % Pass		MD psi XD psi MD % XD %	
		Pass			
NA MD NA % XD NA % NA NA		Pass MD 3.0 % XD 3.0 % Pass Pass		MD % XD %	
g.		2.8 g.		g.	
% MD % XD % MD psi XD psi		1.8 % MD % XD % MD psi XD psi		% MD % XD % MD psi XD psi	
MD % XD % MD NA % XD NA % % % %		MD 0.5 % XD 0.5 % MD % XD % % % %		MD % XD % MD % XD % % % %	
psi		psi		psi	
U.S. MINERAL PRODUCTS CO.		WAT PRO, INC.			

PRODUCT NAME►		FLEXHIDE LR-50
Product Description►		PVC W/POLY REINFORCING
1. Thickness	Method:	ASTM D751
	Results:	50 mils
2. Tensile Strength	Method:	ASTM D751, Grab method
	Results:	290 x 280 lbs.
3. Lap Joint Strength	Method:	ASTM D751 Modified Grab method
	Results:	90% of material breaking strength
4. Elongation at Break	Method:	ASTM D751, Grab method
	Results:	25%/75% x 35%/80%
5. Tensile set	Method:	
	Results:	
6. Low Temperature Flexibility	Method:	ASTM D2136 1/8″ mandrel
	Results:	− 40°F, Pass
7. Water Absorption	Method:	
	Results:	
8. Dimensional Stability After Water Absorption	Method:	
	Results:	
9. Heat Aging	Method:	
	Results:	
10. Ozone Resistance	Method:	
	Results:	
11. Resistance to Accelerated Weathering	Method:	
	Results:	
12. Dynamic Impacting (Puncturing)	Method:	
	Results:	
13. Tear Resistance	Method:	
	Results:	
14. Tearing Strength	Method:	ASTM D751, tongue tear (8″ x 8″ specimen)
	Results:	100 lbs
15. Low Temperature Impact	Method:	
	Results:	
16. Permeability	Method:	ASTM E96
	Results:	0.96 g/m²/24 hour
17. Dimensional Change After Stress Relaxation	Method:	ASTM D1204 176°F, 30 mins.
	Results:	0.2% change
18. Cone Penetration	Method:	
	Results:	
COMPANY►		U.S. MINERAL PRODUCTS CO.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER **Part 1** *(See Part 2 for Test Results)*

PRODUCT NAME ►	HYDRO-SEAL .045 BLACK	HYDRO-SEAL .045 WHITE	HYDRO-SEAL .060 BLACK	HYDRO-SEAL .060 WHITE	BENOIT EPDM I	BENOIT EPDM I SUNSHIELD
1. PRODUCT DESCRIPTION						
a) Reinforcement	None	None	None	None	None	None
b) Color	Black	White	Black	White	Black	Beige
c) Installed wt. (lbs. per sq. ft. w/o ballast)	.26	.30	.35	.40		
2. COATING REQUIRED	None	None	None	None	None	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Adhesive/Sealant	Adhesive/Sealant	Adhesive/Sealant	Adhesive/Sealant	Tape	Tape
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)	10 min.		10 Min.		10	
b) Partially adhered-method	Mech. Fastened	Mech. Fastened	Mech. Fastened	Mech. Fastened	●	●
c) Fully adhered-method	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	●	●
d) Protected Membrane Roofing Assembly	IRMA		IRMA		●	
6. MINIMUM SLOPE	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
7. USE OVER						
a) Perlite	●	●	●	●	●	●
b) Urethane	●	●	●	●	●	●
c) Wood fibre	●	●	●	●	●	●
d) Fibre glass	●	●	●	●	●	●
e) Expanded polystyrene	●	●	●	●	●	●
f) Felt faced composites	●	●	●	●	●	●
g) Other	Contact AHI for specifics	Contact AHI for specifics	Contact AHI for specifics	Contact AHI for specifics		
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	None	None
9. WORKABLE TEMP RANGE	20°F-110°F	20°F-110°F	20°F-110°F	20°F-110°F	0°F-160°F	0°F-160°F
10. FLASHING MATERIAL	Uncured Neo	Uncured EPDM	Uncured Neo	Uncured EPDM	Cured EPDM Uncured Neo	Cured EPDM Uncured Neo
11. FLASHING METHOD	Adhesive/Sealant	Adhesive/Sealant	Adhesive/Sealant	Adhesive/Sealant	Tape	Tape
12. PRE-FORMED ACCESS AVAILABLE	Yes	Yes	Yes	Yes	Yes	Yes
13. COUNTRY OF ORIGIN	USA	USA	USA	USA	Japan	Japan
14. COUNTRY OF MANUFACTURE	USA	USA	USA	USA	USA/Japan	USA/Japan
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)					1964	1978
b) U.S.A. (Year, City-first installed)	1981	1981	1981	1981	1980-St. Paul	1983-San Antonio
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign					3,500,000	
b) U.S.A.	Thousands	Thousands	Thousands	Thousands	250,000	10,000
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	10	10	10	5,10,15	5,10,15
b) Renewable after inspection	No	No	No	No		
c) Scope of coverage (repair of leaks)						
c.1 Material only						
c.2 Workmanship & material	●	●	●	●	●	●
d) Monetary limitation						
d.1 None						
d.2 Original cost of installation					●	●
d.3 $ per square	●	●	●	●		
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE	Contact AHI for specifics	Contact AHI for specifics	Contact AHI for specifics	Contact AHI for specifics	Petroleum	Petroleum
19.						
20.						
21. METHOD OF DISTRIB.	Reps./Direct				Varied	
22. # REGIONAL SERVICE LOCATIONS	20				4	
23. LICENSED APPLICATOR AGREEMENT	Yes				No	
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Seminars, Field Training				Field, Seminars	
25. SALES INFORMATION; CONTACT	Bill LeCuyer				Roy F. Schauffele	
26. TECHNICAL INFORMATION; CONTACT	Ed Jarger				Marc Caputo	
COMPANY►	AMERICAN HYDROTECH, INC.				BENOIT, INC.	

For information on UL and FM see Table of Contents page, Important Notes, IV.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 1 *(See Part 2 for Test Results)*

BENOIT-045 EPDM II-BLACK	BENOIT-045 EPDM II-WHITE	BENOIT-060 EPDM II-BLACK	BENOIT-060 EPDM II-WHITE	CARBOLINE EPDM 450	CARBOLINE EPDM 600	SURE-SEAL EPDM — .045	SURE-SEAL EPDM — .060	CELO-1, TYPE I, .045, LOOSE LAID & BALLASTED
None	None	None	None	No	No	None	None	None
Black	White	Black	White	Black	Black	Grey/Black	Grey/Black	Black
				.27	.34	.30	.40	.27
None	None	None	None	None	None	None	None	None
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Splicing Tape	Splicing Tape	Adhesive/Sealant	Adhesive/Sealant	Adhesive
10				10	10	●	●	10
●	●	●	●	Fastened	Fastened			
●	●	●	●		●	●	●	
●		●			●	●	●	
Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	None	None	Dead Level
●	●	●	●	●		●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	
●	●	●	●	●		●	●	
●	●	●	●	●	●	●	●	●
				See Specifications	See Specifications	See Specifications	See Specifications	Plywood Wood Plank Smooth BUR
None	None	None	None	None	None	None	None	None
0°F-160°F	0°F-160°F	0°F-160°F	0°F-160°F	25°F-180°F	25°F-180°F	−25°F-180°F	−25°F-180°F	−40°F-180°F
Cured EPDM Uncured Neo	Cured EPDM Uncured Neo	Cured EPDM Uncured Neo	Cured EPDM Uncured Neo	Uncured Neo	Uncured Neo	Elastoform	Elastoform	Uncured Neo
Cement & Solvent	Cement & Solvent	Cement & Solvent	Cement & Solvent	Cement & Solvent	Cement & Solvent	Adhesive	Adhesive	Contact Adhesive
Yes	Yes	Yes	Yes	No	No	No	No	●
USA	USA	USA	USA	USA	USA	USA	USA	USA
USA	USA	USA	USA	USA	USA	USA	USA	USA
						1963	1963	
1982-Omaha	1983-Charlotte	1982-Wash. D.C.	1983-Charlotte	1979-Chicago	1980	1963-Harrisburg	1963-Harrisburg	1980-Lexington
				Not Available	Not Available			
30,000	2,000	30,000	1,000	Not Available	Not Available	Thousands	Thousands	200,000
5,10,15	5,10,15	5,10,15	5,10,15	10	10	15	15	5,10
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	See Specifications	See Specifications	See Specifications
●	●	●	●	●	●	●	●	
Petroleum	Petroleum	Petroleum	Petroleum	Contact Supplier	Contact Supplier	Petroleum See Specifications	Petroleum Oils	Petroleum Oils
Varied				Sales Reps.		Distrs./Reps.		Distrs./Approved Contrs.
4				24		39		
No				Yes		Yes		Yes
Field, Seminars				Field, Seminars		Seminars, Field, Factory		Seminars
Roy F. Schauffele						Don Kyle		Regional Office
Marc Caputo				R. Bradley		Ed Kane		C.J. Klasen
BENOIT, INC				CARBOLINE COMPANY		CARLISLE SYNTEC SYSTEMS		CELOTEX

continued →

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EPDM ETHYLENE PROPYLENE DIENE MONOMER **Part 1** *(See Part 2 for Test Results)*

PRODUCT NAME ►	CELO-1, TYPE II, .060, FULLY ADHERED	CELO-1, TYPE III, .045, MECH. ATTACHED	CELO-1, TYPE III, .060 MECH. ATTACHED	DUNSEAL .045	DUNSEAL .060	ERA-EPDM 245 — BLACK
1. PRODUCT DESCRIPTION						
a) Reinforcement	None	None	None	With and Without	With and Without	
b) Color	Black	Black	Black	Black	Black	Black
c) Installed wt. (lbs. per sq. ft. w/o ballast)	.36	.27	.36	.28	.38	.26
2. COATING REQUIRED	None	None	None	None	None	None
3. USE						
a) New roofing	●	●	●	●	●	Yes
b) Reroofing	●	●	●	●	●	Yes
4. FIELD LAP JOINT METHOD	Adhesive	Adhesive	Adhesive	Tape/Adhesive	Tape/Adhesive	Contact Adhesive
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)				10	10	●
b) Partially adhered-method		Mechanical	Mechanical	Mech. Fastened	Mech. Fastened	●
c) Fully adhered-method	Contact Adhesive			Contact Adhesive	Contact Adhesive	●
d) Protected Membrane Roofing Assembly				●	●	
6. MINIMUM SLOPE	Dead Level	Dead Level	Dead Level	None	None	Level
7. USE OVER						
a) Perlite		●	●	●	●	●
b) Urethane	●	●	●	●	●	●
c) Wood fibre	●	●	●	●	●	●
d) Fibre glass				●	●	●
e) Expanded polystyrene				●	●	●
f) Felt faced composites	●	●	●	●	●	●
g) Other	Plywood Wood Plank Smooth BUR	Plywood Wood Plank Smooth BUR	Plywood Wood Plank Smooth BUR	See Specifications	See Specifications	See Specifications
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	None	None
9. WORKABLE TEMP RANGE	−40°F-180°F	−40°F-180°F	−40°-180°F	0°F-160°F	0°F-160°F	0°F-160°F
10. FLASHING MATERIAL	Uncured Neo	Uncured Neo	Uncured Neo	Uncured EPDM or Neoprene	Uncured EPDM or Neoprene	Uncured EPDM
11. FLASHING METHOD	Contact Adhesive	Contact Adhesive	Contact Adhesive	Tape and/or Adhesive	Tape and/or Adhesive	Contact Adhesive
12. PRE-FORMED ACCESS AVAILABLE	●	●	●	Yes	Yes	
13. COUNTRY OF ORIGIN	USA	USA	USA	Canada	Canada	USA
14. COUNTRY OF MANUFACTURE	USA	USA	USA	Canada	Canada	USA
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)				1964	1964	1965
b) U.S.A. (Year, City-first installed)	1965-Mishwzka	1982-Newark	1982-Newark	1981-Buffalo	1982-Cleveland	Mishawaka
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign				Thousands	Thousands	NA
b) U.S.A.	160,000	100,000	100,000	Thousands	Thousands	NA
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	5,10	5,10	5,10	15	15	21
b) Renewable after inspection						
c) Scope of coverage (repair of leaks)						
c.1 Material only						
c.2 Workmanship & material	●	●	●	5/10	5/10	●
d) Monetary limitation						
d.1 None						
d.2 Original cost of installation	●	●	●	●	●	●
d.3 $ per square						
e) Exclusion from coverage						
e.1 Damage to other roofing components	See Specifications	See Specifications	See Specifications	●	●	●
e.2 Consequential damages				●	●	●
18. LIMITATIONS OR RESTRICTED USE	Petroleum Oils	Petroleum Oils	Petroleum Oils	Hydrocarbons	Hydrocarbons	Aromatic Hydrocarbons
19.						
20.						
21. METHOD OF DISTRIB.	Distrs./Approved Contrs.			Agent/Direct		Direct
22. # REGIONAL SERVICE LOCATIONS						
23. LICENSED APPLICATOR AGREEMENT	Yes			Yes		
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Seminars			Field, Seminars		Field
25. SALES INFORMATION; CONTACT	Regional Office			P. Hyrsko		D. Mischo
26. TECHNICAL INFORMATION; CONTACT	C. J. Klasen			D. Brazier		R. Ahern
COMPANY►	CELOTEX			DUNLOP CONSTRUCTION PRODUCTS INC.		ERA CORP

For information on UL and FM see Table of Contents page, Important Notes, IV.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 1 *(See Part 2 for Test Results)*

ERA-EPDM 260 — BLACK	ERA-EPDM 245 — WHITE	ERA-EPDM 260 — WHITE	EVANS PRODUCT DEPENDABLE MEMBRANE	RUBBERGARD .045	RUBBERGARD .060	GAFPLY EP BALLASTED	GAFPLY EP FULLY ADHERED	GACO SYSTEM I EPDM-45 MILS
			None	None	None	None	None	None
Black	White	White	Black	Black	Black	Black	Black	Black
.35	.30	.40		.28	.38	.28	.38	.26
None	None	None	None	None	None	None	None	Optional
Yes	Yes	Yes	●	●	●	●	●	●
Yes	Yes	Yes	●	●	●	●	●	●
Contact Adhesive	Contact Adhesive	Contact Adhesive	Tape/Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive
●	●	●	10	10	10	10		10
●	●	●	Battens	Battens	Battens			Mech. Fastened
●	●	●	●		●		●	Contact Adhesive
				●	●			IRMA
Level	Level	Level	Dead Level	Dead Level	Dead Level	No Ponding	No Ponding	Dead Level
●	●	●	●	●	●	●		●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●*	●
●	●	●	●	●	●	●	●*	●
●	●	●	●	●	●	●		●
●	●	●	●	●	●	●	●	●
See Specifications	See Specifications	See Specifications					*and others on a job-by-job basis	See Specifications
None	None	None	None	None	None	None	None	None
0°F-160°F	0°F-160°F	0°F-160°F	0°F-100°F	0°F-100°F	0°F-100°F	0°F-150°F	0°F-150°F	50°F-90°F
Uncured EPDM	Uncured EPDM	Uncured EPDM	Uncured EPDM	Uncured Neo	Uncured Neo	Uncured Neo	Uncured Neo	EPDM
Contact Adhesive	Contact Adhesive	Contact Adhesive	Tape/Adhesive	Contact Adhesive	Contact Adhesive	Solvent Clean/ Contact Adhesive	Solvent Clean/ Contact Adhesive	Contact Adhesive
			Yes	Yes	Yes	No	No	No
USA	USA	USA	USA/Japan	USA	USA	USA	USA	USA
USA	USA	USA	USA/Japan	USA	USA	USA	USA	USA
1965	1965	1965	1964					
Mishawaka	Mishawaka	Mishawaka	1983-Corvallis	1980-Indianapolis	1980-Indianapolis	1965	1965	1979-Sioux City
NA	NA	NA	Not Available					
NA	NA	NA	Not Available	1,000,000+	1,000,000+			62,300
21	21	21	5,10	10/15	10/15	5 and 10	5 and 10	10
				●	●	15	15	
●	●	●	●	●	●	5/10	5/10	●
●	●	●	●	●	●	●	●	
								●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
Aromatic Hydrocarbons	Aromatic Hydrocarbons	Aromatic Hydrocarbons	See Specifications	Hydrocarbon Solvents See Specifications	Hydrocarbon Solvents See Specifications	See Specifications	See Specifications	See Specifications
Direct			Dists/Direct/Reps	Direct/Reps.		Distrs./Approved Contrs.		Distr/Reps.
			8	45		14		31
			Yes	Yes		Yes		Yes
Field			Field	Field, Seminars		On Job Training Seminars		Field, Seminars
D. Mischo			Bill Henry	1-800-428-4442		William J. Woodring		1-800-441-7464
R. Ahern			John Earley	1-800-428-4511		B. Randall Ziegler		1-800-441-7464
ERA CORPORATION			EVANS PRODUCTS PERMAGLAS DIVISION	FIRESTONE INDUSTRIAL PRODUCTS		GAF CORPORATION		GATES ENGINEERING COMPANY, INC.

continued →

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 1 *(See Part 2 for Test Results)*

