# NRCA Roofing Materials Reference & Guide

**Volume 2**
**June 1983**

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 (conventional multi-ply constructions and prefabricated modified bituminous multi-ply constructions) and those products generally referred to as sheet applied Single-Ply membranes.

The Volume II, June, 1983 issue of the ***GUIDE*** is a revised and expanded edition of the Volume I, February 1983 publication and supercedes this earlier issue. Volume II includes sixty one manufacturers and suppliers and presents data on products added to all generic categories.

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—which describes 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 for Elastomeric membranes, (2) 37-GP-54M for Polyvinyl Chloride membranes and (3) 37-GP-56M for Modified Bituminous membranes.

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.

An important feature of the ***NRCA ROOFING MATERIALS REFERENCE & GUIDE*** program is comparative testing which NRCA will perform on listed materials. The testing of materials will be conducted in NRCA designated commercial laboratories and these test results will be printed in the ***GUIDE.*** The comparative data will supplement that supplied by manufacturers and suppliers and will be shown in future issues of the ***GUIDE*** in a contrasting color.

The ***GUIDE*** publication schedule thru 1984 is as follows:

| **Publication Month** | **Closing Date** |
|---|---|
| October 1983 | September 9, 1983 |
| February 1984 | January 9, 1984 |
| June 1984 | May 9, 1984 |
| October 1984 | September 10, 1984 |

The ***GUIDE*** is sold on an annual subscription basis (3 issues) at the following rates: NRCA Members, $55.00 per year; Non-Members, $85.00 per year.

Mail all subscriptions and inquiries to National Roofing Contractors Association, 8600 Bryn Mawr Avenue, Chicago, IL 60631.

NATIONAL ROOFING CONTRACTORS ASSOCIATION

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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."

An indication in the ***GUIDE*** that UL/FM ratings have been awarded does not infer that these ratings apply to all roofing assemblies utilizing the described membrane. This can be determined only by referencing the documents referred to above.

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

# 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.

**MODIFIED BITUMEN: are composite sheets consisting of a copolymer modified bitumen often reinforced and sometimes surfaced with various types of films, foils and mats.**

**MB: Modified Bitumen** Composite Self-Adhering Sheet Membrane System. A cold-applied self-adhering composite sheet with modified bitumen and plastic film. The modified bitumen base layer may contain plasticizers and oils. The top surface sheet of polyethylene film serves as a protective barrier and base for the liquid protective coating. Thickness varies from 60 to 80 mils (1/16" to 5/64") depending on the manufacturer. The surfacing may be a special protective liquid coating, mineral granules or aggregates.

**MB/R: Modified Bitumen Reinforced** Composite Sheet Membrane System. A composite sheet with modified bitumen and reinforcing sheets normally located at the sheets mid-depth. The reinforcement may be plastic sheeting, polyethylene film, heavy polyester mat, glass fiber felt or fabric, or combination thereof. Surfacing may be a thin embossed metal, special protective coating, or mineral aggregate. They are generally heat-applied in the field. The modified asphalt generally contains block polymers or special plasticizers depending on manufacturer. Total membrane thickness may be as thick as 160 mils (5/32"). Application can be loose laid and ballasted or fully adhered.

**THERMOPLASTIC: is a plastic like polymer consisting of any of various complex organic compounds produced by polymerization which are capable of being molded, extruded or cast into various shapes or films. Generally they are thermoplastic in nature i.e. they will soften when heated and harden when cooled. Examples are:**

**CPE: Chlorinated Polyethylene** Roof Membrane System. Chlorinated Polyethylene consists of a cured chlorinated polyethylene polymer. These materials are available in sheet applied systems. The sheet materials generally have an inorganic fiber backing which facilitates handling and application. The thickness of the membrane is generally about 35 mils (1/32") depending on manufacturer. Application can be fully adhered with hot asphalt or contact adhesive.

**CSPE: Chlorosulfonated Polyethylene** Roof Membrane System. Chlorosulfonated Polyethylene is a chlorinated polyethylene containing a small number of chlorosulphonyl groups produced by the simultaneous chlorination and sulfonation of high molecular weight, low density polyethylene. The chlorosulfonated polyethylene is available in both sheet and liquid forms. The sheet material generally has an inorganic fiber backing which facilitates handling and applications. Total membrane thickness is generally about 35 mils (1/32") depending on the manufacturer. Application can be fully adhered with hot asphalt or contact adhesive.

**ECB: Ethylene-Copolymer-Bitumen** and Anthracite Microdust Roof Membrane System. ECB is a material without any plasticizers. Thickness varies from 30 to 60 mils (1/32" to 1/16") depending on manufacturer. Application can be loose laid with ballast, mechanically fastened or fully adhered.

**PIB: Polyisobutylene** Roof Membrane System. This material is a blend of polyisobutylene, EPDM and other synthetic rubbers. Thickness varies from 30 to 60 mils (1/32" to 1/16") depending on manufacturer. Application can be loose laid with ballast, partially adhered or mechanically fastened.

**PVC: Polyvinyl Chloride** Roof Membrane System. A membrane composed of single-ply sheets that are made of polyvinyl chloride (PVC). PVC is a polymer, synthesized from vinyl chloride, that is thermoplastic in nature and contains plasticizers and stabilizers. Thickness varies from 32 to 60 mils (1/32" to 1/16") and reinforcement may be added with the use of fabric or fibers depending on manufacturer. Application can be loose laid and ballasted, fully adhered or mechanically fastened.

**ELASTOMERIC: is a rubber like synthetic polymer that will stretch when pulled and will return quickly to its original shape when released. Examples are:**

**EPDM: Ethylene Propylene Diene Monomer** Roof Membrane System. A single-ply sheet composed of synthetic rubber. Thickness varies from 30 to 60 mils (1/32" to 1/16"). In some cases the sheet is reinforced with fabric or fibers. EPDM sheets *cannot* be solvent or heat welded. The sheet laps are joined together by contact adhesive. Application can be loose laid and ballasted or fully adhered.

**NEOPRENE: Polychloroprene** Roof Membrane Systems. A membrane composed of single-ply sheets or synthetic rubber consisting of polymers or chloroprene. This particular synthetic rubber has good resistance to petroleum oils, solvents and weathering. Some formulations require a protective coating of Hypalon (chlorosulfonated polyethylene) to retard weathering. Thickness varies from 30 to 120 mils (1/32" to 1/8") depending on manufacturer. This system can be employed in an inverted roof assembly. Application can be loose laid and ballasted or fully adhered.

# 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 |

# ›st Significance Statements Relating to Test ›equirements Specified in Referenced NBS BSS #55 ‹iteria 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.

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**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.**

# Index of Listed Roofing Membranes

| Manufacturer or Supplier | BUILT-UP ROOFING | | SINGLE-PLY | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Conventional | Modified Bitumens | Modified Bitumens | PVC Polyvinyl Chloride | EPDM Ethylene Propylene Monomer | NEOPRENE Polychloroprene | CSPE HYPALON Chlorosulfonated Polyethylene | PIB Polyisobutylene | CPE Chloronated Polyethylene | Other |
| 1. AGR Company<br>2702 Pearl Road<br>Brunswick, OH 44212<br>216/225-4524 | | | | | | | | Alphagard | | |
| 2. Alkor Division of the<br>Solvay American Corp.<br>609 Fifth Avenue<br>New York, NY 10017<br>212/935-5458 | | | | Alkorplan | | | | | Alkorflex 35093<br>Alkorflex 35094<br>Alkorflex 35096 | |
| 3. The American Lubricants Co.<br>1227 Deeds Avenue<br>Dayton, OH 45401<br>800/543-9720 | | | Tiffany | | | | | | | |
| 4. American Roofing Corp.<br>P.O. Box 1516<br>Des Plaines, IL 60018<br>312/692-7701 | | | ARC Standard<br>ARC Aluminum<br>ARC Premium<br>ARC Granular | | | | | | | |
| 5. Apache Bldg. Products Co.<br>2025 E. Linden<br>Linden, NJ 07036<br>201/486-6723 | | | SAM | | | | | | | |
| 6. Barra Corp. of America<br>190 Fairfield Avenue<br>W. Caldwell, NJ 07006<br>800/526-2201 | | | | Rhenofol C-34<br>Rhenofol C-45<br>Rhenofol C-52<br>Rhenofol CV40<br>Rhenofol CV48 | | | | | | |
| 7. Benoit Inc.<br>635 North Prior<br>St. Paul, MN 55104<br>800/328-1436 | | | | | Benoit EPDM I White<br>Benoit EPDM I Sunshield<br>Benoit .045 EPDM II-Black<br>Benoit .045 EPDM II White<br>Benoit .060 EPDM II Black<br>Benoit .060 EPDM II White | | | | | |
| 8. Bond Cote Systems<br>3rd Street<br>Pulski, VA 24301<br>703/980-2262 | | | | | | | | | | Nitrite Alloy<br>Bond Grey 35 |
| 9. Bowe Co., Inc. (Dibiten)<br>24 Market Street<br>Saddle Brook, NJ 07662<br>201/845-5900 | | | Dibiten | | | | | | | |
| 10. Carboline Building Products<br>350 Hanley Industrial Ct.<br>St. Louis, MO 63144<br>314/644-1000 | | | | | EPDM 450<br>EPDM 600 | | | PIB 1000 | | |
| 11. Carlisle SynTec Systems<br>P.O. Box 7000<br>Carlisle, PA 17013<br>717/245-7000 | | | | | Sure-Seal EPDM | Sure-Seal Neoprene | | | | |
| 12. Central States Assoc. Corp.<br>P.O. Box 65504<br>West Des Moines, IA 50265<br>515/224-4771 | | | | | | | Uniroof | | | |
| 13. CertainTeed<br>Box 860<br>Valley Forge, PA 19482<br>215/687-5000 | • | | | | | | | | | |
| 14. Consolidated Prot.<br>Coatings Corp.<br>1801 E. 9th Street<br>Cleveland, OH 44114<br>800/321-7886 | | | Conso-Gard<br>Conso-Gard II | | | | | | | |
| 15. Cooley Rfg. Systems Inc.<br>50 Eastern Avenue<br>Pawtucket, RI 02860<br>401/724-0490 | | | | | | | | | Cool Top 40 | |
| 16. Danosa Caribbean, Inc.<br>Box 13757<br>Santurce Station<br>San Juan, PR 00908<br>809/785-4545 | | | Glasdan R-36<br>Esterdan R-36<br>Glasdan AL-80<br>Esterdan RM | | | | | | | |
| 17. Durolast Roofing, Inc.<br>525 Morley Drive<br>Saginaw, MI 48601<br>1-800/248-0280<br>1-517/753-2186 | | | | | | | | | | Trimeric Polymer<br>Coated Polyester<br>Duro-last |
| 18. Dynamit Nobel<br>10 Link Drive<br>Rockleigh, NJ 07647<br>201/767-1660 | | | | Trocal SMA | | | | | | |

# Index of Listed Roofing Membranes *continued*

| Manufacturer or Supplier | BUILT-UP ROOFING | | SINGLE-PLY | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Conventional | Modified Bitumens | Modified Bitumens | PVC Polyvinyl Chloride | EPDM Ethylene Propylene Monomer | NEOPRENE Polychloroprene | CSPE HYPALON Chlorosulfonated Polyethylene | PIB Polyisobutylene | CPE Chloronated Polyethylene | Other |
| 19. Firestone Industrial Prods.<br>1700 Firestone Blvd.<br>Noblesville, IN 46060<br>800/428-4442 | | | | | Rubbergard .045<br>Rubbergard .060 | | | | | |
| 20. The Garland Co., Inc.<br>3800 E. 91st Street<br>Cleveland, OH 44105<br>216/641-7500 | | | Stress Ply<br>Pitch Ply | | | | | | | |
| 21. Gaco Engineering Co., Inc.<br>100 South West Street<br>Wilmington, DE 19899<br>TWX 510/666-2096 | | | | | Gaco System I EPDM-45 Mils<br>Gaco System I EPDM-60 Mils | Gaco System II Neoprene-Black<br>Gates System II Neoprene-Gray | | | | |
| 22. General Tire & Rubber Co.<br>Building Products Division<br>P.O. Box 875<br>Toledo, OH 43696-0815<br>419/729-3731 | | | | GenSeal ACR | GenFlex ACR | | | | | |
| 23. Genstar Building Mat'ls Co.<br>580 Decker Drive<br>Irving, TX 75062<br>214/659-9800 | • | • | Flintlastic | | | | | | | |
| 24. Guiana Corp. of America<br>& Polypren Roofing of Amer.<br>P.O. Box 405<br>Paramus, NJ 07652<br>201/445-8876 | | | Guiana Polyglass<br>Guiana Polyglass Alum.<br>Guiana Polyglass Polyester<br>Guiana Polyglass Granular<br>Guiana Polypren | | | | | | | |
| 25. GAF Corporation<br>140 West 51st Street<br>New York, NY 10021<br>212/621-5000 | • | | | | Gafply EP Ballasted<br>Gafply EP Fully Adhered | | | | | |
| 26. Hey'Di U.P.M.<br>2801 Crusader Circle<br>Va. Beach, VA 23456<br>804/468-2200 | | | Hey'DI ECB | | | | | | | |
| 27. Hitchens Amer. Inc.<br>P.O. Box 3449<br>Longwood, FL 32750<br>305/869-5110 | | | Nuralite | | | | | | | |
| 28. Hyload, Inc.<br>1006 McKinght Park Drive<br>Pittsburgh, PA 15237<br>412/367-0633 | | • | Hyload 150E | | | | | | | |
| 29. IPW Interplastic<br>156 Ludlow Avenue<br>Northvale, NJ 02021<br>201/767-8073 | | | | Interoof "U"<br>Interoof "B" | | | | | | |
| 30. Kelly Energy Systems Inc.<br>P.O. Box 2583<br>Waterbury, CT 06723<br>203/575-9220 | | | | | Whaleskin/81 C-EPDM<br>Whaleskin/81 White C-EPDM<br>Whaleskin/81 White EPDM<br>Whaleskin/81 EPDM | | | | | |
| 31. Kendall Company Polyken<br>Roofing Systems<br>One Federal Street<br>Boston, MA 02101<br>617/423-2000 | | | | | Polyken M-45<br>Polyken M-60 | | | | | |
| 32. The Kimmenade Corp.<br>12820 Pennridge Drive<br>Bridgeton, MO 63044<br>314/739-4594 | | | Duralasta P<br>Duralasta M | | | | | | | |
| 33. Koppers<br>1050 Koppers Building<br>Pittsburgh, PA 15219<br>412/227-2000 | • | | | | | | | | | |
| 34. Manville Bldg. Mat'ls Corp.<br>P.O. Box 5108<br>Ken-Caryl Ranch<br>Denver, CO 80217<br>303/978-2000 | • | | | | | | | | | |
| 35. Mineral Fiber Mfg. Corp.<br>P.O. Box 356<br>313 South Sixth Street<br>Cosh Octon, OH 43812<br>614/622-2645 | • | | | | | | | | | |
| 36. Nord Bitumi U.S., Inc.<br>960 S. Springfield Ave.<br>Springfield, NJ 07081<br>201/467-8669 | | • | Poly 4 | | | | | | | |

# Index of Listed Roofing Membranes *continued*

| Manufacturer or Supplier | BUILT-UP ROOFING | | SINGLE-PLY | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Conventional | Modified Bitumens | Modified Bitumens | PVC Polyvinyl Chloride | EPDM Ethylene Propylene Monomer | NEOPRENE Polychloroprene | CSPE HYPALON Chlorosulfonated Polyethylene | PIB Polyisobutylene | CPE Chloronated Polyethylene | Other |
| 37. Otto Fabric, Inc.<br>P.O. Box 18361<br>Wichita, KS 67218<br>316/686-2010<br>800/835-3347 | | | | | | | | | | Otto Single-Ply STR |
| 38. Owens-Corning Fiberglas Corp.<br>Fiberglas Tower<br>Toledo, OH 43659<br>419/248-8000 | • | | Owens-Corning Derbigum HPS<br>Owens-Corning Derbigum SP | | | | | | | |
| 39. Plymouth Rubber Co., Inc.<br>104 Revere Street<br>Canton, MA 02021<br>617/828-0220 | | | | Plyroof PVC Grey<br>Plyroof PVC White | Plyseal EPDM | Plyshield Neoprene | | | | |
| 40. J & P Petroleum Products<br>P.O. Box 4206<br>Dallas, TX 75208<br>214/291-1591 | | | Aquashield 2001 AD | | | | | | | |
| 41. Protective Coatings, Inc.<br>1602 Birchwood Avenue<br>Fort Wayne, IN 46803<br>214/291-1591 | | | | | Superoof-Black<br>Superoof-White<br>Superoof-Gray<br>Superoof-White Fire Retardent | | | | | |
| 42. PMS/Sucoflex<br>21203 Hawthorne Blvd.<br>#5083<br>Torrance, CA 90503<br>213/320-3142 | | | | Sucoflex F-132<br>Sucoflex F-127 | | | | | | |
| 43. Reeves Bros., Inc.<br>P.O. Box 1531<br>Spartanburg, SC 29304<br>803/576-9210 | | | | | Reevetech | | | | | |
| 44. Republic Powdered Metals<br>2628 Pearl Road<br>Medina, OH 44256<br>216/225-3192 | | | | | | | | Geoflex | | |
| 45. Royal Oil Company<br>P.O. Box 646<br>Ft. Worth, TX 76101<br>817/332-7001 | | | Royal | | | | | | | |
| 46. Rubber & Plastics Compound, Inc.<br>3615 23rd Street<br>Long Island City, NY 11106<br>212/392-6780 | | | | Nervaply<br>Nervaply UB | | | | | | |
| 47. Sarnafil (U.S.), Inc.<br>Canton Commerce Building<br>P.O. Box 380<br>Canton, MA 02021<br>617/828-5400 | | | | Sarnafil G21-410<br>Sarnafil G21-442<br>Sarnafil S21-327 | | | | | | |
| 48. Seal-Dry/USA, Inc.<br>Box 719<br>Pontiac, MI 48056<br>313/333-2590 | | | | | | | | | | Seal-Dry, 30 mils<br>Seal-Dry, 34 mils |
| 49. Seaman Corporation<br>102B N. Washington Street<br>Millersburg, OH 44654<br>216/674-0121 | | | | | | | | | | Polyester Reintorced TPE Fibertite |
| 50. Siplast, Inc.<br>Hwy. 67 South<br>Arkadelphia, AR 71923<br>501/246-8094 | | | Veral (Alum. Faced)<br>Veral (Stain/ Steel) Faced<br>Veral (Copper Faced)<br>Parafor-50<br>Paradiene-30<br>Paradiene-20 | | | | | | | |
| 51. SYenergy Methods, Inc.<br>1367 Elmwood Avenue<br>Cranston, RI 02910<br>401/467-2600 | | | | | SMI Rubber Roof Black<br>SMI Rubber Roof White | | | | | |
| 52. SWEPCO<br>534 North Main Street<br>Ft. Worth, TX 76101<br>817/332-2336 | | | SWEPCO Uni + Shield | | | | | | | |
| 53. Tamko<br>220 West 4th Street<br>Joplin, MO 64801<br>417/624-6644 | • | | Awaplan | | | | | | | |
| 54. Teltex, Inc.<br>Commerce Drive<br>N. Branford, CT 06471<br>800/243-6258 | | | Rhoflex | | | | | | | |

# Index of Listed Roofing Membranes *continued*

| Manufacturer or Supplier | BUILT-UP ROOFING | | SINGLE-PLY | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Conventional** | **Modified Bitumens** | **Modified Bitumens** | **PVC** Polyvinyl Chloride | **EPDM** Ethylene Propylene Monomer | **NEOPRENE** Polychloroprene | **CSPE HYPALON** Chlorosulfonated Polyethylene | **PIB** Polyisobutylene | **CPE** Chloronated Polyethylene | **Other** |
| 5. Texas Refinery Corp.<br>One Refinery Place<br>Ft. Worth, TX 76101<br>817/332-1161 | | | MightyPlate | | | | | | | |
| 6. Tropical Industrial Coatings, Inc.<br>P.O. Box 444<br>Brunswick, OH 44212<br>216/273-2564<br>1-800/321-8353 | | | Tropiseal | | | | | Tropigard | | |
| 7. U.S. Intec/BRAI<br>P.O. Box 2845<br>1212 Brai Drive<br>Port Arthur Drive<br>Port Arthur, TX 77640<br>713/724-7024 | | | BRAI SP4 | | | | | | | |
| 3. U.S. Mineral Products Corp.<br>Furnace Street<br>Stanhope, NJ 07874<br>201/347-1200 | | | | Flexhide 34<br>Flexhide 45<br>Flexhide LR50 | | | | | Flexhide CPE | |
| 9. W.R. Grace & Co.<br>62 Whittemore Avenue<br>Cambridge, MA 02130<br>617/876-1400 | | | GRM-120<br>GRM-230<br>GRM-350<br>GRM-500 | | | | | | | |
| 0. Wat-Pro, Inc.<br>P.O. Box 336<br>Manasquan, NJ 08736<br>201/528-6727 | | | | Flagon SF<br>Flagon C | Agaper-E | | | | | |
| 1. Weathergard Roofing Systems, Inc.<br>P.O. Box 17824<br>Memphis, TN 38117<br>901/458-2222 | | | | | .045 Weathergard | | | | | |

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

## 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: Ship to Distributors and Direct to Roofers
5. PREFORMED ACCESSORIES AVAILABLE ☐ YES ■ NO
6. LIMITATIONS OR RESTRICTED USE: (1) 3CG-GSW and 4CG-SSW; May not be applied to light-weight concrete decks. (2) All roofs must have positive drainage (roof clear in 24 hours).
7. SALES INFORMATION CONTACT: Regional Sales Office
8. TECHNICAL INFORMATION CONTACT: Dr. Michael J. Noone (Blue Bell, PA)
9. FELTS TEST DATA:

| Trade Name | Applicable ASTM Standard | (1) |
|---|---|---|
| Certaglass Ply Sheet | D-2178-81a | ■ PASS ☐ FAIL |
| No. 15 Perforated Asphalt Felt | D226-81 | ■ PASS ☐ FAIL |
| Roofers Base Sheet | D2626-81 | ■ PASS ☐ FAIL |

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

1. # REGIONAL SERVICE LOCATIONS: 12
*2. LICENSED APPLICATOR AGREEMENT ■ YES ☐ NO
3. APPLICATOR TRAINING ■ FIELD ☐ SEMINARS ☐ FACTORY
4. METHOD OF DISTRIBUTION: Wholesalers
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 TEST DATA:

| Trade Name | Applicable ASTM Standard | (1) |
|---|---|---|
| Gafglas Ply 4 | D-2178 Type IV | ■ PASS ☐ FAIL |
| Gafglas Ply 3 | D-2178 Type III | ■ PASS ☐ FAIL |
| Gafglas Mineral Surfaced Cap Sheet | D-3909 | ■ PASS ☐ FAIL |
| Gafglas #75 Base Sheet** | No ASTM Standard | ☐ PASS ☐ FAIL |
| Gafglas Base & Ply Sheet** | No ASTM Standard | ☐ PASS ☐ FAIL |
| Gafglas Stratavent (Vent Ply) Perforated | D-3672 | ■ PASS ☐ FAIL |
| Gafglas Stratavent (Vent Ply) for nailable decks | No ASTM Standard | ☐ PASS ☐ FAIL |

*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 TEST DATA:

| Trade Name | Applicable ASTM Standard | (1) |
|---|---|---|
| All Weather Flaxine Base Sheet | D2626-80 | ■ PASS ☐ FAIL |
| Empire Base Sheet | D3158-78 | ■ PASS ☐ FAIL |
| Flintglas Base Sheet | None | ☐ PASS ☐ FAIL |
| Flintglas Ply Sheet | D2178-81a | ■ PASS ☐ FAIL |
| Flintglas Cap Sheet | D3909-81 | ■ PASS ☐ FAIL |
| No. 15 Saturated Felt | D226-76 | ■ PASS ☐ FAIL |
| No. 90 Yosemite MS Buffer Sheet | D228-69 | ■ PASS ☐ FAIL |