PRODUCT NAME ►	GACO SYSTEM I EPDM-60 MILS	GENFLEX ACR .045 BLACK	GENFLEX ACR .045 WHITE	GENFLEX ACR .060 BLACK	VERSIGARD .045	VERSIGARD .060
1. PRODUCT DESCRIPTION						
a) Reinforcement	None	None	None Required	None Required	None	None
b) Color	Black	Black	White	Black	Black	Black/White
c) Installed wt. (lbs. per sq. ft. w/o ballast)	.39	.26	.28	.38	.28	.38/.45
2. COATING REQUIRED	Optional		None	None	None	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)	10	10.5	10.5	10.5	●	●
b) Partially adhered-method	Mech. Fastened					●
c) Fully adhered-method	Contact Adhesive	●	●	●		●
d) Protected Membrane Roofing Assembly	IRMA	●		●	●	●
6. MINIMUM SLOPE	Dead Level	Level	Dead Level	Dead Level	None	None
7. USE OVER						
a) Perlite	●	●	●	●	●	●
b) Urethane	●	●	●	●	●	●
c) Wood fibre	●	●	●	●	●	●
d) Fibre glass	●	●	●	●	●	●
e) Expanded polystyrene	●	●	●	●	●	●
f) Felt faced composites	●	●	●	●	●	●
g) Other	See Specifications		See Specifications	See Specifications	See Specifications	See Specifications
8. RESTRICTED REGIONS *(See "Important Notes")*	None		None	None	None	None
9. WORKABLE TEMP RANGE	50°F-90°F		0°F-120°F	0°F-120°F	0°F-150°F	0°F-150°F
10. FLASHING MATERIAL	EPDM	Uncured	Uncured EPDM	Uncured Neoprene	Wingprene	Wingprene
11. FLASHING METHOD	Contact Adhesive	Cement	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive
12. PRE-FORMED ACCESS AVAILABLE	No	Yes	No	Yes	Yes	Yes
13. COUNTRY OF ORIGIN	USA	USA	USA	USA	USA	USA
14. COUNTRY OF MANUFACTURE	USA	USA	USA	USA	USA	USA
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)					1982	1982
b) U.S.A. (Year, City-first installed)	1979-Sioux City	1981-Adrian, MI	1983-Texas	1981-Adrian, MI	1965-New Bedford	1965-New Bedford
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign					Not Available	Not Available
b) U.S.A.	30,000				Not Available	Not Available
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	15	10	15	10	10
b) Renewable after inspection		No			●	●
c) Scope of coverage (repair of leaks)						
c.1 Material only		●		●		
c.2 Workmanship & material	●	●	●	●	●	●
d) Monetary limitation						
d.1 None						
d.2 Original cost of installation		●	●	●	●	●
d.3 $ per square	●					
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE	See Specifications	See Manufacturer	See Manufacturer	See Manufacturer	Contact Goodyear	Contact Goodyear
19.						
20.						
21. METHOD OF DISTRIB.	Distr/Reps.	Approved Contractors			Distributors	
22. # REGIONAL SERVICE LOCATIONS	31	8			55	
23. LICENSED APPLICATOR AGREEMENT	Yes	Yes			Yes	
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Field, Seminars	Seminars			Field, Seminars	
25. SALES INFORMATION; CONTACT	1-800-441-7464	419-729-3731			Bill Vobbe	
26. TECHNICAL INFORMATION; CONTACT	1-800-441-7464	419-729-3731			Paul Oliveira	
COMPANY►	GATES ENGINEERING COMPANY, INC.	GENERAL TIRE BUILDING PRODUCTS CO.			GOODYEAR	

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 1 *(See Part 2 for Test Results)*

INTERNATIONAL BLACK	INTERNATIONAL WHITE	INTERNATIONAL WHITE FIRE RETARDANT	WHALESKIN/81 C-EPDM	WHALESKIN/81 WHITE EPDM	WHALESKIN/81 WHITE C-EPDM	WHALESKIN/81 EPDM	WHALESKIN/81 TALC FREE EPDM	POLYKEN M-45
None	None	None	None	None	None	None	None	None
Black	White	White	Black	White	White	Black	Black	Black
.30	.35	.40	.31-45 mil/.34-60 mil	.31-45 mil/.34-60 mil	.31-45 mil/.34-60 mil	.31-45 mil/.34-60 mil/.56-81 mil	.31-45 mil/.34-60 mil	.28
None	None	None	None	None	None	None	None	None
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
Splicing Cement	Splicing Cement		Contact Adhesive	Contact Adhesive	Contact Adhesvive	Contact Adhesive	Tape or Adhesive	Seam Tape
10	10		●	●	●	10 Min.	10 Min.	10
Plate Bound	Plate Bound	Plate Bound	●	●	●	●	●	Mech. Fastened
Contact Cement	Contact Cement	Plate	●	●	●	●	●	Contact Adhesive
●			●	●	●	●	●	●
Dead Level	Dead Level		Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	None
			●*	●*	●*	●*	●*	●
			●*	●*	●*	●*	●*	●
			●*	●*	●*	●*	●*	●
			●*	●*	●*	●*	●*	●
			●*	●*	●*	●*	●*	●
			●*	●*	●*	●*	●*	●
Some May Require Barrier Sheet	Some May Require Barrier Sheet	Some May Require Barrier Sheet	*Contact KES for application methods over each type or see specs	*Contact KES for application methods over each type or see specs	*Contact KES for application methods over each type or see specs	*Contact KES for application methods over each type See Specs	*Contact KES for application methods over each type See Specs	See Specifications
None	None	None	None	None	None	None	None	None
0°F-160°F	0°F-160°F	0°F-160°F	−25°F-180°F	−25°F-180°F	−25°F-180°F	−25°F-180°F	−50°F-220°F	0°F-110°F
Uncured EPDM	Uncured EPDM	Uncured EPDM	Uncured EPDM Uncured Neoprene	Uncured EPDM Uncured Neoprene	Uncured EPDM Uncured Neoprene	Uncured EPDM Uncured Neoprene	Uncured EPDM Uncured Neoprene	Uncured Neo Self Adhering
Special Adhesive	Special Adhesive	Special Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Self Adhering Tape
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
USA	USA	USA	USA	USA	USA	USA	USA	USA
USA	USA	USA	USA	USA	USA	USA	USA/Canada	USA
1982								
1965-Mishawaka	1966-Mishawaka	1982-Fort Wayne	1979-Thomaston	1965-Mishawaka	1982-Orlando	1965-Mishawaka	1983-Greely, CO	1982-Franklin
15,000								
250,000	50,000	3,000	Thousands	Thousands	Thousands	Thousands	Thousands	Thousands
10	10	10	21	30 yrs (81 mil) 21 yrs (other)	21	30 yrs (81 mil) 21 yrs (other)	21	10
●	●	●	●	●	●	●	●	
●	●	●	Also Available	Also Available	Also Available	Also Available	Also Available	
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	
●	●	●						●
●	●	●						
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
Aromatic Hydrocarbons	Aromatic Hydrocarbons	Aromatic Hydrocarbons	Petroleum Contact Supplier	Petroleum Contact Supplier	Petroleum Contact Supplier	Petroleum Contact Supplier	Petroleum Contact Supplier	Contact Kendall

Contrs/Distrs	Distributors	Direct
20	62	2
Yes	No	Yes
Field, Factory	In Field Training, Seminars	Field, Seminars
R. Whitman	T. Arras, A. Poremba	Ken Coffey
R. Whitman	T. Arras, A. Poremba	Rick Dalainis
INTERNATIONAL RUBBER ROOFING SYSTEMS, INC.	KELLY ENERGY SYSTEMS, INC.	KENDALL COMPANY

continued →

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 1 *(See Part 2 for Test Results)*

PRODUCT NAME ►	POLYKEN M-60	SPM 45	SPM 60	PLYSEAL EPDM	SUPEROOF-BLACK	SUPEROOF-WHITE
1. PRODUCT DESCRIPTION						
a) Reinforcement	None	None	None	Yes	None	None
b) Color	Black	Black	Black	Black	Black	White
c) Installed wt. (lbs. per sq. ft. w/o ballast)	.35	.455	.255	.31	.30	.35
2. COATING REQUIRED	None	None	None	None	None	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Seam Tape	Adhesive/Sealant	Adhesive/Sealant	Contact Adhesive	Splicing Cement	Splicing Cement
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)	10	●	●	10-13	10	10
b) Partially adhered-method	Mech. Fastened			Batten	Plate Bound	Plate Bound
c) Fully adhered-method	Contact Adhesive	●		●	Contact Cement	Contact Cement
d) Protected Membrane Roofing Assembly	●	●	●	●	●	
6. MINIMUM SLOPE	None	None	None	Dead Level	Dead Level	Dead Level
7. USE OVER						
a) Perlite	●	●	●	●	●	●
b) Urethane	●	●	●	●	●	●
c) Wood fibre	●	●	●	●	●	●
d) Fibre glass	●	●	●	●	●	●
e) Expanded polystyrene	●	●	●	●	●	●
f) Felt faced composites	●	●	●	●	●	●
g) Other	See Specifications	See Specifications	See Specifications	Approval of Plyroof Tech. Dept.	Some May Require Barrier Sheet	Some May Require Barrier Sheet
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	None	None
9. WORKABLE TEMP RANGE	0°F-100°F	25°F-160°F	25°F-160°F	15°F-120°F	0°F-120°F	0°F-160°F
10. FLASHING MATERIAL	Uncured Neo Self Adhering	Uncured Neo	Uncured Neo	Uncured Neoprene	Uncured EPDM	Uncured EPDM
11. FLASHING METHOD	Self Adhering Tape	Adhesive	Adhesive	Contact Adhesive	Splicing Adhesive	Splicing Adhesive
12. PRE-FORMED ACCESS AVAILABLE	Yes			No	Yes	Yes
13. COUNTRY OF ORIGIN	USA	USA	USA	USA	USA	USA
14. COUNTRY OF MANUFACTURE	USA	USA	USA	USA	USA	USA
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)					1982	
b) U.S.A. (Year, City-first installed)	1982-Franklin	1979-Muncie	1979-Muncie	1979-Salem	1965-Mishawaka	1966-Mishawaka
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign					15,000	
b) U.S.A.		Thousands	Thousands	647,000	250,000	300,000
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	5,10	5,10	10	10	Up to 20
b) Renewable after inspection				No	●	●
c) Scope of coverage (repair of leaks)						
c.1 Material only						
c.2 Workmanship & material	●	●	●	●	●	●
d) Monetary limitation						
d.1 None						
d.2 Original cost of installation	●	●	●	●	●	●
d.3 $ per square						
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE	Contact Kendall	Contact Supplier	Contact Supplier	Contact Plyroof Tech. Dept.	Aromatic Hydrocarbons	Aromatic Hydrocarbons
19.						
20.						
21. METHOD OF DISTRIB.	Direct	Reps/Distrs		Direct	Contrs./Distrs.	
22. # REGIONAL SERVICE LOCATIONS	2			4	20	
23. LICENSED APPLICATOR AGREEMENT	Yes	Yes		Yes	Yes	
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Field, Seminars	Seminars, Factory		Field	Field, Factory	
25. SALES INFORMATION; CONTACT	Ken Coffey	John Busch		Charles Taft	Howells, Gettys	
26. TECHNICAL INFORMATION; CONTACT	Rick Dalainis	Vince Greco		Steve Condren	H. Howells	
COMPANY►	KENDALL COMPANY	MANVILLE		PLYMOUTH RUBBER CO., INC.	PROTECTIVE COATINGS, INC.	

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EPDM ETHYLENE PROPYLENE DIENE MONOMER **Part 1** *(See Part 2 for Test Results)*

SUPEROOF-GREY	SUPEROOF-WHITE FIRE RETARDANT	REEVETECH .045	REEVETECH .060	SMI RUBBER ROOF BLACK	SMI RUBBER ROOF WHITE	SYENERGY RUBBER ROOF .055 BLACK	SYENERGY RUBBER ROOF .055 WHITE	SYENERGY FIRESTOP 045" MEMBRANE
None	None	None	None	None	None	None	None	None
Gray	White-Fire Ret.	Black	Black	Black	Black	Black	White	Black
.35	.40	.28	.37	.26	.26	.35	.40	.25
None	None	None	None	None	None	None	None	None
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
Splicing Cement	Splicing Cement	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive
10		10	10	10 Min.	10 Min.	10 Min.	10 Min.	10 Min.
Plate Bound	Plate Bound			●	●	Plate Bound	Plate Bound	Plate Bound
Contact Cement	Contact Cement			●	●	●	●	●
				●	●	●	●	●
Dead Level		Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●			●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●			●	●	●	●	●
Some May Require Barrier Sheet	Some May Require Barrier Sheet			See Specifications or Tech. Bulletin	See Specifications or Tech. Bulletin	See Specifications or Tech. Bulletin	See Specifications or Tech. Bulletin	See Specifications or Tech. Bulletin
None	None	None	None	None	None	None	None	None
0°F-160°F	0°F-160°F	35°F-120°F	35°F-120°F			Consult Tech. Serv.	Consult Tech. Serv.	Consult Tech. Serv.
Uncured EPDM	Uncured EPDM	Uncured Neo	Uncured Neo	Uncured EPDM	Uncured EPDM	Uncured EPDM	Uncured EPDM	Uncured EPDM
Splicing Adhesive	Splicing Adhesive	Adhesive	Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive
Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes
USA	USA	USA	USA	USA	USA	USA	USA	USA
USA	USA	USA	USA	USA	USA	USA	USA	USA
1966-South Bend	1982-Ft. Wayne	1981-Washington	1981-Washington	1965-Mishawaka	1965-Mishawaka	1965-Mishawaka	1965-Mishawaka	1965-Mishawaka
				None	None			
1,000	5,000							
Up to 20	Up to 20	10	10	6 or 12 Available	6 or 12 Available	6 or 12 Available	6 or 12 Available	6 or 12 Available
●	●	No	No	●	●			
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
Aromatic Hydrocarbons	Aromatic Hydrocarbons	Petroleum See Specifications	Petroleum See Specifications	Petroleum See Specifications	Petroleum See Specifications	Petroleum See Specifications	Petroleum See Specifications	Petroleum See Specifications

Contractors & Distributors	Contractors	Distributors
20	3	30
Yes	Yes	Yes
Field, Factory	Field Training	Field, Seminars
Howells, Gettys	K. Schwarz	D. Creed
H. Howells	B. Smith	S. DonFrancesco
PROTECTIVE COATINGS, INC.	REEVES BROS.,	SYENERGY METHODS, INC.

continued →

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 1 *(See Part 2 for Test Results)*

PRODUCT NAME ►	SYENERGY RUBBER ROOF 045" BLACK	SYENERGY RUBBER ROOF 045" WHITE	AGAPER-E	.045 WEATHERGARD BLACK	.055 WEATHERGARD BLACK	.060 WEATHERGARD BLACK
1. PRODUCT DESCRIPTION						
a) Reinforcement	None	None	None	None	None	None
b) Color	Black	White	Black	Black	Black	Black
c) Installed wt. (lbs. per sq. ft. w/o ballast)	.25	.28	.31	.28	.34	.36
2. COATING REQUIRED	None	None	None	None	None	None
3. USE						
a) New roofing	●	●	●	●		
b) Reroofing	●	●	●	●		
4. FIELD LAP JOINT METHOD	Contact Adhesive	Contact Adhesive	Cold Tape	Contact Adhesive	Contact Adhesive	Contact Adhesive
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)	10 Min.	10 Min.	8	10		
b) Partially adhered-method	Plate Bound	Plate Bound	●	●	●	●
c) Fully adhered-method	●	●	●	●	●	●
d) Protected Membrane Roofing Assembly	●	●		●	●	●
6. MINIMUM SLOPE	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
7. USE OVER						
a) Perlite	●	●	●	●	●	●
b) Urethane	●	●	●	●	●	●
c) Wood fibre	●	●	●	●	●	●
d) Fibre glass	●	●	●	●	●	●
e) Expanded polystyrene	●	●	●	●	●	●
f) Felt faced composites	●	●	●	●	●	●
g) Other	See Specifications or Tech. Bulletin	See Specifications or Tech. Bulletin				
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	None	None
9. WORKABLE TEMP RANGE	Consult Tech. Serv.	Consult Tech. Serv.	20°F-110°F	20°F-160°F	20°F-160°F	20°F-160°F
10. FLASHING MATERIAL	Uncured EPDM	Uncured EPDM	EPDM	Uncured Neo	Uncured Neo	Uncured Neoprene
11. FLASHING METHOD	Contact Adhesive	Contact Adhesive	Tape	Contact Adhesive	Contact Adhesive	Contact Adhesive
12. PRE-FORMED ACCESS AVAILABLE			Yes	Yes	Yes	Yes
13. COUNTRY OF ORIGIN			Italy	USA	USA	USA
14. COUNTRY OF MANUFACTURE			Italy	USA	USA	USA
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)			1970	1983-Puerto Rico		
b) U.S.A. (Year, City-first installed)	1965-Mishawaka	1965-Mishawaka	New Jersey	1981-Memphis		
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign			900,000			
b) U.S.A.			3,000			
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	6 or 12 Available	6 or 12 Available	5/10	5/10/15	5/10/15	5/10/15
b) Renewable after inspection			●	●	●	●
c) Scope of coverage (repair of leaks)						
c.1 Material only				15	15	15
c.2 Workmanship & material	●	●	●	5/10	5/10	5/10
d) Monetary limitation						
d.1 None						
d.2 Original cost of installation	●	●		●	●	●
d.3 $ per square			●			
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE	Petroleum See Specifications	Petroleum See Specifications	Petroleum	Petroleum Contaminants See Specifications	Petroleum Contaminants See Specifications	Petroleum Contaminants See Specifications
19.						
20.						
21. METHOD OF DISTRIB.	Distributors		Distributors	Distrs./Reps.		
22. # REGIONAL SERVICE LOCATIONS	30		7	25		
23. LICENSED APPLICATOR AGREEMENT	Yes		Yes	Yes		
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Field, Seminars		Seminars	On Site, Seminars		
25. SALES INFORMATION; CONTACT	D. Creed		201/528-6727	1-800-USA-EPDM		
26. TECHNICAL INFORMATION; CONTACT	S. DonFrancesco		201/528-6727	901/458-2222		
COMPANY►	SYENERGY METHODS, INC.		WAT PRO, INC.	WEATHERGARD		

For information on UL and FM see Table of Contents page, Important Notes, IV.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER **Part 1** *(See Part 2 for Test Results)*

.045 WEATHERGARD WHITE	.060 WEATHERGARD WHITE	.045 WEATHERGARD BLACK FIRE RETARDANT	.055 WEATHERGARD BLACK FIRE RETARDANT	.060 WEATHERGARD BLACK FIRE RETARDANT				
None	None	None	None	None				
White	White	Black	Black	Black				
.28	.36	.28	.34	.60				
None	None	None	None	None				
		●	●	●				
		●	●	●				
Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive				
		10						
●	●	●	●	●				
●	●	●	●	●				
●	●	●	●	●				
Dead Level	Dead Level	Dead Level	Dead Level	Dead Level				
●	●	●	●	●				
●	●	●	●	●				
●	●	●	●	●				
●	●	●	●	●				
●	●	●	●	●				
●	●	●	●	●				
None	None	None	None	None				
20°F-160°F	20°F-160°F	20°F-160°F	20°F-160°F	20°F-160°F				
Uncured White EPDM	Uncured White EPDM	Uncured Neoprene	Uncured Neoprene	Uncured Neoprene				
Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive				
Yes	Yes	No	No	No				
USA	USA	USA	USA	USA				
USA	USA	USA	USA	USA				
5/10/15	5/10/15	5/10/15	5/10/15	5/10/15				
●	●	●	●	●				
15	15	15	15	15				
5/10	5/10	5/10	5/10	5/10				
●	●	●	●	●				
●	●	●	●	●				
●	●	●	●	●				
Petroleum Contaminants See Specifications	Petroleum Contaminants See Specifications	Petroleum Contaminants See Specifications	Petroleum Contaminants See Specifications	Petroleum Contaminants See Specifications				

Distributor/Reps	
25	
Yes	
On Site, Seminars	
1-800/USA-EPDM	
901/458-2222	
WEATHERGARD ROOFING SYSTEMS, INC.	