10. MODIFIED BITUMINOUS PREFABRICATED MEMBRANE TEST DATA:

| Trade Name | Applicable CGSB Standard | (1) |
|---|---|---|
| Flintlastic MS Cap Sheet | 37-GP-56M | ☐ PASS ☐ FAIL |

## Hyload, Inc.
1006 McKnight Park Drive
Pittsburgh, PA 15237
412/367-0633

1. # REGIONAL SERVICE LOCATIONS: 4
2. LICENSED APPLICATOR AGREEMENT ☐ YES ■ NO
3. APPLICATOR TRAINING ■ FIELD ☐ SEMINARS ☐ FACTORY
4. METHOD OF DISTRIBUTION: Various
5. PREFORMED ACCESSORIES AVAILABLE ☐ YES ■ NO
6. LIMITATIONS OR RESTRICTED USE: None
7. SALES INFORMATION CONTACT: Alex W. Harkness
8. TECHNICAL INFORMATION CONTACT: Roger Bonafont
9. FELTS TEST DATA:

| Trade Name | Applicable ASTM Standard | (1) |
|---|---|---|

10. MODIFIED BITUMINOUS PREFABRICATED MEMBRANE TEST DATA:

| Trade Name | Applicable CGSB Standard | (1) |
|---|---|---|
| Hyload 150E | 37-GP-56M | ☐ PASS ☐ FAIL |

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

1. # REGIONAL SERVICE LOCATIONS: 7
*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 TEST DATA:

| Trade Name | Applicable ASTM Standard | (1) |
|---|---|---|
| Coal Tar Bitumen | D-450 Type III | ■ PASS ☐ FAIL |
| No. 15 Tarred Felt | D-227 | ■ PASS ☐ FAIL |

## 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 TEST DATA:

| Trade Name | Applicable ASTM Standard | (1) |
|---|---|---|
| Glasply | D-2178-81a | ■ PASS ☐ FAIL |
| GlasBase | None | ☐ PASS ☐ FAIL |
| Planet II | None | ☐ PASS ☐ FAIL |
| GlasKap | D3909-81 | ■ PASS ☐ FAIL |
| Ventsulation | D3672-81 | ■ PASS ☐ FAIL |
| -18 Asbestos | D250-81 Type I | ■ PASS ☐ FAIL |
| -15 Asbestos | D250-81 Type I | ■ PASS ☐ FAIL |
| Centurion | D250-81 Type IV | ■ PASS ☐ FAIL |

**(1)** Indicates PASS/FAIL status as determined by appropriate standards.

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

**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 TEST DATA:**

| Trade Name | Applicable ASTM Standard | (1) |
|---|---|---|
| Duraply IV | D2178-81 Type IV | ■ PASS ☐ FAIL |
| Durabase | None | ☐ PASS ☐ FAIL |
| Polyply | None | ☐ PASS ☐ FAIL |

**Nord Bitumi U.S., Inc.**
**960 S. Springfield Ave.**
**Springfield, N.J. 07081**
**201/467-8669**

1. **# REGIONAL SERVICE LOCATIONS:** To be selected
2. **LICENSED APPLICATOR AGREEMENT** ■ YES ☐ NO
3. **APPLICATOR TRAINING** ■ FIELD ☐ SEMINARS ☐ FACTORY
4. **METHOD OF DISTRIBUTION:** Wholesale Distribution
5. **PREFORMED ACCESSORIES AVAILABLE** ☐ YES ■ NO
6. **LIMITATIONS OR RESTRICTED USE:** Do not apply when moisture is present on roof deck
7. **SALES INFORMATION CONTACT:** John J. Butler
8. **TECHNICAL INFORMATION CONTACT:** John J. Butler
9. **FELTS TEST DATA:**

10. **MODIFIED BITUMINOUS PREFABRICATED MEMBRANE TEST DATA:**

| Trade Name | Applicable CGSB Standard | (1) |
|---|---|---|
| Poly 4 | 37-GP-56M | ☐ PASS ☐ FAIL |

**Owens-Corning Fiberglas**
**Fiberglas Tower**
**Toledo, OH 43659**
**419/248-7766**

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 TEST DATA:**

| Trade Name | Applicable ASTM Standard | (1) |
|---|---|---|
| Perma Ply-R | D-2178-81A - Type IV | ■ PASS ☐ FAIL |
| Perma Ply No. 28 | None | ☐ PASS ☐ FAIL |
| Perma Ply No. 28 (P) | None | ☐ PASS ☐ FAIL |
| Perma Cap | D3909-81 | ■ PASS ☐ FAIL |
| Perma Ply No. 11 | D-2178-81A - Type III | ■ PASS ☐ FAIL |
| Perma Plus-2 IPS | D-2178-81A - Type IV | ■ PASS ☐ FAIL |
| Perma Plus-2 IPS | D-2178-81A - Type IV | ■ PASS ☐ FAIL |

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

1. **# REGIONAL SERVICE LOCATIONS:** 8
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 TEST DATA:**

| Trade Name | Applicable ASTM Standard | (1) |
|---|---|---|
| Tri-Six | D226-81 Type III | ■ PASS ☐ FAIL |
| Type 15 Perf. | D226-81 Type I | ■ PASS ☐ FAIL |
| Type 43 Base | D2626-81 | ■ PASS ☐ FAIL |
| Tam-Glass | D2178-81a | ■ PASS ☐ FAIL |
| Tam Cap | D3909-80 | ■ PASS ☐ FAIL |
| Vapor Chan | D3672-81 Type II | ■ PASS ☐ FAIL |

**(1)** Indicates PASS/FAIL status as determined by appropriate standards.

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

| Manufacturer | CERTAINTEED CORPORATION | | | | | | | | | | | | GENSTAR | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Specification Number** | 4CG-GSW | 3CG-GSW | 4CG-SSW | RB-315-GSW | 4CG-GS1 | 3CG-GS1 | 4CG-SS1 | 415-GS1 | 4CG-GSC | 3CG-GSC | 4CG-SSC | 415-GSC | AAA1-1 | AAA2-1 | AAA3-1 |
| **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 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 3 |
| b. BASE | | | | 1 | | | | | | | | | 3 | 3 | 3 |
| c. INTERPLY | | 3 | | 3 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 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) | 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 |
| b. SMOOTH-ASPHALT | | | | | | | | | | | | | | | |
| -COAL TAR | | | | | | | | | | | | | | | |
| c. EMULSION — CUT BACK | | | • | | | | • | | | | • | | | | |
| d. CAP SHEET | | | | | | | | | | | | | | | |
| **7. APPROX. APPLIED WT. PER SQ. FT. (INCL. PLIES)** | | | | | | | | | | | | | | | |
| a. AGGREGATE | 5.8 | 5.5 | | 6.3 | 6.1 | 5.7 | | 6.2 | 6.1 | 5.7 | | 6.2 | 6 | 6 | 6 |
| b. SMOOTH | | | | | | | | | | | | | | | |
| c. EMULSION-CUT BACK | | | 1.4 | | | | 1.6 | | | | 1.6 | | | | |
| d. CAP SHEET | | | | | | | | | | | | | | | |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | A,B | A,B | A,B | | A,B | A,B | A,B | | A,B | A,B | A,B | | None | None | None |
| **9. YR. OF FIRST COMMER'L INSTALLATION** | 1975 | 1975 | 1975 | 1920 | 1975 | 1975 | 1975 | 1920 | 1975 | 1975 | 1975 | 1920 | | | |
| **10. TEST RESULTS (PER BSS #55)** | | | | | | | | | | | | | | | |
| a. ■ TENSILE STRENGTH — NOT LESS THAN 200 lb./in. @ 0°F—MD | 335 | 222 | 335 | 498 | 335 | 222 | 335 | 425 | 335 | 222 | 335 | 425 | | | |
| — NOT LESS THAN 200 lb./in. @ 0°F—XD | 311 | 218 | 311 | 290 | 311 | 218 | 311 | 313 | 311 | 218 | 311 | 313 | | | |
| b. ■ THERMAL EXPAN. — NOT EXCEED 40 x $10^{-6}$/°F @ 0° to −30°F—MD | 25 | 22 | 25 | 5 | 25 | 22 | 25 | 23 | 25 | 22 | 25 | 23 | | | |
| — NOT EXCEED 40 x $10^{-6}$/°F @ 0° to −30°F—XD | 25 | 24 | 25 | 21 | 25 | 24 | 25 | 26 | 25 | 24 | 25 | 26 | | | |
| c. ■ THERMAL SHOCK — NOT LESS THAN 100°F—MD | 640 | 705 | 640 | 3520 | 640 | 705 | 640 | 700 | 640 | 705 | 640 | 700 | | | |
| — NOT LESS THAN 100°F—XD | 500 | 615 | 500 | 990 | 500 | 615 | 500 | 790 | 500 | 615 | 500 | 790 | | | |
| **11. LIMITATIONS OR RESTRICTED USE (SEE PART 1)** | 2 | 1,2 | 1,2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | | |
| **12. WARRANTY** *(See "Important Notes")* | | | | | | | | | | | | | | | |
| a. DURATION (YEARS) | 5 | 5 | 5 | | 5 | 5 | 5 | | 5 | 5 | 5 | | 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 |
| e. EXCLUSION FROM COVERAGE | | | | | | | | | | | | | | | |
| DAMAGE TO OTHER COMPONENTS | • | • | • | | • | • | • | | • | • | • | | • | • | • |
| CONSEQUENTIAL DAMAGES | • | • | • | | • | • | • | | • | • | • | | • | • | • |
| **13. UL FIRE RESISTANCE** *(See "Important Notes")* | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| **14. FM WIND RESISTANCE** *(See "Important Notes")* | | | | | | | | | | | | | • | • | • |

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

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

continued→

| BUILDING MATERIALS CO. | | | | | | | | | GAF | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AAA4-1 | AAA5-1 | AAAA6-1 | 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 | 103 M-B | 102 M | 106 G | 104 GN | 104 SN | 103 GN | 103 SN | 103 MN | 101 MN |
| • | | • | | • | | • | | • | | | | | | | | | | | | | | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | | | |
| | • | | • | | • | | • | | • | • | • | • | • | • | • | • | • | • | • | • | | | | | | |
| | | | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| • | • | • | | | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | | | • | • | • | • | • | • | | • | | • | | | • | • | • | • | • | | | • | | • | • | • |
| 3 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 3 |
| 3 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | | 1 | | 1 | | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 |
| | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 4 | 4 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 1 |
| | | | 1 | 1 | 1 | 1 | | | | | | | | | | | 1 | 1 | 1 | | | | | | 1 | 1 |
| • | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | • | • | • | • | | | • | • | | | | | | | | | | | | | | | | | | |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | | | | | | | | | | | | | | | | | | | | • | | | | | | |
| 4 | 4 | 4 | | | | | | | 4,3* | | 4,3* | | 4,3* | 4,3* | | | | | | 4,3* | 4,3* | | 4,3* | | | |
| | | | | | | | | | | • | | • | | | • | • | | | | | | • | | • | | |
| | | | | | | • | • | | | • | | • | | | • | • | | | | | | • | | • | | |
| | | | • | • | • | • | | | | | | | | | | | • | • | • | | | | | | • | • |
| 6 | 6 | 6 | | | | | | | 6 | | 6 | | 6 | 6 | | | | | | 6 | 6 | | 6 | | | |
| | | | | | | | | | | 2 | | 2 | | | 2 | 2 | | | | | | 2 | | 2 | | |
| | | | | | | | 2 | 2 | | 2 | | 2 | | | 2 | 2 | | | | | | 2 | | 2 | | |
| | | | 2 | 2 | 2 | 2 | | | | | | | | | | | 3 | 3 | 2 | | | | | | 3 | 2 |
| None | None | None | None | None | None | None | 1 | 1 | None | None | None | None | None | N | N | N | N | N | N & S | None | None | None | None | N | N | N & S |
| | | | | | | | | | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 | 1974 |
| 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 10 | 10 | 5 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | 5 | | | | | | | | | | | | | | | |
| | | | | | | | | | • | • | | | | | | | | | | | | | | | | |
| • | • | • | • | • | • | • | • | • | | | • | | | | | | | | | | | | | | | |
| 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 10 | 20 | 25 | | | | | | | | | | | | | | | |
| • | • | • | • | • | • | • | • | • | • | • | • | | | | | | | | | | | | | | | |
| • | • | • | • | • | • | • | • | • | • | • | • | | | | | | | | | | | | | | | |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • | | | • | • | | | | | | • | | | | | | | • | • |

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

GAF: "Not an accepted industry standard."

*All three types of warranty are available for all specifications.*

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

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

| Manufacturer | GAF | KOPPERS | | | | MANVILLE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Specification Number** | 106 GN | 220 | 210 | | | 4AIS | 4ANS | 4GNS | 3AIS | 3ANS | 4AIG | 3AIG | 4ANG | 3ANG | 4ALG |
| **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 | | | 4 | 4 | 4 | 3 | 3 | 4 | 3 | 4 | 3 | 4 |
| b. BASE | 1 | | 1 | | | | | 1 | | 1 | | | 1 | 1 | 1 |
| c. INTERPLY | 2 | 4 | 3 | | | 4 | 4 | 3 | 3 | 2 | 4 | 3 | 3 | 2 | 2 |
| 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 | 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 | 6 | 6 | | | | | | | | 6 | 5.5 | 5.5 | 5 | 6 |
| b. SMOOTH | | | | | | 1.9 | 1.6 | 1.4 | 1.5 | 1.2 | | | | | |
| c. EMULSION-CUT BACK | | | | | | 1.9 | 1.6 | 1.4 | 1.5 | 1.2 | | | | | |
| d. CAP SHEET | | | | | | | | | | | | | | | |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | None | None | None | | | | | 3 | 2 & 3 | 2 & 3 | | | | 2 & 3 | 2 & 3 |
| **9. YR. OF FIRST COMMER'L INSTALLATION** | 1974 | 1928 | 1928 | | | 1949 | 1981 | 1981 | 1981 | 1981 | 1979 | 1965 | 1981 | 1981 | 1981 |
| **10. TEST RESULTS (PER BSS #55)** | | | | | | | | | | | | | | | |
| a. ■ TENSILE STRENGTH — NOT LESS THAN 200 lb./in. @ 0°F—MD | | 468 | | | | | | | | | | | | | |
| — NOT LESS THAN 200 lb./in. @ 0°F—XD | | 265 | | | | | | | | | | | | | |
| b. ■ THERMAL EXPAN. — NOT EXCEED 40 x $10^{-6}$/°F @ 0° to −30°F—MD | | 19.3 | | | | | | | | | | | | | |
| — NOT EXCEED 40 x $10^{-6}$/°F @ 0° to −30°F—XD | | 29.5 | | | | | | | | | | | | | |
| c. ■ THERMAL SHOCK — NOT LESS THAN 100°F—MD | | 360 | | | | | | | | | | | | | |
| — NOT LESS THAN 100°F—XD | | 120 | | | | | | | | | | | | | |
| **11. LIMITATIONS OR RESTRICTED USE (SEE PART 1)** | | | | | | | | | | | | | | | |
| **12. WARRANTY** *(See "Important Notes")* | | | | | | | | | | | | | | | |
| a. DURATION (YEARS) | | | | | | 10 | 10 | 10 | 5 | 5 | 10 | 5 | 10 | 5 | 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 | | | | | | | 50 | 50 | 35 | 35 | | 35 | 50 | 35 | 50 |
| e. EXCLUSION FROM COVERAGE | | | | | | | | | | | | | | | |
| DAMAGE TO OTHER COMPONENTS | | | | | | • | • | • | • | • | • | • | • | • | • |
| CONSEQUENTIAL DAMAGES | | | | | | | | | | | | | | | |
| **13. UL FIRE RESISTANCE** *(See "Important Notes")* | • | • | • | | | • | • | • | • | • | • | • | • | • | • |
| **14. FM WIND RESISTANCE** *(See "Important Notes")* | • | • | • | | | • | • | • | • | • | • | • | • | • | • |

*This data was derived from a NBS test of 4 ply coal tar BUR system and presented in their report Preliminary Performance Criteria for Bituminous Membrane Roofing BSS #55.*

"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."

*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.*

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

**MANVILLE**

*continued →*

| 3ALG | 4AIC | 4ANC | 3AIC | 3GNC | 4GIS | 4GNS | 3GIS | 3GNS | 4GIG | 3GIG | 4GNG | 3GNG | 4GLG | 3GLG | 4GIC | 4GNC | 3GIC | 3ANC | 3GNC Mod | 100 | 102 | 103 | 151 | 630 | 631 | 400 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • | | • | | • | | • | | • | | | • | • | • | • | | • | | • | • | • | • | | | • | | • |
| | • | | • | | • | | • | | • | • | | | | | • | | • | | | | | • | • | | • | |
| | • | | • | | | | | | | | | | | | | | | | | | | • | • | | • | |
| • | | | • | | • | • | • | • | • | • | • | • | • | • | | | | • | • | • | • | • | • | • | • | |
| • | • | • | • | | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | • | • | • |
| | • | • | • | | • | • | • | • | | | | | | | | • | | • | • | • | • | • | • | | | • |
| 3 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 4 |
| 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | 1 | 1 | 1 | | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | 3 | 2 | 2 | 1 | 4 | 3 | 3 | 2 | 4 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 3 | 2 | 2 | 3 | 3 | 3 | 2 |
| | 1 | 1 | 1 | 1 | | | | | | | | | | | 1 | 1 | 1 | 1 | 1 | | | | | | | 1 |
| | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | | | | | | | • |
| • | • | • | • | | | | | | | | | | | | | | | • | • | • | • | • | • | • | • | • |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | 4 | 4 | 4 | 4 | 4 | 4 | | | | | | | | | | 4 | 4 | |
| | | | | | • | • | • | • | | | | | | | | | | | | • | • | • | • | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | • | • | • | • | | | |
| | • | • | • | • | | | | | | | | | | | • | • | • | • | • | | | | | | | • |
| 5.5 | 2.4 | 2 | 3 | | | | | | 6 | 5.5 | 5.5 | 5 | 6 | 5.5 | 2.2 | 2.1 | | | | | | | | 6 | 6 | |
| | | | | | 1.7 | 1.0 | 1.4 | 1.2 | | | | | | | | | | | | 1.6 | 1.2 | 1.5 | 1.9 | | | |
| | | | | | 1.7 | 1.0 | 1.4 | 1.2 | | | | | | | | | | | | 1.6 | 1.2 | 1.5 | 1.9 | | | |
| | | | | 1.7 | | | | | | | | | | | | | 1.9 | 1.7 | 1.6 | | | | | | | 2.1 |
| 2 & 3 | | | 2 | 3 | | | | 2, 3 | | | | 2, 3 | 2, 3 | 2, 3 | | | 3 | 3 | 3 | | 3 | 3 | | | | |
| 1981 | 1981 | 1981 | 1981 | 1980 | 1976 | 1978 | 1980 | 1980 | 1978 | 1978 | 1978 | 1980 | 1980 | 1980 | 1978 | 1978 | 1978 | 1981 | 1981 | 1965 | 1965 | 1965 | 1965 | 1977 | 1977 | 1949 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 10 | 10 | 5 | 5 | 10 | 10 | 5 | 5 | 10 | 5 | 10 | 5 | 10 | 5 | 10 | 10 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| • | | | • | • | • | | • | • | • | • | | • | | • | | | • | • | • | • | • | • | • | • | • | • |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | • | | | | • | | | | | | | | | | | | | | | | | |
| 35 | 50 | 50 | 35 | 35 | | 50 | 35 | 35 | | 35 | 50 | 35 | 50 | 35 | 50 | 50 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 | 35 |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |

*"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."*

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

| Manufacturer | MANVILLE | MINERAL FIBER MFG. CO. | | | | | | | | OWENS-CORNING | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Specification Number** | 401 | 43-GAW | 43-GSW | 43-GAC | 43-GSC | 52-PAW | 52-PSW | 52-PSC | 52-PAC | 23-TG | 23-TC | 33-TS | 33-FG | 33-FC | 43-FS |
| **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 | 3 | 4 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 |
| b. BASE | 1 | 1 | 1 | | | 1 | 1 | | | | | | 1 | 1 | 1 |
| c. INTERPLY | 2 | 3 | 3 | 3 | 4 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 3 |
| d. CAP | 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 | 2 | 6 | 2 | 5 | 2 | 2 | 6 | 5.5 | | | 5.5 | | |
| b. SMOOTH | | | | | | | | | | | | 1.5 | | | 1.5 |
| c. EMULSION-CUT BACK | | | | | | | | | | | | 1.5 | | | 1.5 |
| d. CAP SHEET | 2.4 | | | | | | | | | | 2 | | | 2 | |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | | | | | | | | | | 1 | 1 | 1 | | | |
| **9. YR. OF FIRST COMMER'L INSTALLATION** | 1949 | 1976 | 1976 | 1976 | 1976 | 1982 | 1982 | 1982 | 1982 | 1965 | 1965 | 1965 | 1965 | 1965 | 1965 |
| **10. TEST RESULTS (PER BSS #55)** | | | | | | | | | | | | | | | |
| a. ■ TENSILE STRENGTH — NOT LESS THAN 200 lb./in. @ 0°F—MD | | | | | | | | | | 166 | 166 | 226 | 226 | 226 | 264 |
| — NOT LESS THAN 200 lb./in. @ 0°F—XD | | | | | | | | | | 198 | 198 | 224 | 224 | 224 | 356 |
| b. ■ THERMAL EXPAN. — NOT EXCEED 40 x $10^{-6}$/°F @ 0° to −30°F—MD | | | | | | | | | | 23.3 | 23.3 | 17.4 | 17.4 | 17.4 | 19.9 |
| — NOT EXCEED 40 x $10^{-6}$/°F @ 0° to −30°F—XD | | | | | | | | | | 24.0 | 24.0 | 13.6 | 13.6 | 13.6 | 17.5 |
| c. ■ THERMAL SHOCK — NOT LESS THAN 100°F—MD | | | | | | | | | | 663 | 663 | 663 | 928 | 928 | 685 |
| — NOT LESS THAN 100°F—XD | | | | | | | | | | 645 | 645 | 645 | 1332 | 1332 | 1038 |
| **11. LIMITATIONS OR RESTRICTED USE (SEE PART 1)** | | | | | | | | | | | | | | | |
| **12. WARRANTY** *(See "Important Notes")* | | | | | | | | | | | | | | | |
| a. DURATION (YEARS) | 5 | | | | | | | | | 10 | 10 | 10 | 10 | 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 | 35 | | | | | | | | | | | | | | |
| e. EXCLUSION FROM COVERAGE | | | | | | | | | | | | | | | |
| DAMAGE TO OTHER COMPONENTS | • | | | | | | | | | • | • | • | • | • | • |
| CONSEQUENTIAL DAMAGES | | | | | | | | | | • | • | • | • | • | • |
| **13. UL FIRE RESISTANCE** *(See "Important Notes")* | • | | | | | | | | | • | • | • | • | • | • |
| **14. FM WIND RESISTANCE** *(See "Important Notes")* | • | | | | | | | | | • | • | • | • | • | • |

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

**FIBERGLAS** — **OWENS-CORNING FIBERGLAS** — *continued→*

| 33-IS | 43-NG | 22-IS | 22-IG | 22-IC | 3P-IG | 4P-IG | 3P-XG | 33-IG | 43-IG | 33-IC | 43-IC | 43-IS | 33-XG | 33-XC | 43-XS | 33-NG | 33-NC | 43-NS | 33-XG | 33-XC | 43-XS | 33-NG | 30-IG | 30-IC | 40-IS | 20-TG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| • | | | | | • | • | | • | • | • | • | • | | | | | | | | | | | • | • | • | • |
| | | | | | | | • | | | | | | • | • | • | | | | • | • | • | | | | | |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | | | | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • |
| • | | • | | • | | | | | | • | • | • | | • | • | | • | • | | • | • | | | • | • | |
| 3 | 4 | 2 | 2 | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 5 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 4 | 2 |
| | 1 | 1 | 1 | 1 | | | 1 | | | | | | | | | | | | | | | 1 | | | | |
| 3 | 3 | 1 | 1 | 1 | 3 | 4 | 2 | 3 | 4 | 3 | 4 | 4 | 3 | 3 | 4 | 3 | 3 | 4 | 3 | 3 | 4 | 2 | 3 | 3 | 4 | 2 |
| | | | | | | | | | | 1 | 1 | | | 1 | | | 1 | | | 1 | | | | 1 | | |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | • | • | • | | | | | | | | | | | | | | | • | | | | |
| | 4 | | 4 | | 4 | 4 | 4 | 4 | 4 | | | | 4 | | | 4 | | | 4 | | | 4 | 4 | | | 4 |
| • | | • | | | | | | | | | | • | | | • | | | • | | | • | | | | • | |
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| • | | • | | | | | | | | | | • | | | • | | | • | | | • | | | | • | |
| | | | | • | | | | | | • | • | | | • | | | • | | | • | | | | • | | |
| | 6 | | 5.5 | | 6 | 6.5 | 6 | 5.5 | 6 | | | | 5.5 | | | 5.5 | | | 5.5 | | | 5.5 | 5.5 | | | 5.5 |
| 1.5 | | 1.2 | | | | | | | | | | 1.5 | | | 1.5 | | | 1 | | | 1.5 | | | | 1.5 | |
| 1.5 | | 1.2 | | | | | | | | | | 1.5 | | | 1.5 | | | 1 | | | 1.5 | | | | 1.5 | |
| | | | | 2 | | | | | | 2 | 2.4 | | | 2 | | | 2 | | | 2 | | | | 2 | | |
| | | | | | | | | | | | | | | | | | | | | | | | 1,2 | 1,2 | 1,2 | 1,2 |
| 1965 | 1965 | 1982 | 1982 | 1982 | 1973 | 1973 | 1973 | 1965 | 1965 | 1965 | 1965 | 1965 | 1965 | 1965 | 1965 | 1965 | 1965 | 1965 | 1965 | 1965 | 1965 | 1973 | 1959 | 1959 | 1959 | 1959 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 238 | 283 | 233 | 233 | 233 | 216 | 316 | 216 | 238 | 337 | 238 | 337 | 337 | 238 | 238 | 337 | 238 | 238 | 337 | 238 | 238 | 337 | 216 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 321 | 320 | 232 | 232 | 232 | 263 | 442 | 263 | 321 | 431 | 321 | 431 | 431 | 321 | 321 | 431 | 321 | 321 | 431 | 321 | 321 | 431 | 263 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19.7 | 19.1 | 24.8 | 24.8 | 24.8 | 17.4 | 20.4 | 17.4 | 19.7 | 19.0 | 19.7 | 19.0 | 19.0 | 19.7 | 19.7 | 19.0 | 19.7 | 19.7 | 19.0 | 19.7 | 19.7 | 19.0 | 17.4 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12.9 | 25.2 | 13.1 | 13.1 | 13.1 | 13.2 | 14.4 | 13.2 | 12.9 | 15.2 | 12.9 | 15.2 | 15.2 | 12.9 | 12.9 | 15.2 | 12.9 | 12.9 | 15.2 | 12.9 | 12.9 | 15.2 | 13.2 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 661 | 670 | 753 | 753 | 753 | 754 | 652 | 754 | 661 | 725 | 661 | 725 | 725 | 661 | 661 | 725 | 661 | 661 | 725 | 661 | 661 | 725 | 754 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1294 | 616 | 1704 | 1704 | 1704 | 959 | 705 | 959 | 1294 | 1174 | 1294 | 1174 | 1174 | 1294 | 1294 | 1174 | 1294 | 1294 | 1174 | 1294 | 1294 | 1174 | 959 | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 10 | 10 | 10 | 10 | 10 | 20 | 10 | 10 | 20 | 10 | 20 | 20 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 20 | 20 | 20 | 20 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | • | • | • | • |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | 20 | 20 | 20 | 20 |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |

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

| Manufacturer | OWENS-CORNING FIBERGLAS | | | | | | | | | | | | | TAMKO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Specification Number** | 20-TC | 30-TS | 30-XG | 30-XC | 40-XS | 30-NG | 30-NC | 40-NS | 30-IS | 30-FG | 30-FC | 40-FS | 40-NG | 301 | 401 |
| **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 | 4 | 4 | 3 | 3 | 4 | 4 | 4 | 3 | 4 |
| b. BASE | | | | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | 1 |
| c. INTERPLY | 2 | 3 | 3 | 3 | 4 | 2 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 |
| d. CAP | 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 | | | 5.5 | | | 5.5 | | | | 5.5 | | | 6 | 6 | 6 |
| b. SMOOTH | | 1.5 | | | 1.5 | | | 1 | 1 | | | 1.5 | | | |
| c. EMULSION-CUT BACK | | 1.5 | | | 1.5 | | | 1 | 1 | | | 1.5 | | | |
| d. CAP SHEET | 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 | 1,2 | 1,2 | | |
| **9. YR. OF FIRST COMMER'L INSTALLATION** | 1959 | 1959 | 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 | | | | | | | | | | | | | | | |
| — NOT LESS THAN 200 lb./in. @ 0°F—XD | | | | | | | | | | | | | | | |
| b. ■ THERMAL EXPAN. — NOT EXCEED $40 \times 10^{-6}$/°F @ 0° to −30°F—MD | | | | | | | | | | | | | | | |
| — NOT EXCEED $40 \times 10^{-6}$/°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 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 5&10 | 5&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 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | • | • |
| e. EXCLUSION FROM COVERAGE | | | | | | | | | | | | | | | |
| DAMAGE TO OTHER COMPONENTS | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| CONSEQUENTIAL DAMAGES | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| **13. UL FIRE RESISTANCE** *(See "Important Notes")* | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| **14. FM WIND RESISTANCE** *(See "Important Notes")* | • | • | • | • | • | • | • | • | • | • | • | • | • | | |

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

**TAMKO**

| 403 | 412 | 501 | 502 | 503 | 504 | 505 | 506 | 512 | 513 | 514 | 515 | 516 | 521 | 522 |
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| 4 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 |
| | 1 | | | | | | 1 | 1 | 1 | 1 | 1 | 1 | | |
| 4 | 3 | 3 | 3 | 4 | 3 | 4 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | | 1 | | | | | 1 | | | | | | 1 |
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| 4 | 4 | 4 | | 4 | | | 4 | | 4 | 4 | 4 | | 4 | |
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| 6 | 6 | 6 | | 6 | | | 6 | | 6 | 6 | 7 | | 6 | |
| | | | | | 1 | 2 | | | | | | 2 | | |
| | | | | | 1 | 2 | | | | | | 2 | | |
| | | | 2 | | | | | 2 | | | | | 2 | |
| | | 1,2 | 1,2 | 1,2 | 2 | 1,2 | 1,2 | 1,2 | 2 | 1,2 | 1,2 | 1,2 | 1,2 | 1,2 |
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| 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 |
| • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
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| • | • | • | • | • | • | • | | • | • | • | • | • | • | • |

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

| Manufacturer | GENSTAR | | | HYLOAD | | | | | | | | | NORD | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Specification Number** | AM 12 M-1 RS | AM 12 M-1 RG | AM 12 M-1 RI | No 1 | No 1A | No 3 | No 3A | No 5 | No 6 | No 6A | No 8 | No 8A | 101a | 202a | 303a |
| **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 | 2 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| b. BASE | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| c. INTERPLY | | | | | | | | | | | | | | | |
| d. CAP | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **4. FELTS** | | | | | | | | | | | | | | | |
| a. FIBERGLASS | 1 | 1 | 1 | • | • | • | • | • | • | • | • | • | | | |
| b. ORGANIC | | 1 | | | | | | | | | | | | | |
| c. ASBESTOS | | | | | | | | | | | | | | | |
| d. POLYESTER | 1 | 1 | 1 | | | | | | | | | | | | |
| e. OTHER | | | | | | | | | | | | | | | |
| **5. INTERPLY BITUMEN** | III & IV | III & IV | III & IV | | | | | | | | | | | | |
| 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 | | | | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | | | | | | | |
| b. SMOOTH | | | | | | | | | | | | | 8.8 | 8.8 | 8.8 |
| c. EMULSION-CUT BACK | | | | | | | | | | | | | | | |
| d. CAP SHEET | 142 | 259 | 177 | | | | | | 1.0 | 1.0 | 1.0 | 1.0 | | | |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | | | | | | | | | | | | | | | |
| **9. YR. OF FIRST COMMER'L INSTALLATION** | 1972 | 1972 | 1972 | 1969 | 1969 | 1969 | 1969 | 1976 | 1975 | 1975 | 1975 | 1975 | | | |
| **10. TEST RESULTS (PER BSS #55)** | | | | | | | | | | | | | | | |
| a. ■ TENSILE STRENGTH — NOT LESS THAN 200 lb./in. @ 0°F—MD | 220 | 220 | 220 | | | | | | | | | | | | |
| — NOT LESS THAN 200 lb./in. @ 0°F—XD | 200 | 200 | 200 | | | | | | | | | | | | |
| b. ■ THERMAL EXPAN. — NOT EXCEED $40 \times 10^{-6}$/°F @ 0° to -30°F—MD | 32 | 32 | 32 | | | | | | | | | | | | |
| — NOT EXCEED $40 \times 10^{-6}$/°F @ 0° to -30°F—XD | 17 | 17 | 17 | | | | | | | | | | | | |
| c. ■ THERMAL SHOCK — NOT LESS THAN 100°F—MD | 1474 | 1474 | 1474 | | | | | | | | | | | | |
| — NOT LESS THAN 100°F—XD | 722 | 722 | 722 | | | | | | | | | | | | |
| **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 | 5 | 5 | 5 |
| b. RENEWABLE AFTER INSPECTION | | | | | | | | | | | | | +5 | +5 | +5 |
| c. SCOPE OF COVERAGE (REPAIR OF LEAKS) | | | | | | | | | | | | | | | |
| MATERIAL ONLY | | | | | | | | | | | | | | | |
| WORKMANSHIP AND MATERIAL | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| d. MONETARY LIMITATION | | | | | | | | | | | | | | | |
| NONE | | | | • | • | • | • | • | • | • | • | • | | | |
| ORIGINAL COST OF INSTALLATION | | | | | | | | | | | | | • | • | • |
| $ PER SQUARE | 100 | 100 | 100 | | | | | | | | | | | | |
| e. EXCLUSION FROM COVERAGE | | | | | | | | | | | | | | | |
| DAMAGE TO OTHER COMPONENTS | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| CONSEQUENTIAL DAMAGES | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| **13. UL FIRE RESISTANCE** *(See "Important Notes")* | | | | • | • | • | • | • | | | | | | | • |
| **14. FM WIND RESISTANCE** *(See "Important Notes")* | | | | • | • | • | • | • | • | • | • | • | | | |

HYLOAD 150 E is tested to British Standards 2782 and 3177, Canadian Standards 37-GP-56M, American Standards D 412, D 624 and D 746. BSS # 55 is not applicable.

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

BITUMI U.S. INC.

| 505a | 606a | 707a |
|---|---|---|
| • | • | • |
| • | • | • |
| • | • | • |
| 2 | 2 | 2 |
| 1 | | |
| 1 | 2 | 2 |
| 8.8 | 8.8 | 8.8 |
| 5 | 5 | 5 |
| +5 | +5 | +5 |
| • | • | • |
| • | • | • |
| • | • | • |
| • | • | • |
| • | | |

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

| PRODUCT NAME► | TIFFANY | ARC STANDARD | ARC ALUMINUM | ARC PREMIUM | ARC GRANULAR | SAM |
|---|---|---|---|---|---|---|
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Thickness (mils) | 150 | 160 | 160 | 160 | 175 | 75 |
| b) Top surface | Modified Bitumen | Plain | Aluminum | Plain | Mineral | Polypropylene |
| c) Reinforcement | Polyester non-woven fabric | Fiberglass | Fiberglass | Polyester | Polyester | Polypropylene |
| d) Reinforcement | | | | | | |
| e) Color | Black | Black | Aluminum | Black | Optional | Grey-Black |
| f) Installed wt. (lbs. per sq. ft. w/o ballast) | .82. | .88 | .88 | .88 | .96 | .40 |
| **2. COATING REQUIRED** | Alum. | None | None | None | None | Yes |
| **3. USE** | | | | | | |
| a) New roofing | ● | ● | ● | ● | ● | ● |
| b) Reroofing | ● | ● | ● | ● | ● | ● |
| **4. FIELD LAP JOINT METHOD** | Torch | Torch | Torch | Torch | Torch | Self-Adhering |
| **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 | Torch | Self-Adhering |
| d) Protected Membrane Roofing Assembly | | ● | | ● | | |
| **6. MINIMUM SLOPE** | Dead Level | Dead Level | Positive Drain | Dead Level | Positive Drain | Dead Level |
| **7. USE OVER** | | | | | | |
| a) Perlite | ● | ●* | ●* | ●* | ●* | |
| b) Urethane | ● | ●* | ●* | ●* | ●* | ● |
| 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 Rubber, Other M/B |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | | | | | | None |
| **9. WORKABLE TEMP RANGE** | 15°F-115°F | 15°F-115°F | 15°F-115°F | 15°F-115°F | 15°F-115°F | 40°F-120°F |
| **10. FLASHING MATERIAL** | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l |
| **11. FLASHING METHOD** | Torch | Torch | Torch | Torch | Torch | Self-Adhering |
| **12. PRE-FORMED ACCESS AVAILABLE** | No | No | No | No | No | None |
| **13. COUNTRY OF ORIGIN** | Italy | Italy | Italy | Italy | Italy | |
| **14. COUNTRY OF MANUFACTURE** | USA | USA | USA | USA | USA | USA |
| **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 | 1981-Chicago | 1979-Greenville |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq.ft.) | | | | | | |
| a) Foreign | None | | | | | |
| b) U.S.A. | 21,000 | 2,000 | 5,000 | 35,000 | 1,000 | 4,000 |
| **17. WARRANTY** *(See "Important Notes")* | | | | | | |
| a) Duration (years) | 6 | 10 | 10 | 10 | 10 | 5 |
| b) Renewable after inspection | +6 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. UL** *(See "Important Notes")* | ● | Pending | Pending | Pending | Pending | In Test |
| **20. FM** *(See "Important Notes")* | ● | | | | | In Test |
| **21. METHOD OF DISTRIB.** | Sales Force | Distributors | | | | Direct/Some Distrs. |
| **22. # REGIONAL SERVICE LOCATIONS** | Throughout USA | 9 | | | | 50 |
| **23. LICENSED APPLICATOR AGREEMENT** | No | Yes | | | | Yes |
| **24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)** | Field, Seminars | Field, Seminars | | | | Field, Seminars |
| **25. SALES INFORMATION; CONTACT** | Tom Girard | Bud Jansen | | | | Geoff Mercier |
| **26. TECHNICAL INFORMATION; CONTACT** | Tom Girard | Bud Jansen | | | | Bob Davis |
| **COMPANY►** | THE AMERICAN LUBRICANTS COMPANY | AMERICAN ROOFING CORPORATION | | | | APACHE |

# ODIFIED BITUMENS Part 1 *(See Part 2 for Test Results)*

| DIBITEN | CONSO-GARD | CONSO-GARD II | GLASDAN R-36 | ESTERDAN R-36 | GLASDAN AL-80 | ESTERDAN RM | STRESSPLY | PITCHPLY |
|---|---|---|---|---|---|---|---|---|
| 157 | 118 | 157 | 140 | 140 | 140 | 140 | 80 | 60 |
| oth or Granular | Plain | Plain | Bitumen | Bitumen | Aluminum | Mineral Granules | | |
| ster or Fiberglass | Polyester | Polyester | Glass Fiber | Polyester | Glass Fiber | Polyester | 2 plies woven glass | Unreinforced |
| | | | | | | | | |
| ck-White-Grey | Black | Black | Black | Black | Aluminum | White & Other Mineral Colors | Black | Black |
| .88 | .60 | .90 | .77 | .77 | .77 | .77 | 1.65 lbs.* | 1.50 lbs.* |
| None | Yes | Yes | Fibrated Emulsion, Second Membrane or Ballast | Fibrated Emulsion, Second Membrane or Ballast | None | None | Gravel or Alum. | Gravel |
| | | | | | | | | |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| Torched | Torch | Torch | Torch or Hot Asphalt | Torch or Hot Asphalt | Torch or Hot Asphalt | Torch or Hot Asphalt | Bitumen/Adhesive | Bitumen/Adhesive |
| | | | | | | | | |
| | 10 lb. | 10 lb. | | | | | | |
| | • | • | | | | | | |
| Torched | • | • | Torch or Hot Asphalt | Torch or Hot Asphalt | Torch or Hot Asphalt | Torch or Hot Asphalt | • | • |
| | • | • | | | | | • | • |
| Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level |
| | | | | | | | | |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| | | | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| | | | • | • | • | • | | |
| • | • | • | • | • | • | • | • | • |
| Any skinned insulation, wood, metal, concrete, protection board | | | | | | | | |
| None | None | None | None | None | None | None | | |
| 10°F-120°F | 40°F-115°F | 40°F-115°F | 14°F-100°F | 14°F-100°F | 14°F-100°F | 14°F-100°F | 35°F-120°F | 35°F-120°F |
| Same Mat'l | 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 | Same Mat'l | Same Mat'l |
| Torched | Torch | Torch | Torch and Hot Asphalt | Torch or Hot Asphalt | Torch or Hot Asphalt | Torch or Hot Asphalt | Bitumen/Adhesive | Bitumen/Adhesive |
| No | No | No | No | No | No | No | No | Yes |
| Italy | USA | USA | Puerto Rico USA | Puerto Rico USA | Puerto Rico USA | Puerto Rico USA | USA | England |
| Italy | USA | USA | Puerto Rico USA | Puerto Rico USA | Puerto Rico USA | Puerto Rico USA | USA | USA |
| 1969 | | | | | | | | 1965 |
| 1978-New Jersey | | | 1979-San Juan, P.R. | 1979-San Juan, P.R. | 1979-San Juan, P.R. | 1979-San Juan, P.R. | 1978-Cleveland | 1976-Cleveland |
| 4,100,000 | | | | | | | | 5,000,000+ |
| 175,000 | | | 500,000 | 409,000 | 350,000 | 300,000 | 75,000 | 80,000+ |
| 10 | 10 | 10 | 5 & 10 | 5 & 10 | 5 & 10 | 5 & 10 | 10 | 10 |
| | | | • | • | • | • | | |
| | • | • | | | | | | |
| • | | | • | • | • | • | • | • |
| | | | | | | | None | • |
| • | | | • | • | • | • | | |
| | | | • | • | • | • | | |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| | | | See Specifications | See Specifications | See Specifications | See Specifications | | |
| | | | • | • | • | | • | • |
| | | | | | | | • | • |
| • | | | | | | | | |
| Distributors | Direct | | Distributors | | | | Company Sales Force | |
| 5 | | | | | | | 58 | |
| No | No | | Yes | | | | Yes | |
| Field, Seminars | Yes | | Seminars — on job training | | | | Field, Seminars | |
| Charles Whitley | T. Malloy | | Manuel del Rio | | | | Richard DeBacco | |
| Elmer Favaro | G. Kurtzhals | | Rogelio Mur | | | | Joseph Fogel | |
| BOWE COMPANY, INC. (DIBITEN) | CONSOLIDATED PROTECTIVE COATINGS CORPORATION | | DANOSA CARIBBEAN, INC. | | | | THE GARLAND COMPANY, INC. | |

*includes gravel

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

| PRODUCT NAME► | FLINTLASTIC | GUIANA POLYGLASS | GUIANA POLYGLASS ALUMINUM | GUIANA POLYGLASS POLYESTER | GUIANA POLYGLASS GRANULAR | GUIANA POLYPREN |
|---|---|---|---|---|---|---|
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Thickness (mils) | 104 | 158 | 160 | 160 | 170 | 83 |
| b) Top surface | Granules | Plain | Aluminum | Plain | Mineral | Plain |
| c) Reinforcement | PVA & Glass Mat. | Fiberglass | Fiberglass | Polyester | Polyester | Non-woven Fiber |
| d) Reinforcement | | | | | | |
| e) Color | Grey-Green | Black | Aluminum | Black | Optional | Black |
| f) Installed wt. (lbs. per sq. ft. w/o ballast) | 148 lbs. Min.-2 Ply Sys. | .88 | .88 | .88 | .95 | .50 |
| **2. COATING REQUIRED** | | None | None | None | None | None |
| **3. USE** | | | | | | |
| a) New roofing | ● | ● | ● | ● | ● | ● |
| b) Reroofing | ● | ● | ● | ● | ● | ● |
| **4. FIELD LAP JOINT METHOD** | Hot Mop | Torch | Torch | Torch | Torch | Hot Air |
| **5. TYPE OF ROOF SYSTEM** | | | | | | |
| a) Loose laid/ballasted (ballast: lbs. per sq. ft.) | | | | | | 10 lbs |
| b) Partially adhered-method | | | | | | Hot Asphalt |
| c) Fully adhered-method | Hot Mop | Torch | Torch | Torch | Torch | Hot Asphalt |
| 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 | 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 | −30°F-150°F |
| **10. FLASHING MATERIAL** | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l |
| **11. FLASHING METHOD** | Hot Adhesive | Torch | Torch | Torch | Torch | Torch |
| **12. PRE-FORMED ACCESS AVAILABLE** | | No | No | No | No | Yes |
| **13. COUNTRY OF ORIGIN** | Holland | Italy | Italy | Italy | Italy | Italy |
| **14. COUNTRY OF MANUFACTURE** | Holland | Italy | Italy | Italy | Italy | Italy |
| **15. YEAR FIRST COMMERCIAL USE** | | | | | | |
| a) Foreign (Year) | 1972 | 1960 | 1960 | 1960 | 1960 | 1960 |
| b) U.S.A. (Year, City-first installed) | 1980-Jersey City | 1978-New Jersey | 1978-New Jersey | 1978-New Jersey | 1978-New Jersey | 1978-New Jersey |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq. ft.) | | | | | | |
| a) Foreign | >100,000 | >1,000,000 | >1,000,000 | >1,000,000 | >1,000,000 | >1,000,000 |
| b) U.S.A. | <20,000 | 50,000 | 50,000 | 50,000 | 50,000 | 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. UL** *(See "Important Notes")* | | Pending | Pending | Pending | Pending | Pending |
| **20. FM** *(See "Important Notes")* | | Pending | Pending | Pending | Pending | Pending |
| **21. METHOD OF DISTRIB.** | Distributors | Distributors | | | | |
| **22. # REGIONAL SERVICE LOCATIONS** | 3 | 23 | | | | |
| **23. LICENSED APPLICATOR AGREEMENT** | Yes | No | | | | |
| **24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)** | Field, Seminars | Field, Seminars | | | | |
| **25. SALES INFORMATION; CONTACT** | C.T. Derry | B. Mitzman | | | | |
| **26. TECHNICAL INFORMATION; CONTACT** | D.R. Hughes | B. Mitzman | | | | |
| **COMPANY►** | GENSTAR BUILDING MATERIALS COMPANY | GUIANA CORPORATION OF AMERICA & POLYPREN ROOFING OF AMERICA | | | | |