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-52M	HYDRO-SEAL .045 BLACK		HYDRO-SEAL .045 WHITE		HYDRO-SEAL .060 BLACK	
	Type	Class	Type	Class	Type	Class
	1	A	1	A	1	A
1. THICKNESS						
TYPE 1 & 2-Min. 39 mils in (1.0 mm)	45 mils		45 mils		60 mils	
-Max. tolerance ± 10% nominal thickness	10 %		10 %		10 %	
2. STRENGTH OF MEMBRANE						
TYPE 1-Tensile strength: min. 870 psi (6MPa)	1500 psi		1400 psi		1500 psi	
TYPE 2-Breaking strength: min 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
3. LAP JOINT STRENGTH						
TYPE 1 & 2						
Before exposure: min 68 lbf (300N)	75 lbf		75 lbf		75 lbf	
After exposure:						
Min. of 85% of value before exposure but not less than 68 lbf (300N)	70 lbf		70 lbf		70 lbf	
CLASS A-After immersion and freeze thaw cycles (min. 85%)	85 %		85 %		85 %	
CLASS B-After immersion (min. 85%)	NA %		NA %		NA %	
4. ELONGATION AT BREAK						
TYPE 1-Min. 300% elongation	350 %		500 %		350 %	
TYPE 2-Min. 200% elongation	NA %		NA %		NA %	
5. TENSILE SET						
TYPE 1 ONLY-Not greater than 5.0%	3.0 %		5.0 %		3.0 %	
6. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking (Pass/Fail)	Pass		Pass		Pass	
7. WATER ABSORPTION - after immersion in water:						
Change in mass not to exceed 5.0%	3 %		7 %		3 %	
Shall not drop in strength by more than 10% as received (TEST 2)	0.0 %		0.0 %		0.0 %	
Strength not less than:						
TYPE 1-Tensile strength: 870 psi (6MPa)	1500 psi		1400 psi		1500 psi	
TYPE 2-Breaking strength: 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
8. DIMENSIONAL STABILITY AFTER WATER ABSORPTION						
Change in length not to exceed 3.0%	MD 1.0 % XD 1.0 %		MD 1.5 % XD 1.5 %		MD 1.0 % XD 1.0 %	
9. HEAT AGING						
After exposure:						
Shall retain 80% of strength as received and in no case less than min. strength measured in test 2	MD 100 % XD 100 %		MD 100 % XD 100 %		MD 100 % XD 100 %	
TYPE 1-Tensile strength: min. 870 PSI (6 MPa)	1500 psi		1400 psi		1500 psi	
TYPE 2-Breaking strength: min. 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
Pass low temperature flexibility test (Pass/Fail)	Pass		Pass		Pass	
Have a min. elongation at break						
TYPE 1-210%	225 %		300 %		225 %	
TYPE 2-140%	NA %		NA %		NA %	
Dimensional change not to exceed 3.0%	MD 1.5 % XD 1.5 %		MD 2.0 % XD 2.0 %		MD 1.5 % XD 1.5 %	
10. OZONE RESISTANCE						
No visible cracks under 7 power magnification (Pass/Fail)	Pass		Pass		Pass	
11. RESISTANCE TO ACCELERATED WEATHERING						
CLASS A ONLY						
TYPE 1 & 2-Shall show no cracking, blistering or visible defects (Pass/Fail)	Pass		Pass		Pass	
Shall retain min. of 90% of strength prior to weathering and in no case less than min. strength specified in Test 2.						
TYPE 1-Shall retain 90% of tensile strength	100 %		100 %		100 %	
TYPE 2-Shall retain 90% of breaking strength	NA %		NA %		NA %	
TYPE 1-Min. tensile strength of 870 psi (6 MPa)	1500 psi		1400 psi		1500 psi	
TYPE 2-Min. breaking strength of 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
12. DYNAMIC IMPACT (PUNCTURING) TEST						
Will withstand puncturing test of an energy impact of 1.8 ft. lbs (2.45J) (Pass/Fail)	Pass		Pass		Pass	
13. TEAR RESISTANCE						
TYPE 1 ONLY-Shall exceed 6 lbf (26N) per mm of thickness	MD 7 lbf XD 7 lbf		MD 7 lbf XD 7 lbf		MD 7 lbf XD 7 lbf	
14. TEARING STRENGTH						
TYPE 2 ONLY-Shall exceed 8 lbf (35N)	NA lbf		NA lbf		NA lbf	
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	**AMERICAN HYDROTECH, INC.**					
NOTE: Blank lines = applicable data not reported by manufacturer.						

( ) = "Comparative Test" data; see Foreword for explanation.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

HYDRO-SEAL .060 WHITE		BENOIT EPDM I		BENOIT EPDM I SUNSHIELD		BENOIT .045 EPDM II - BLACK		BENOIT .045 EPDM II - WHITE		BENOIT .060 EPDM II - BLACK	
Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class
1	A	1	A	1	A	1	A	1	A	1	A
60 mils		45 (43) mils		45 (51) mils		45 (48) mils		45 (47) mils		60 (66) mils	
10 %		−.6 %		−.6 %		10 %		10 %		10 %	
1400 psi		1515 (1330) psi		1515 (1238) psi		1500 (1649) psi		1500 (1680) psi		1500 (1327) psi	
NA lbf		NA (NA) lbf		NA (NA) lbf		NA (NA) lbf		NA (NA) lbf		NA (NA) lbf	
75 lbf		107 lbf		107 lbf		75 lbf		75 lbf		75 lbf	
70 lbf		91 lbf		91 lbf		70 lbf		70 lbf		70 lbf	
85 %		85 %		85 %		85 %		85 %		85 %	
NA %		NA %		NA %		NA %		NA %		NA %	
500 %		447 (465) %		447 (495) %		350 (362) %		350 (573) %		350 (405) %	
NA %		NA (NA) %		NA (NA) %		NA (NA) %		NA (NA) %		NA %	
5.0 %		2.9 %		2.9 %		3.0 %		3.0 %		3.0 %	
Pass		Pass		Pass		Pass		Pass		Pass	
7 %		3.1 %		3.1 %		3.0 %		3.0 %		3.0 %	
0.0 %		+11 %		+11 %		0.0 %		0.0 %		0.0 %	
1400 psi		1679 psi		1679 psi		1500 psi		1500 psi		1500 psi	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
MD 1.5 % XD 1.5 %		MD 0.0 % XD 0.5 %		MD 0.0 % XD 0.5 %		MD 1.0 % XD 1.0 %		MD 1.0 % XD 1.0 %		MD 1.0 % XD 1.0 %	
MD 100 % XD 100 %		MD 109 % XD %		MD 109 % XD %		MD 100 % XD 100 %		MD 100 % XD 100 %		MD 100 % XD 100 %	
1400 psi		1651 psi		1651 psi		1500 psi		1500 psi		1500 psi	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
Pass		Pass		Pass		Pass		Pass		Pass	
300 %		197 %		197 %		225 %		225 %		225 %	
NA %		NA %		NA %		NA %		NA %		NA %	
MD 2.0 % XD 2.0 %		MD 1.3 % XD 0.8 %		MD 1.3 % XD 0.8 %		MD 1.5 % XD 1.5 %		MD 1.5 % XD 1.5 %		MD 1.5 % XD 1.5 %	
Pass		Pass		Pass		Pass		Pass		Pass	
Pass		Pass		Pass		Pass		Pass		Pass	
100 %		+2.9 %		+2.9 %		100 %		100 %		100 %	
NA %		NA %		NA %		NA %		NA %		NA %	
1400 psi		1559 psi		1559 psi		1500 psi		1500 psi		1500 psi	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
Pass		Pass		Pass		Pass		Pass		Pass	
MD 7 lbf XD 7 lbf		MD 199/in. lbf XD 177/in. lbf		MD 199/in. lbf XD 177/in. lbf		MD 7 lbf XD 7 lbf		MD 7 lbf XD 7 lbf		MD 7 lbf XD 7 lbf	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
AMERICAN HYDROTECH INC.		BENOIT, INC.									

continued →

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-52M	BENOIT .060 EPDM II - WHITE		CARBOLINE EPDM 450		CARBOLINE EPDM 600	
	Type	Class	Type	Class	Type	Class
	1	A	1	A	1	A
1. THICKNESS						
TYPE 1 & 2-Min. 39 mils in (1.0 mm)	60 (58) mils		45 (50) mils		60 (63) mils	
-Max. tolerance ± 10% nominal thickness	10 %		10 %		10 %	
2. STRENGTH OF MEMBRANE						
TYPE 1-Tensile strength: min. 870 psi (6MPa)	1500 (1676) psi		1400 (1630) psi		1400 (1455) psi	
TYPE 2-Breaking strength: min 112 lbf (500N)	NA (NA) lbf		NA (NA) lbf		NA (NA) lbf	
3. LAP JOINT STRENGTH **TYPE 1 & 2**						
Before exposure: min 68 lbf (300N)	75 lbf		90 lbf		90 lbf	
After exposure:						
Min. of 85% of value before exposure but not less than 68 lbf (300N)	70 lbf		77 lbf		77 lbf	
CLASS A-After immersion and freeze thaw cycles (min. 85%)	85 %		90 %		90 %	
CLASS B-After immersion (min. 85%)	NA %		NA %		NA %	
4. ELONGATION AT BREAK						
TYPE 1-Min. 300% elongation	350 (570) %		300 (373) %		300 (410) %	
TYPE 2-Min. 200% elongation	NA (NA) %		NA (NA) %		NA (NA) %	
5. TENSILE SET						
TYPE 1 ONLY-Not greater than 5.0%	3.0 %		<5.0 %		<5.0 %	
6. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking (Pass/Fail)	Pass		Pass		Pass	
7. WATER ABSORPTION - after immersion in water:						
Change in mass not to exceed 5.0%	3.0 %		<2.0 %		<2.0 %	
Shall not drop in strength by more than 10% as received (TEST 2)	0.0 %		<10 %		<10 %	
Strength not less than:						
TYPE 1-Tensile strength: 870 psi (6MPa)	1500 psi		1260 psi		1260 psi	
TYPE 2-Breaking strength: 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
8. DIMENSIONAL STABILITY AFTER WATER ABSORPTION						
Change in length not to exceed 3.0%	MD — % XD — %		MD <3.0 % XD <3.0 %		MD <3.0 % XD <3.0 %	
9. HEAT AGING						
After exposure:						
Shall retain 80% of strength as received and in no case less than min. strength measured in test 2	MD 100 % XD 100 %		MD 85 % XD 85 %		MD 85 % XD 85 %	
TYPE 1-Tensile strength: min. 870 PSI (6 MPa)	1500 psi		1200 psi		1200 psi	
TYPE 2-Breaking strength: min. 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
Pass low temperature flexibility test (Pass/Fail)	Pass		Pass		Pass	
Have a min. elongation at break						
TYPE 1-210%	225 %		210 %		210 %	
TYPE 2-140%	NA %		NA %		NA %	
Dimensional change not to exceed 3.0%	MD 1.5 % XD 1.5 %		MD 2.0 % XD 2.0 %		MD 2.0 % XD 2.0 %	
10. OZONE RESISTANCE						
No visible cracks under 7 power magnification (Pass/Fail)	—		Pass		Pass	
11. RESISTANCE TO ACCELERATED WEATHERING CLASS A ONLY						
TYPE 1 & 2-Shall show no cracking, blistering or visible defects (Pass/Fail)	Pass		Pass		Pass	
Shall retain min. of 90% of strength prior to weathering and in no case less than min. strength specified in Test 2.						
TYPE 1-Shall retain 90% of tensile strength	100 %		90 %		90 %	
TYPE 2-Shall retain 90% of breaking strength	NA %		NA %		NA %	
TYPE 1-Min. tensile strength of 870 psi (6 MPa)	1500 psi		1260 psi		1260 psi	
TYPE 2-Min. breaking strength of 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
12. DYNAMIC IMPACT (PUNCTURING) TEST						
Will withstand puncturing test of an energy impact of 1.8 ft. lbs (2.45J) (Pass/Fail)	Pass		Pass		Pass	
13. TEAR RESISTANCE						
TYPE 1 ONLY-Shall exceed 6 lbf (26N) per mm of thickness	MD 7 lbf XD 7 lbf		MD 14 lbf XD 14 lbf		MD 14 lbf XD 14 lbf	
14. TEARING STRENGTH						
TYPE 2 ONLY-Shall exceed 8 lbf (35N)	NA lbf		NA lbf		NA lbf	
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	**BENOIT, INC.**		**CARBOLINE COMPANY**			
NOTE: Blank lines = applicable data not reported by manufacturer.						

( ) = "Comparative Test" data; see Foreword for explanation.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

SURE-SEAL EPDM — .045		SURE-SEAL EPDM — .060		CELO-1 TYPE I .045 LOOSE LAID & BALL		CELO-1 TYPE II .060 FULLY ADHERED		CELO-1 TYPE III .045 MECH. ATTACHED		CELO-1 TYPE III .045 MECH. ATTACHED	
Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class
1	A & B	1	A & B	1	A	1	A	1	A	1	A
45 (42) mils ±10 %		60 (61) mils ±10 %		45 mils ±10 %		60 mils ±10 %		45 mils ±10 %		60 mils ±10 %	
1755 (1655) psi NA (NA) lbf		1755 (1718) psi NA (NA) lbf		1400 psi NA lbf		1400 psi NA lbf		1400 psi NA lbf		1400 psi NA lbf	
69.5 lbf 70.9 lbf 102 % 102 %		69.5 lbf 70.9 lbf 102 % 102 %		70# Min lbf lbf % NA %		70# Min lbf lbf % NA %		70# Min lbf lbf % NA %		70# Min lbf lbf % NA %	
445 (535) % NA (NA) %		445 (468) % NA (NA) %		300 Min % NA %		300 Min % NA %		300 Min % NA %		300 Min % NA %	
0.1 %		0.1 %		3 %		3 %		3 %		3 %	
Pass		Pass		Pass		Pass		Pass		Pass	
2.3 % 2.5 % 1711 psi NA lbf		2.3 % 2.5 % 1711 psi NA lbf		2.2 % 5 % 1260 psi NA lbf		2.2 % 5 % 1260 psi NA lbf		2.2 % 5 % 1260 psi NA lbf		2.2 % 5 % 1260 psi NA lbf	
MD 0.29 % XD 0.05 %		MD 0.29 % XD 0.05 %		MD 2 % XD 2 %		MD 2 % XD 2 %		MD 2 % XD 2 %		MD 2 % XD 2 %	
MD 97 % XD 97 % 1697 psi NA lbf Pass 263 % NA % MD 0.49 % XD 0.56 %		MD 97 % XD 97 % 1697 psi NA lbf Pass 263 % NA % MD 0.49 % XD 0.56 %		MD 80 % XD 80 % 1200 psi NA lbf Pass 210 % NA % MD 2 % XD 2 %		MD 80 % XD 80 % 1200 psi NA lbf Pass 225 % NA % MD 2 % XD 2 %		MD 80 % XD 80 % 1200 psi NA lbf Pass 210/225 % NA % MD 2 % XD 2 %		MD 80 % XD 80 % 1200 psi NA lbf Pass 225 % NA % MD 2 % XD 2 %	
Pass		Pass		Pass		Pass		Pass		Pass	
Pass 101 % NA % 1769 psi NA lbf		Pass 101 % NA % 1769 psi NA lbf		Pass 90 % NA % 1260 psi NA lbf		Pass 90 % NA % 1260 psi NA lbf		Pass 90 % NA % 1260 psi NA lbf		Pass 90 % NA % 1260 psi NA lbf	
Pass		Pass		Pass		Pass		Pass		Pass	
MD 8.2 lbf XD 8.2 lbf		MD 8.2 lbf XD 8.2 lbf		MD 7 lbf XD 7 lbf		MD 9 lbf XD 9 lbf		MD 7 lbf XD 7 lbf		MD 7 lbf XD 7 lbf	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
CARLISLE SYNTEC SYSTEMS				CELOTEX							

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-52M	DUNSEAL .045		DUNSEAL .060		ERA – EPDM 245 BLACK	
	Type	Class	Type	Class	Type	Class
	1	A & B	1	A & B	1	A
1. THICKNESS						
TYPE 1 & 2-Min. 39 mils in (1.0 mm)	____ mils		____ mils		45 mils	
-Max. tolerance ± 10% nominal thickness	____ %		____ %		.005 %	
2. STRENGTH OF MEMBRANE						
TYPE 1-Tensile strength: min. 870 psi (6MPa)	1650 psi		1650 psi		1400 psi	
TYPE 2-Breaking strength: min 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
3. LAP JOINT STRENGTH						
TYPE 1 & 2						
Before exposure: min 68 lbf (300N)	77 lbf		77 lbf		____ lbf	
After exposure:						
Min. of 85% of value before exposure but not less than 68 lbf (300N)	94 lbf		94 lbf		____ lbf	
CLASS A-After immersion and freeze thaw cycles (min. 85%)	122 %		122 %		____ %	
CLASS B-After immersion (min. 85%)	122 %		122 %		NA %	
4. ELONGATION AT BREAK						
TYPE 1-Min. 300% elongation	350 %		350 %		300 %	
TYPE 2-Min. 200% elongation	NA %		NA %		NA %	
5. TENSILE SET						
TYPE 1 ONLY-Not greater than 5.0%	0.0 %		0.0 %		____ %	
6. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking (Pass/Fail)	Pass		Pass		Pass	
7. WATER ABSORPTION - after immersion in water:						
Change in mass not to exceed 5.0%	3.0 %		3.0 %		1.5 %	
Shall not drop in strength by more than 10% as received (TEST 2)	8.8 %		8.8 %		____ %	
Strength not less than:						
TYPE 1-Tensile strength: 870 psi (6MPa)	1508 psi		1508 psi		____ psi	
TYPE 2-Breaking strength: 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
8. DIMENSIONAL STABILITY AFTER WATER ABSORPTION						
Change in length not to exceed 3.0%	MD 0.15 % XD 0.04 %		MD 0.15 % XD 0.04 %		MD 1.0 % XD ____ %	
9. HEAT AGING						
After exposure:						
Shall retain 80% of strength as received and in no case less than min. strength measured in test 2	MD 1.06 % XD 0.40 %		MD 1.06 % XD 0.40 %		MD ____ % XD ____ %	
TYPE 1-Tensile strength: min. 870 PSI (6 MPa)	1390 psi		1390 psi		1050 psi	
TYPE 2-Breaking strength: min. 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
Pass low temperature flexibility test (Pass/Fail)						
Have a min. elongation at break						
TYPE 1-210%	240 %		240 %		Pass %	
TYPE 2-140%	NA %		NA %		NA %	
Dimensional change not to exceed 3.0%	MD ____ % XD ____ %		MD ____ % XD ____ %		MD ____ % XD ____ %	
10. OZONE RESISTANCE						
No visible cracks under 7 power magnification (Pass/Fail)	Pass		Pass		Pass	
11. RESISTANCE TO ACCELERATED WEATHERING						
CLASS A ONLY						
TYPE 1 & 2-Shall show no cracking, blistering or visible defects (Pass/Fail)	Pass		Pass		Pass	
Shall retain min. of 90% of strength prior to weathering and in no case less than min. strength specified in Test 2.						
TYPE 1-Shall retain 90% of tensile strength	94 %		94 %		Pass %	
TYPE 2-Shall retain 90% of breaking strength	NA %		NA %		NA %	
TYPE 1-Min. tensile strength of 870 psi (6 MPa)	1550 psi		1550 psi		Pass psi	
TYPE 2-Min. breaking strength of 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
12. DYNAMIC IMPACT (PUNCTURING) TEST						
Will withstand puncturing test of an energy impact of 1.8 ft. lbs (2.45J) (Pass/Fail)	Pass		Pass		____	
13. TEAR RESISTANCE						
TYPE 1 ONLY-Shall exceed 6 lbf (26N) per mm of thickness	MD ____ lbf XD ____ lbf		MD ____ lbf XD ____ lbf		MD 180 lbf XD ____ lbf	
14. TEARING STRENGTH						
TYPE 2 ONLY-Shall exceed 8 lbf (35N)	NA lbf		NA lbf		NA lbf	
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	**DUNLOP CONSTRUCTION PRODUCTS INC.**				**ERA CORPORATION**	
NOTE: Blank lines = applicable data not reported by manufacturer.						