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

| HEY 'DI ECB | NURALITE | HYLOAD 150E | DURALASTA P | DURALASTA M | AQUASHIELD 2001 AD | POLY 4 | OWENS-CORNING DERBIGUM HPS | OWENS-CORNING DERBIGUM SP |
|---|---|---|---|---|---|---|---|---|
| 83 | 100 | 150 | 160 | 160 | 60±5 | 160 | 160 | 160 |
| | Asphalt | Black | Optional | Slate Chip | Polyethylene | Modified Bitumen | Modified Bitumen | Modified Bitumen |
| ion-woven Fiberglass | Asbestos | Dispersed | Polyester | Polyester | Polyester | Polyester | Polyester | Polyester |
| | | Fiber | | | Polyester | | Glasfiber Mat/Web | Glasfiber Mat |
| Black | Black *Turns Grey w/Aging | Black | Black | Green/Blue | Grey/Black | Black | Black | Black |
| .50 | .50 | .40 | 1.0 | 1.0 | .80 | 0.88 | 1.0 | 1.0 |
| None | None | None | Surfacing | None | Yes | Aluminum | None | None |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Hot Air Welding | Torch | Hot Asphalt | Torch/Hot Asphalt | Torch/Hot Asphalt | Self-Adhered | Torch | Torch | Torch |
| 10 lbs | | | | | | | | |
| Hot Asphalt | Spot Adhered | | Torch/Hot Asphalt | Torch/Hot Asphalt | | Torch | | |
| Hot Asphalt | | Hot Asphalt | Torch/Hot Asphalt | Torch/Hot Asphalt | Primer | Torch | Torch | Torch |
| | | | Torch/Hot Asphalt | Torch/Hot Asphalt | | Torch | | |
| Dead Level | | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level |
| ● | | ● | | | ● | ● | ●* | ●* |
| ● | ●* | ● | | | | ● | ●* | ●* |
| ● | | ● | | | ● | ● | ●* | ●* |
| ● | | ● | | | ● | ● | ● | ● |
| ● | ●* | | | | | ● | ●* | ●* |
| ● | | ● | | | | ● | ●* | ●* |
| | *Composite | Glass fiber base sheet | 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 | | *Overlayment Required | *Overlayment Required |
| ● | None | | | | | | 1,2,3 | 2,3 |
| −30°F-150°F | No Restrictions | 40° Min. | | | 40°F Min. | 0°F-110°F | 25°F-140°F | 25°F-140°F |
| ECB Cold Adhesive | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l |
| Hot Asphalt | Adhesive | Hot Asphalt | Torch/Hot Asphalt | Torch/Hot Asphalt | Primer | Torch | Torch | Torch |
| Yes | No | No | No | No | Yes | No | No | No |
| W. Germany | England | England | Netherlands | Netherlands | USA | Italy | Italy | Italy |
| USA | England | USA | Germany | Germany | USA | USA | USA | USA |
| 1964 | 1947 | 1965 | 1978 | 1978 | | 1967 | | |
| 1982-St. Louis | 1978-Orlando | 1976-Cleveland | 1982-St. Louis | 1982-St. Louis | | 1976-Detroit | 1981-Kansas City | 1978-Valley Forge, PA |
| Approx. 10,000,000 | | >5,000,000 | 25,000 | 15,000 | | 15,000,000 | | 15,000,000 |
| 2,000 | | 100,000 | 450 | 600 | | 100,000 | 400,000 | 100,000 |
| 10 | 10-Labor 20-Material | 10 | 10 | 10 | 10 | 5 | 10 | 10 |
| | | | | | | +5 | | |
| | | | ● | ● | ● | ● | | |
| ● | ● | ● | | | | | ● | ● |
| | ● | ● | ● | ● | | | ● | ● |
| | | | | | ● | | | |
| ● | | | | | | | | |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | ● | ● | ● | ● | ● | ● | ● | ● |
| See Literature | | | | | | | | |
| | ● | ● | | | | ● | ● | ● |
| ● | ● | ● | | | | Pending | ● | ● |
| Distributors | Hitchens Amer. | Distributors | Distrs./Contrs. | | Direct | Distributors | Distr./Direct | |
| 12 | 4 | 4 | 3 | | | 1 | Throughout USA | |
| Yes | Yes | No | | | Yes | Pending | Yes | |
| Field, Seminars, Factory | Seminars & Field Training | Field | Field | | Field, Factory, Seminars | Field, Seminars | Field, Seminars | |
| Harold M. Muench | Bob Ferrell | Alex W. Harkness | T. J. Evans | | R. Wood | John Butler | Local Branch Office | |
| Harold M. Muench | Dick Bray | | Hugo Landheer | | R. Wood | John Butler | Local Branch Office | |
| HEY 'DI UPM CORPORATION | HITCHENS AMERICA INC. | HYLOAD, INC. | THE KIMMENADE CORPORATION | | J & P PETROLEUM PRODUCTS | NORD BITUMI U.S., INC. | OWENS-CORNING FIBERGLAS CORPORATION | |

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

| PRODUCT NAME► | ROYAL | VERAL (ALUMINUM FACED) | VERAL (STAIN/STEEL) | VERAL (COPPER) | PARAFOR-50 | PARADIENE-30 |
|---|---|---|---|---|---|---|
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Thickness (mils) | 150 | 130 | 130 | 130 | 150 | 95 |
| b) Top surface | Modified Bitumen | Aluminum | Stain/Steel | Copper | Mineral | Mineral |
| c) Reinforcement | Polyester Non-Woven Fabric | Glass Scrim | Glass Scrim | Glass Scrim | Polyester | Glass Mat |
| d) Reinforcement | | N/A | N/A | N/A | N/A | N/A |
| e) Color | Black | Aluminum | Stain/Steel | Copper | Various | Various |
| f) Installed wt. (lbs. per sq. ft. w/o ballast) | .82 | .86 | .86 | .86 | 1.47 | .77 |
| **2. COATING REQUIRED** | Aluminum | None | None | None | None | None |
| **3. USE** | | | | | | |
| a) New roofing | • | • | • | • | • | • |
| b) Reroofing | • | • | • | • | • | • |
| **4. FIELD LAP JOINT METHOD** | Torch | Hot/Torch | Hot/Torch | Hot/Torch | Hot/Torch | |
| **5. TYPE OF ROOF SYSTEM** | | | | | | |
| a) Loose laid/ballasted (ballast: lbs. per sq. ft.) | | | | | | |
| b) Partially adhered-method | • | | | | | |
| c) Fully adhered-method | • | Hot/Torch | Hot/Torch | Hot/Torch | Hot/Torch | Hot Asphalt |
| d) Protected Membrane Roofing Assembly | | | | | | Hot Asphalt |
| **6. MINIMUM SLOPE** | Dead Level | ½ Inch | ½ Inch | ½ Inch | ½ Inch | Dead Level |
| **7. USE OVER** | | | | | | |
| a) Perlite | • | • | • | • | • | |
| b) Urethane | | | | | | |
| c) Wood fibre | | • | • | • | • | |
| d) Fibre glass | • | • | • | • | • | |
| e) Expanded polystyrene | | | | | | |
| f) Felt faced composites | • | | | | | |
| g) Other | | 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 |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | | | | | | |
| **9. WORKABLE TEMP RANGE** | 15°F-115°F | | | | | |
| **10. FLASHING MATERIAL** | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same/Veral | Veral |
| **11. FLASHING METHOD** | Torch | Torch | Torch | Torch | Torch | Torch |
| **12. PRE-FORMED ACCESS AVAILABLE** | No | Unnecessary | Unnecessary | Unnecessary | Unnecessary | Unnecessary |
| **13. COUNTRY OF ORIGIN** | Italy | France | France | France | France | France |
| **14. COUNTRY OF MANUFACTURE** | USA | France | France | France | France | USA |
| **15. YEAR FIRST COMMERCIAL USE** | | | | | | |
| a) Foreign (Year) | 1967 | | | | | 1968 |
| b) U.S.A. (Year, City-first installed) | 1978-Detroit | | | | | 1979-Jacksonville |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq. ft.) | | | | | | |
| a) Foreign | None | | | | | |
| b) U.S.A. | 19,000 | | | | | |
| **17. WARRANTY** *(See "Important Notes")* | | | | | | |
| a) Duration (years) | 6 | 10 | 10 | 10 | 10 | 10 |
| b) Renewable after inspection | +6 Yrs. (Alum. Coat) | No | 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 Siplast | Contact Siplast | Contact Siplast | Contact Siplast | Contact Siplast |
| **19. UL** *(See "Important Notes")* | • | | | | | |
| **20. FM** *(See "Important Notes")* | • | | | | | |
| **21. METHOD OF DISTRIB.** | Sales Force | Direct | | | | |
| **22. # REGIONAL SERVICE LOCATIONS** | Throughout USA | 5 | | | | |
| **23. LICENSED APPLICATOR AGREEMENT** | No | Yes | | | | |
| **24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)** | Field, Seminars | Field, Seminars | | | | |
| **25. SALES INFORMATION; CONTACT** | Pat Pate | J. Mollenhoff | | | | |
| **26. TECHNICAL INFORMATION; CONTACT** | Royal Oil Company | G. Baumgardner | | | | |
| **COMPANY►** | ROYAL OIL COMPANY | SIPLAST, INC. | | | | |

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

| PARADIENE-20 | SWEPCO UNI + SHIELD | AWAPLAN | RHOFLEX | MIGHTYPLATE | TROPISEAL | BRAI SP4 | GRM-120 | GRM-230 |
|---|---|---|---|---|---|---|---|---|
| 90 | 150 | 160 | 160 | 150 | 157 | 150 | 50 | 50 |
| Plain | Modified Asphalt | Granule | Can Be Coated | Modified Bitumen | Modified Bitumen | Modified Bitumen | Polyethylene | Polyethylene |
| Glass Mat | Polyester | Polyester | Polyester | Polyester Non-Woven Fabric | Polyester | Polyester | Alum. Foil | |
| N/A | | | | | | | | |
| Black | Black | White/Black | Black | Black | Grey/Black | Black | Gray/Black | Gray/Black |
| .48 | .88 | 1.05 | .88 | .82 | .88 | .88 | .34 | .34 |
| Paradiene 30 | | Emulsion for UL Approval | None | Aluminum | None | Aluminum | White | Gravel |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| Hot Asphalt | | Hot Asphalt/Torch | Torch | Torch | Torch | Torch | Self-adhesive | Self-adhesive |
| | | | | | 10 | | | |
| Hot Asphalt | • | | | • | | | Nailed Laps | Nailed Laps |
| Hot Asphalt | • | Hot Asphalt or Torch | Torch | • | | Torch | Self-adhesive | Self-adhesive |
| Hot Asphalt | | | DOW IRMA | | | | | |
| Dead Level | ¼" | ¼" per ft. | Dead Level | Dead Level | Dead Level | Dead Level | To Drain | To Drain |
| • | • | • | • | • | • | • | • | • |
| | • | Consult Tamko | • | • | • | • | | |
| • | • | • | • | | •* | • | • | • |
| • | • | • | • | • | • | • | • | • |
| | | Consult Tamko | • | | •* | • | • | • |
| | • | • | • | • | • | • | | |
| Cellular Glass Always use with Paradiene 30 as a System | • | | • | | *Base Sheet Over Non-prefaced Insulation | | Isocyanurate, Foamed Glass | Isocyanurate, Foamed Glass |
| | | None | Alaska | | None | 1 | None | None |
| | 5°F-125°F | 50°F-120°F | 0°F-130°F | 15°F-115°F | 0°F-120°F | 0°F-120°F | 40°F-120°F | 40°F-120°F |
| Veral | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l | Same Mat'l |
| Torch | Torch | Hot Asphalt/Torch | Torch | Torch | Torch | Torch | Self-adhesive | Self-adhesive |
| Unnecessary | Unnecessary | Unnecessary | No | No | No | No | No | No |
| France | | W. Germany | Italy | Italy | Italy | Italy | USA | USA |
| USA | USA | USA | USA & Italy | USA | USA | USA | USA | USA |
| 1968 | 1963 | 1970 | 1970 | 1967 | 1965 | 1961 | | |
| 1979-Jacksonville | 1981-Fort Worth | 1978-Grand Rapids | 1977-Westchester | 1978-Detroit | 1978-Beaumont | 1978-Detroit | 1979-Phoenix | 1975-Toledo |
| | | Not Available | Millions | None | | 10,000,000 | | |
| | Hundreds of Thousands | Not Reported | Hundreds of Thousands | 19,000 | | 117,500 | >250,000 | >250,000 |
| 10 | 12 | 5 or 10 | 10 + 5 | 6 | 5 or 10 | 12 | 10 | 10 |
| No | Yes | After 5 Yrs. | • | +6 Yrs. (Alum. Coat) | No | No | | |
| | • | | | • | | | | |
| • | • | • | • | | • | • | • | • |
| • | Yes | | • | | • | • | • | • |
| | • | | | | | | | |
| | • | 100 | | | | | | |
| • | • | Consult Tamko | • | • | • | • | • | • |
| • | • | | • | • | • | • | • | • |
| Contact Siplast | Contact SWPECO | | | | | | | |
| | • | • | • | • | • | • | • | • |
| | • | • | | • | • | • | • | • |
| Direct | Direct | Distributors | Distributors | Sales Force | Sales Force | Distributors | Direct Sale | |
| 5 | Every State | 8 | 22 | Throughout USA & Canada | 2 | 12 | 5 | |
| Yes | | • | Yes | No | Yes | Yes | Yes | |
| Field, Seminars | Factory & Field Seminars | Seminars | Field, Seminars | Field, Seminars | Field, Seminars | Seminars, Factory | Field, Regional Seminars | |
| J. Mollenhoff | J. Ashworth | J. Pearman | Gardner Rowbotham | Leroy Groce | Tropical | Bailey King | Regional Office | |
| G. Baumgardner | Riad Nimri | P. Danials | Mat Bockh | Mark Buse | Tropical | Craig Noble | Regional Office | |
| SIPLAST, INC. | SOUTHWESTERN PETROLEUM CORPORATION | TAMKO ASPHALT PRODUCTS, INC. | TELTEX, INC. | TEXAS REFINERY CORPORATION | TROPICAL INDUSTRIAL COATINGS, INC. | U.S. INTEC, INC. | W. R. GRACE & CO. *continued →* | |

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

| PRODUCT NAME► | GRM-350 | GRM-500 | | | | |
|---|---|---|---|---|---|---|
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Thickness (mils) | 50 | 40 | | | | |
| b) Top surface | Polyethylene | Polyvinyl Fluoride | | | | |
| c) Reinforcement | | Polyethylene | | | | |
| d) Reinforcement | | Alum. Foil | | | | |
| e) Color | Grey/Black | White | | | | |
| f) Installed wt. (lbs. per sq. ft. w/o ballast) | .34 | .30 | | | | |
| **2. COATING REQUIRED** | Insul. Board | None | | | | |
| **3. USE** | | | | | | |
| a) New roofing | • | • | | | | |
| b) Reroofing | • | • | | | | |
| **4. FIELD LAP JOINT METHOD** | Self-adhesive | Self-adhesive | | | | |
| **5. TYPE OF ROOF SYSTEM** | | | | | | |
| a) Loose laid/ballasted (ballast lbs. per sq. ft.) | | | | | | |
| b) Partially adhered-method | | Nailed Laps | | | | |
| c) Fully adhered-method | Self-adhesive | Self-adhesive | | | | |
| d) Protected Membrane Roofing Assembly | Self-adhesive | | | | | |
| **6. MINIMUM SLOPE** | To Drain | To Drain | | | | |
| **7. USE OVER** | | | | | | |
| a) Perlite | | • | | | | |
| b) Urethane | | | | | | |
| c) Wood fibre | | • | | | | |
| d) Fibre glass | | • | | | | |
| e) Expanded polystyrene | | • | | | | |
| f) Felt faced composites | | | | | | |
| g) Other | Concrete, Gypsum, Plywood | Isocyanurate Foamed Glass | | | | |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | None | None | | | | |
| **9. WORKABLE TEMP RANGE** | 40°-120°F | 40°-120°F | | | | |
| **10. FLASHING MATERIAL** | GRM-120 or GRM-500 | Same Mat'l | | | | |
| **11. FLASHING METHOD** | Self-adhesive | Self-adhesive | | | | |
| **12. PRE-FORMED ACCESS AVAILABLE** | No | No | | | | |
| **13. COUNTRY OF ORIGIN** | USA | USA | | | | |
| **14. COUNTRY OF MANUFACTURE** | USA | USA | | | | |
| **15. YEAR FIRST COMMERCIAL USE** | | | | | | |
| a) Foreign (Year) | 1971-Toronto | | | | | |
| b) U.S.A. (Year, City-first installed) | 1972-Boston | 1980-Glenview | | | | |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq. ft.) | | | | | | |
| a) Foreign | | | | | | |
| b) U.S.A. | <250,000 | <250,000 | | | | |
| **17. WARRANTY** *(See "Important Notes")* | | | | | | |
| a) Duration (years) | 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** | Only in PRMASystems | | | | | |
| **19. UL** *(See "Important Notes")* | • | • | | | | |
| **20. FM** *(See "Important Notes")* | | • | | | | |
| **21. METHOD OF DISTRIB.** | Direct Sale | | | | | |
| **22. # REGIONAL SERVICE LOCATIONS** | 5 | | | | | |
| **23. LICENSED APPLICATOR AGREEMENT** | Yes | | | | | |
| **24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)** | Field, Regional Seminars | | | | | |
| **25. SALES INFORMATION; CONTACT** | Regional Office | | | | | |
| **26. TECHNICAL INFORMATION; CONTACT** | Regional Office | | | | | |
| **COMPANY►** | 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 STANDARD | | | ARC ALUMINUM | | |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade |
| | 1a,2a | C | 2 | 1a,2a | C | 1 | 1a,2a | B | 1 |
| **1. BREAKING STRENGTH** | | | | | | | | | |
| **GRADE 1**-Min. 66 lbf (294N) | MD NA lbf XD NA lbf | | | MD 111 lbf XD 480 lbf | | | MD 106 lbf XD 71 lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD 208 lbf XD 180.4 lbf | | | MD 111 lbf XD 480 lbf | | | MD 106 lbf XD 71 lbf | | |
| **2. ULTIMATE ELONGATION (ELONGATION AT BREAK)** | | | | | | | | | |
| **GRADE 1**-Min. 4.0% | MD NA % XD NA % | | | MD 38 % XD 44 % | | | MD 40 % XD 38 % | | |
| **GRADE 2**-Min. 8.0% | MD 72.38 % XD 64.76 % | | | MD 38 % XD 44 % | | | MD 40 % XD 38 % | | |
| **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 | | | 18,770 | | | 18,840 | | |
| **GRADE 2**-Min. 14700 | 66,968 | | | 18,770 | | | 18,840 | | |
| **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) | | | | 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. | | | NA 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 | | | Pass | | | Pass | | |
| **GRADE 2** - 3.6 ft. lbf (4.9J) (Pass/Fail) | Pass | | | Pass | | | 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 168 lbf XD 442 lbf | | | MD 84 lbf XD 76 lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD 166.32 lbf XD lbf | | | MD 168 lbf XD 442 lbf | | | MD 84 lbf XD 76 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 144 lbf XD 392 lbf | | | MD 99 lbf XD 73 lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD 176.8 lbf XD lbf | | | MD 144 lbf XD 392 lbf | | | MD 99 lbf XD 73 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 145 lbf XD 402 lbf | | | MD 95 lbf XD 63 lbf | | |
| **GRADE 2**-Min 176 lbf (785N) | MD 175.48 lbf XD lbf | | | MD 145 lbf XD 402 lbf | | | MD 95 lbf XD 63 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 91 % XD 92 % | | | 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) | Pass | | | | | | | | |
| LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction | **THE AMERICAN LUBRICANTS CO.** | | | **AMERICAN ROOFING CORP.** | | | | | |
| NOTE: Blank lines = applicable data not reported by manufacturer. | | | | | | | | | |

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

| ARC PREMIUM | | | ARC GRANULAR | | | SAM | | | DIBITEN | | | CONSO-GARD | | | CONSO-GARD II | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade |
| 1a,2a | C | 1 & 2 | 1a,2a | A | 1 & 2 | | | | 2a | A,C | 2 | 1a,1b,2a,2b,2c | C | 1 | 1a,1b,2a,2b,2c | C | 2 |
| MD 164 lbf XD 134 lbf | | | MD 158 lbf XD 124 lbf | | | MD ___ lbf XD ___ lbf | | | MD NA lbf XD NA lbf | | | MD 67.2 lbf XD 44.8 lbf | | | MD NA lbf XD NA lbf | | |
| MD 164 lbf XD 134 lbf | | | MD 158 lbf XD 124 lbf | | | MD ___ lbf XD ___ lbf | | | MD 208 lbf XD 180.4 lbf | | | MD NA lbf XD NA lbf | | | MD ___ lbf XD ___ lbf | | |
| MD 58 % XD 81 % | | | MD 89 % XD 106 % | | | MD ___ % XD ___ % | | | MD NA % XD NA % | | | MD 35 % XD ___ % | | | MD NA % XD NA % | | |
| MD 58 % XD 81 % | | | MD 89 % XD 106 % | | | MD ___ % XD ___ % | | | MD 48 % XD 48 % | | | MD NA % XD NA % | | | MD ___ % XD ___ % | | |
| NA | | | NA | | | | | | NA | | | | | | NA | | |
| 42,300 | | | 62,600 | | | | | | NA | | | | | | NA | | |
| 42,300 | | | 62,600 | | | | | | | | | NA | | | | | |
| < 1.0 g | | | < 1.0 g | | | ___ g | | | 0.0 g | | | nil g | | | ___ g | | |
| MD < 1.0 % XD < 1.0 % | | | MD < 1.0 % XD < 1.0 % | | | MD ___ % XD ___ % | | | MD 1.0 % XD 1.0 % | | | MD nil % XD nil % | | | MD ___ % XD ___ % | | |
| Pass | | | Pass | | | | | | NA | | | Pass | | | | | |
| Pass | | | Pass | | | | | | Pass | | | | | | Pass | | |
| 0.132 g | | | 0.132 g | | | ___ g | | | 0.062 g | | | ___ g | | | ___ g | | |
| NA mm | | | NA mm | | | ___ mm | | | NA mm | | | ___ mm | | | ___ mm | | |
| Pass | | | Pass | | | | | | NA | | | Pass | | | NA | | |
| Pass | | | Pass | | | | | | Pass | | | NA | | | Pass | | |
| Pass | | | Pass | | | | | | Pass | | | Pass | | | Pass | | |
| MD 128 lbf XD 104 lbf | | | MD 168 lbf XD 130 lbf | | | MD ___ lbf XD ___ lbf | | | MD NA lbf XD NA lbf | | | MD ___ lbf XD ___ lbf | | | MD NA lbf XD NA lbf | | |
| MD 128 lbf XD 104 lbf | | | MD 168 lbf XD 130 lbf | | | MD ___ lbf XD ___ lbf | | | MD 171.8 lbf XD ___ lbf | | | MD NA lbf XD NA lbf | | | MD ___ lbf XD ___ lbf | | |
| Pass | | | Pass | | | | | | | | | | | | | | |
| MD 155 lbf XD 137 lbf | | | MD 140 lbf XD 123 lbf | | | MD ___ lbf XD ___ lbf | | | MD NA lbf XD NA lbf | | | MD ___ lbf XD ___ lbf | | | MD NA lbf XD NA lbf | | |
| MD 155 lbf XD 137 lbf | | | MD 140 lbf XD 123 lbf | | | MD ___ lbf XD ___ lbf | | | MD 177.3 lbf XD ___ lbf | | | MD NA lbf XD NA lbf | | | MD ___ lbf XD ___ lbf | | |
| Pass | | | Pass | | | | | | Pass | | | | | | | | |
| MD 155 lbf XD 129 lbf | | | MD 164 lbf XD 127 lbf | | | MD ___ lbf XD ___ lbf | | | MD NA lbf XD NA lbf | | | MD ___ lbf XD ___ lbf | | | MD NA lbf XD NA lbf | | |
| MD 155 lbf XD 129 lbf | | | MD 164 lbf XD 127 lbf | | | MD ___ lbf XD ___ lbf | | | MD 174.9 lbf XD ___ lbf | | | MD NA lbf XD NA lbf | | | MD ___ lbf XD ___ lbf | | |
| Pass | | | Pass | | | | | | Pass | | | | | | | | |
| NA g | | | .01g/cm² g | | | ___ g | | | ___ g | | | NA g | | | NA g | | |
| | | | | | | | | | Pass | | | | | | | | |
| MD ___ % XD ___ % | | | MD ___ % XD ___ % | | | MD ___ % XD ___ % | | | MD 190.1 % XD 166.0 % | | | MD ___ % XD ___ % | | | MD ___ % XD ___ % | | |
| MD ___ % XD ___ % | | | MD ___ % XD ___ % | | | MD ___ % XD ___ % | | | MD 65.9 % XD 59.35 % | | | MD ___ % XD ___ % | | | MD ___ % XD ___ % | | |
| | | | | | | | | | NA | | | | | | | | |
| | | | | | | | | | Pass | | | | | | | | |
| AMERICAN ROOFING CORP. | | | | | | APACHE | | | BOWE COMPANY, INC. (DIBITEN) | | | CONS. PROT. COATINGS CORP. | | | | | |

# 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 | GLASDAN R36 | | | ESTERDAN R-36 | | | GLASDAN AL-80 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade |
| | 2a | C | 1 | 2a | C | 2 | 1a | B | 1 |
| **1. BREAKING STRENGTH** | | | | | | | | | |
| **GRADE 1**-Min. 66 lbf (294N) | MD * lbf XD * lbf | | | MD NA lbf XD NA lbf | | | MD * lbf XD * lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD NA lbf XD NA 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 NA % XD NA % | | | MD * % XD * % | | |
| **GRADE 2**-Min. 8.0% | MD NA % XD NA % | | | 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 | | | | 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 | | | Pass | | |
| **TYPE 2**-After testing at – 14°F ( – 10°C) (Pass/Fail) | Pass | | | Pass | | | NA | | |
| **6. WATER VAPOR TRANSMISSION** | | | | | | | | | |
| Max. 1.0g./m² x 24h. | 6.29 g | | | 6.29 g | | | 0.024 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 | | | Pass | | | NA | | |
| **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 * lbf XD lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD * lbf XD 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 * lbf XD lbf | | | MD NA lbf XD NA lbf | | | MD * lbf XD lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD * lbf XD 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 Plus Freeze Thaw Cycles** | | | | | | | | | |
| **GRADE 1**-Min 66 lbf (294N) | MD * lbf XD lbf | | | MD NA lbf XD NA lbf | | | MD * lbf XD lbf | | |
| **GRADE 2**-Min 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD * lbf XD lbf | | | MD NA lbf XD NA 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 | | | Pass | | | Pass | | |
| 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** | Danosa note: *indicates tests performed according to ASTM specifications (not CGSB standard 37-GP-56M); test results available from manufacturer. | | | | | | | | |
| Shall show no cracking, splitting or loss of adhesion | | | | | | | | | |
| **TYPE 1.a. and 1.b.**-at – 22°F ( – 30°C) (Pass/Fail) | NA | | | NA | | | NA | | |
| **TYPE 2.a. and 2.b.**-at – 14° ( – 10°C) (Pass/Fail) | | | | | | | NA | | |

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

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

**DANOSA CARRIBBEAN, INC.**

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

| ESTERDAN RM | | | STRESSPLY | | | PITCHPLY | | | FLINTLASTIC | | | GUIANA POLYGLAS | | | GUIANA POLYGLAS ALUM. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade |
| 1a | A | 2 | | C | 1 & 2 | | C | 1 & 2 | 1a | A | 1 | 1a,2a | C | 1 & 2 | 1a,2a | B | 1 |
| MD NA lbf XD NA lbf | | | MD 318 lbf XD 324 lbf | | | MD 247 lbf XD 157 lbf | | | MD 177 lbf XD 150 lbf | | | MD 162 lbf XD 132 lbf | | | MD 105 lbf XD 70 lbf | | |
| MD * lbf XD * lbf | | | MD 318 lbf XD 324 lbf | | | MD 247 lbf XD 157 lbf | | | MD NA lbf XD NA lbf | | | MD 162 lbf XD 132 lbf | | | MD 105 lbf XD 70 lbf | | |
| MD NA % XD NA % | | | MD *340 % XD *240 % | | | MD 100 % XD 120 % | | | MD 4.35 % XD 4.0 % | | | MD 56 % XD 80 % | | | MD 39 % XD 37 % | | |
| MD * % XD * % | | | MD *340 % XD *240 % | | | MD 100 % XD 120 % | | | MD NA % XD NA % | | | MD 56 % XD 80 % | | | MD 39 % XD 37 % | | |
| NA | | | NA | | | NA | | | NA | | | NA | | | NA | | |
| NA | | | 14,170 | | | 132,000 | | | 3,466 | | | 42,200 | | | 18,840 | | |
| * | | | 14,170 | | | | | | NA | | | 42,200 | | | 18,840 | | |
| * g | | | g | | | 0.051 g | | | 0.5 g | | | <1.0 g | | | <1.0 g | | |
| MD % XD % | | | MD % XD % | | | MD −0.5 % XD 0.0 % | | | MD 0.0 % XD 0.0 % | | | MD <1.0 % XD <1.0 % | | | MD <1.0 % XD <1.0 % | | |
| | | | | | | | | | Pass | | | Pass | | | Pass | | |
| Pass | | | | | | | | | Pass | | | Pass | | | Pass | | |
| 0.065 g | | | g | | | 0.5 g | | | 0.51 g | | | 0.132 g | | | 0.132 g | | |
| NA mm | | | NA mm | | | NA mm | | | NA mm | | | NA mm | | | mm | | |
| NA | | | | | | | | | Pass | | | Pass | | | Pass | | |
| Pass | | | | | | | | | NA | | | Pass | | | NA | | |
| | | | | | | | | | Pass | | | Pass | | | Pass | | |
| MD NA lbf XD NA lbf | | | MD lbf XD lbf | | | MD lbf XD lbf | | | MD 140 lbf XD 100 lbf | | | MD 126 lbf XD 102 lbf | | | MD 82 lbf XD 74 lbf | | |
| MD * lbf XD lbf | | | MD lbf XD lbf | | | MD lbf XD lbf | | | MD NA lbf XD NA lbf | | | MD 126 lbf XD 102 lbf | | | MD 82 lbf XD 74 lbf | | |
| Pass | | | | | | | | | Pass | | | Pass | | | Pass | | |
| MD NA lbf XD NA lbf | | | MD lbf XD lbf | | | MD lbf XD lbf | | | MD 130 lbf XD 90 lbf | | | MD 153 lbf XD 135 lbf | | | MD 97 lbf XD 73 lbf | | |
| MD * lbf XD lbf | | | MD lbf XD lbf | | | MD lbf XD lbf | | | MD NA lbf XD NA lbf | | | MD 153 lbf XD 135 lbf | | | MD 97 lbf XD 73 lbf | | |
| Pass | | | | | | | | | Pass | | | Pass | | | Pass | | |
| MD NA lbf XD NA lbf | | | MD lbf XD lbf | | | MD lbf XD lbf | | | MD 130 lbf XD 90 lbf | | | MD 153 lbf XD 127 lbf | | | MD 93 lbf XD 61 lbf | | |
| MD * lbf XD lbf | | | MD lbf XD lbf | | | MD lbf XD lbf | | | MD NA lbf XD NA lbf | | | MD 153 lbf XD 127 lbf | | | MD 93 lbf XD 61 lbf | | |
| | | | | | | | | | Pass | | | Pass | | | Pass | | |
| g | | | NA g | | | NA g | | | 0.1 g | | | NA g | | | NA g | | |
| Pass | | | Pass | | | Pass | | | Pass | | | | | | | | |
| * * MD % XD % | | | MD % XD % | | | 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 % | | |
| | | | | | | | | | Pass | | | | | | | | |
| NA | | | | | | | | | NA | | | | | | | | |
| DANOSA CARIBBEAN, INC. | | | THE GARLAND CO., INC. | | | | | | GENSTAR | | | GUIANA | | | | | |

# 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 | GUIANA POLYGLASS POLYESTER | | | GUIANA POLYGLASS MINERAL | | | GUIANA POLYPREN | | |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade |
| | 1a,2a | C | 1 | 1a,2a | A | 1 & 2 | | | |
| **1. BREAKING STRENGTH** | | | | | | | | | |
| **GRADE 1**-Min. 66 lbf (294N) | MD 110 lbf XD 478 lbf | | | MD 156 lbf XD 122 lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD 110 lbf XD 478 lbf | | | MD 156 lbf XD 122 lbf | | | MD ____ lbf XD ____ lbf | | |
| **2. ULTIMATE ELONGATION (ELONGATION AT BREAK)** | | | | | | | | | |
| **GRADE 1**-Min. 4.0% | MD 36 % XD 43 % | | | MD 87 % XD 104 % | | | MD ____ % XD ____ % | | |
| **GRADE 2**-Min. 8.0% | MD 36 % XD 43 % | | | MD 87 % XD 104 % | | | 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 | 18,765 | | | 62,500 | | | | | |
| **GRADE 2**-Min. 14700 | 18,765 | | | 62,500 | | | | | |
| **4. WATER RESISTANCE** | | | | | | | | | |
| Shall not absorb more than 1.0g. of water | <1.0 g | | | <1.0 g | | | ____ g | | |
| Dimensional change shall not exceed ± 1.0% | MD <1.0 % XD <1.0 % | | | MD <1.0 % XD <1.0 % | | | 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 | | | Pass | | | | | |
| **TYPE 2**-After testing at – 14°F (– 10°C) (Pass/Fail) | Pass | | | Pass | | | | | |
| **6. WATER VAPOR TRANSMISSION** | | | | | | | | | |
| Max. 1.0g./m² x 24h. | 0.132 g | | | 0.132 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 | | | ____ mm | | |
| **8. DYNAMIC IMPACT (PUNCTURING)** | | | | | | | | | |
| Pass water tightness test after energy impact of: | | | | | | | | | |
| **GRADE 1** - 1.8 ft. lbf (2.45J) (Pass/Fail) | Pass | | | Pass | | | | | |
| **GRADE 2** - 3.6 ft. lbf (4.9J) (Pass/Fail) | Pass | | | Pass | | | | | |
| **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 166 lbf XD 440 lbf | | | MD 166 lbf XD 128 lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD 166 lbf XD 440 lbf | | | MD 166 lbf XD 128 lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 1 & 2**-Pass water tightness test (Pass/Fail) | Pass | | | Pass | | | | | |
| **Immersion at 50°C for 5 Days** | | | | | | | | | |
| **GRADE 1**-Min. 66 lbf (294N) | MD 142 lbf XD 390 lbf | | | MD 138 lbf XD 121 lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD 142 lbf XD 390 lbf | | | MD 138 lbf XD 121 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 143 lbf XD 400 lbf | | | MD 162 lbf XD 125 lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min 176 lbf (785N) | MD 143 lbf XD 400 lbf | | | MD 162 lbf XD 125 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 | | | .01g/cm² 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.

GUIANA

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

| HEY'DI ECB | | | NURALITE | | | HYLOAD 150E | | | DURALASTA P | | | DURALASTA M | | | AQUASHIELD 2001 AD | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade |
| | | | | | | 2a | A | 1 & 2 | 2a,2b | A | 2 | 2a,2b | C | 2 | 2a | C | 1 & 2 |
| MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD 250 lbf XD 160 lbf<br>MD 250 lbf XD 160 lbf | | | MD NA lbf XD NA lbf<br>MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf<br>MD ____ lbf XD ____ lbf | | | MD 318 lbf XD 324 lbf<br>MD 318 lbf XD 324 lbf | | |
| MD ____ % XD ____ %<br>MD ____ % XD ____ % | | | MD ____ % XD ____ %<br>MD ____ % XD ____ % | | | MD 150 % XD 150 %<br>MD 150 % XD 150 % | | | MD NA % XD NA %<br>MD ____ % XD ____ % | | | MD NA % XD NA %<br>MD ____ % XD ____ % | | | MD 300 % XD ____ %<br>MD 300 % XD ____ % | | |
| | | | | | | 166,000<br>166,000 | | | NA<br>NA | | | NA<br>NA | | | | | |
| ____ g<br>MD ____ % XD ____ % | | | ____ g<br>MD ____ % XD ____ % | | | 0.051 g<br>MD 0.5 % XD ____ % | | | ____ g<br>MD ____ % XD ____ % | | | ____ g<br>MD ____ % XD ____ % | | | ____ g<br>MD ____ % XD ____ % | | |
| | | | | | | NA<br>Pass | | | NA | | | NA | | | Pass<br>Pass | | |
| ____ g | | | ____ g | | | 0.5 g | | | ____ g | | | ____ g | | | .1 max g | | |
| ____ mm | | | ____ mm | | | NA mm | | | NA mm | | | NA mm | | | NA mm | | |
| | | | | | | Pass | | | NA | | | NA | | | | | |
| | | | | | | Pass | | | NA | | | | | | Pass | | |
| MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf<br>MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf<br>MD ____ lbf XD ____ lbf | | | MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | |
| MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf<br>MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf<br>MD ____ lbf XD ____ lbf | | | MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | |
| MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf<br>MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf<br>MD ____ lbf XD ____ lbf | | | MD ____ lbf XD ____ lbf<br>MD ____ lbf XD ____ lbf | | |
| ____ g | | | ____ g | | | ____ g | | | ____ g | | | NA g | | | NA g | | |
| MD ____ % XD ____ %<br>MD ____ % XD ____ % | | | MD ____ % XD ____ %<br>MD ____ % XD ____ % | | | Pass<br>MD NA % XD NA %<br>MD NA % XD NA % | | | NA<br>MD NA % XD NA %<br>MD NA % XD NA % | | | NA<br>MD NA % XD NA %<br>MD NA % XD NA % | | | NA<br>MD NA % XD NA %<br>MD NA % XD NA % | | |
| | | | | | | NA | | | NA | | | NA | | | Pass<br>Pass | | |
| HEY 'DI UPM CORP. | | | HITCHENS AMER. INC. | | | HYLOAD, INC. | | | THE KIMMENADE CORP. | | | | | | J & P PETROLEUM PRODUCTS | | |

# 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 | POLY 4 | | | OWENS-CORNING DERBIGUM HPS | | | OWENS-CORNING DERBIGUM 5P | | |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade |
| | 1a,1b,2a,2b,2c | C | 1 & 2 | | | | | | |
| **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 | **NORD BITUMI U.S. INC.** | | | **OWENS-CORNING** | | | | | |
| NOTE: Blank lines = applicable data not reported by manufacturer. | | | | | | | | | |

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

| ROYAL SINGLE-PLY | | | VERAL (ALUMINUM FACED) | | | VERAL (STAIN/STEEL) | | | VERAL (COPPER FACED) | | | PARAFOR-50 | | | PARADIENE-30 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade |
| 1a,2a | C | 2 | 1a | B | 1 | 1a | B | 1 | 1a | B | 1 | 1a | A | 1 | 1a | A | 1 |
| MD NA lbf XD NA lbf | | | MD 139 lbf XD 137 lbf | | | MD 677 lbf XD 676 lbf | | | MD 139 lbf XD 137 lbf | | | MD 164 lbf XD 122 lbf | | | MD 91 lbf XD 71 lbf | | |
| MD 208 lbf XD 180.4 lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | |
| MD NA % XD NA % | | | MD 4.0 % XD 5.0 % | | | MD 3.0 % XD 3.0 % | | | MD 4.0 % XD 5.0 % | | | MD 90 % XD 90 % | | | MD 24 % XD 24 % | | |
| MD 72.38 % XD 64.76 % | | | MD NA % XD NA % | | | MD NA % XD NA % | | | MD NA % XD NA % | | | MD NA % XD NA % | | | MD NA % XD NA % | | |
| NA | | | NA | | | NA | | | NA | | | NA | | | NA | | |
| NA | | | 3,613 | | | 9,039 | | | 3,557 | | | 65,392 | | | 9,801 | | |
| 66,968 | | | NA | | | NA | | | NA | | | NA | | | NA | | |
| 0.0 g | | | 0.10 g | | | 0.10 g | | | 0.10 g | | | 0.25 g | | | 0.23 g | | |
| MD 1.0 % XD 1.0 % | | | MD % XD % | | | MD % XD % | | | MD % XD % | | | MD % XD % | | | MD % XD % | | |
| | | | | | | | | | | | | | | | Pass | | |
| Pass | | | NA | | | NA | | | NA | | | NA | | | NA | | |
| 0.06 g | | | g | | | g | | | g | | | g | | | g | | |
| NA mm | | | mm | | | mm | | | mm | | | NA mm | | | NA mm | | |
| NA | | | | | | | | | | | | | | | | | |
| Pass | | | NA | | | NA | | | NA | | | NA | | | NA | | |
| Pass | | | Pass | | | Pass | | | Pass | | | Pass | | | Pass | | |
| MD NA lbf XD NA lbf | | | MD 169 lbf XD 173 lbf | | | MD 169 lbf XD 173 lbf | | | MD 169 lbf XD 173 lbf | | | MD 161 lbf XD 116 lbf | | | MD 70 lbf XD 69 lbf | | |
| MD 166.32 lbf XD lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | |
| Pass | | | Pass | | | Pass | | | Pass | | | Pass | | | 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 176.8 lbf XD lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA 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 175.48 lbf XD lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | |
| Pass | | | | | | | | | | | | | | | | | |
| NA g | | | NA g | | | NA g | | | NA g | | | <1.0 g | | | <1.0 g | | |
| Pass | | | | | | | | | | | | | | | | | |
| MD 92 % XD 92 % | | | MD % XD % | | | MD % XD % | | | MD % XD % | | | MD % XD % | | | MD % XD % | | |
| MD 91 % XD 92 % | | | MD % XD % | | | MD % XD % | | | MD % XD % | | | MD % XD % | | | MD % XD % | | |
| Pass | | | NA | | | NA | | | NA | | | NA | | | NA | | |
| ROYAL OIL COMPANY | | | SIPLAST, INC. | | | | | | | | | | | | | | |

# 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 | PARADIENE-20 | | | SWEPCO UNI+ SHIELD | | | AWAPLAN | | |
|---|---|---|---|---|---|---|---|---|---|
| | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade |
| | 2a,2b | C | 1 | 2a,2b | C | 2 | 1a | A | 1 |
| **1. BREAKING STRENGTH** | | | | | | | | | |
| **GRADE 1**-Min. 66 lbf (294N) | MD 72 lbf XD 67 lbf | | | MD NA lbf XD NA lbf | | | MD 69 lbf XD 65 lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD 210 lbf XD 176 lbf | | | MD NA lbf XD NA lbf | | |
| **2. ULTIMATE ELONGATION (ELONGATION AT BREAK)** | | | | | | | | | |
| **GRADE 1**-Min. 4.0% | MD 29 % XD 27 % | | | MD NA % XD NA % | | | MD ____ % XD ____ % | | |
| **GRADE 2**-Min. 8.0% | MD NA % XD NA % | | | MD 70 % XD 65 % | | | 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 | 9393 | | | NA | | | 40,000 | | |
| **GRADE 2**-Min. 14700 | NA | | | | | | NA | | |
| **4. WATER RESISTANCE** | | | | | | | | | |
| Shall not absorb more than 1.0g. of water | 0.30 g | | | 0.0 g | | | ____ g | | |
| Dimensional change shall not exceed ± 1.0% | MD ____ % XD ____ % | | | MD Pass % XD Pass % | | | 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 | | | Pass | | |
| **TYPE 2**-After testing at – 14 °F ( – 10 °C) (Pass/Fail) | Pass | | | Pass | | | NA | | |
| **6. WATER VAPOR TRANSMISSION** | | | | | | | | | |
| Max. 1.0g./m² x 24h. | ____ g | | | 0.1 g | | | .08 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 | | | ____ | | |
| **GRADE 2** - 3.6 ft. lbf (4.9J) (Pass/Fail) | NA | | | Pass | | | 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 74 lbf XD 72 lbf | | | MD NA lbf XD NA lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD 166 lbf XD ____ lbf | | | MD NA lbf XD NA lbf | | |
| **GRADE 1 & 2**-Pass water tightness test (Pass/Fail) | 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 ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD 177 lbf XD ____ 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 ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD 176 lbf XD ____ 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 | | | <1.0 g | | |
| **12. ACCELERATED WEATHERING** | | | | | | | | | |
| **TYPE 1 ONLY**-after prescribed no. of cycles (approx. 90 days) | | | | | | | | | |
| Shall not show cracking or blistering (Pass/Fail) | NA | | | Pass | | | Pass | | |
| Retain 90% of breaking strength, Test 1 | MD NA % XD NA % | | | MD 90.1 % XD 92.0 % | | | MD 92 % XD 92 % | | |
| Retain 90% of elongation at break, Test 2 | MD NA % XD NA % | | | MD 92.0 % XD 92.0 % | | | MD 100 % XD 100 % | | |
| **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 | | |
| LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction | **SIPLAST, INC.** | | | **SWEPCO** | | | **TAMKO** | | |
| NOTE: Blank lines = applicable data not reported by manufacturer. | | | | | | | | | |

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

| RHOFLEX | | | MIGHTYPLATE | | | TROPISEAL | | | BRAI SP4 | | | GRM 120 | | | GRM 230 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade | Type | Class | Grade |
| 1a,2a,2b,2c | C | 1 | 1a,2a | C | 2 | 2a | C | 2 | 2a | C | 2 | 1a,1b | C | 1 | 2a,2b | C | 1 |
| MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD 102 lbf XD 122 lbf | | | MD 102 lbf XD 105 lbf | | |
| MD NA lbf XD NA lbf | | | MD 208 lbf XD 180.4 lbf | | | MD 208 lbf XD 180.4 lbf | | | MD 208 lbf XD 180.4 lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | |
| MD 57 % XD 57 % | | | MD NA % XD NA % | | | MD NA % XD NA % | | | MD NA % XD NA % | | | MD 210 % XD 151 % | | | MD 169 % XD 139 % | | |
| MD NA % XD NA % | | | MD 72.38 % XD 64.76 % | | | MD 72.38 % XD 64.76 % | | | MD 72.38 % XD 64.76 % | | | MD NA % XD NA % | | | MD NA % XD NA % | | |
| | | | NA | | | NA | | | NA | | | NA | | | NA | | |
| | | | NA | | | NA | | | NA | | | 95,550 | | | 76,900 | | |
| NA | | | 66,968 | | | | | | | | | NA | | | NA | | |
| ____ g | | | 0.0 g | | | 0.0 g | | | 0.0 g | | | 0.04 g | | | 0.04 g | | |
| MD % XD % | | | MD 1.0 % XD 1.0 % | | | MD 1.0 % XD 1.0 % | | | MD 1.0 % XD 1.0 % | | | MD 0.0 % XD 0.0 % | | | MD 0.0 % XD 0.3 % | | |
| | | | | | | NA | | | NA | | | Pass | | | NA | | |
| | | | Pass | | | Pass | | | Pass | | | NA | | | Pass | | |
| 0.78 g | | | 0.06 g | | | 0.06 g | | | 0.06 g | | | ____ g | | | ____ g | | |
| NA mm | | | NA mm | | | NA mm | | | NA mm | | | NA mm | | | NA mm | | |
| | | | NA | | | NA | | | NA | | | Pass | | | Pass | | |
| NA | | | Pass | | | Pass | | | Pass | | | NA | | | NA | | |
| | | | Pass | | | | | | Pass | | | | | | NA | | |
| MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD 93 lbf XD 93 lbf | | | MD 93 lbf XD 93 lbf | | |
| MD NA lbf XD NA lbf | | | MD 166.32 lbf XD ____ lbf | | | MD 166.32 lbf XD ____ lbf | | | MD 166.32 lbf XD ____ lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | |
| | | | Pass | | | Pass | | | Pass | | | Pass | | | Pass | | |
| MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD 105 lbf XD 105 lbf | | | MD 105 lbf XD 105 lbf | | |
| MD NA lbf XD NA lbf | | | MD 176.8 lbf XD ____ lbf | | | MD 176.8 lbf XD ____ lbf | | | MD 176.8 lbf XD ____ lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | |
| | | | Pass | | | Pass | | | Pass | | | Pass | | | Pass | | |
| MD ____ lbf XD ____ lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD 111 lbf XD 111 lbf | | | MD 111 lbf XD 111 lbf | | |
| MD NA lbf XD NA lbf | | | MD 175.48 lbf XD ____ lbf | | | MD 175.48 lbf XD ____ lbf | | | MD 175.48 lbf XD ____ lbf | | | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | |
| | | | Pass | | | Pass | | | Pass | | | | | | | | |
| NA g | | | NA g | | | NA g | | | NA g | | | NA g | | | NA g | | |
| | | | Pass | | | Pass | | | Pass | | | | | | NA | | |
| MD ____ % XD ____ % | | | MD 92 % XD 92 % | | | MD 189.69 % XD 165.97 % | | | MD 92 % XD 92 % | | | MD ____ % XD ____ % | | | MD NA % XD NA % | | |
| MD ____ % XD ____ % | | | MD 91 % XD 92 % | | | MD 66.15 % XD 59.58 % | | | MD 66.15 % XD 59.58 % | | | MD ____ % XD ____ % | | | MD NA % XD NA % | | |
| | | | | | | NA | | | NA | | | Pass | | | NA | | |
| | | | Pass | | | Pass | | | Pass | | | NA | | | Pass | | |
| TELTEX, INC. | | | TEXAS REFINERY CORP. | | | TROPICAL | | | U.S. INTEC INC. | | | W.R. GRACE & CO. | | | | | |

# 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 350 Type 2a | GRM 350 Class C | GRM 350 Grade 1 | GRM 500 Type 1a,1b | GRM 500 Class C | GRM 500 Grade 1 | Type | Class | Grade |
|---|---|---|---|---|---|---|---|---|---|
| **1. BREAKING STRENGTH** | | | | | | | | | |
| **GRADE 1**-Min. 66 lbf (294N) | MD 51 lbf XD 75 lbf | | | MD 150 lbf XD 168 lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD ____ lbf XD ____ lbf | | |
| **2. ULTIMATE ELONGATION (ELONGATION AT BREAK)** | | | | | | | | | |
| **GRADE 1**-Min. 4.0% | MD 215 % XD 138 % | | | MD 164 % XD 109 % | | | MD ____ % XD ____ % | | |
| **GRADE 2**-Min. 8.0% | MD NA % XD NA % | | | MD NA % XD NA % | | | MD ____ % XD ____ % | | |
| **3. LOAD STRAIN PRODUCT [BREAK STRENGTH (N) x ULTIMATE ELONGATION (%)]** | | | | | | | | | |
| **GRADE 1**-If breaking strength is not met; 19400 | 49,000 | | | NA | | | | | |
| **GRADE 1**-If breaking strength is met; 2940 | NA | | | 109,700 | | | | | |
| **GRADE 2**-Min. 14700 | NA | | | NA | | | | | |
| **4. WATER RESISTANCE** | | | | | | | | | |
| Shall not absorb more than 1.0g. of water | 0.08 g | | | 0.07 g | | | ____ g | | |
| Dimensional change shall not exceed ± 1.0% | MD 0.0 % XD 0.3 % | | | MD 0.0 % XD 0.0 % | | | 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. | ____ 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 | | | NA 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 | | | Pass | | | | | |
| **GRADE 2** - 3.6 ft. lbf (4.9J) (Pass/Fail) | 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 81 lbf XD 81 lbf | | | MD 104 lbf XD 104 lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD NA lbf XD NA lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 1 & 2**-Pass water tightness test (Pass/Fail) | Pass | | | Pass | | | | | |
| **Immersion at 50°C for 5 Days** | | | | | | | | | |
| **GRADE 1**-Min. 66 lbf (294N) | MD 90 lbf XD 90 lbf | | | MD 121 lbf XD 121 lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min. 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD NA lbf XD NA 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 93 lbf XD 93 lbf | | | MD 122 lbf XD 122 lbf | | | MD ____ lbf XD ____ lbf | | |
| **GRADE 2**-Min 176 lbf (785N) | MD NA lbf XD NA lbf | | | MD NA lbf XD NA 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 | 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) | NA | | | | | | | | |
| 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) | NA | | | Pass | | | | | |
| **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 | W.R. GRACE & CO. | | | | | | | | |
| NOTE: Blank lines = applicable data not reported by manufacturer. | | | | | | | | | |

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left blank.