( ) = "Comparative Test" data; see Foreword for explanation.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

ERA – EPDM 260 BLACK		ERA – EPDM 245 WHITE		ERA – EPDM 260 WHITE		EVANS PRODUCTS DEPENDABLE MEMBRANE		RUBBERGARD .045		RUBBERGARD .060	
Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class
1	A	1	A	1	A	1	A	1	A & B	1	A & B
60 mils		45 mils		60 mils		45 mils		45 mils		60 mils	
.005 %		.005 %		.005 %		10 %		( ) 10 %		( ) 10 %	
1400 psi		1000 psi		1000 psi		1500 psi		1650 psi		1650 psi	
NA lbf		NA lbf		NA lbf		lbf		( ) NA lbf		( ) NA lbf	
lbf		lbf		lbf		75 lbf		lbf		lbf	
lbf		lbf		lbf		70 lbf		lbf		lbf	
%		%		%		85 %		%		%	
NA %		NA %		NA %		%		%		%	
300 %		300 %		300 %		350 %		450 %		450 %	
NA %		NA %		NA %		%		( ) NA %		( ) NA %	
%		%		%		3 %		<5.0 %		<5.0 %	
Pass		Pass		Pass		Pass		Pass		Pass	
1.5 %		1.5 %		1.5 %		3 %		+2.0 %		+2.0 %	
%		%		%		%		%		%	
psi		psi		psi		1500 psi		870 psi		870 psi	
NA lbf		NA lbf		NA lbf		lbf		NA lbf		NA lbf	
MD 1.0 % XD %		MD 2.0 % XD %		MD 2.0 % XD %		MD 1 % XD 1 %		MD <1.0 % XD <1.0 %		MD <1.0 % XD <1.0 %	
MD % XD %		MD % XD %		MD % XD %		MD 100 % XD 100 %		MD 97 % XD 97 %		MD 97 % XD 97 %	
1050 psi		920 psi		920 psi		1500 psi		1600 psi		1600 psi	
NA lbf		NA lbf		NA lbf		lbf		NA lbf		NA lbf	
						Pass		Pass		Pass	
Pass %		Pass %		Pass %		225 %		295 %		295 %	
NA %		NA %		NA %		%		NA %		NA %	
MD % XD %		MD % XD %		MD % XD %		MD 1.5 % XD 1.5 %		MD <1.0 % XD <1.0 %		MD <1.0 % XD <1.0 %	
Pass		Pass		Pass		Pass		Pass		Pass	
Pass		Pass		Pass		Pass					
Pass %		Pass %		Pass %		100 %		%		%	
NA %		NA %		NA %		%		NA %		NA %	
Pass psi		Pass psi		Pass psi		1500 psi		psi		psi	
NA lbf		NA lbf		NA lbf		lbf		NA lbf		NA lbf	
						Pass		Pass		Pass	
MD 180 lbf XD lbf		MD 170 lbf XD lbf		MD 170 lbf XD lbf		MD 7 lbf XD 7 lbf		MD 10 lbf XD 10 lbf		MD 10 lbf XD 10 lbf	
NA lbf		NA lbf		NA lbf		lbf		NA lbf		NA lbf	
ERA CORPORATION						EVANS PRODUCTS PERMAGLAS DIV.		FIRESTONE INDUSTRIAL PRODUCTS			

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-52M	GAFPLY EP BALLASTED		GAFPLY EP FULLY ADHERED		GACO SYSTEM I EPDM - 45 MILS	
	Type	Class	Type	Class	Type	Class
	1		1		1	A & B
1. THICKNESS						
TYPE 1 & 2-Min. 39 mils in (1.0 mm)	(41) mils		(55) mils		45 (49) mils	
-Max. tolerance ± 10% nominal thickness	%		%		10 %	
2. STRENGTH OF MEMBRANE						
TYPE 1-Tensile strength: min. 870 psi (6MPa)	(1502) psi		(1629) psi		1500 (1269)* psi	
TYPE 2-Breaking strength: min 112 lbf (500N)	(NA) lbf		(NA) lbf		NA (NA) lbf	
3. LAP JOINT STRENGTH						
TYPE 1 & 2						
Before exposure: min 68 lbf (300N)	lbf		lbf		lbf	
After exposure:						
Min. of 85% of value before exposure but not less than 68 lbf (300N)	lbf		lbf		lbf	
CLASS A-After immersion and freeze thaw cycles (min. 85%)	%		%		%	
CLASS B-After immersion (min. 85%)	%		%		%	
4. ELONGATION AT BREAK						
TYPE 1-Min. 300% elongation	(308) %		(358) %		350 (365) %	
TYPE 2-Min. 200% elongation	(NA) %		(NA) %		NA (NA) %	
5. TENSILE SET						
TYPE 1 ONLY-Not greater than 5.0%	%		%		<5.0 %	
6. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking (Pass/Fail)						
7. WATER ABSORPTION - after immersion in water:						
Change in mass not to exceed 5.0%	%		%		3.0 %	
Shall not drop in strength by more than 10% as received (TEST 2)	%		%		%	
Strength not less than:						
TYPE 1-Tensile strength: 870 psi (6MPa)	psi		psi		psi	
TYPE 2-Breaking strength: 112 lbf (500N)	lbf		lbf		NA lbf	
8. DIMENSIONAL STABILITY AFTER WATER ABSORPTION						
Change in length not to exceed 3.0%	MD % XD %		MD % XD %		MD % XD %	
9. HEAT AGING						
After exposure:						
Shall retain 80% of strength as received and in no case less than min. strength measured in test 2	MD % XD %		MD % XD %		MD % XD %	
TYPE 1-Tensile strength: min. 870 PSI (6 MPa)	psi		psi		1400 psi	
TYPE 2-Breaking strength: min. 112 lbf (500N)	lbf		lbf		NA lbf	
Pass low temperature flexibility test (Pass/Fail)						
Have a min. elongation at break						
TYPE 1-210%	%		%		250 %	
TYPE 2-140%	%		NA %		NA %	
Dimensional change not to exceed 3.0%	MD % XD %		MD % XD %		MD % XD %	
10. OZONE RESISTANCE						
No visible cracks under 7 power magnification (Pass/Fail)					Pass	
11. RESISTANCE TO ACCELERATED WEATHERING						
CLASS A ONLY						
TYPE 1 & 2-Shall show no cracking, blistering or visible defects (Pass/Fail)						
Shall retain min. of 90% of strength prior to weathering and in no case less than min. strength specified in Test 2.						
TYPE 1-Shall retain 90% of tensile strength	%		%		%	
TYPE 2-Shall retain 90% of breaking strength	%		%		NA %	
TYPE 1-Min. tensile strength of 870 psi (6 MPa)	psi		psi		psi	
TYPE 2-Min. breaking strength of 112 lbf (500N)	lbf		lbf		NA lbf	
12. DYNAMIC IMPACT (PUNCTURING) TEST						
Will withstand puncturing test of an energy impact of 1.8 ft. lbs (2.45J) (Pass/Fail)						
13. TEAR RESISTANCE						
TYPE 1 ONLY-Shall exceed 6 lbf (26N) per mm of thickness	MD lbf XD lbf		MD lbf XD lbf		MD 6 lbf XD 6 lbf	
14. TEARING STRENGTH						
TYPE 2 ONLY-Shall exceed 8 lbf (35N)	lbf		lbf		NA lbf	
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	**GAF CORPORATION**				**GATES ENGINEERING CO., INC.**	
NOTE: Blank lines = applicable data not reported by manufacturer.						

( ) = "Comparative Test" data; see Foreword for explanation.

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*calculated on basis of measured thickness of unbuffed sheets.

EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

GACO SYSTEM I EPDM - 60 MILS		GENFLEX ACR .045 BLACK		GENFLEX ACR .045 WHITE		GENFLEX ACR .060 BLACK		VERSIGARD .045		VERSIGARD .060	
Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class
1	A & B	1	A	1	A	1		1	A & B	1	A & B
60 (66) mils		45 (49) mils		45 mils		60 mils		45 mils		60 mils	
10 %		5 %		10 %		10 %		10 %		%	
1500 (1549)* psi		1350 (1262) psi		1400 psi		1500 psi		1450 psi		psi	
NA (NA) lbf		NA (NA) lbf		NA lbf		NA lbf		NA lbf		NA lbf	
lbf		>68 lbf		>68 lbf		>68 lbf		117 lbf		lbf	
lbf		>68 lbf		>68 lbf		>68 lbf		115 lbf		lbf	
%		85 %		>85 %		>85 %		98 %		%	
%		%		%		%		%		%	
350 (390) %		350 (320) %		350 %		350 %		450 %		%	
NA (NA) %		NA (NA) %		NA %		NA %		NA %		NA %	
<5.0 %		>5.0 %		<5.0 %		<5.0 %		<5.0 %		%	
		Pass		Pass		Pass		Pass			
3.0 %		1.0 %		<5 %		<5 %		2.7 %		%	
%		<10 %		<10 %		<10 %		7.1 %		%	
psi		870 psi		>870 psi		>870 psi		1030 psi		psi	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
MD % XD %		MD <3.0 % XD <3.0 %		MD <3.0 % XD <3.0 %		MD % XD %		MD 0.9 % XD 0.02 %		MD % XD %	
MD % XD %		MD >80 % XD >80 %		MD >80 % XD >80 %		MD >80 % XD >80 %		MD 100 % XD 100 %		MD % XD %	
1400 psi		870 psi		1400 psi		1550 psi		1570 psi		psi	
NA lbf		NA lbf		lbf		lbf		NA lbf		NA lbf	
		Pass		Pass		Pass		Pass			
250 %		245 %		>210 %		245 %		230 %		%	
NA %		255 %		%		%		NA %		NA %	
MD % XD %		MD 1.0 % XD 1.0 %		MD <3.0 % XD <3.0 %		MD % XD %		MD <1.0 % XD <1.0 %		MD % XD %	
Pass		Pass		Pass		Pass		Pass			
		Pass		Pass		Pass		Pass			
%		>90 %		>90 %		>90 %		100 %		%	
NA %		NA %		%		%		NA %		NA %	
psi		>870 psi		>870 psi		>870 psi		1520 psi		psi	
NA lbf		NA lbf		lbf		lbf		NA lbf		NA lbf	
		Pass		Pass		Pass		Pass			
MD 6 lbf XD 6 lbf		MD 10.4 lbf XD 10.4 lbf		MD >6 lbf XD >6 lbf		MD >6 lbf XD >6 lbf		MD 7.8 lbf XD 7.8 lbf		MD lbf XD lbf	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
GATES ENGINEERING CO., INC.		GENERAL TIRE BUILDING PRODUCTS						GOODYEAR			

*calculated on basis of measured thickness of unbuffed sheets.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-52M	INTERNATIONAL BLACK		INTERNATIONAL WHITE		INTERNATIONAL WHITE FIRE RETARDANT	
	Type	Class	Type	Class	Type	Class
1. THICKNESS						
TYPE 1 & 2-Min. 39 mils in (1.0 mm)	_____ mils		_____ mils		_____ mils	
-Max. tolerance ± 10% nominal thickness	_____ %		_____ %		_____ %	
2. STRENGTH OF MEMBRANE						
TYPE 1-Tensile strength: min. 870 psi (6MPa)	_____ psi		_____ psi		_____ psi	
TYPE 2-Breaking strength: min 112 lbf (500N)	_____ lbf		_____ lbf		_____ lbf	
3. LAP JOINT STRENGTH						
TYPE 1 & 2						
Before exposure: min 68 lbf (300N)	_____ lbf		_____ lbf		_____ lbf	
After exposure:						
Min. of 85% of value before exposure but not less than 68 lbf (300N)	_____ lbf		_____ lbf		_____ lbf	
CLASS A-After immersion and freeze thaw cycles (min. 85%)	_____ %		_____ %		_____ %	
CLASS B-After immersion (min. 85%)	_____ %		_____ %		_____ %	
4. ELONGATION AT BREAK						
TYPE 1-Min. 300% elongation	_____ %		_____ %		_____ %	
TYPE 2-Min. 200% elongation	_____ %		_____ %		_____ %	
5. TENSILE SET						
TYPE 1 ONLY-Not greater than 5.0%	_____ %		_____ %		_____ %	
6. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking (Pass/Fail)	_____		_____		_____	
7. WATER ABSORPTION - after immersion in water:						
Change in mass not to exceed 5.0%	_____ %		_____ %		_____ %	
Shall not drop in strength by more than 10% as received (TEST 2)	_____ %		_____ %		_____ %	
Strength not less than:						
TYPE 1-Tensile strength: 870 psi (6MPa)	_____ psi		_____ psi		_____ psi	
TYPE 2-Breaking strength: 112 lbf (500N)	_____ lbf		_____ lbf		_____ lbf	
8. DIMENSIONAL STABILITY AFTER WATER ABSORPTION						
Change in length not to exceed 3.0%	MD _____ % XD _____ %		MD _____ % XD _____ %		MD _____ % XD _____ %	
9. HEAT AGING						
After exposure:						
Shall retain 80% of strength as received and in no case less than min. strength measured in test 2	MD _____ % XD _____ %		MD _____ % XD _____ %		MD _____ % XD _____ %	
TYPE 1-Tensile strength: min. 870 PSI (6 MPa)	_____ psi		_____ psi		_____ psi	
TYPE 2-Breaking strength: min. 112 lbf (500N)	_____ lbf		_____ lbf		_____ lbf	
Pass low temperature flexibility test (Pass/Fail)	_____		_____		_____	
Have a min. elongation at break						
TYPE 1-210%	_____ %		_____ %		_____ %	
TYPE 2-140%	_____ %		_____ %		_____ %	
Dimensional change not to exceed 3.0%	MD _____ % XD _____ %		MD _____ % XD _____ %		MD _____ % XD _____ %	
10. OZONE RESISTANCE						
No visible cracks under 7 power magnification (Pass/Fail)	_____		_____		_____	
11. RESISTANCE TO ACCELERATED WEATHERING						
CLASS A ONLY						
TYPE 1 & 2-Shall show no cracking, blistering or visible defects (Pass/Fail)	_____		_____		_____	
Shall retain min. of 90% of strength prior to weathering and in no case less than min. strength specified in Test 2.						
TYPE 1-Shall retain 90% of tensile strength	_____ %		_____ %		_____ %	
TYPE 2-Shall retain 90% of breaking strength	_____ %		_____ %		_____ %	
TYPE 1-Min. tensile strength of 870 psi (6 MPa)	_____ psi		_____ psi		_____ psi	
TYPE 2-Min. breaking strength of 112 lbf (500N)	_____ lbf		_____ lbf		_____ lbf	
12. DYNAMIC IMPACT (PUNCTURING) TEST						
Will withstand puncturing test of an energy impact of 1.8 ft. lbs (2.45J) (Pass/Fail)	_____		_____		_____	
13. TEAR RESISTANCE						
TYPE 1 ONLY-Shall exceed 6 lbf (26N) per mm of thickness	MD _____ lbf XD _____ lbf		MD _____ lbf XD _____ lbf		MD _____ lbf XD _____ lbf	
14. TEARING STRENGTH						
TYPE 2 ONLY-Shall exceed 8 lbf (35N)	_____ lbf		_____ lbf		_____ lbf	

LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction

NOTE: Blank lines = applicable data not reported by manufacturer.

INTERNATIONAL RUBBER ROOFING SYSTEMS INC.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

WHALESKIN/81 C-EPDM		WHALESKIN/81 WHITE EPDM		WHALESKIN/81 WHITE C-EPDM		WHALESKIN/81 EPDM		WHALESKIN/81 TALC FREE EPDM		POLYKEN M-45	
Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class
1	A	1	A	1	A	1	A & B	1	A & B	1	A
45, 60 (41) mils 10 %		45, 60, 81 (55) mils 10 %		45,60 ( ) mils 10 %		45, 60, 81 (40) mils 10 %		45, 60 mils 10 %		45 (50) mils 5 %	
1445 (1161) psi NA (NA) lbf		1774 (1795) psi NA (NA) lbf		1774 ( ) psi NA ( ) lbf		1445 (1742) psi NA (NA) lbf		1400 psi NA lbf		1600 (1722) psi NA (NA) lbf	
lbf lbf % NA %		lbf lbf % NA %		lbf lbf % NA %		lbf lbf % NA %		lbf lbf 122 % NA %		85 lbf 100 lbf 117 % NA %	
300 Min. (420) % NA (NA) %		300 Min. (518) % NA (NA) %		300 Min. ( ) % NA ( ) %		300 Min. (395) % NA (NA) %		300 Min. % NA %		300 Min. (360) % NA (NA) %	
%		%		%		%		0.0 %		0.0 %	
Pass		Pass		Pass		Pass		Pass		Pass	
2.2 % % psi NA lbf		3.2 % % psi NA lbf		3.2 % % psi NA lbf		2.2 % % psi NA lbf		3.0 % 8.8 % 1400 psi NA lbf		.01 % 0.0 % 1600 psi NA lbf	
MD 0.6 % XD 0.7 %		MD 1.0 % XD 0.7 %		MD 1.0 % XD 0.7 %		MD 0.6 % XD 0.7 %		MD 0.15 % XD 0.04 %		MD 0.0 % XD 0.0 %	
MD % XD % 1540 psi NA lbf 230 % NA % MD % XD %		MD % XD % 1574 psi NA lbf 267 % NA % MD % XD %		MD % XD % 1574 psi NA lbf 267 % NA % MD % XD %		MD % XD % 1540 psi NA lbf Pass 230 % NA % MD % XD %		MD >80 % XD >80 % 1600 psi NA lbf Pass 230 % NA % MD 1.06 % XD 0.4 %		MD 100 % XD 100 % 1600 psi NA lbf Pass 400 % NA % MD 0.0 % XD 0.0 %	
Pass		Pass		Pass		Pass		Pass		Pass	
 % NA % psi NA lbf		 % NA % psi NA lbf		 % NA % psi NA lbf		Pass % NA % psi NA lbf		Pass >90 % NA % 1600 psi NA lbf		Pass 99 % NA % 1584 psi NA lbf	
								Pass		Pass	
MD 180 lbf XD lbf		MD 170 lbf XD lbf		MD 170 lbf XD lbf		MD 180 lbf XD lbf		MD 180 lbf XD lbf		MD 6.216 lbf XD 6.192 lbf	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
KELLY ENERGY SYSTEMS, INC.										KENDALL CO.	

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-52M	POLYKEN M-60 Type 1	POLYKEN M-60 Class A	SPM 45 Type 1	SPM 45 Class B	SPM 60 Type 1	SPM 60 Class A & B
1. THICKNESS						
TYPE 1 & 2-Min. 39 mils in (1.0 mm)	60 (67) mils		45 mils		60 mils	
-Max. tolerance ± 10% nominal thickness	5 %		±10 %		±10 %	
2. STRENGTH OF MEMBRANE						
TYPE 1-Tensile strength: min. 870 psi (6MPa)	1600 (1721) psi		1725 psi		1472 psi	
TYPE 2-Breaking strength: min 112 lbf (500N)	NA (NA) lbf		NA lbf		NA lbf	
3. LAP JOINT STRENGTH **TYPE 1 & 2**						
Before exposure: min 68 lbf (300N)	85 lbf		lbf		lbf	
After exposure:						
Min. of 85% of value before exposure but not less than 68 lbf (300N)	100 lbf		lbf		lbf	
CLASS A-After immersion and freeze thaw cycles (min. 85%)	117 %		NA %		%	
CLASS B-After immersion (min. 85%)	NA %		%		%	
4. ELONGATION AT BREAK						
TYPE 1-Min. 300% elongation	300 Min. (310) %		390 %		364 %	
TYPE 2-Min. 200% elongation	NA (NA) %		NA %		NA %	
5. TENSILE SET						
TYPE 1 ONLY-Not greater than 5.0%	0.0 %		1.3 %		1.3 %	
6. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking (Pass/Fail)	Pass		Pass		Pass	
7. WATER ABSORPTION - after immersion in water:						
Change in mass not to exceed 5.0%	.01 %		0.9 %		0.9 %	
Shall not drop in strength by more than 10% as received (TEST 2)	0.0 %		2.6 %		%	
Strength not less than:						
TYPE 1-Tensile strength: 870 psi (6MPa)	1600 psi		1680 psi		psi	
TYPE 2-Breaking strength: 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
8. DIMENSIONAL STABILITY AFTER WATER ABSORPTION						
Change in length not to exceed 3.0%	MD 0.0 % XD 0.0 %		MD .14 % XD −.4 %		MD % XD %	
9. HEAT AGING						
After exposure:						
Shall retain 80% of strength as received and in no case less than min. strength measured in test 2	MD 100 % XD 100 %		MD 100 % XD 100 %		MD 100 % XD 100 %	
TYPE 1-Tensile strength: min. 870 PSI (6 MPa)	1600 psi		1729 psi		1557 psi	
TYPE 2-Breaking strength: min. 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
Pass low temperature flexibility test (Pass/Fail)	Pass		Pass		Pass	
Have a min. elongation at break						
TYPE 1-210%	400 %		298 %		267 %	
TYPE 2-140%	NA %		NA %		NA %	
Dimensional change not to exceed 3.0%	MD 0.0 % XD 0.0 %		MD −0.33 % XD −1.75 %		MD −0.3 % XD −1.8 %	
10. OZONE RESISTANCE						
No visible cracks under 7 power magnification (Pass/Fail)	Pass		Pass		Pass	
11. RESISTANCE TO ACCELERATED WEATHERING						
CLASS A ONLY						
TYPE 1 & 2-Shall show no cracking, blistering or visible defects (Pass/Fail)	Pass				Pass	
Shall retain min. of 90% of strength prior to weathering and in no case less than min. strength specified in Test 2.						
TYPE 1-Shall retain 90% of tensile strength	99 %		%		%	
TYPE 2-Shall retain 90% of breaking strength	NA %		NA %		NA %	
TYPE 1-Min. tensile strength of 870 psi (6 MPa)	1584 psi		psi		psi	
TYPE 2-Min. breaking strength of 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
12. DYNAMIC IMPACT (PUNCTURING) TEST						
Will withstand puncturing test of an energy impact of 1.8 ft. lbs (2.45J) (Pass/Fail)	Pass		None		None	
13. TEAR RESISTANCE						
TYPE 1 ONLY-Shall exceed 6 lbf (26N) per mm of thickness	MD 7.952 lbf XD 7.748 lbf		MD 19.8 lbf XD lbf		MD 18.7 lbf XD lbf	
14. TEARING STRENGTH						
TYPE 2 ONLY-Shall exceed 8 lbf (35N)	NA lbf		NA lbf		NA lbf	
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	**KENDALL CO.**		**MANVILLE**			
NOTE: Blank lines = applicable data not reported by manufacturer.						

( ) = "Comparative Test" data; see Foreword for explanation.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

PLYSEAL EPDM		SUPEROOF - BLACK		SUPEROOF - WHITE		SUPEROOF - GRAY		SUPEROOF - WHITE FIRE RETARDANT		REEVETECH .045	
Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class
2	A	1	A & B	1	A & B	1	A & B	1	A & B	1	A
45 mils		45, 55, 60 mils		45, 55, 60 mils		45, 55, 60 mils		45, 55, 60 mils		45 mils	
(45)		( )		( )		( )		( )		(45)	
±10 %		±10 %		±10 %		±10 %		±10 %		−7% +10% %	
NA psi		1400 Min. psi		1400 Min. psi		1400 Min. psi		1500 Min. psi		1600 psi	
(NA)		( )		( )		( )		( )		(1860)	
89 lbf		200 lbf		200 lbf		200 lbf		200 lbf		NA lbf	
MD(101) XD(94.7)		( )		( )		( )		( )		(NA)	
72 lbf		lbf		lbf		lbf		lbf		lbf	
68 lbf		lbf		lbf		lbf		lbf		lbf	
94 %		%		%		%		%		%	
94 %		%		%		%		%		NA %	
NA %		300 Min. %		300 Min. %		300 Min. %		600 Min. %		350 %	
(NA)		( )		( )		( )		( )		(529)	
300 %		NA %		NA %		NA %		NA %		NA %	
MD(307) XD(450)		( )		( )		( )		( )		(NA)	
NA %		%		%		%		%		.5 %	
Pass		Pass		Pass		Pass		Pass		Pass	
+0.2 %		1.5 %		1.5 %		1.5 %		1.5 %		1.0 %	
9.0 %		5.0 %		5.0 %		5.0 %		5.0 %		0 %	
NA psi		1325 psi		1325 psi		1325 psi		1425 psi		psi	
90 lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
MD −0.06 % XD +0.03 %		MD 1.0 Max % XD %		MD 1.0 Max % XD %		MD 1.0 Max % XD %		MD 1.0 Max % XD %		MD % XD %	
MD 90 % XD 90 %		MD 93 % XD 93 %		MD 93 % XD 93 %		MD % XD 93 %		MD 93 % XD 93 %		MD 100 % XD 100 %	
NA psi		1300 psi		1300 psi		1300 psi		1400 psi		1700 psi	
90 lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
Pass		Pass		Pass		Pass		Pass		Pass	
NA %		300 Min. %		300 Min. %		300 Min. %		550 Min. %		250 %	
250 %		NA %		NA %		NA %		NA %		NA %	
MD 1.0 % XD 1.0 %		MD 1.0 % XD 1.5 %		MD 1.0 % XD 1.5 %		MD 1.0 % XD 1.5 %		MD 1.0 % XD 1.5 %		MD 1.0 % XD 1.0 %	
Pass		Pass		Pass		Pass		Pass		Pass	
Pass		Pass		Pass		Pass		Pass		Pass	
NA %		92 %		92 %		92 %		92 %		100 %	
93 %		NA %		NA %		NA %		NA %		NA %	
NA psi		1300 psi		1300 psi		1300 psi		1450 psi		psi	
91 lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
		Pass		Pass		Pass		Pass		Pass	
MD NA lbf XD NA lbf		MD 9 lbf XD 9 lbf		MD 9 lbf XD 9 lbf		MD 9 lbf XD 9 lbf		MD 9 lbf XD 9 lbf		MD 7.0 lbf XD 7.0 lbf	
9 lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
PLYMOUTH RUBBER COMPANY, INC.		PROTECTIVE COATINGS, INC.								REEVES BROS. INC.	

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-52M	REEVETECH .060		SMI RUBBER ROOF BLACK		SMI RUBBER ROOF WHITE	
	Type	Class	Type	Class	Type	Class
	1	A	1	A	1	A
1. THICKNESS						
TYPE 1 & 2-Min. 39 mils in (1.0 mm)	60 mils		45 ( ) mils		45 ( ) mils	
-Max. tolerance ± 10% nominal thickness	−7% +10% %		±10 %		±10 %	
2. STRENGTH OF MEMBRANE						
TYPE 1-Tensile strength: min. 870 psi (6MPa)	1600 psi		1400 ( ) psi		1400 ( ) psi	
TYPE 2-Breaking strength: min 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
3. LAP JOINT STRENGTH **TYPE 1 & 2**						
Before exposure: min 68 lbf (300N)	lbf		lbf		lbf	
After exposure:						
Min. of 85% of value before exposure but not less than 68 lbf (300N)	lbf		lbf		lbf	
CLASS A-After immersion and freeze thaw cycles (min. 85%)	%		%		%	
CLASS B-After immersion (min. 85%)	NA %		NA %		NA %	
4. ELONGATION AT BREAK						
TYPE 1-Min. 300% elongation	350 %		300 ( ) %		300 ( ) %	
TYPE 2-Min. 200% elongation	NA %		NA %		NA %	
5. TENSILE SET						
TYPE 1 ONLY-Not greater than 5.0%	.5 %		%		%	
6. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking (Pass/Fail)	Pass		Pass		Pass	
7. WATER ABSORPTION - after immersion in water:						
Change in mass not to exceed 5.0%	1.0 %		%		%	
Shall not drop in strength by more than 10% as received (TEST 2)	0 %		%		%	
Strength not less than:						
TYPE 1-Tensile strength: 870 psi (6MPa)	psi		psi		psi	
TYPE 2-Breaking strength: 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
8. DIMENSIONAL STABILITY AFTER WATER ABSORPTION						
Change in length not to exceed 3.0%	MD % XD %		MD 2.0 % XD 2.0 %		MD 2.0 % XD 2.0 %	
9. HEAT AGING						
After exposure:						
Shall retain 80% of strength as received and in no case less than min. strength measured in test 2	MD 100 % XD 100 %		MD % XD %		MD % XD %	
TYPE 1-Tensile strength: min. 870 PSI (6 MPa)	1700 psi		1225 psi		1225 psi	
TYPE 2-Breaking strength: min. 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
Pass low temperature flexibility test (Pass/Fail)	Pass		Pass		Pass	
Have a min. elongation at break						
TYPE 1-210%	250 %		225 %		225 %	
TYPE 2-140%	NA %		NA %		NA %	
Dimensional change not to exceed 3.0%	MD 1.0 % XD 1.0 %		MD % XD %		MD % XD %	
10. OZONE RESISTANCE						
No visible cracks under 7 power magnification (Pass/Fail)	Pass		Pass		Pass	
11. RESISTANCE TO ACCELERATED WEATHERING						
CLASS A ONLY						
TYPE 1 & 2-Shall show no cracking, blistering or visible defects (Pass/Fail)	Pass		Pass		Pass	
Shall retain min. of 90% of strength prior to weathering and in no case less than min. strength specified in Test 2.						
TYPE 1-Shall retain 90% of tensile strength	100 %		%		%	
TYPE 2-Shall retain 90% of breaking strength	NA %		NA %		NA %	
TYPE 1-Min. tensile strength of 870 psi (6 MPa)	psi		psi		psi	
TYPE 2-Min. breaking strength of 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
12. DYNAMIC IMPACT (PUNCTURING) TEST						
Will withstand puncturing test of an energy impact of 1.8 ft. lbs (2.45J) (Pass/Fail)	Pass		Pass		Pass	
13. TEAR RESISTANCE						
TYPE 1 ONLY-Shall exceed 6 lbf (26N) per mm of thickness	MD 7.0 lbf XD 7.0 lbf		MD 125 lbf XD 125 lbf		MD lbf XD lbf	
14. TEARING STRENGTH						
TYPE 2 ONLY-Shall exceed 8 lbf (35N)	NA lbf		NA lbf		NA lbf	
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	**REEVES BROS. INC.**		**SYENERGY METHODS INC.**			
NOTE: Blank lines = applicable data not reported by manufacturer.						

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

SYENERGY RUBBER ROOF 055" BLACK		SYENERGY RUBBER ROOF 055" WHITE		SYENERGY FIRESTOP 045" MEMBRANE		SYENERGY RUBBER ROOF 045" BLACK		SYENERGY RUBBER ROOF 045" WHITE		AGAPER E	
Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class
1		1		1		1	A	1	A	1	A & B
55 mils		55 mils		45 mils		45 mils		45 mils		45 mils	
±10 %		±10 %		±10 %		±10 %		±10 %		( ) 10 %	
1400 psi		1400 psi		1400 psi		1400 psi		1400 psi		1400 psi	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		( ) 115 lbf	
lbf		lbf		lbf		lbf		lbf		lbf	
lbf		lbf		lbf		lbf		lbf		lbf	
%		%		%		%		%		%	
NA %		NA %		NA %		NA %		NA %		%	
300 %		300 %		300 %		300 %		300 %		350 %	
NA %		NA %		NA %		NA %		NA %		NA %	
%		%		%		%		%		4.0 %	
Pass		Pass		Pass		Pass		Pass		Pass	
%		%		%		%		%		3.5 %	
%		%		%		%		%		%	
psi		psi		psi		psi		psi		psi	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
MD 2.0 % XD 2.0 %		MD 2.0 % XD 2.0 %		MD 1.0 % XD %		MD % XD %		MD % XD %		MD 1.0 % XD %	
MD % XD %		MD % XD %		MD % XD %		MD % XD %		MD % XD %		MD 110 % XD %	
1225 psi		1225 psi		1225 psi		1225 psi		1225 psi		psi	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
Pass		Pass		Pass		Pass		Pass		Pass	
225 %		225 %		225 %		225 %		225 %		300 %	
NA %		NA %		NA %		NA %		NA %		NA %	
MD % XD %		MD % XD %		MD % XD %		MD % XD %		MD % XD %		MD % XD %	
Pass		Pass		Pass		Pass		Pass		Pass	
Pass		Pass		Pass		Pass		Pass			
%		%		%		%		%		%	
NA %		NA %		NA %		NA %		NA %		NA %	
psi		psi		psi		psi		psi		psi	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
Pass		Pass		Pass		Pass		Pass		Pass	
MD lbf XD lbf		MD lbf XD lbf		MD lbf XD lbf		MD 125 lbf XD 125 lbf		MD lbf XD lbf		MD lbf XD lbf	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		NA lbf	
SYENERGY METHODS, INC.										WAT PRO INC.	