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

| PRODUCT NAME ► | ALKORPLAN | RHENOFOL C-34 | RHENOFOL C-45 | RHENOFOL C-52 | RHENOFOL CV40 | RHENOFOL CV48 |
|---|---|---|---|---|---|---|
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Reinforcement | None | None | None | None | None | None |
| b) Color | Grey | Pale Grey | Pale Grey | Pale Grey | Pale Grey | Pale Grey/White |
| c) Installed wt. (lbs. per sq. ft. w/o ballast) | .33 | .23 | .30 | .336 | .266 | .327 |
| **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 | |
| b) Partially adhered-method | | | | • | | • |
| 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 | | | | | | |
| **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 | PVC Coated Metal | PVC Coated Metal | PVC Coated Metal |
| **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 | W. Germany/USA |
| **15. YEAR FIRST COMMERCIAL USE** | | | | | | |
| a) Foreign (Year) | 1970 | 1966 | 1966 | | 1966 | |
| b) U.S.A. (Year, City-first installed) | 1980-Lincoln, NE | 1976-Indianapolis | 1976-Indianapolis | 1982 | 1976 | 1976 |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq. ft.) | | | | | | |
| a) Foreign | Not Available | 2,500,000 All Types | 2,500,000 All Types | 2,500,000 All Types | 2,500,000 All Types | 2,500,000 All Types |
| b) U.S.A. | 50,000 | 160,000 | 100,000 | 1,000 | 27,000 | 108,000 |
| **17. WARRANTY** *(See "Important Notes")* | | | | | | |
| a) Duration (years) | 10 | 5/10 | 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** | Coal Tar | 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, Oils, Animal Fats (applicable with proper procedures) |
| **19. UL** *(See "Important Notes")* | • | • | • | | • | • |
| **20. FM** *(See "Important Notes")* | | • | • | | • | • |
| **21. METHOD OF DISTRIB.** | Mfgr/Reps. | Direct to Contr. | | | | |
| **22. # REGIONAL SERVICE LOCATIONS** | | 9 | | | | |
| **23. LICENSED APPLICATOR AGREEMENT** | Yes | Yes | | | | |
| **24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)** | On Job Training | Factory, Field | | | | |
| **25. SALES INFORMATION; CONTACT** | Office | Customer Service | | | | |
| **26. TECHNICAL INFORMATION; CONTACT** | Office | Technical Service | | | | |
| **COMPANY►** | ALKOR-DIVISION OF THE SOLVAY AMERICAN CORP. | BARRA CORPORATION OF AMERICA, INC. | | | | |

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

| TROCAL SMA | GENSEAL ACR | INTEROOF "U" | INTEROOF "B" | PLYROOF PVC GREY | PLYROOF PVC WHITE | SUCOFLEX F132 | SUCOFLEX F127 | NERVAPLY |
|---|---|---|---|---|---|---|---|---|
| None | None | None | None | None | None | | Polyester | None |
| Beige | Grey/Black | Grey | Grey | Grey | White | Light Grey | Light Grey | Slate |
| .30 | .30 | .40 | .30 | .32 | .32 | .33 | .37 | .36 |
| None | | None | None | None | None | None | None | None |
| | | | | | | | | |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Solvent/Heat | Solvent | Solvent/Thermal | Solvent/Thermal | Solvent/Heat | Solvent/Heat | Hot Air Weld | Hot Air Weld | Solvent/Heat |
| 10 lbs. Min. | ● | | 12 | 10-13 | 10-13 | 10-12 | | 10 |
| | ● | ● | | Batten | Batten | ● | Mech. Fastened | Loose Laid |
| | ● | | | | | ● | | |
| ● | | | | ● | ● | ● | | No |
| Dead Level | | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | 1:12 |
| | | | | | | | | |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | | ● | ● | ● | ● | ● | ● |
| ● | ●* | ● | ● | ● | ● | ● | ●* | ● |
| With Slipsheet | ● | ● | ● | ● | ● | | | ● |
| Specify | Cyanurates *Slipsheet | | | Approval of Plyroof Tech. Dept. | Approval of Plyroof Tech. Dept. | Concrete, Plywood | Concrete, Plywood *Consult Mfgr. | |
| None | See Manufacturer | None | None | None | None | None | None | None |
| 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 | 5°F-140°F |
| PVC Coated Metal | Membrane | PVC Coated Metal | PVC Coated Metal | PVC Coated Metal | PVC Coated Metal | PVC Clad Metal and F132 | PVC Clad Metal and F132 | Self or PVC Metal |
| Solvent/Heat | See Manufacturer | Solvent/Heat | Solvent/Heat | Solvent/Heat | Solvent/Heat | Hot Air Weld | Hot Air Weld | Solvent/Heat |
| Yes | | Yes | Yes | No | No | Yes | Yes | No |
| W. Germany | USA | Austria | Austria | USA | USA | Switzerland | Switzerland | USA |
| USA | USA | Austria | Austria | USA | USA | Switzerland | Switzerland | USA |
| 1971 | | 1970 | 1968 | | | 1966 | 1969 | |
| 1977-New York | 1980 | 1982-Los Angeles | 1982-Detroit | 1975-Pueblo | 1981-Franklin | 1980-Hawthorne | 1980-El Segundo | 1980-NY City |
| >500,000 | | | | | | 500,000 | Yes-Consult Mfgr. | None |
| >500,000 | 21,000 | | | 409,000 | 2,000 | 100,000 | Yes-Consult Mfgr. | 80,000 |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| ● | No | | | No | No | | | ● |
| ● | ● | | | | | | | |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | | | ● | ● | ● |
| ● | ● | | | ● | ● | | | |
| | | | | | | | | $3.00 |
| ● | | | | | | | | ● |
| ● | | | ● | ● | ● | | | ● |
| Coal Tar | 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) | Coal Tar |
| ● | ● | | | ● | ● | ● | ● | ● |
| ● | ● | ● | | | | ● | ● | |
| Manufacturer | Distributors | Direct | | Direct | | Direct | | Direct & Distributor |
| 4 | 8 | | | 4 | | 6 | | 2 |
| Yes | Yes | Yes | | Yes | | Yes | | Yes |
| Field, Seminars | Field, Seminars | Field | | Field | | Factory, Field | | Field |
| Sales Aid Group | T. Clapperton | Michael Haas | | Charles Taft | | Steve Becker | | J. Klaus |
| Tech. Service Dept. | K. Russell | R. Coursey | | Steve Condren | | Ed Stevenson | | J. Lynch |
| DYNAMIT NOBEL | GENERAL TIRE & RUBBER CO. BLDG. PRODUCTS DIVISION | IPW INTERPLASTIC | | PLYMOUTH RUBBER COMPANY, INC. | | PMS/SUCOFLEX | | RUBBER PLASTICS COMPOUND COMPANY, INC. |

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

| PRODUCT NAME ► | NERVAPLY UB | SARNAFIL G21-410 | SARNAFIL G21-442 | SARNAFIL S21-327 | FLEXHIDE 34 | FLEXHIDE 45 |
|---|---|---|---|---|---|---|
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Reinforcement | None | Fiberglass | Fiberglass | Polyester | None | None |
| b) Color | Bone | Grey & Asst'd | Grey | Grey | Light Grey | Light Grey |
| c) Installed wt. (lbs. per sq. ft. w/o ballast) | .49 | .33 | .33 | .33 | .23 | .30 |
| **2. COATING REQUIRED** | None | None | None | None | None | None |
| **3. USE** | | | | | | |
| a) New roofing | ● | ● | ● | ● | ● | ● |
| b) Reroofing | ● | ● | ● | ● | ● | ● |
| **4. FIELD LAP JOINT METHOD** | Solvent/Heat | Hot Air Weld | Hot Air Weld | Hot Air Weld | Solvent/Heat | Solvent/Heat |
| **5. TYPE OF ROOF SYSTEM** | | | | | | |
| a) Loose laid/ballasted (ballast: lbs. per sq. ft.) | | | 10 | | 10 | 10 |
| b) Partially adhered-method | Bar/Strip/Washer | | | Mech. Fastened | | |
| c) Fully adhered-method | No | ● | | | | |
| d) Protected Membrane Roofing Assembly | No | | ● | | ● | ● |
| **6. MINIMUM SLOPE** | 6:12+ | 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 | ● | | With Slipsheet | With Slipsheet | ● | ● |
| f) Felt faced composites | ● | | | | ● | ● |
| g) Other | | | | | Isocyanurate, Extruded Polystyrene | Isocyanurate, Extruded Polystyrene |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | None | None | None | None | None | None |
| **9. WORKABLE TEMP RANGE** | 5°F-140°F | 0°F-120°F | 0°F-120°F | 0°F-120°F | | |
| **10. FLASHING MATERIAL** | Self or PVC Metal | G21-410 | G21-442 | G21-410 | Coated Metal | Coated Metal |
| **11. FLASHING METHOD** | Solvent/Heat | Adhesive & Heat Weld | Adhesive & Heat Weld | Adhesive & Heat Weld | Solvent/Heat | Solvent/Heat |
| **12. PRE-FORMED ACCESS AVAILABLE** | No | Yes | Yes | Yes | Yes | Yes |
| **13. COUNTRY OF ORIGIN** | USA | Switzerland | Switzerland | Switzerland | USA | 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-Flint, MI | 1975-New Hampshire | 1977-Massachusetts | 1978-Illinois | 1978-Stanhope | 1980-Stanhope |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq.ft.) | | | | | | |
| a) Foreign | None | NA | NA | NA | | |
| b) U.S.A. | 70,000 | 120,000 | 80,000 | 20,000 | <100,000 | <50,000 |
| **17. WARRANTY** *(See "Important Notes")* | | | | | | |
| a) Duration (years) | 10 | 10 | 10 | 10 | 5 or 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 | 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** | Needs Separate Sheet | Bitumen, Oils Animal Fats | Bitumen, Oils, Animal Fats | Bitumen, Oils Animal Fats | Petroleum, Coal Tar Products See Specifications | Petroleum, Coal Tar Products See Specifications |
| **19. UL** *(See "Important Notes")* | ● | ● | ● | ● | ● | ● |
| **20. FM** *(See "Important Notes")* | Pending | ● | | ● | | |
| **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 | | | Field, Seminars, Factory | |
| **25. SALES INFORMATION; CONTACT** | J. Klaus | Ruth Warshaw | | | G. Schubert | |
| **26. TECHNICAL INFORMATION; CONTACT** | J. Lynch | Ed Stewart | | | F. Neuwirth | |
| **COMPANY►** | RUBBER PLASTICS COMPOUND COMPANY, INC. | SARNAFIL (U.S.) INC. | | | U.S. MINERAL PRODUCTS COMPANY | |

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

| FLEXHIDE LR 50 | FLAGON SF | FLAGON C | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Polyester | None | None | | | | | | |
| Light Grey or White | Grey | Grey | | | | | | |
| .32 | .35 | | | | | | | |
| None | None | None | | | | | | |
| • | • | • | | | | | | |
| • | • | • | | | | | | |
| Solvent/Heat | Solvent | Solvent/Heat | | | | | | |
| | | 10 | | | | | | |
| Mech. Fastened | | | | | | | | |
| | • | | | | | | | |
| | | | | | | | | |
| Dead Level | Dead Level | Dead Level | | | | | | |
| • | • | • | | | | | | |
| • | • | • | | | | | | |
| • | • | • | | | | | | |
| • | • | • | | | | | | |
| • | • | • | | | | | | |
| • | • | • | | | | | | |
| Isocyanurate, Extruded Polystyrene | | | | | | | | |
| None | None | None | | | | | | |
| | 0°F-120°F | 0°F-120°F | | | | | | |
| Coated Metal | PVC/PVC Ctd. Metal | PVC/PVC Ctd. Metal | | | | | | |
| Solvent/Heat | Solvent/Heat | Solvent/Heat | | | | | | |
| Yes | Yes | Yes | | | | | | |
| USA | Italy | Italy | | | | | | |
| USA | Italy | USA | | | | | | |
| | 1963 | 1963 | | | | | | |
| 1978-Stanhope | 1978 | 1978 | | | | | | |
| | 80,000 | 800,000 | | | | | | |
| <30,000 | 40,000 | 400,000 | | | | | | |
| 5 or 10 | 10 | 10 | | | | | | |
| | • | • | | | | | | |
| | | | | | | | | |
| • | • | • | | | | | | |
| | • | • | | | | | | |
| • | | | | | | | | |
| | | | | | | | | |
| • | | | | | | | | |
| • | • | • | | | | | | |
| Petroleum, Coal Tar Products See Specifications | Coal Tar | Coal Tar | | | | | | |
| • | | • | | | | | | |
| • | • | | | | | | | |
| Licensed Contractors Only | Direct, Distributors | | | | | | | |
| 1 | 7 | | | | | | | |
| Yes | Yes | | | | | | | |
| Field, Seminars, Factory | Field, Seminars | | | | | | | |
| G. Schubert | 201/528-6727 | | | | | | | |
| F. Neuwirth | 201/528-6727 | | | | | | | |
| U.S. MINERAL PRODUCTS COMPANY | WAT PRO, INC. | | | | | | | |

# 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-34 Type 1 | RHENOFOL C-34 Class A | RHENOFOL C-45 Type 1 | RHENOFOL C-45 Class A |
|---|---|---|---|---|---|---|
| **1. THICKNESS** | | | | | | |
| **TYPE 1**-Min. 39 mils (1.0 mm) | 48 mils | | 34 mils | | 45 mils | |
| **TYPE 2**-Min. 47 mils (1.2 mm) | NA mils | | NA mils | | NA mils | |
| **TYPE 1 & 2**-No measured thickness lower than 3 mils (.08 mm) below nominal thickness (Pass/Fail) | Pass | | | | | |
| **2. TENSILE STRENGTH** | | | | | | |
| **TYPE 1**-Shall not be less than 1700 psi (11.7 MPa) | MD 2800 psi XD 2800 psi | | MD * psi XD * psi | | MD * psi XD * 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 psi XD 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 * % XD * % | | MD * % XD * % | |
| **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 | | NA | |
| Elongation at break shall not be reduced by more than 5.0% as received | MD <5 % XD <5 % | | 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. PEARMEABILITY (WATER VAPOR TRANSMISSION)** | | | | | | |
| Max. 4.0 g./m² in 24h. | 2.35 g | | 1.4 g | | 2.7 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 OF THE SOLVAY AMERICAN CORP.** | | **BARRA CORPORATION OF AMERICA, INC.** | | | |
| NOTE: Blank lines = applicable data not reported by manufacturer. | | | | | | |

*Barra Corp. of America, Inc. has had all of these tests performed according to ASTM specifications and is in the process of testing to CGSB Standard 37-GP-54M. ASTM results are available from Barra and are published in Sweets 1983 Catalogue File, Sec. 7-1 Bar.

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

| RHENOFOL C-52 | | RHENOFOL CV40 | | RHENOFOL CV48 | | TROCAL SMA | | GEN SEAL ACR | | INTEROOF "U" | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Type | Class | Type | Class | Type | Class | Type | Class | Type | Class |
| 1 | A,B | 2 | A,B | 2 | A,B | 1 | A | 1 | B | 1 | B |
| 52 mils | | NA mils | | NA mils | | 48 mils | | 45 mils | | * mils | |
| NA mils | | 40 mils | | 48 mils | | NA mils | | NA mils | | NA mils | |
| | | | | | | Pass | | Pass | | | |
| MD * psi XD * psi | | MD NA psi XD NA psi | | MD NA psi XD NA psi | | MD >2130 psi XD psi | | MD 1800 psi XD 1900 psi | | MD * psi XD * psi | |
| MD NA psi XD NA psi | | MD * psi XD * psi | | MD * psi XD * psi | | MD >2130 psi XD psi | | MD NA psi XD NA psi | | MD NA psi XD NA psi | |
| MD % XD % | | MD % XD % | | MD % XD % | | MD >75 % XD % | | MD >75 % XD >75 % | | MD % XD % | |
| | | | | | | Pass | | Pass | | | |
| | | | | | | Pass | | Pass | | | |
| MD % XD % | | MD % XD % | | MD % XD % | | MD >75 % XD % | | MD >70 % XD >70 % | | MD % XD % | |
| MD * % XD * % | | MD * % XD * % | | MD * % XD * % | | MD >300 % XD % | | MD 300 % XD 300 % | | MD % XD % | |
| * | | * | | * | | Pass | | | | Pass | |
| MD * psi XD * psi | | MD * psi XD * psi | | MD * psi XD * psi | | MD >2130 psi XD psi | | MD 1890 psi XD 1995 psi | | MD * psi XD * psi | |
| MD * % XD * % | | MD * % XD * % | | MD * % XD * % | | MD 0.0 % XD % | | MD −6 % XD −6 % | | MD % XD % | |
| * | | * | | * | | Pass | | Pass | | | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| * | | * | | * | | Pass | | Pass | | Pass | |
| MD * % XD * % | | MD * % XD * % | | MD * % XD * % | | MD <5 % XD % | | MD % XD % | | MD % XD % | |
| * | | * | | * | | Pass | | | | | |
| * | | * | | * | | Pass | | Pass | | | |
| * g | | * g | | * g | | >4.0 g | | <1.0 g | | 1.03 g | |
| % | | % | | % | | <0.2 % | | <1.0 % | | % | |
| MD % XD % | | MD % XD % | | MD % XD % | | MD >90 % XD % | | MD 90 % XD 90 % | | MD % XD % | |
| MD psi XD psi | | MD psi XD psi | | MD psi XD psi | | MD >2130 psi XD psi | | MD psi XD psi | | MD psi XD psi | |
| MD * % XD * % | | MD NA % XD NA % | | MD NA % XD NA % | | MD <0.5 % XD % | | MD <1.0 % XD <1.0 % | | MD * % XD * % | |
| MD NA % XD NA % | | MD * % XD * % | | MD * % XD * % | | MD NA % XD NA % | | MD NA % XD NA % | | MD NA % XD NA % | |
| * % | | * % | | * % | | % | | % | | % | |
| * % | | * % | | * % | | | | | | | |
| psi | | psi | | psi | | <7 psi | | >7 psi | | psi | |
| BARRA CORPORATION OF AMERICA, INC. | | | | | | DYNAMIT NOBEL | | GENERAL TIRE & RUBBER | | IPW INTERPLASTIC | |

*Barra Corp. of America, Inc. has had all of these tests performed according to ASTM specifications and is in the process of testing to CGSB Standard 37-GP-54M. ASTM results are available from Barra and are published in Sweets 1983 Catalogue File, Sec. 7-1 Bar.

IPW INTERPLASTIC:
* All these tests have been performed according to ASTM specifications (not CGSB Standard 37-GP-54M) and are available upon request from Interplastic or can be seen in the Sweets architectural binders, Sec. 7.1, where our brochure is included.

# 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 "B" Type 1 | INTEROOF "B" Class B | PLYROOF PVC GREY Type 1 | PLYROOF PVC GREY Class B | PLYROOF PVC WHITE Type 1 | PLYROOF PVC WHITE Class B |
|---|---|---|---|---|---|---|
| **1. THICKNESS** | | | | | | |
| **TYPE 1**-Min. 39 mils (1.0 mm) | * mils | | 45 mils | | 45 mils | |
| **TYPE 2**-Min. 47 mils (1.2 mm) | NA mils | | NA mils | | 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 2147 psi XD 1873 psi | | MD 2147 psi XD 1873 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 psi XD 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 76.0 % XD 83.5 % | | 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 74 % XD 75 % | | MD 74 % XD 75 % | |
| **4. ELONGATION AT BREAK** | | | | | | |
| Shall not be less than 250% | MD % XD * % | | MD 260 % XD 255 % | | MD 260 % XD 255 % | |
| **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 1976 psi XD 1779 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 9 % XD 20 % | | MD 9 % XD 20 % | |
| Shall show no delamination (Pass/Fail) | | | Pass | | 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 3.5 % XD 4.0 % | | MD 3.5 % XD 4.0 % | |
| Shall pass low temperature impact test (Pass/Fail) | | | Pass | | Pass | |
| Shall pass low temperature flexibility test (Pass/Fail) | | | Pass | | Pass | |
| **9. PEARMEABILITY (WATER VAPOR TRANSMISSION)** | | | | | | |
| Max. 4.0 g./m² in 24h. | 1.03 g | | 2.24 g | | 2.24 g | |
| **10. WATER ABSORPTION** | | | | | | |
| Shall not absorb a mass of water greater than 2.0% | − % | | 0.93 % | | 0.93 % | |
| Elongation at break shall not be less than 90% of elongation at break as measured in test 4 | MD % XD % | | MD 91 % XD 90 % | | 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 1867 psi XD 1773 psi | | MD 1867 psi XD 1773 psi | |
| **11. DIMENSIONAL CHANGE** | | | | | | |
| Without loading: **TYPE 1**-Shall not change more than 2.0% | MD * % XD * % | | MD 2.5 % XD 1.0 % | | 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 | | 9 psi | | 9 psi | |
| | **IPW INTERPLASTIC** | | **PLYMOUTH RUBBER COMPANY, INC.** | | | |

LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction
NOTE: Blank lines = applicable data not reported by manufacturer.

# /C Part 2: Test Results *(See Part 1 for General Information)*

| SUCOFLEX F132 | | SUCOFLEX F127 | | NERVAPLY | | NERVAPLY UB | | SARNAFIL G21-410 | | SARNAFIL S21-327 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Type | Class | Type | Class | Type | Class | Type | Class | Type | Class |
| 2 | B | 2 | B | 2 | A & B | 2 | A & B | 2 | B | 2 | B |
| NA mils | | NA mils | | NA mils | | NA mils | | NA mils | | NA mils | |
| 48, 60, 90 mils | | 48 mils | | 48 mils | | 48 mils | | 1.2 mils | | 1.2 mils | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| NA psi XD NA psi | | MD NA psi XD NA psi | | MD NA psi XD NA psi | | MD NA psi XD NA psi | | MD NA psi XD NA psi | | MD NA psi XD NA psi | |
| 1562 psi XD 1520 psi | | MD 3026 psi XD 2773 psi | | MD 2390 psi XD — psi | | MD 2640 psi XD — psi | | MD 1566 psi XD 1523 psi | | MD 2770 psi XD 3090 psi | |
| — % XD — % | | MD — % XD — % | | MD — % XD — % | | MD — % XD — % | | MD 103 % XD — % | | MD 107 % XD — % | |
| Pass | | Pass | | | | | | Pass | | Pass | |
| Pass | | Pass | | | | | | Pass | | Pass | |
| — % XD — % | | MD — % XD — % | | MD — % XD — % | | MD — % XD — % | | MD 105 % XD — % | | MD 94.2 % XD — % | |
| 270 % XD 260 % | | MD * % XD * % | | MD 325 % XD — % | | MD 325 % XD — % | | MD 292 % XD 264 % | | MD — % XD — % | |
| Pass | | * | | Pass | | Pass | | Pass | | Pass | |
| — psi XD — psi | | MD — psi XD — psi | | MD 2490 psi XD — psi | | MD 2772 psi XD — psi | | MD 1625 psi XD — psi | | MD 2800 psi XD — psi | |
| — % XD — % | | MD — % XD — % | | MD 7 % XD — % | | MD 7 % XD — % | | MD 295.8 % XD — % | | MD — % XD — % | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| — % XD — % | | MD — % XD — % | | MD 7.6 % XD 0.4 % | | MD 7.6 % XD — % | | MD — % XD 4.7 % | | MD — % XD — % | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| 3.0 g | | * g | | 0.3 g | | 0.3 g | | 1.21 g | | 1.44 g | |
| Pass % | | Pass % | | — % | | — % | | 1.29 % | | 1.5 % | |
| — % XD — % | | MD — % XD — % | | MD — % XD — % | | MD — % XD — % | | MD 267.9 % XD — % | | MD — % XD — % | |
| — psi XD — psi | | MD — psi XD — psi | | MD — psi XD — psi | | MD — psi XD — psi | | MD 1610 psi XD — psi | | MD 2915 psi XD — psi | |
| NA % XD NA % | | MD NA % XD NA % | | MD NA % XD NA % | | MD NA % XD NA % | | MD NA % XD NA % | | MD NA % XD NA % | |
| 0.0 % XD 0.0 % | | MD * % XD * % | | MD 0.4 % XD 0.3 % | | MD 0.4 % XD 0.3 % | | MD 0.039 % XD 0.0196 % | | MD 0.004 % XD 0.064 % | |
| — % | | — % | | 0.4 % | | 0.4 % | | 0.032 % | | 0.031 % | |
| — % | | — % | | 0.18 % | | 0.18 % | | 0.061 % | | 0.052 % | |
| Pass psi | | Pass psi | | — psi | | — psi | | 10.6 psi | | 12.17 psi | |
| PMS/SUCOFLEX | | | | RUBBER PLASTICS COMPOUND CO., INC. | | | | SARNAFIL (U.S.) INC. | | | |

* Consult Manufacturer

* Indicates tests performed according to ASTM specifications (not CGSB Standard 37-GP-54M). Test results are available from manufacturer.

# 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 G21-442 | | FLEXHIDE 34 | | FLEXHIDE 45 | |
|---|---|---|---|---|---|---|
| | Type | Class | Type | Class | Type | Class |
| | 2 | A | 1 | A | 1 | A |
| **1. THICKNESS** | | | | | | |
| **TYPE 1**-Min. 39 mils (1.0 mm) | NA mils | | mils | | mils | |
| **TYPE 2**-Min. 47 mils (1.2 mm) | * mils | | NA mils | | NA mils | |
| **TYPE 1 & 2**-No measured thickness lower than 3 mils (.08 mm) below nominal thickness (Pass/Fail) | | | | | | |
| **2. TENSILE STRENGTH** | | | | | | |
| **TYPE 1**-Shall not be less than 1700 psi (11.7 MPa) | MD NA psi XD NA psi | | MD psi XD psi | | MD psi XD psi | |
| **TYPE 2**-Shall not be less than 1500 psi (10.3 MPa) | MD * psi XD * psi | | MD NA psi XD NA psi | | MD NA psi XD 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) | | | | | | |
| 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 % XD % | |
| **4. ELONGATION AT BREAK** | | | | | | |
| Shall not be less than 250% | MD * % XD * % | | MD % XD % | | MD % XD % | |
| **5. LOW TEMPERATURE IMPACT** | | | | | | |
| Shall not have more than 2 specimens out of 10 fail (Pass/Fail) | | | | | | |
| **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 * % XD * % | | MD % XD % | | MD % XD % | |
| Shall show no delamination (Pass/Fail) | | | | | | |
| **7. LOW TEMPERATURE FLEXIBILITY** | | | | | | |
| Shall show no cracking at −22°F (−30°C) (Pass/Fail) | | | | | | |
| **8. RESISTANCE TO ACCELERATED WEATHERING** | | | | | | |
| **CLASS B ONLY** — after exposure to accelerated weathering: | | | | | | |
| Shall not show cracking, blistering or color change (Pass/Fail) | NA | | NA | | NA | |
| Elongation at break shall not be reduced by more than 5.0% as received | MD NA % XD NA % | | MD NA % XD NA % | | MD NA % XD NA % | |
| Shall pass low temperature impact test (Pass/Fail) | NA | | NA | | NA | |
| Shall pass low temperature flexibility test (Pass/Fail) | NA | | NA | | NA | |
| **9. PEARMEABILITY (WATER VAPOR TRANSMISSION)** | | | | | | |
| Max. 4.0 g./m² in 24h. | * g | | g | | g | |
| **10. WATER ABSORPTION** | | | | | | |
| Shall not absorb a mass of water greater than 2.0% | * % | | % | | % | |
| 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 NA % XD NA % | | MD % XD % | | MD % XD % | |
| **TYPE 2**-Shall not change more than 0.5% | MD * % XD * % | | 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 | **SARNAFIL (U.S.) INC.** | | **U.S. MINERAL PRODUCTS CO.** | | | |
| NOTE: Blank lines = applicable data not reported by manufacturer. | | | | | | |

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

| FLEXHIDE LR50 | | FLAGON SF | | FLAGON C | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Type | Class | Type | Class | Type | Class | Type | Class | Type | Class |
| 2 | B | 1 | A & B | 1,2 | A & B | | | | | | |
| NA mils | | 48 mils | | 40 mils | | mils | | mils | | mils | |
| mils | | 48 mils | | 48 mils | | mils | | mils | | mils | |
| | | Pass | | Pass | | | | | | | |
| MD NA psi XD NA psi | | MD 1250 psi XD 1280 psi | | MD 2600 psi XD 2600 psi | | MD psi XD psi | | MD psi XD psi | | MD psi XD psi | |
| MD psi XD psi | | MD 1280 psi XD 1280 psi | | MD psi XD psi | | MD psi XD psi | | MD psi XD psi | | MD psi XD psi | |
| MD % XD % | | MD 95 % XD 95 % | | MD 80 % XD 80 % | | MD % XD % | | MD % XD % | | MD % XD % | |
| | | Pass | | Pass | | | | | | | |
| MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | |
| MD % XD % | | MD 240 % XD 240 % | | MD 350 % XD 350 % | | MD % XD % | | MD % XD % | | MD % XD % | |
| | | Pass | | Pass | | | | | | | |
| MD psi XD psi | | MD psi XD psi | | MD −3 psi XD −3 psi | | MD psi XD psi | | MD psi XD psi | | MD psi XD psi | |
| MD % XD % | | MD % XD % | | MD −3.0 % XD −3.0 % | | MD % XD % | | MD % XD % | | MD % XD % | |
| | | Pass | | Pass | | | | | | | |
| | | Pass | | Pass | | | | | | | |
| | | Pass | | Pass | | | | | | | |
| MD % XD % | | MD 3.0 % XD 3.0 % | | MD 3.0 % XD 3.0 % | | MD % XD % | | MD % XD % | | MD % XD % | |
| | | Pass | | Pass | | | | | | | |
| | | Pass | | Pass | | | | | | | |
| g | | 2.8 g | | 2.8 g | | g | | g | | g | |
| % | | 2.6 % | | 1.8 % | | % | | % | | % | |
| MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | |
| MD psi XD psi | | MD psi XD psi | | MD psi XD psi | | MD psi XD psi | | MD psi XD psi | | MD psi XD psi | |
| MD NA % XD NA % | | MD 0.0 % XD 0.0 % | | MD 0.5 % XD 0.5 % | | MD % XD % | | MD % XD % | | MD % XD % | |
| MD % XD % | | MD 0.0 % XD 0.0 % | | MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | |
| % | | 0.4 % | | % | | % | | % | | % | |
| % | | % | | % | | % | | % | | % | |
| psi | | psi | | psi | | psi | | psi | | psi | |
| U.S. MINERAL PRODUCTS CO. | | WAT PRO, INC. | | | | | | | | | |

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

| PRODUCT NAME ► | BENOIT EPDM I | BENOIT EPDM I SUNSHIELD | BENOIT-045 EPDM II-BLACK | BENOIT-045 EPDM II-WHITE | BENOIT-060 EPDM II-BLACK | BENOIT-060 EPDM II-WHITE |
|---|---|---|---|---|---|---|
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Reinforcement | None | None | None | None | None | None |
| b) Color | Black | Beige | Black | White | Black | White |
| c) Installed wt. (lbs. per sq. ft. w/o ballast) | | | | | | |
| **2. COATING REQUIRED** | None | None | None | None | None | None |
| **3. USE** | | | | | | |
| a) New roofing | ● | ● | ● | ● | ● | ● |
| b) Reroofing | ● | ● | ● | ● | ● | ● |
| **4. FIELD LAP JOINT METHOD** | Tape | Tape | Contact Adhesive | Contact Adhesive | Contact Adhesive | Contact Adhesive |
| **5. TYPE OF ROOF SYSTEM** | | | | | | |
| a) Loose laid/ballasted (ballast: lbs. per sq. ft.) | 10 | | 10 | | | |
| b) Partially adhered-method | ● | ● | ● | ● | ● | ● |
| 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 | | | | | | |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | None | None | None | None | None | None |
| **9. WORKABLE TEMP RANGE** | 0°F-160°F | 0°F-160°F | 0°F-160°F | 0°F-160°F | 0°F-160°F | 0°F-160°F |
| **10. FLASHING MATERIAL** | Cured EPDM Uncured Neo | Cured EPDM Uncured Neo | Cured EPDM Uncured Neo | Cured EPDM Uncured Neo | Cured EPDM Uncured Neo | Cured EPDM Uncured Neo |
| **11. FLASHING METHOD** | Tape | Tape | Cement & Solvent | Cement & Solvent | Cement & Solvent | Cement & Solvent |
| **12. PRE-FORMED ACCESS AVAILABLE** | Yes | Yes | Yes | Yes | Yes | Yes |
| **13. COUNTRY OF ORIGIN** | Japan | Japan | USA | USA | USA | USA |
| **14. COUNTRY OF MANUFACTURE** | USA/Japan | USA/Japan | USA | USA | USA | USA |
| **15. YEAR FIRST COMMERCIAL USE** | | | | | | |
| a) Foreign (Year) | 1964 | 1978 | | | | |
| b) U.S.A. (Year, City-first installed) | 1980-St. Paul | 1983-San Antonio | 1982-Omaha | 1983-Charlotte | 1982-Wash. D.C. | 1983-Charlotte |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq. ft.) | | | | | | |
| a) Foreign | 3,500,000 | | | | | |
| b) U.S.A. | 250,000 | 10,000 | 20,000 | >1,000 | 8,000 | >1,000 |
| **17. WARRANTY** *(See "Important Notes")* | | | | | | |
| a) Duration (years) | 5,10,15 | 5,10,15 | 5,10,15 | 5,10,15 | 5,10,15 | 5,10,15 |
| 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** | Petroleum | Petroleum | Petroleum | Petroleum | Petroleum | Petroleum |
| **19. UL** *(See "Important Notes")* | ● | | | | | |
| **20. FM** *(See "Important Notes")* | ● | | | | | |
| **21. METHOD OF DISTRIB.** | Varied | | | | | |
| **22. # REGIONAL SERVICE LOCATIONS** | 4 | | | | | |
| **23. LICENSED APPLICATOR AGREEMENT** | No | | | | | |
| **24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)** | Field, Seminars | | | | | |
| **25. SALES INFORMATION; CONTACT** | Pat Downey | | | | | |
| **26. TECHNICAL INFORMATION; CONTACT** | Marc Caputo | | | | | |
| **COMPANY►** | BENOIT, INC | | | | | |

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

| EPDM 450 | EPDM 600 | SURE-SEAL EPDM | RUBBERGARD .045 | RUBBERGARD .060 | GAFPLY EP BALLASTED | GAFPLY EP FULLY ADHERED | GACO SYSTEM I EPDM-45 MILS | GACO SYSTEM I EPDM-60 MILS |
|---|---|---|---|---|---|---|---|---|
| No | No | None | None | None | None | None | None | None |
| Black | Black | Grey/Black | Black | Black | Black | Black | Black | Black |
| .27 | .34 | .30-.40 | .28 | .38 | .28 | .38 | .26 | .39 |
| None | None | None | None | None | None | None | Optional | Optional |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Contact Adhesive | Contact Adhesive | Adhesive/Sealant | Contact Adhesive | Contact Adhesive | Contact Adhesive | Contact Adhesive | Contact Adhesive | Contact Adhesive |
| 10 | 10 | ● | 10 | 10 | 10 | | 10 | 10 |
| Fastened | Fastened | | Battens | Battens | | | Mech. Fastened | Mech. Fastened |
| | ● | ● | | ● | | ● | Contact Adhesive | Contact Adhesive |
| | ● | ● | ● | ● | | | IRMA | IRMA |
| Dead Level | Dead Level | None | Dead Level | Dead Level | No Ponding | No Ponding | Dead Level | Dead Level |
| ● | | ● | ● | ● | ● | | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | ● | ●* | ● | ● |
| ● | ● | ● | ● | ● | ● | ●* | ● | ● |
| ● | | ● | ● | ● | ● | | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | | See Specifications | | | | *and others on a job-by-job basis | See Specifications | See Specifications |
| None | None | None | None | None | None | None | None | None |
| 25°F-160°F | 25°F-160°F | −25°F-180°F | 0°F-100°F | 0°F-100°F | | | 50°F-90°F | 50°F-90°F |
| Uncured Neo | Uncured Neo | Elastoform | Uncured Neo | Uncured Neo | Uncured Neo | Uncured Neo | EPDM | EPDM |
| Cement & Solvent | Cement & Solvent | Adhesive | | | Solvent Clean/ Contact Adhesive | Solvent Clean/ Contact Adhesive | Contact Adhesive | Contact Adhesive |
| No | No | No | Yes | Yes | No | No | No | No |
| USA | USA | USA | USA | USA | USA | USA | USA | USA |
| USA | USA | USA | USA | USA | USA | USA | USA | USA |
| Not Available | Not Available | 1963 | | | 1964 | 1964 | | |
| 1979-Chicago | 1980 | 1963-Harrisburg | 1980-Indianapolis | 1980-Indianapolis | 1964 | 1964 | 1979-Sioux City | 1979-Sioux City |
| Not Available | Not Available | | | | | | | |
| Not Available | Not Available | Thousands | 500,000 | 500,000 | | | 62,300 | 30,000 |
| 10 | 10 | 15 | 10 | 10 | 5 and 10 | 5 and 10 | 10 | 10 |
| | | | | | | | | |
| | | | ● | ● | 15 | 15 | | |
| ● | ● | ● | ● | ● | 5/10 | 5/10 | ● | ● |
| | | | | | | | | |
| ● | ● | ● | ● | ● | ● | ● | | |
| | | | | | $3.00 | $3.00 | ● | ● |
| ● | ● | See Specifications | ● | ● | ● | ● | ● | ● |
| ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Contact Supplier | Contact Supplier | Petroleum See Specifications | Hydrocarbon Solvents See Specifications | Hydrocarbon Solvents See Specifications | See Specifications | See Specifications | See Specifications | See Specifications |
| ● | | ● | ● | ● | ● | ● | ● | ● |
| | | ● | ● | ● | ● | ● | | |
| Sales Reps. | | Distrs./Reps. | Direct/Reps. | | Distributors | | Distr/Reps. | |
| 24 | | 39 | 30 | | 2 | | 31 | |
| Yes | | Yes | Yes | | Yes | | Yes | |
| Field, Seminars | | Seminars, Field, Factory | Field | | On Job Training, Seminars | | Field, Seminars | |
| | | Don Kyle | Dillinger/Moorhead | | James P. LaCasse | | 1-800-441-7464 | |
| R. Bradley | | Ed Kane | Ross Robertson | | B. Randall Ziegler | | 1-800-441-7464 | |
| CARBOLINE COMPANY | | CARLISLE SYNTEC SYSTEMS | FIRESTONE INDUSTRIAL PRODUCTS | | GAF CORPORATION | | GATES ENGINEERING COMPANY, INC. | |

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

| PRODUCT NAME ► | GENFLEX ACR | WHALESKIN/81 C-EPDM | WHALESKIN/81 WHITE EPDM | WHALESKIN/81 WHITE C-EPDM | WHALESKIN/81 EPDM | POLYKEN M-45 |
|---|---|---|---|---|---|---|
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Reinforcement | None | None | None | None | None | None |
| b) Color | Black | Black | Black | White | Black | Black |
| c) Installed wt. (lbs. per sq. ft. w/o ballast) | .26 | .31-45 mil/34-60 mil | .31-45 mil/34-60 mil | .31-45 mil/34-60 mil | .31-45 mil/34-60 mil | .28 |
| **2. COATING REQUIRED** | | None | None | None | None | |
| **3. USE** | | | | | | |
| a) New roofing | ● | ● | ● | ● | ● | ● |
| b) Reroofing | ● | ● | ● | ● | ● | ● |
| **4. FIELD LAP JOINT METHOD** | Coated Adhesive | Contact Adhesive | Contact Adhesive | Contact Adhesive | Contact Adhesive | Seam Tape |
| **5. TYPE OF ROOF SYSTEM** | | | | | | |
| a) Loose laid/ballasted (ballast: lbs. per sq. ft.) | 10.5 | ● | ● | ● | ● | 10 |
| b) Partially adhered-method | | ● | ● | ● | ● | Fastened |
| c) Fully adhered-method | ● | ● | ● | ● | ● | |
| d) Protected Membrane Roofing Assembly | ● | ● | ● | ● | ● | |
| **6. MINIMUM SLOPE** | 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 KES for application methods over each type | *Contact KES for application methods over each type | *Contact KES for application methods over each type | *Contact KES for application methods over each type | See Specifications |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | | None | None | None | None | None |
| **9. WORKABLE TEMP RANGE** | | | | | | 0°F-100°F |
| **10. FLASHING MATERIAL** | Uncured | Uncured EPDM | Uncured EPDM | Uncured EPDM | Uncured EPDM | Uncured Neo Self Adhering |
| **11. FLASHING METHOD** | Cemet | Contact Adhesive | Contact Adhesive | Contact Adhesive | Contact Adhesive | Self Adhering Tape |
| **12. PRE-FORMED ACCESS AVAILABLE** | 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) | | | | | | |
| b) U.S.A. (Year, City-first installed) | 1981-Adrian, MI | 1979-Thomaston | 1965-Mishawaka | 1982-Orlando | 1965-Mishawaka | 1982-Franklin |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq. ft.) | | | | | | |
| a) Foreign | | 200,000 | 200,000 | 200,000 | 200,000 | |
| b) U.S.A. | | | | | | |
| **17. WARRANTY** *(See "Important Notes")* | | | | | | |
| a) Duration (years) | 15 | 31 yrs (81 mil) 21 yrs (other) | 31 yrs (81 mil) 21 yrs (other) | 31 yrs (81 mil) 21 yrs (other) | 31 yrs (81 mil) 21 years (other) | 10 |
| b) Renewable after inspection | No | ● | ● | ● | ● | |
| c) Scope of coverage (repair of leaks) | | | | | | |
| c.1 Material only | ● | Also Available | Also Available | Also Available | Also Available | |
| 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 Manufacturer | | | | | Petroleum Contact Supplier |
| **19. UL** *(See "Important Notes")* | ● | ● | ● | ● | ● | Pending |
| **20. FM** *(See "Important Notes")* | | ● | ● | ● | ● | Pending |
| **21. METHOD OF DISTRIB.** | Distributors | Distributors | | | | Direct |
| **22. # REGIONAL SERVICE LOCATIONS** | 8 | | | | | 2 |
| **23. LICENSED APPLICATOR AGREEMENT** | Yes | No | | | | Yes |
| **24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)** | Seminars | Field, Seminars | | | | Field, Seminars |
| **25. SALES INFORMATION; CONTACT** | T. Clapperton | S. Griffin | | | | Ken Coffey |
| **26. TECHNICAL INFORMATION; CONTACT** | K. Russell | T. Arras | | | | Rick Dalainis |
| **COMPANY►** | GENERAL TIRE & RUBBER CO. BLDG. PRODUCTS | KELLY ENERGY SYSTEMS, INC. | | | | KENDALL COMPANY POLYKEN ROOFING SYSTEMS |