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-52M	.045 WEATHERGARD BLACK		.055 WEATHERGARD BLACK		.060 WEATHERGARD BLACK	
	Type	Class	Type	Class	Type	Class
	1	A	1	A	1	A
1. THICKNESS						
TYPE 1 & 2-Min. 39 mils in (1.0 mm)	45 (53) mils		55 mils		60 (65) mils	
-Max. tolerance ± 10% nominal thickness	7 %		10 %		10 %	
2. STRENGTH OF MEMBRANE						
TYPE 1-Tensile strength: min. 870 psi (6MPa)	1400 (1511) psi		1400 psi		1400 (1927) psi	
TYPE 2-Breaking strength: min 112 lbf (500N)	NA (NA) lbf		NA lbf		NA (NA) lbf	
3. LAP JOINT STRENGTH						
TYPE 1 & 2						
Before exposure: min 68 lbf (300N)	82 lbf		82 lbf		82 lbf	
After exposure:						
Min. of 85% of value before exposure but not less than 68 lbf (300N)	lbf		lbf		lbf	
CLASS A-After immersion and freeze thaw cycles (min. 85%)	%		%		%	
CLASS B-After immersion (min. 85%)	NA %		NA %		NA %	
4. ELONGATION AT BREAK						
TYPE 1-Min. 300% elongation	300 (355) %		300 %		300 (343) %	
TYPE 2-Min. 200% elongation	NA (NA) %		NA %		NA (NA) %	
5. TENSILE SET						
TYPE 1 ONLY-Not greater than 5.0%	+4.0 %		+4.0 %		+4.0 %	
6. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking (Pass/Fail)	Pass		Pass		Pass	
7. WATER ABSORPTION - after immersion in water:						
Change in mass not to exceed 5.0%	3.0 %		3.0 %		3.0 %	
Shall not drop in strength by more than 10% as received (TEST 2)	%		%		%	
Strength not less than:						
TYPE 1-Tensile strength: 870 psi (6MPa)	psi		psi		psi	
TYPE 2-Breaking strength: 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
8. DIMENSIONAL STABILITY AFTER WATER ABSORPTION						
Change in length not to exceed 3.0%	MD % XD %		MD % XD %		MD % XD %	
9. HEAT AGING						
After exposure:						
Shall retain 80% of strength as received and in no case less than min. strength measured in test 2	MD % XD %		MD % XD %		MD % XD %	
TYPE 1-Tensile strength: min. 870 PSI (6 MPa)	1200 psi		1200 psi		1200 psi	
TYPE 2-Breaking strength: min. 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
Pass low temperature flexibility test (Pass/Fail)						
Have a min. elongation at break						
TYPE 1-210%	210 %		210 %		210 %	
TYPE 2-140%	NA %		NA %		NA %	
Dimensional change not to exceed 3.0%	MD ±2.0 % XD ±2.0 %		MD ±2.0 % XD ±2.0 %		MD ±2.0 % XD ±2.0 %	
10. OZONE RESISTANCE						
No visible cracks under 7 power magnification (Pass/Fail)	Pass		Pass		Pass	
11. RESISTANCE TO ACCELERATED WEATHERING						
CLASS A ONLY						
TYPE 1 & 2-Shall show no cracking, blistering or visible defects (Pass/Fail)						
Shall retain min. of 90% of strength prior to weathering and in no case less than min. strength specified in Test 2.						
TYPE 1-Shall retain 90% of tensile strength	%		%		%	
TYPE 2-Shall retain 90% of breaking strength	NA %		NA %		NA %	
TYPE 1-Min. tensile strength of 870 psi (6 MPa)	psi		psi		psi	
TYPE 2-Min. breaking strength of 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
12. DYNAMIC IMPACT (PUNCTURING) TEST						
Will withstand puncturing test of an energy impact of 1.8 ft. lbs (2.45J) (Pass/Fail)						
13. TEAR RESISTANCE						
TYPE 1 ONLY-Shall exceed 6 lbf (26N) per mm of thickness	7.0 MD lbf XD lbf		7.0 MD lbf XD lbf		7.0 MD lbf XD lbf	
14. TEARING STRENGTH						
TYPE 2 ONLY-Shall exceed 8 lbf (35N)	NA lbf		NA lbf		NA lbf	

LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction

NOTE: Blank lines = applicable data not reported by manufacturer.

WEATHERGARD ROOFING SYSTEMS, INC.

( ) = "Comparative Test" data; see Foreword for explanation.

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EPDM ETHYLENE PROPYLENE DIENE MONOMER Part 2: Test Results *(See Part 1 for General Information)*

.045 WEATHERGARD WHITE		.060 WEATHERGARD WHITE		.045 WEATHERGARD BLACK FIRE RETARDANT		.055 WEATHERGARD BLACK FIRE RETARDANT		.060 WEATHERGARD BLACK FIRE RETARDANT			
Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class
1	A	1	A	1	A	1	A	1	A		
45 (50) mils 7 %		60 (63) mils 10 %		45 (46) mils 7 %		55 mils 10 %		60 (58) mils 10 %		mils %	
1400 (1570) psi NA (NA) lbf		1400 (1657) psi NA (NA) lbf		1400 (1604) psi NA (NA) lbf		1400 psi NA lbf		1400 (1571) psi NA (NA) lbf		psi lbf	
82 lbf lbf % NA %		82 lbf lbf % NA %		82 lbf lbf % NA %		82 lbf lbf % NA %		82 lbf lbf % NA %		lbf lbf % %	
300 (528) % NA (NA) %		300 (598) % NA (NA) %		300 (378) % NA (NA) %		300 % NA %		300 (378) % NA (NA) %		% %	
+4.0 %		+4.0 %		+4.0 %		+4.0 %		+4.0 %		%	
Pass		Pass		Pass		Pass		Pass			
4.0 % % psi NA lbf		4.0 % % psi NA lbf		3.0 % % psi NA lbf		3.0 % % psi NA lbf		3.0 % % psi NA lbf		% % psi lbf	
MD % XD %		MD % XD %		MD % XD %		MD % XD %		MD % XD %		MD % XD %	
MD % XD % 1200 psi NA lbf 210 % NA % MD ±2.0 % XD ±2.0 %		MD % XD % 1200 psi NA lbf 210 % NA % MD ±2.0 % XD ±2.0 %		MD % XD % 1200 psi NA lbf 210 % NA % MD ±2.0 % XD ±2.0 %		MD % XD % 1200 psi NA lbf 210 % NA % MD ±2.0 % XD ±2.0 %		MD % XD % 1200 psi NA lbf 210 % NA % MD ±2.0 % XD ±2.0 %		MD % XD % psi lbf % % MD % XD %	
Pass		Pass		Pass		Pass		Pass			
% NA % psi NA lbf		% NA % psi NA lbf		% NA % psi NA lbf		% NA % psi NA lbf		% NA % psi NA lbf		% % psi lbf	
MD 7.0 lbf XD lbf		MD 7.0 lbf XD lbf		MD 7.0 lbf XD lbf		MD 7.0 lbf XD lbf		MD 7.0 lbf XD lbf		MD lbf XD lbf	
NA lbf		NA lbf		NA lbf		NA lbf		NA lbf		lbf	
WEATHERGARD ROOFING SYSTEMS, INC.											

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Other Single-Ply Pre-Fabricated Sheet Applied Membranes Part 1 *(See Part 2 for Test Results)*

	NEOPRENE Polychloroprene					
PRODUCT NAME ►	**SURE-SEAL NEO**	**GACO SYSTEM II NEOPRENE-BLACK**	**GACO SYSTEM II NEOPRENE-GRAY**	**PLYSHIELD NEOPRENE**	**WEATHERGARD NEOPRENE .045**	**WEATHERGARD NEOPRENE .060**
1. PRODUCT DESCRIPTION						
a) Reinforcement	None	None	None	None	None	None
b) Color	Grey/Black	Black	Gray	Black	Black	Black
c) Installed wt. (lbs. per sq. ft. w/o ballast)	.46	.45	.45	.28		
2. COATING REQUIRED	None		●	None	None	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Adhesive/Sealant	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)	●			10-13		
b) Partially adhered-method		Mech. Fastened	Mech. Fastened	Batten		
c) Fully adhered-method	●	Contact Adhesive	Contact Adhesive	●		
d) Protected Membrane Roofing Assembly	●			●		
6. MINIMUM SLOPE	None	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
7. USE OVER						
a) Perlite	●	●	●	●	●	●
b) Urethane	●	●	●	●	●	●
c) Wood fibre	●	●	●	●	●	●
d) Fibre glass	●	●	●	●	●	●
e) Expanded polystyrene	●	●	●	●	●	●
f) Felt faced composites	●	●	●	●	●	●
g) Other	See Specifications	See Specifications	See Specifications	Approval of Plyroof Tech. Dept.	Consult Weathergard Technical Services	Consult Weathergard Technical Services
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	None	None
9. WORKABLE TEMP RANGE	−25°F-180°F	50°F-90°F	50°F-90°F	15°F-120°F		
10. FLASHING MATERIAL	Elastoform	Uncured Neo	Uncured Neo	Uncured Neo	Uncured Neo	Uncured Neo
11. FLASHING METHOD	Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive	Contact Adhesive
12. PRE-FORMED ACCESS AVAILABLE	Yes	No	No	No	No	No
13. COUNTRY OF ORIGIN	USA	USA	USA	USA	USA	USA
14. COUNTRY OF MANUFACTURE	USA	USA	USA	USA	USA	USA
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)	1960	1973-Saudi Arabia	1973-Saudi Arabia			
b) U.S.A. (Year, City-first installed)	1960-Carlisle	1961-Wash., D.C.	1961-Wash., D.C.	1963-Denver		
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign		71,000 Black & Gray	71,000 Black & Gray			
b) U.S.A.	Thousands	180,000 Black & Gray	180,000 Black & Gray	209,000		
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	10	10	10	10	10
b) Renewable after inspection				No	No	No
c) Scope of coverage (repair of leaks)						
c.1 Material only						
c.2 Workmanship & material	●	●	●	●	●	●
d) Monetary limitation						
d.1 None						
d.2 Original cost of installation	●			●	●	●
d.3 $ per square		●	●			
e) Exclusion from coverage						
e.1 Damage to other roofing components	See Literature	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE	See Literature	See Specifications	See Specifications	Contact Plyroof Tech Dept.	See Specifications	See Specifications
19.						
20.						
21. METHOD OF DISTRIB.	Distrs./Reps.	Distrs./Reps.		Direct	Distrs./Reps.	
22. # REGIONAL SERVICE LOCATIONS	39	31		4	25	
23. LICENSED APPLICATOR AGREEMENT	Yes	Yes		Yes	Yes	
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Field, Seminars Factory	Field, Seminars		Field	Onsite, Seminars	
25. SALES INFORMATION; CONTACT	Don Kyle	1-800-441-7464		Charles Taft	1-800-USA-EPDM	
26. TECHNICAL INFORMATION; CONTACT	Ed Kane	1-800-441-7464		Steve Condren	901-458-2222	
COMPANY►	CARLISLE SYNTEC SYSTEMS	GATES ENGINEERING CO., INC.		PLYMOUTH RUBBER CO. INC.	WEATHERGARD ROOFING SYSTEMS, INC.	

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Other Single-Ply Pre-Fabricated Sheet Applied Membranes Part 1 *(See Part 2 for Test Results)*

CSPE HYPALON								PIB Polyisobutylene
BURKELINE M-341	BURKELINE M-356	CSPE HYPALON UNIROOF	DUNSEAL HYPALON	GREAT WHITE HYPALON WHITE	GREAT WHITE HYPALON BLACK	HI-TUFF	TREMCO HHP	ALPHAGARD
*Polyester Fiber	M.F. Backing	None	Polyester	Yes	Yes	10 × 10 Polyester	Woven Polyester	60 Mil PIB 40 Mil Fleece
White	White	All Colors	All Colors	White	Black	White	White	Black or White
.25	.31	.25	.30-.40	.25	.25	.29 Min.	.26	.63
None	None	None	None	None	None	None	None	None
●	●	●	Yes	●	●	●	●	●
●	●	●	Yes	●	●	●	●	●
Solvent/Heat Weld	Solvent/Heat Weld	Heat Weld	Heat or Adhesive	Solvent/Heat Weld	Solvent/Heat Weld	Heat Weld	Contact Adhesive	Pre-Fab Seam
10	10		10	●	●	10		10
Mech. Fastened			Mech. Fastened	●	●	Mech. Attached		Asphalt/Adhesive
	Latex Adhesive	Latex Adhesive	Adhesive	●	●		●	Asphalt Adhesive
●	●		Yes	●	●	●	●	●
Dead Level	Dead Level	Dead Level	None	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
●			●	●*	●*	●		●
●		●	●	●*	●*	●	●	●
●		●	●	●*	●*	●	●	●
●		●	●	●*	●*	●	●	●
●		●	●	●*	●*	●*	●*	●
●		●	●	●*	●*	●	●	Recovery Board
See Specifications	See Specifications	Existing Roof	See Specifications	*Contact KES for application methods over each type or see specs	*Contact KES for application methods over each type or see specs	Isocyanurate Smooth Asphalt *Consult JPS	Isocyanurate Foamglas * EPS/Fiberboard Composite Only	Existing Roof See Specifications
None	None	None	None	None	None	None	None	None
0°F-120°F	0°F-120°F	10°F-120°F	0°F-160°F	-25°F-150°F	-25°F-150°F	-25°F-140°F	20°F-160°F	20° and above
Burkeline Hypalon	Burkeline Hypalon	Hypalon	Unreinforced Hypalon	Hypalon	Hypalon	Reinforced Hypalon Non-reinforced Hypalon	Reinforced Hypalon	PIB U60 and cover tape
Solvent/Heat Weld To Self	Contact Adhesive To Other Substrates	Cement	Adhesive or Heat Weld	Solvent or Heat Weld	Solvent or Heat Weld	Adhesive & Heat Weld	Adhesives (Installation Specification)	Solvent/Weld and Self Adhering
Yes	Yes	Yes	No			●	Yes	Yes
USA	USA	UK	Canada	USA	USA	USA	USA	Germany
USA	USA	UK	Canada	USA	USA	USA	USA	Germany & USA
1982	1982	1963	1972			1977		1950
1976	1976	1978-LaVerne, CA	1980-Tennessee	1983-Waterbury	1983-Waterbury	1978-Chicago	1982-Cleveland	1977-St. Louis
120	2,000	400,000	Thousands					9,000,000
20,000	30	7,400	Thousands			100's of Thousands		200,000
10	10	10	15	21	21	10	10	10
		Yes					No	No
				Also Available	Also Available			
●	●	●	5-10	●	●	●	●	●
		●		●	●			
●	●		●			●	●	
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
See Specifications	See Specifications	None	None	See Specifications	See Specifications	See Specifications		Contact Manufacturer
Distributors		Distributors	Agent/Direct	Distributors		Distributors	Local Sales Reps	Distrs./Reps.
3		6		62		24	18	2
Yes		Yes	Yes			Yes	Yes	Yes
Field		Field	Field, Seminars	Field, Seminars		Field, Seminars Factory	Field	Yes
Doug Bartlett		J. Whittemore	P. Hyrsko	A. Poremba, T. Arras		Bruce J. Abbott	P. Mitchell	Charles Kellar
Ralph Woodley		J. Whittemore	D. Brazier	A. Poremba, T. Arras		Jim Freedman	K. Brozozowski	Werner H. Huhn
BURKE RUBBER COMPANY		CENTRAL STATES ASSOC. CORP.	DUNLOP CONSTRUCTION PRODUCTS, INC.	KELLY ENERGY SYSTEMS, INC.		J.P. STEVENS	TREMCO INC.	AGR COMPANY

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Other Single-Ply Pre-Fabricated Sheet Applied Membranes Part 1 *(See Part 2 for Test Results)*

	PIB Polyisobutylene			CPE Chlorinated Polyethylene		
PRODUCT NAME ►	**CARBOLINE PIB 1000**	**GEOFLEX**	**TROPIGARD**	**ALKORFLEX 35093**	**ALKORFLEX 35094**	**ALKORFLEX 35096**
1. PRODUCT DESCRIPTION						
a) Reinforcement	Yes	Polyester	60 Mil PIB 40 Mil Fleece	None	Polyester Fleece	Polyester Fiber
b) Color	White or Black	Black or White	Black	Light Grey	Light Grey	Light Grey
c) Installed wt. (lbs. per sq. ft. w/o ballast)	.57	.57	.57	.30	.30	.30
2. COATING REQUIRED	None	None	None	None	None	None
3. USE						
a) New roofing	●	●	●	●	●	●
b) Reroofing	●	●	●	●	●	●
4. FIELD LAP JOINT METHOD	Self-sealing	Self-sealing	Self-sealing	Solvent/Heat	Solvent/Heat	Solvent/Heat
5. TYPE OF ROOF SYSTEM						
a) Loose laid/ballasted (ballast: lbs. per sq. ft.)		12	13	10		10
b) Partially adhered-method	Fasteners/Adhesive	●	Asphalt or Adhesive		●	
c) Fully adhered-method	Adhesive		Asphalt or Adhesive		●	
d) Protected Membrane Roofing Assembly	●	●	●	●		●
6. MINIMUM SLOPE	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level	Dead Level
7. USE OVER						
a) Perlite	●	●	●	●		●
b) Urethane	●	●	●	●		●
c) Wood fibre	●	●	●	●	●	●
d) Fibre glass	●	●	●	●	●	●
e) Expanded polystyrene	●	●	●	●		●
f) Felt faced composites	●	●	Recovery Board	●	●	●
g) Other	Existing Roof	See Specifications	Existing Smooth Asphalt BUR	Extruded Polystrene Isocyanurate	Isocyanurate, Existing Smooth BUR	Isocyanurate, Extruded Polystrene
8. RESTRICTED REGIONS *(See "Important Notes")*	None	None	None	None	None	None
9. WORKABLE TEMP RANGE	20°F-160°F	20°F-100°F	20°F-100°F	0°F-115°F	0°F-115°F	0°F-115°F
10. FLASHING MATERIAL	PIB	PIB	Unbacked PIB	CPE Coated Metal, 35093	CPE Coated Metal, 35093	CPE Coated Metal, 35093
11. FLASHING METHOD	Solvent/Weld	Solvent & Adhesive	Solvent/Weld	Solvent/Heat	Solvent/Heat	Solvent/Heat
12. PRE-FORMED ACCESS AVAILABLE	Yes	Yes	Yes	Yes	Yes	Yes
13. COUNTRY OF ORIGIN	USA	West Germany	Germany	Belgium	Belgium	Belgium
14. COUNTRY OF MANUFACTURE	USA	USA	Germany & USA	Belgium	Belgium	Belgium
15. YEAR FIRST COMMERCIAL USE						
a) Foreign (Year)	1968	1950	1950	1973	1976	1974
b) U.S.A. (Year, City-first installed)	1979-St. Louis	1977-St. Louis	1978-Amsterdam, NY	1979-Madison	1980-St. Louis	1979-Madison
16. NO. OF SQUARES INSTALLED (1 square=100 sq. ft.)						
a) Foreign	Thousands	8,200,000	8,500,000	>250,000	>100,000	>250,000
b) U.S.A.	Thousands	170,000	>200,000	>50,000	>30,000	>100,000
17. WARRANTY *(See "Important Notes")*						
a) Duration (years)	10	5 or 10	10	10	10	10
b) Renewable after inspection		Yes		Contact Alkor	Contact Alkor	Contact Alkor
c) Scope of coverage (repair of leaks)						
c.1 Material only						
c.2 Workmanship & material	●	●	●	●	●	●
d) Monetary limitation						
d.1 None		●	●	●	●	●
d.2 Original cost of installation	●					
d.3 $ per square		●				
e) Exclusion from coverage						
e.1 Damage to other roofing components	●	●	●	●	●	●
e.2 Consequential damages	●	●	●	●	●	●
18. LIMITATIONS OR RESTRICTED USE	Contact Supplier	Yes See Literature	Yes See Specifications	Few See Specifications	Few See Specifications	Few See Specifications
19.						
20.						
21. METHOD OF DISTRIB.	Sales Reps	Mfgr./Reps.	Distrs./Reps.	Mfgr./Reps.		
22. # REGIONAL SERVICE LOCATIONS	24	4	2			
23. LICENSED APPLICATOR AGREEMENT	Yes	Yes	Yes	Yes		
24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)	Field, Seminars	Field, Seminars Factory	Yes	On Job Training		
25. SALES INFORMATION; CONTACT	R. Bradley	Joe Chew	Jerry Mathews	Office		
26. TECHNICAL INFORMATION; CONTACT	R. Bradley	Joe Chew	Ron Utzler	Office		
COMPANY►	CARBOLINE CO.	REPUBLIC POWDERED METALS	TROPICAL INDUSTRIAL COATINGS, INC.	ALKOR-DIVISION, HEDWIN CORP.		

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Other Single-Ply Pre-Fabricated Sheet Applied Membranes Part 1 *(See Part 2 for Test Results)*

		OTHER FABRICATED SHEET APPLIED MEMBRANES						
COOL TOP 40	**FLEXHIDE CPE**	**BOND GREY 35**	**DURO-LAST**	**OTTO SINGLE-PLY STR**	**SEAL-DRY, POLYESTER**	**SEAL-DRY, FIBERGLASS**	**FIBERTITE**	
Polyester	Polyester	Polyester	Reinforced Polyester	Woven Fiberglass	Polyester	Fiberglass	Reinforced Polyester	
White	White	Grey	White	White	White	White	Beige	
.31	.30	.22	.21	.19	.25	.25	.25	
None	None	None	None	None	None	None	None	
●	●	●	●	●	●	●	●	
●	●	●	●	●	●	●	●	
Heat	Solvent/Heat	Heat Weld	Heat Gun	Air Cure	Heat Weld	Heat Weld	Heat Weld	
		●	●		●	●		
●	Mech. Fastened	●	Mechanically		Mech. Fastened	Mech. Fastened	Mech. Fastened	
			●	●	●	●		
Dead Level	Dead Level	Dead Level	Any	Dead Level	Dead Level	Dead Level	Dead Level	
●	●	●	●		●	●	●	
●	●	●	●		●	●	●	
	●	●	●		●	●	●	
●	●	●	●		●	●	●	
●	●	●	●	●	●	●	●	
●	●	●	●		●	●	●	
Extruded Polystrene, Isocyanurate	Extruded Polystrene, Isocyanurate				●	●	Check With Manufacturer	
None	None	None	None	None	None	None	None	
0°F-120°F		−30°F-180°F	30°F-160°F	No Restrictions	−30°F-160°F	−30°F-160°F	−30°-160°F	
Cool Top 40 & CPE Coated Metal	Coated Metal	Conventional	Roof Material	Same Materials & Silicone Caulking	Roof Membrane	Roof Membrane	Roof Membrane	
Heat	Solvent/Heat	Conventional	Heat Weld	Air Cure	Heat Weld	Heat Weld	Heat Weld	
Yes	Yes	Yes	Yes	Not Necessary	Yes	Yes	Yes	
USA	USA	USA	USA	USA	USA	USA	USA	
USA	USA	USA	USA	USA	USA	USA	USA	
							1974	
1978-Newark	1982-Stanhope	1981	1978-Saginaw,MI	1979-Kansas City	1983-Owasso,MI	1983-Providence,KY	1968-Sarasota	
			None				10,000	
250,000			>120,000	10,000	3,000	400	Thousands	
10	5 or 10	10	20	10	15	15	10	
			No		No	No		
			Last 10 Years					
●	●	●	First 10 Years	●	●	●	●	
				●	●	●		
●	●	●	●				●	
●	●	●	●	●	●	●	●	
●	●	●	●	●	●	●	●	
Consult Cooley	Petroleum, Coal Tar Products See Specifications	See Specifications	None	See Specifications	None	None	See Specifications	
Mfgr./Reps.	Licensed Contractors Only	Contrs./Direct	Reps./Dealers	Distributors	Reps./Installers		Direct	
2	1		2				3	
Yes	Yes	Yes	Yes	Yes	Yes		Yes	
Field, Seminars	Field, Seminars, Factory	Yes	Seminars, Field, Factory	Yes	Field, Seminars, Factory		Field, Seminars, Factory	
Office	S. Steck	Steve Irwin	Bill Frederick	Tom Olsen	Bill Shroyer		Sam Eisentrout	
Office	F. Neuwirth	Steve Irwin	John Burt	John Sweeney	Jack Givens		Sam Eisentrout	
COOLEY ROOFING SYSTEMS INC.	**U.S. MINERAL PRODUCTS CO.**	**BOND COTE SYSTEMS**	**DURO-LAST ROOFING, INC.**	**OTTO FABRIC, INC.**	**SEAL DRY/U.S.A, INC.**		**SEAMAN CORP.**	

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Other Single-Ply Pre-Fabricated Sheet Applied Membranes
Part 2: Test Results *(See Part 1 for General Information)*

Test Description and Suggested Values As Specified in CGSB Standard 37-GP-52M	NEOPRENE Polychloroprene					
	SURE-SEAL NEOPRENE		GACO SYSTEM II NEOPRENE - BLACK		GACO SYSTEM II NEOPRENE - GRAY	
	Type	Class	Type	Class	Type	Class
	1	A & B	1	A & B	1	A & B
1. THICKNESS						
TYPE 1 & 2-Min. 39 mils in (1.0 mm)	45,60 (57) mils		60 (64) mils		60 (64) mils	
-Max. tolerance ± 10% nominal thickness	±10 %		10 %		10 %	
2. STRENGTH OF MEMBRANE						
TYPE 1-Tensile strength: min. 870 psi (6MPa)	1750 (2095) psi		2000 (2236) psi		1400 (1678) psi	
TYPE 2-Breaking strength: min 112 lbf (500N)	NA (NA) lbf		NA (NA) lbf		NA (NA) lbf	
3. LAP JOINT STRENGTH **TYPE 1 & 2**						
Before exposure: min 68 lbf (300N)	lbf		lbf		lbf	
After exposure:						
Min. of 85% of value before exposure but not less than 68 lbf (300N)	lbf		lbf		lbf	
CLASS A-After immersion and freeze thaw cycles (min. 85%)	%		%		%	
CLASS B-After immersion (min. 85%)	%		%		%	
4. ELONGATION AT BREAK						
TYPE 1-Min. 300% elongation	360 (330) %		350 (473) %		650 (790) %	
TYPE 2-Min. 200% elongation	NA (NA) %		NA (NA) %		NA (NA) %	
5. TENSILE SET						
TYPE 1 ONLY-Not greater than 5.0%	1.0 %		<5 %		<5 %	
6. LOW TEMPERATURE FLEXIBILITY						
Shall show no cracking (Pass/Fail)	Pass					
7. WATER ABSORPTION - after immersion in water:						
Change in mass not to exceed 5.0%	±10 %		10 %		25 %	
Shall not drop in strength by more than 10% as received (TEST 2)	%		%		%	
Strength not less than:						
TYPE 1-Tensile strength: 870 psi (6MPa)	psi		psi		psi	
TYPE 2-Breaking strength: 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
8. DIMENSIONAL STABILITY AFTER WATER ABSORPTION						
Change in length not to exceed 3.0%	MD % XD %		MD % XD %		MD % XD %	
9. HEAT AGING						
After exposure:						
Shall retain 80% of strength as received and in no case less than min. strength measured in test 2	MD % XD %		MD % XD %		MD % XD %	
TYPE 1-Tensile strength: min. 870 PSI (6 MPa)	psi		psi		psi	
TYPE 2-Breaking strength: min. 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
Pass low temperature flexibility test (Pass/Fail)	Pass					
Have a min. elongation at break						
TYPE 1-210%	%		%		%	
TYPE 2-140%	NA %		NA %		NA %	
Dimensional change not to exceed 3.0%	MD 0.5 % XD 0.5 %		MD % XD %		MD % XD %	
10. OZONE RESISTANCE						
No visible cracks under 7 power magnification (Pass/Fail)	Pass					
11. RESISTANCE TO ACCELERATED WEATHERING						
CLASS A ONLY						
TYPE 1 & 2-Shall show no cracking, blistering or visible defects (Pass/Fail)	Pass					
Shall retain min. of 90% of strength prior to weathering and in no case less than min. strength specified in Test 2.						
TYPE 1-Shall retain 90% of tensile strength	%		%		%	
TYPE 2-Shall retain 90% of breaking strength	NA %		NA %		NA %	
TYPE 1-Min. tensile strength of 870 psi (6 MPa)	psi		psi		psi	
TYPE 2-Min. breaking strength of 112 lbf (500N)	NA lbf		NA lbf		NA lbf	
12. DYNAMIC IMPACT (PUNCTURING) TEST						
Will withstand puncturing test of an energy impact of 1.8 ft. lbs (2.45J) (Pass/Fail)	Pass					
13. TEAR RESISTANCE						
TYPE 1 ONLY-Shall exceed 6 lbf (26N) per mm of thickness	MD 6.6 lbf XD 6.6 lbf		MD 7.9 lbf XD 7.9 lbf		MD 7.9 lbf XD 7.9 lbf	
14. TEARING STRENGTH						
TYPE 2 ONLY-Shall exceed 8 lbf (35N)	NA lbf		NA lbf		NA lbf	
LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction	**CARLISLE SYNTEC SYSTEMS**		**GATES ENGINEERING CO., INC.**			
NOTE: Blank lines = applicable data not reported by manufacturer.						

( ) = "Comparative Test" data; see Foreword for explanation.

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Other Single-Ply Pre-Fabricated Sheet Applied Membranes
Part 2: Test Results *(See Part 1 for General Information)*

NEOPRENE Polychloroprene						CSPE HYPALON					
PLYSHIELD NEOPRENE		WEATHERGARD NEOPRENE .045		WEATHERGARD NEOPRENE .060		UNIROOF		GREAT WHITE HYPALON WHITE		GREAT WHITE HYPALON BLACK	
Type	Class	Type	Class	Type	Class	Type	Class	Type	Class	Type	Class
2	A	1	A	1	A	1	A	2	A	2	A
32 (30) mils		45 mils		60 mils		39 ( ) mils		Approx .36 or .45 mils		Approx .36 or .45 mils	
+10 - 5.0 %		10 %		10 %		10 ( ) %		10 %		10 %	
NA (NA) psi		1500 psi		1500 psi		1200 ( ) psi		NA psi		NA psi	
90 MD(103.3) XD(93.9) lbf		NA lbf		NA lbf		NA lbf		165 lbf		165 lbf	
76 lbf		91 lbf		91 lbf		lbf		lbf		lbf	
69 lbf		lbf		lbf		lbf		lbf		lbf	
90 %		%		%		%		%		%	
NA %		NA %		NA %		NA %		NA %		NA %	
NA (NA) %		330 %		330 %		854 ( ) %		NA %		NA %	
250 MD(169.2) XD(171.4) %		NA %		NA %		NA %		250 %		250 %	
NA %		±4.0 %		±4.0 %		%		NA %		NA %	
Pass		Pass		Pass		Pass		Pass		Pass	
3.4 %		3.5 %		3.5 %		0.0 %		5.0 max %		5.0 max %	
10 %		%		%		0.0 %		%		%	
NA psi		psi		psi		1200 psi		NA psi		NA psi	
88 lbf		NA lbf		NA lbf		NA lbf		165 lbf		165 lbf	
MD +0.3 % XD +0.3 %		MD % XD %		MD % XD %		MD 0.0 % XD 0.0 %		MD <3.0 % XD <3.0 %		MD <3.0 % XD <3.0 %	
MD 85 % XD 85 %		MD % XD %		MD % XD %		MD % XD %		MD % XD %		MD % XD %	
NA psi		1300 psi		1300 psi		psi		NA psi		NA psi	
98 lbf		NA lbf		NA lbf		NA lbf		165 lbf		165 lbf	
Pass						Pass		Pass		Pass	
NA %		210 %		210 %		854 %		NA %		NA %	
205 %		NA %		NA %		NA %		200 %		200 %	
MD 1.0 % XD 1.0 %		MD % XD %		MD % XD %		MD 0.0 % XD 0.0 %		MD <3.0 % XD <3.0 %		MD <3.0 % XD <3.0 %	
Pass						Pass		Pass		Pass	
Pass		Pass		Pass		Pass		Pass		Pass	
NA %		95 %		94 %		100 %		NA %		NA %	
95 %		NA %		NA %		NA %		>90 %		>90 %	
NA psi		1450 psi		1450 psi		1200 psi		NA psi		NA psi	
95 lbf		NA lbf		NA lbf		NA lbf		>112 lbf		>112 lbf	
Pass		Pass		Pass				Pass		Pass	
MD NA lbf XD NA lbf		MD 11.4 lbf XD lbf		MD 13.8 lbf XD lbf		MD lbf XD lbf		MD NA lbf XD lbf		MD NA lbf XD lbf	
10 lbf		NA lbf		NA lbf		NA lbf		lbf		lbf	
PLYMOUTH RUBBER COMPANY, INC.		WEATHERGARD ROOFING SYSTEMS, INC.				CENTRAL STATES ASSOC. CORP.		KELLY ENERGY SYSTEMS, INC.			

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Other Single-Ply Pre-Fabricated Sheet Applied Membranes
Part 2: Test Results *(See Part 1 for General Information)*

		CSPE HYPALON				
PRODUCT NAME►		**BURKELINE M-341**	**BURKELINE M-356**	**DUNSEAL HYPALON**	**HI-TUFF**	**TREMCO HHP**
Product Description►		POLYESTER REINFORCED CSPE	CSPE W/M.F. BACKING	CSPE HYPALON	POLYESTER REINFORCED CSPE	WOVEN POLYESTER
1. Thickness	Method:	ASTM D751	ASTM D412		ASTM D751	ASTM D751
	Results:	**36 mils nominal**	**40 mils nominal**	**.036 and .045 ±10%**	**45 mils nominal**	**.053 in.**
2. Tensile Strength	Method:	ASTM D751, Grab method	ASTM D882	ASTM D412	ASTM D751, Grab method	ASTM D751
	Results:	**155 x 158 pounds**	**24 x 17 pounds/inch width**	**1500 psi**	**225 lbs. min.**	**225 lbs. avg.**
3. Lap Joint Strength	Method:	ASTM D751, Grab method	ASTM D3083, Para. 9.3			ASTM D816B
	Results:	**123 pounds**	**15 pounds/inch width**	**Exceeds parent material**	**Exceeds parent material**	**Parent material breaks**
4. Elongation at Break	Method:	ASTM D751, Grab method	ASTM D882	ASTM D412	ASTM D412	ASTM D751
	Results:	**103 x 90%**	**400 x 590%**	**300%**	**25% reinforced 550% non-reinforced**	**Rubber: 250% Fabric: 25%**
5. Tensile set	Method:	NA				
	Results:					
6. Low Temperature Flexibility	Method:	ASTM D2136	NA	ASTM D2136 – 45 °F	ASTM D2136,1/8" mandrel	ASTM D2136
	Results:	**– 40 °F**		**No cracks**	**– 40 °C Pass**	**–30°F**
7. Water Absorption	Method:	ASTM D471, 7 days @ 70 °F	ASTM D471, 7 days @ 70 °F	ASTM D570	ASTM D570	
	Results:	**5%**	**5%**	**<2%**	**1.0%**	
8. Dimensional Stability After Water Absorption	Method:			ASTM D570	ASTM D570	
	Results:			**No change**	**No change**	
9. Heat Aging	Method:	ASTM D573 14 days@212 °F	ASTM D573, 14 days@212 °F	ASTM D571	ASTM D753 7 days@200 °F	ASTM D753
	Results:	**Tensile 100%, Elong 60%**	**Tensile 100%, Elong 60%**	**Retained 60%**	**100% strength retention**	**90% min. retention tensile & elongation**
10. Ozone Resistance	Method:	ASTM D1149, 100pphm, 1/8" bentloop 7 days@104 °F	ASTM D1149, 100 pphm @20% strain 7 days @104 °F	ASTM D3041	ASTM D1149, 3ppm @ 30% strain, @104 °F (72 + 2500 hrs.)	ASTM D1149
	Results:	**No cracks @7X**	**No cracks @7X**	**Passed**	**No effect**	**Pass**
11. Resistance to Accelerated Weathering	Method:	ASTM E838	ASTM E838	10 yr. Panama	ASTM E838	D750
	Results:	**>1 Million Langleys**	**>1 Million Langleys**	**Pass; CGSB testing in progress**	**>3 million langleys**	**10,000 hrs.**
12. Dynamic Impacting (Puncturing)	Method:	FTMS 101C, Method 2031	FTMS 101C, Method 2031	FTMS 101B	FTM 191B, Method 2031	FTMS 101-2031
	Results:	**151 lbs.**	**51 lbs.**	**150 lbs.**	**200 lbs.**	**200 lbs. avg.**
13. Tear Resistance	Method:	NA	ASTM D1004, Die C	a. ASTM D751, Tongue b. ASTM D1004	ASTM D751, tongue tear	
	Results:		**7/6 lbs**	**a. 100 lbs. min. b. 289 lbs. min.**	**90 lbs min**	
14. Tearing Strength	Method:	ASTM D751, Tongue method	NA	ASTM D751, Tongue	ASTM D751, tongue tear	ASTM D751
	Results:	**47/58 lbs.**		**100 lbs. min.**	**90 lbs min**	**85 lbs min**
15. Low Temperature Impact	Method:	ASTM D2137	ASTM D1790	ASTM D2136 – 45 °F	ASTM D2136	ASTM 74CB
	Results:	**– 40 °F**	**– 40 °F**	**No cracks**	**– 40 °C, no cracks**	**– 45 °F**
16. Permeability	Method:	ASTM E96	ASTM E96	ASTM E96	ASTM E96 proc bw	ASTM E96
	Results:	**3 x 10^{-3} metric perm-CM.**	**3 x 10^{-3} metric perm-CM.**	**<2.0 perm**	**.049 perms**	**0.36 g/100 sgm/24 hrs.**
17. Dimensional Change After Stress Relaxation	Method:	ASTM D1204 1 hr. @212 °F	ASTM D1204 15 min. @212 °F	ASTM 1204	ASTM D1204	ASTM D1204
	Results:	**1.5%**	**1.0%**	**< ±10%**	**1.0%**	**1.0%**
18. Cone Penetration	Method:					
	Results:					
COMPANY►		**BURKE RUBBER COMPANY**		**DUNLOP CONSTRUCTION PRODUCTS INC.**	**J.P. STEVENS**	**TREMCO, INC.**

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Other Single-Ply Pre-Fabricated Sheet Applied Membranes
Part 2: Test Results *(See Part 1 for General Information)*

		PIB Polyisobutylene				CPE Chlorinated Polyethylene
PRODUCT NAME►		**ALPHAGARD**	**CARBOLINE PIB 1000**	**GEOFLEX**	**TROPIGARD**	**ALKORFLEX 35093**
Product Description►		PIB	PIB	PIB	PIB	CPE
1. Thickness	Method:	Own quality control (high frequency)	ASTM D751	ASTM D751	Own quality control (high frequency)	ASTM D3083
	Results:	**100 mil ±10%**	**100 mil ±10%**	**100 mils**	**100 mil ±10%**	**44 mil**
2. Tensile Strength	Method:	ASTM D412	ASTM D751, Grab method	ASTM D412 & D882	ASTM D412 & D882	ASTM D412
	Results:	**800 psi**	**150 lbf**	**550 psi**	**500 psi**	**2000 psi MD & XD**
3. Lap Joint Strength	Method:	ASTM D751	ASTM D751	ASTM D751	ASTM D751	ASTM D412
	Results:	**159.5 16/in²**	**157 lbf**	**159.7 lbf**	**159.5 lbf**	**>95% MD & XD**
4. Elongation at Break	Method:	ASTM D412	ASTM D412 unbacked sheet	ASTM D882 with backing	ASTM D882	ASTM D412
	Results:	**530%**	**500% Min**	**410%**	**410%**	**>400% MD & XD**
5. Tensile set	Method:	ASTM D395 (Method B)		ASTM D395 (Method B)	ASTM D395 (Method B)	ASTM D412
	Results:	**91.5%**		**91.5%**	**91.5%**	**<5.0% Variation**
6. Low Temperature Flexibility	Method:	ASTM D2136, – 40 °F/ – 40 °C	ASTM D2136	ASTM D2136	ASTM D2136, – 40 °F/ – 40 °C	Mandrel test
	Results:	**Satisfactory; 3 of 3 passed**	**–40°F**	**–40°F**	**Satisfactory; 3 of 3 passed**	**–40°F**
7. Water Absorption	Method:	ASTM D570	ASTM D570 (Rubber only)	ASTM D570, percent by weight (24 hr. immersion)	ASTM D570	ASTM D2842
	Results:	**0.032%**	**<1.0%**	**0.032%**	**0.032%**	**<1.0%**
8. Dimensional Stability After Water Absorption	Method:	Not tested because technically no water absorption		ASTM D1204, 24 hrs.@212 °F	Not tested because technically no water absorption	ASTM D1204
	Results:			**–0.7%**		**<2%**
9. Heat Aging	Method:	ASTM D412	CGSB standard 37-GP-56M, test 2, test 4 & delamination	ASTM D573, after 6 hrs.@376 °F	ASTM D573 after 6 hrs.	CGSB standard 37-GP-56M, test 2, test 4 & delamination
	Results:	**Typical Value Retain approx. 75% after 155 hrs. @158°F**	**Passed**	**2.3%**	**2.3% loss @376°F**	**Passed**
10. Ozone Resistance	Method:	DIN 4102 (no U.S. test)	ASTM D1149, 1 ppm @100 °F	DIN 4102 (no U.S. test)	DIN 4102 (no U.S.test)	ASTM D3041, 100 hrs
	Results:	**Excellent**	**Passes 168 hrs.**	**Excellent**	**Excellent**	**Passed**
11. Resistance to Accelerated Weathering	Method:	ASTM G23 Xenon Arc Test	ASTM D1499 (Model XW)	U.S. Testing	U.S. Testing	Xenon 1200 DIN 53387 Xenon 150 DIN 53387
	Results:	**Passed 16,000 hrs.**	**10,000 hrs.**	**15,000 hrs.**	**15,000 hrs.**	**20,000 hrs., no change**
12. Dynamic Impacting (Puncturing)	Method:	FTMS 191 (Method 5120)		FTMS 191 (Method 5120)	FTMS 191 (Method 5120)	
	Results:	**208.4 lbs**		**208.4 lbs.**	**208.4 lbs**	
13. Tear Resistance	Method:	ASTM D624		ASTM D1004	ASTM D1004	ASTM D624
	Results:	**176 lbs/in thickness**		**176 lbs/in thickness**	**176 lbs/in thickness**	**>335 lbs/in MD & XD**
14. Tearing Strength	Method:	ASTM D751 a. Method B b. Grab method	ASTM D751 (Trapazoid method)	a. ASTM D624 w/o backing b. ASTM D624 with backing	ASTM D751 a. Method B b. Grab method	
	Results:	**a. 52 lbs** **b. 139.4 lbs**	**50 lbf (min)**	**a. 92 pli** **b. 190 pli**	**a. 52 lbs** **b. 139.4 lbs**	
15. Low Temperature Impact	Method:	ASTM D2136,-1/8″ mandrel	1 ft lb impact (own test)	ASTM D2136,-1/8″ mandrel	ASTM D2136,-1/8″ mandrel	ASTM D746
	Results:	**No cracks@ –40°F**	**Passes at –50°F**	**No cracks@ –30°F**	**No cracks@ –30°F**	**–50°F**
16. Permeability	Method:	ASTM E96	ASTM E96	ASTM E96 (Procedure A) gms/24 hr./in²	ASTM E96	ASTM E96, Procedure E @100 °F
	Results:	**0.01 perm**	**0.01 perm**	**0.112 W.V.T.**	**0.01 perm**	**0.6 g/m²d**
17. Dimensional Change After Stress Relaxation	Method:	ASTM (24 hrs.@212°F)	ASTM D1204	ASTM (24 hrs.@212°F)	ASTM (24 hrs.@212°F)	ASTM D1204, 6 hrs.@176°C
	Results:	**–0.7%**	**Max. 1.0%**	**–0.7%**	**–0.7%**	**<±2.0%**
18. Cone Penetration	Method:					DIN 53443, Blatt 2, d = 1.5mm
	Results:					**1600 N@ +23°C**
COMPANY►		**AGR COMPANY**	**CARBOLINE CO.**	**REPUBLIC POWERED METALS**	**TROPICAL INDUSTRIAL COATINGS, INC**	**ALKOR-DIVISION, HEDWIN CORP.**

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Other Single-Ply Pre-Fabricated Sheet Applied Membranes
Part 2: Test Results *(See Part 1 for General Information)*

		CPE Chlorinated Polyethylene				OTHER FABRICATED SHEET APPLIED MEMBRANE
PRODUCT NAME►		**ALKORFLEX 35094**	**ALKORFLEX 35096**	**COOL TOP 40**	**FLEXHIDE CPE**	**BOND GREY 35**
Product Description►		CPE	CPE	CPE	CPE	NITRITE ALLOY
1. Thickness	Method:	ASTM D3083	ASTM D3083	ASTM D374, Method A	ASTM D374, Method A	ASTM D3083
	Results:	**40 mil + fleece**	**44 mils**	**40 mils**	**45 mils**	**.035 in min**
2. Tensile Strength	Method:	ASTM D412	ASTM D412	ASTM D882	ASTM D751, Grab method	a. ASTM D751, Grab method b. ASTM D882
	Results:	**2000 psi MD & XD**	**2200 psi MD & XD**	**2500 psi**	**224 lbs**	**a. 390 × 415 lbs** **b. 7000 psi**
3. Lap Joint Strength	Method:	ASTM D412	ASTM D412	ASTM D751	ASTM D751, Modified Grab method	ASTM D751
	Results:	**>95% MD & XD**	**>95% MD & XD**	**95% of material breaking strength**	**92% of material breaking strength**	**350 lbs**
4. Elongation at Break	Method:	ASTM D412	ASTM D1682	ASTM D751		ASTM D751
	Results:	**>400% MD & XD**	**>15% MD & XD**	**27%**		**28%**
5. Tensile set	Method:	ASTM D412	ASTM D412			
	Results:	**<5.0% Variation**	**<5.0% Variation**			
6. Low Temperature Flexibility	Method:	Mandrel Test	Mandrel Test	MIL C-20696B	ASTM D2136, 1/8″ mandrel	ASTM D2136
	Results:	**−40°F**	**−40°F**	**−40°F**	**−40°F, pass**	**−30°F, No cracks**
7. Water Absorption	Method:	ASTM D2842	ASTM D2842	ASTM D2842-69, Modified		
	Results:	**<1.0%**	**<1.0%**	**0.2%**		
8. Dimensional Stability After Water Absorption	Method:	ASTM D1204	ASTM D1204		ASTM D1204, 176°F, 30 min	
	Results:	**<1%**	**<0.5%**		**0.5%**	
9. Heat Aging	Method:	CGSB standard 37-GP-56M, test 2, test 4 & delamination	CGSB standard 37-GP-56M, test 2, test 4, & delamination	ASTM D751	ASTM D751, after 7 days @176°F	176°F, 7 days
	Results:	**Passed**	**Passed**	**100% of breaking strength**	**Retains 100% breaking strength**	**Retains 95% of tensile strength**
10. Ozone Resistance	Method:	ASTM D3041, 100 hrs	ASTM D3041, 100 hrs			ASTM D1149, 100 pphm, 1/8″, 104°F, 1/8″ bent loop
	Results:	**Passed**	**Passed**			**No cracks, 7X**
11. Resistance to Accelerated Weathering	Method:	Xenon 1200 DIN 53387 Xenon 150 DIN 53387	Xenon 1200 DIN 53387 Xenon 150 DIN 53387	a. Twin carbon arc FED 195, Method 5804 b. Desert sun ASTM E838		FS191, Method 5804, carbon and w/water spray 5,000 hrs
	Results:	**20,000 hrs., no change**	**20,000 hrs., no change**	**a. 15,000 hrs** **b. 3 yrs**		**No cracking**
12. Dynamic Impacting (Puncturing)	Method:		FM Simulated Hail			FS101B, Method 2031
	Results:		**Passed**			**250 lbs**
13. Tear Resistance	Method:	ASTM D624	ASTM D624	ASTM D2262		
	Results:	**>335 lbs/in MD & XD**	**>335 lbs/in MD & XD**	**Warp 60 lbs** **Fill 85 lbs**		**Same as tear strength**
14. Tearing Strength	Method:				ASTM D751 (Tongue Tear) 8″ × 8″ specimen	ASTM D751, 8″ × 10″ sample
	Results:				**81 lbs**	**90 × 100 lbs**
15. Low Temperature Impact	Method:	ASTM D746	ASTM D746		ASTM D746	ASTM D2136, −30°F
	Results:	**−50°F**	**−60°F**		**−50°F pass**	**No cracking**
16. Permeability	Method:	ASTM E96, Procedure E @100°F	ASTM E96, Procedure E @100°F	ASTM E96	ASTM E96	(Permeance) ASTM E96, Method A
	Results:	**0.6 g/m²d**	**0.6 g/m²d**	**1.62 perms**	**0.4 perms**	**0.379 U.S. perms**
17. Dimensional Change After Stress Relaxation	Method:	ASTM D1204, 6 hrs.@176°C	ASTM D1204, 6 hrs@176°F	ASTM D1204	ASTM D1204, 176°, 30 min	
	Results:	**<±1.0%**	**<±0.5%**	**Less than 1.0%**	**0.5%**	
18. Cone Penetration	Method:	DIN 53443, Blatt 2, d = 1.5mm	DIN 53443, Blatt 2, d = 1.5mm			
	Results:	**1600 N@ + 23°C**	**1500 N@ + 23°C**			
COMPANY►		**ALKOR-DIVISION, HEDWIN CORP.**		**COOLEY ROOFING SYSTEMS, INC.**	**U.S. MINERAL PRODUCTS CO.**	**BOND COTE SYSTEMS**

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Other Single-Ply Pre-Fabricated Sheet Applied Membranes
Part 2: Test Results *(See Part 1 for General Information)*

		OTHER FABRICATED SHEET APPLIED MEMBRANES				
PRODUCT NAME►		**DURO-LAST**	**OTTO SINGLE-PLY**	**SEAL-DRY POLYESTER**	**SEAL-DRY FIBERGLASS**	**FIBERTITE**
Product Description►		TRIMERIC POLYMER COATED POLYESTER	SILICONE FIBERGLASS	POLYESTER REINFORCED CPA	FIBERGLASS REINFORCED CPA	POLYESTER REINFORCED EPA
1. Thickness	Method:	ASTM D751	ASTM D1777-64	FS 191, Method 5030.2 ASTM D751	ASTM D751	ASTM D3083
	Results:	**30 mils**	**29 mils**	**35 mils min**	**34 mils**	**30 mils min**
2. Tensile Strength	Method:	a. ASTM D751, Grab method b. ASTM D882	ASTM D579-66	a. ASTM D751 Grab method b. ASTM D882	ASTM D751, Grab tensile	a. ASTM D882 b. ASTM D751, Grab method
	Results:	**a. 350 × 390 lbs** **b. 6000 psi**	**20,000 psi**	**a. 450×390 lbs min** **b. 7476 psi**	**350 lb ×340 lb**	**a. 8500 psi** **b. 375 lbs×350 lbs**
3. Lap Joint Strength	Method:	ASTM D751		ASTM D751	ASTM D751	ASTM D751
	Results:	**350 lbs**		**>300 lbs**	**>300 lbs**	**>300 lbs**
4. Elongation at Break	Method:	ASTM D751	ASTM D412, Die C	FS 191, Method 5102	FS 191, Method 5102	ASTM D751
	Results:	**27%**	**280%**	**25%×35°F min**	**7%×7%**	**20% warp, 30% fill**
5. Tensile set	Method:					
	Results:					
6. Low Temperature Flexibility	Method:	ASTM D2136	ASTM D2176-69 MOD 180° bend @ – 80°	ASTM D2136, – 30°F, 1/8″ mandrel	ASTM D2136, – 30°F, 1/8″ mandrel	ASTM D2136
	Results:	**–30°F, No cracks**	**No cracks**	**No cracks**	**No cracks**	**–30°F, no cracks**
7. Water Absorption	Method:		24 hr test	ASTM D570@70°F, @122°F, 48 hrs	ASTM D570@70°F, @122°F, 48 hrs	ShelterRite water wicking test, 24 hrs
	Results:		**No change**	**1.5% max, 2.0% max**	**2.7% max**	**1/8″max**
8. Dimensional Stability After Water Absorption	Method:		24 hr test	ASTM D570@70°F, @122°F, 48 hrs	ASTM D570 @ 70°F, @ 122°F, 48 hrs.	ShelterRite water wicking test, 24 hrs
	Results:		**No change**	**No change**	**No change**	**Less than 0.2%**
9. Heat Aging	Method:	176°F, 7 days		14 days@175°F	14 days@175°F	160°F - 7 days
	Results:	**Retains 95% of tensile strength**		**>95% strength retained** **No cracking, crazing, blistering**	**>95% strength retained** **No cracking, crazing, blistering**	**>95% strength retention**
10. Ozone Resistance	Method:	ASTM D1149, 100 pphm, 1/8″, 104°F - 7 days				3 days at 100pphm - 100°F & 3 days at 300 pphm - 100°F
	Results:	**No cracks, 7X**				**No cracking**
11. Resistance to Accelerated Weathering	Method:	FS191, Method 5804, carbon and w/water spray	Atlas & Q-panel weatherometer	ASTM D2565 weatherometer	ASTM D2565 weatherometer	Carbon arc weatherometer w/water spray, 5000 hrs
	Results:	**No cracking**	**32,970 hrs, no change**	**2000 hrs, no cracking** **crazing, blistering**	**2000 hrs, no cracking** **crazing, blistering**	**No cracking**
12. Dynamic Impacting (Puncturing)	Method:	FS101B, Method 2031	FTM 191-5122-2	FS 101B, Method 2031	FS 101B, Method 2031	FS 101B, Method 2031
	Results:	**250 lbs**	**775 lbs**	**250 lbs min**	**168 lbs.**	**250 lbs**
13. Tear Resistance	Method:	ASTM 751, Tongue	FTM 191-5136	FS 191, Method 5134, ASTM D751, 8″×8″ sample	FS 191, Method 5134, ASTM D751 8″×8″ sample	ASTM D751 8″×10″ sample
	Results:	**90×90 lbs**	**60 lbs×33 lbs**	**160 lbw×190 lbf**	**41 lbs × 41 lbs**	**100 lbs**
14. Tearing Strength	Method:	ASTM D751, Tongue		FS 191, Method 5134, ASTM D751, 8″×8″ sample	FS 191, Method 5134 ASTM D751, 8″×8″ sample	ASTM D751 8″×10″ sample
	Results:	**90×90 lbs**		**160 lbw×190 lbf**	**41 lbs. x 41 lbs.**	**100 lbs**
15. Low Temperature Impact	Method:		ASTM D2176-69 MOD			ASTM D2136 – 30°F
	Results:		**No cracking**			**No cracking**
16. Permeability	Method:	a. ASTM E96, Proc. B b. ASTM E96 (WVT), Proc. B, Method A	ASTM E96-66, Method B	Water Vapor Transmission, ASTM E96, Proc A	Water Vapor Transmission, ASTM E96, Proc A	Water Vapor Transmission, ASTM E96, Proc A
	Results:	**a. 0.151g/hr** **b. 0.151g/hr/m²**	**7.2**	**.8 g/m²/24h**	**.8 g/m²/24h**	**1.3 g/m²/24h**
17. Dimensional Change After Stress Relaxation	Method:					37-GP-54M
	Results:					**Shall not change more than 0.24**
18. Cone Penetration	Method:					37-GP-54M
	Results:					**Pass**
COMPANY►		**DURO-LAST ROOFING, INC.**	**OTTO FABRIC, INC.**	**SEAL DRY/U.S.A., INC.**		**SEAMAN CORP.**

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