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

| POLYKEN M-60 | PLYSEAL EPDM | SUPEROOF-BLACK | SUPEROOF-WHITE | SUPEROOF-GREY | SUPEROOF-WHITE FIRE RETARDANT | REEVETECH | SMI RUBBER ROOF BLACK | SMI RUBBER ROOF WHITE |
|---|---|---|---|---|---|---|---|---|
| None | Yes | None | None | None | None | None | None | None |
| Black | Black | Black | White | Grey | White-Fire Ret. | Black | Black | Black |
| .35 | .31 | .30 | .35 | .35 | .40 | .28 | .26 | .26 |
| | None | None | None | None | None | None | None | None |
| | | | | | | | | |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| Seam Tape | Contact Adhesive | Splicing Cement | Splicing Cement | Splicing Cement | | Contact Adhesive | Contact Adhesive | Contact Adhesive |
| | | | | | | | | |
| 10 | 10-13 | 10 | 10 | 10 | | 10 | 10 Min. | 10 Min. |
| Fastened | Batten | Plate Bound | Plate Bound | Plate Bound | Plate Bound | | • | • |
| | • | Contact Cement | Contact Cement | Contact Cement | Plate | | • | • |
| | • | • | | | | | • | • |
| | Dead Level | Dead Level | Dead Level | Dead Level | | Dead Level | Dead Level | Dead Level |
| | | | | | | | | |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | | • | • |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | | • | • |
| See Specifications | Approval of Plyroof Tech. Dept. | Some May Require Barrier Sheet | Some May Require Barrier Sheet | Some May Require Barrier Sheet | Some May Require Barrier Sheet | | | |
| None | None | None | None | None | None | None | None | None |
| 0°F-100°F | 15°F-120°F | 0°F-160°F | 0°F-160°F | 0°F-160°F | 0°F-160°F | −40°F-180°F | | |
| Uncured Neo Self Adhering | Uncured Neo | Uncured EPDM | Uncured EPDM | Uncured EPDM | Uncured EPDM | Uncured Neo | Uncured EPDM | Uncured EPDM |
| Self Adhering Tape | Contact Adhesive | Splicing Adhesive | Splicing Adhesive | Splicing Adhesive | Splicing Adhesive | Adhesive | Contact Adhesive | Contact Adhesive |
| Yes | No | Yes | Yes | Yes | Yes | No | Yes | Yes |
| USA | USA | USA | USA | USA | USA | USA | USA | USA |
| USA | USA | USA | USA | USA | USA | USA | USA | USA |
| | | 1982 | | | | | | |
| 1982-Franklin | 1979-Salem | 1965-Mishawaka | 1966-Mishawaka | 1966-South Bend | 1982-Ft. Wayne | 1981-Washington | 1965-Mishawaka | 1965-Mishawaka |
| | 426,000 | 15,000 | | | | 0 | None | None |
| | | 250,000 | 50,000 | 1,000 | 3,000 | 7,000 | | |
| 10 | 10 | | | | | | | |
| | No | 10 | 10 | 10 | 10 | 10 | 5 or 10 Available | 5 or 10 Available |
| | | • | • | • | • | No | • | • |
| • | • | | | | | | | |
| | | • | • | • | • | • | • | • |
| • | • | | | | | | | |
| | | • | • | • | • | • | • | • |
| | | | | | | | | |
| • | | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| Petroleum Contact Supplier | | Aromatic Hydrocarbons | Aromatic Hydrocarbons | Aromatic Hydrocarbons | Aromatic Hydrocarbons | Petroleum See Specifications | | |
| Pending | • | • | • | • | • | • | • | • |
| Pending | | In Test | In Test | In Test | In Test | | • | • |
| Direct | Direct | Contractors & Distributors | | | | Contractors | Distributors | |
| 2 | 4 | 20 | | | | 3 | 30 | |
| Yes | Yes | Yes | | | | Yes | Yes | |
| Field, Seminars | Field | Field, Factory | | | | Field Training | Field, Seminars | |
| Ken Coffey | Charles Taft | Howells, Gettys | | | | K. Schwarz | D. Creed | |
| Rick Dalainis | Steve Condren | H. Howells | | | | B. Smith | S. DonFrancesco | |
| KENDALL COMPANY POLYKEN ROOFING SYSTEMS | PLYMOUTH RUBBER CO., INC. | PROTECTIVE COATINGS, INC. | | | | REEVES BROS., INC. | SYENERGY METHODS, INC. | |

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

| PRODUCT NAME ► | AGAPER-E | .045 WEATHERGARD | | | | |
|---|---|---|---|---|---|---|
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Reinforcement | None | None | | | | |
| b) Color | Black | Black | | | | |
| c) Installed wt. (lbs. per sq. ft. w/o ballast) | .31 | .28 | | | | |
| **2. COATING REQUIRED** | None | None | | | | |
| **3. USE** | | | | | | |
| a) New roofing | • | • | | | | |
| b) Reroofing | • | • | | | | |
| **4. FIELD LAP JOINT METHOD** | Cold Tape | Contact Adhesive/Primer Opt. | | | | |
| **5. TYPE OF ROOF SYSTEM** | | | | | | |
| a) Loose laid/ballasted (ballast: lbs. per sq. ft.) | 8 | 10 | | | | |
| b) Partially adhered-method | • | • | | | | |
| c) Fully adhered-method | • | • | | | | |
| d) Protected Membrane Roofing Assembly | | • | | | | |
| **6. MINIMUM SLOPE** | 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 | | | | | | |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | None | None | | | | |
| **9. WORKABLE TEMP RANGE** | 20°F-110°F | 20°F-160°F | | | | |
| **10. FLASHING MATERIAL** | EPDM | Uncured Neo | | | | |
| **11. FLASHING METHOD** | Tape | Cement & Solvent | | | | |
| **12. PRE-FORMED ACCESS AVAILABLE** | Yes | Yes | | | | |
| **13. COUNTRY OF ORIGIN** | Italy | USA | | | | |
| **14. COUNTRY OF MANUFACTURE** | Italy | USA | | | | |
| **15. YEAR FIRST COMMERCIAL USE** | | | | | | |
| a) Foreign (Year) | 1970 | | | | | |
| b) U.S.A. (Year, City-first installed) | New Jersey | 1981-Memphis | | | | |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq. ft.) | | | | | | |
| a) Foreign | 900,000 | | | | | |
| b) U.S.A. | 3,000 | 80,000 | | | | |
| **17. WARRANTY** *(See "Important Notes")* | | | | | | |
| a) Duration (years) | 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 | | Contract Amount | | | | |
| 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 | Petroleum Contaminants See Specifications | | | | |
| **19. UL** *(See "Important Notes")* | | • | | | | |
| **20. FM** *(See "Important Notes")* | | • | | | | |
| **21. METHOD OF DISTRIB.** | Distributors | Distrs./Reps. | | | | |
| **22. # REGIONAL SERVICE LOCATIONS** | 7 | 6 | | | | |
| **23. LICENSED APPLICATOR AGREEMENT** | Yes | Yes | | | | |
| **24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)** | Seminars | On Site, Seminars | | | | |
| **25. SALES INFORMATION; CONTACT** | 201/528-6727 | John Doherty | | | | |
| **26. TECHNICAL INFORMATION; CONTACT** | 201/528-6727 | G. M. Bailey | | | | |
| **COMPANY►** | WAT PRO, INC. | WEATHERGARD | | | | |

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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-54M | BENOIT EPDM I | | BENOIT EPDM I SUNSHIELD | | BENOIT .045 EPDM II - 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 | | 45 mils | |
| -Max. tolerance ± 10% nominal thickness | −.6 % | | −.6 % | | 10 % | |
| **2. STRENGTH OF MEMBRANE** | | | | | | |
| **TYPE 1**-Tensile strength: min. 870 psi (6MPa) | 1515 psi | | 1515 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) | 107 lbf | | 107 lbf | | 75 lbf | |
| After exposure: | | | | | | |
| Min. of 85% of value before exposure but not less than 68 lbf (300N) | 91 lbf | | 91 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 | 447 % | | 447 % | | 350 % | |
| **TYPE 2**-Min. 200% elongation | NA % | | NA % | | NA % | |
| **5. TENSILE SET** | | | | | | |
| **TYPE 1 ONLY**-Not greater than 5.0% | 2.9 % | | 2.9 % | | 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% | 3.1 % | | 3.1 % | | 3.0 % | |
| Shall not drop in strength by more than 10% as received (TEST 2) | +11 % | | +11 % | | 0.0 % | |
| Strength not less than: | | | | | | |
| **TYPE 1**-Tensile strength: 870 psi (6MPa) | 1679 psi | | 1679 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 0.0 % XD 0.5 % | | MD 0.0 % XD 0.5 % | | 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 109 % XD — % | | MD 109 % XD — % | | MD 100 % XD 100 % | |
| **TYPE 1**-Tensile strength: min. 870 PSI (6 MPa) | 1651 psi | | 1651 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% | 197 % | | 197 % | | 225 % | |
| **TYPE 2**-140% | NA % | | NA % | | NA % | |
| Dimensional change not to exceed 3.0% | MD 1.3 % XD 0.8 % | | MD 1.3 % XD 0.8 % | | 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 | +2.9 % | | +2.9 % | | 100 % | |
| **TYPE 2**-Shall retain 90% of breaking strength | NA % | | NA % | | NA % | |
| **TYPE 1**-Min. tensile strength of 870 psi (6 MPa) | 1559 psi | | 1559 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 199/in. lbf XD 177/in. lbf | | MD 199/in. lbf XD 177/in. 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 | BENOIT, INC. | | | | | |
| NOTE: Blank lines = applicable data not reported by manufacturer. | | | | | | |

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

| BENOIT .045 EPDM II - WHITE | | BENOIT .060 EPDM II - BLACK | | BENOIT .060 EPDM II - WHITE | | EPDM 450 | | EPDM 600 | | SURE-SEAL EPDM | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Type | Class | Type | Class | Type | Class | Type | Class | Type | Class |
| 1 | A | 1 | A | 1 | A | 1 | A | 1 | A | 1 | A & B |
| 45 mils | | 60 mils | | 60 mils | | 45 mils | | 60 mils | | 45, 60 mils | |
| 10 % | | 10 % | | 10 % | | 10 % | | 10 % | | ±10 % | |
| 1500 psi | | 1500 psi | | 1500 psi | | 1400 psi | | 1400 psi | | 1755 psi | |
| NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| 75 lbf | | 75 lbf | | 75 lbf | | 90 lbf | | 90 lbf | | 69.5 lbf | |
| 70 lbf | | 70 lbf | | 70 lbf | | 77 lbf | | 77 lbf | | 70.9 lbf | |
| 85 % | | 85 % | | 85 % | | 90 % | | 90 % | | 102 % | |
| NA % | | NA % | | NA % | | NA % | | NA % | | 102 % | |
| 350 % | | 350 % | | 350 % | | 300 % | | 300 % | | 445 % | |
| NA % | | NA % | | NA % | | NA % | | NA % | | NA % | |
| 3.0 % | | 3.0 % | | 3.0 % | | <5.0 % | | <5.0 % | | 0.1 % | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| 3.0 % | | 3.0 % | | 3.0 % | | <2.0 % | | <2.0 % | | 2.3 % | |
| 0.0 % | | 0.0 % | | 0.0 % | | <10 % | | <10 % | | 2.5 % | |
| 1500 psi | | 1500 psi | | 1500 psi | | 1260 psi | | 1260 psi | | 1711 psi | |
| NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| MD 1.0 % XD 1.0 % | | MD 1.0 % XD 1.0 % | | MD — % XD — % | | MD <3.0 % XD <3.0 % | | MD <3.0 % XD <3.0 % | | MD 0.29 % XD 0.05 % | |
| MD 100 % XD 100 % | | MD 100 % XD 100 % | | MD 100 % XD 100 % | | MD 85 % XD 85 % | | MD 85 % XD 85 % | | MD 97 % XD 97 % | |
| 1500 psi | | 1500 psi | | 1500 psi | | 1200 psi | | 1200 psi | | 1697 psi | |
| NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| 225 % | | 225 % | | 225 % | | 210 % | | 210 % | | 263 % | |
| NA % | | NA % | | NA % | | NA % | | NA % | | NA % | |
| MD 1.5 % XD 1.5 % | | MD 1.5 % XD 1.5 % | | MD 1.5 % XD 1.5 % | | MD 2.0 % XD 2.0 % | | MD 2.0 % XD 2.0 % | | MD 0.49 % XD 0.56 % | |
| Pass | | Pass | | | | Pass | | Pass | | Pass | |
| Pass | | Pass | | Pass | | Pass | | Pass | | | |
| 100 % | | 100 % | | 100 % | | 90 % | | 90 % | | — % | |
| NA % | | NA % | | NA % | | NA % | | NA % | | NA % | |
| 1500 psi | | 1500 psi | | 1500 psi | | 1260 psi | | 1260 psi | | — 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 7 lbf XD 7 lbf | | MD 7 lbf XD 7 lbf | | MD 14 lbf XD 14 lbf | | MD 14 lbf XD 14 lbf | | MD 8.2 lbf XD 8.2 lbf | |
| NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| BENOIT, INC. | | | | | | CARBOLINE COMPANY | | | | CARLISLE SYNTEC SYSTEMS | |

# 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-54M | RUBBERGARD .045" Type 1 | RUBBERGARD .045" Class A & B | RUBBERGARD .060" Type 1 | RUBBERGARD .060" Class A & B | GAFPLY EP BALLASTED Type | GAFPLY EP BALLASTED Class |
|---|---|---|---|---|---|---|
| **1. THICKNESS** | | | | | | |
| **TYPE 1 & 2**-Min. 39 mils in (1.0 mm) | 45 mils | | 60 mils | | ____ mils | |
| -Max. tolerance ± 10% nominal thickness | 10 % | | 10 % | | ____ % | |
| **2. STRENGTH OF MEMBRANE** | | | | | | |
| **TYPE 1**-Tensile strength: min. 870 psi (6MPa) | 1650 psi | | 1650 psi | | ____ psi | |
| **TYPE 2**-Breaking strength: min 112 lbf (500N) | NA lbf | | NA 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 | 450 % | | 450 % | | ____ % | |
| **TYPE 2**-Min. 200% elongation | NA % | | NA % | | ____ % | |
| **5. TENSILE SET** | | | | | | |
| **TYPE 1 ONLY**-Not greater than 5.0% | <5.0 % | | <5.0 % | | ____ % | |
| **6. LOW TEMPERATURE FLEXIBILITY** | | | | | | |
| Shall show no cracking (Pass/Fail) | Pass | | Pass | | ____ | |
| **7. WATER ABSORPTION - after immersion in water:** | | | | | | |
| Change in mass not to exceed 5.0% | +2.0 % | | +2.0 % | | ____ % | |
| Shall not drop in strength by more than 10% as received (TEST 2) | ____ % | | ____ % | | ____ % | |
| Strength not less than: | | | | | | |
| **TYPE 1**-Tensile strength: 870 psi (6MPa) | 870 psi | | 870 psi | | ____ psi | |
| **TYPE 2**-Breaking strength: 112 lbf (500N) | NA lbf | | NA lbf | | ____ lbf | |
| **8. DIMENSIONAL STABILITY AFTER WATER ABSORPTION** | | | | | | |
| Change in length not to exceed 3.0% | MD <1.0 % XD <1.0 % | | MD <1.0 % XD <1.0 % | | 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 97 % XD 97 % | | MD 97 % XD 97 % | | MD ____ % XD ____ % | |
| **TYPE 1**-Tensile strength: min. 870 PSI (6 MPa) | 1600 psi | | 1600 psi | | ____ psi | |
| **TYPE 2**-Breaking strength: min. 112 lbf (500N) | NA lbf | | NA lbf | | ____ lbf | |
| Pass low temperature flexibility test (Pass/Fail) | Pass | | Pass | | ____ | |
| Have a min. elongation at break | | | | | | |
| **TYPE 1**-210% | 295 % | | 295 % | | ____ % | |
| **TYPE 2**-140% | NA % | | NA % | | ____ % | |
| Dimensional change not to exceed 3.0% | MD <1.0 % XD <1.0 % | | MD <1.0 % XD <1.0 % | | MD ____ % XD ____ % | |
| **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) | ____ | | ____ | | ____ | |
| 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 % | | ____ % | |
| **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 | | ____ 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 10 lbf XD 10 lbf | | MD 10 lbf XD 10 lbf | | MD ____ lbf XD ____ lbf | |
| **14. TEARING STRENGTH** | | | | | | |
| **TYPE 2 ONLY**-Shall exceed 8 lbf (35N) | NA lbf | | NA lbf | | ____ lbf | |
| LEGEND: NA = not applicable; MD = machine direction; XD = cross machine direction | **FIRESTONE INDUSTRIAL PRODUCTS** | | | | **GAF CORPORATION** | |
| NOTE: Blank lines = applicable data not reported by manufacturer. | | | | | | |

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

| GAFPLY EP FULLY ADHERED | | GACO SYSTEM I EPDM - 45 MILS | | GACO SYSTEM I EPDM - 60 MILS | | GENFLEX ACR | | WHALESKIN/81 C-EPDM C-EPDM | | WHALESKIN/81 WHITE EPDM | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Type | Class | Type | Class | Type | Class | Type | Class | Type | Class |
| | | 1 | A & B | 1 | A & B | 1 | A | 1 | A | 1 | A |
| ____ mils | | 45 mils | | 60 mils | | 45 mils | | 45 mils | | 45 mils | |
| ____ % | | 10 % | | 10 % | | 5 % | | 10 % | | 10 % | |
| ____ psi | | 1500 psi | | 1500 psi | | 1350 psi | | 1445 psi | | 1774 psi | |
| ____ lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| ____ lbf | | ____ lbf | | ____ lbf | | >68 lbf | | ____ lbf | | ____ lbf | |
| ____ lbf | | ____ lbf | | ____ lbf | | >68 lbf | | ____ lbf | | ____ lbf | |
| ____ % | | ____ % | | ____ % | | 85 % | | ____ % | | ____ % | |
| ____ % | | ____ % | | ____ % | | ____ % | | NA % | | NA % | |
| ____ % | | 350 % | | 350 % | | 350 % | | 320 % | | 390 % | |
| ____ % | | NA % | | NA % | | NA % | | NA % | | NA % | |
| ____ % | | <5.0 % | | <5.0 % | | >5.0 % | | ____ % | | ____ % | |
| ____ | | ____ | | ____ | | Pass | | Pass | | Pass | |
| ____ % | | 3.0 % | | 3.0 % | | 1.0 % | | 2.2 % | | 3.2 % | |
| ____ % | | ____ % | | ____ % | | <10 % | | ____ % | | ____ % | |
| ____ psi | | ____ psi | | ____ psi | | 870 psi | | ____ psi | | ____ psi | |
| ____ lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| MD ____ % XD ____ % | | MD ____ % XD ____ % | | MD ____ % XD ____ % | | MD <3.0 % XD <3.0 % | | MD 0.6 % XD 0.7 % | | MD 1.0 % XD 0.7 % | |
| MD ____ % XD ____ % | | MD ____ % XD ____ % | | MD ____ % XD ____ % | | MD >80 % XD >80 % | | MD ____ % XD ____ % | | MD ____ % XD ____ % | |
| ____ psi | | 1400 psi | | 1400 psi | | 870 psi | | 1540 psi | | 1574 psi | |
| ____ lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| ____ | | ____ | | ____ | | Pass | | ____ | | ____ | |
| ____ % | | 250 % | | 250 % | | 245 % | | 230 % | | 267 % | |
| NA % | | NA % | | NA % | | 255 % | | NA % | | NA % | |
| MD ____ % XD ____ % | | MD ____ % XD ____ % | | MD ____ % XD ____ % | | MD 1.0 % XD 1.0 % | | MD ____ % XD ____ % | | MD ____ % XD ____ % | |
| ____ | | Pass | | Pass | | Pass | | Pass | | Pass | |
| ____ | | ____ | | ____ | | Pass | | ____ | | ____ | |
| ____ % | | ____ % | | ____ % | | >90 % | | ____ % | | ____ % | |
| ____ % | | NA % | | NA % | | NA % | | NA % | | NA % | |
| ____ psi | | ____ psi | | ____ psi | | >870 psi | | ____ psi | | ____ psi | |
| ____ lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| ____ | | ____ | | ____ | | Pass | | ____ | | ____ | |
| MD ____ lbf XD ____ lbf | | MD 6 lbf XD 6 lbf | | MD 6 lbf XD 6 lbf | | MD 10.4 lbf XD 10.4 lbf | | MD 180 lbf XD ____ lbf | | MD 170 lbf XD ____ lbf | |
| ____ lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| GAF CORPORATION | | GATES ENGINEERING CO., INC. | | | | GENERAL TIRE | | KELLY ENERGY SYSTEMS, INC. | | | |

# 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-54M | WHITE C EPDM | | WHALESKIN/81 EPDM | | POLYKEN M-45 | |
|---|---|---|---|---|---|---|
| | 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 | | 45 mils | |
| -Max. tolerance ± 10% nominal thickness | 10 % | | 10 % | | 5 % | |
| **2. STRENGTH OF MEMBRANE** | | | | | | |
| **TYPE 1**-Tensile strength: min. 870 psi (6MPa) | 1774 psi | | 1445 psi | | 1600 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 | | 85 lbf | |
| After exposure: | | | | | | |
| Min. of 85% of value before exposure but not less than 68 lbf (300N) | lbf | | lbf | | 100 lbf | |
| **CLASS A**-After immersion and freeze thaw cycles (min. 85%) | % | | % | | 117 % | |
| **CLASS B**-After immersion (min. 85%) | NA % | | NA % | | NA % | |
| **4. ELONGATION AT BREAK** | | | | | | |
| **TYPE 1**-Min. 300% elongation | 390 % | | 320 % | | 400 % | |
| **TYPE 2**-Min. 200% elongation | NA % | | NA % | | NA % | |
| **5. TENSILE SET** | | | | | | |
| **TYPE 1 ONLY**-Not greater than 5.0% | % | | % | | 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% | 3.2 % | | 2.2 % | | .01 % | |
| Shall not drop in strength by more than 10% as received (TEST 2) | % | | % | | 0.0 % | |
| Strength not less than: | | | | | | |
| **TYPE 1**-Tensile strength: 870 psi (6MPa) | psi | | psi | | 1600 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 0.7 % | | MD 0.6 % XD 0.7 % | | MD 0.0 % XD 0.0 % | |
| **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 % XD % | | MD % XD % | | MD 100 % XD 100 % | |
| **TYPE 1**-Tensile strength: min. 870 PSI (6 MPa) | 1574 psi | | 1540 psi | | 1600 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% | 267 % | | 230 % | | 400 % | |
| **TYPE 2**-140% | NA % | | NA % | | NA % | |
| Dimensional change not to exceed 3.0% | MD % XD % | | MD % XD % | | MD 0.0 % XD 0.0 % | |
| **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) | | | | | 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) | psi | | psi | | 1584 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 170 lbf XD lbf | | MD 180 lbf XD lbf | | MD 6.216 lbf XD 6.192 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 | KELLY ENERGY SYSTEMS, INC. | | | | KENDALL CO. POLYKEN ROOFING SYSTEMS | |
| NOTE: Blank lines = applicable data not reported by manufacturer. | | | | | | |

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

| POLYKEN M-60 | | PLYSEAL EPDM | | SUPEROOF - BLACK | | SUPEROOF - WHITE | | SUPEROOF - GRAY | | SUPEROOF - WHITE FIRE RETARDANT | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Type | Class | Type | Class | Type | Class | Type | Class | Type | Class |
| 1 | A | 2 | A | 1 | A & B | 1 | A & B | 1 | A & B | 1 | A & B |
| 60 mils | | 45 mils | | 45, 55, 60 mils | | 45, 55, 60 mils | | 45, 55, 60 mils | | 45, 55, 60 mils | |
| 5 % | | +4.0-2.0 % | | ±10 % | | ±10 % | | ±10 % | | ±10 % | |
| 1600 psi | | NA psi | | 1400 Min. psi | | 1400 Min. psi | | 1400 Min. psi | | 1400 Min. psi | |
| NA lbf | | 89 lbf | | 200 lbf | | 200 lbf | | 200 lbf | | 200 lbf | |
| 85 lbf | | 72 lbf | | lbf | | lbf | | lbf | | lbf | |
| 100 lbf | | 68 lbf | | lbf | | lbf | | lbf | | lbf | |
| 117 % | | 94 % | | % | | % | | % | | % | |
| NA % | | 94 % | | % | | % | | % | | % | |
| 400 % | | NA % | | 300 Min. % | | 300 Min. % | | 300 Min. % | | 300 Min. % | |
| NA % | | 300 % | | NA % | | NA % | | NA % | | NA % | |
| 0.0 % | | NA % | | % | | % | | % | | % | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| .01 % | | +0.2 % | | 1.5 % | | 1.5 % | | 1.5 % | | 1.5 % | |
| 0.0 % | | 9.0 % | | 5.0 % | | 5.0 % | | 5.0 % | | 5.0 % | |
| 1600 psi | | NA psi | | 1325 psi | | 1325 psi | | 1325 psi | | 1325 psi | |
| NA lbf | | 90 lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| MD 0.0 % XD 0.0 % | | 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 100 % XD 100 % | | MD 90 % XD 90 % | | MD 93 % XD 93 % | | MD 93 % XD 93 % | | MD % XD 93 % | | MD 93 % XD 93 % | |
| 1600 psi | | NA psi | | 1200 psi | | 1200 psi | | 1200 psi | | 1200 psi | |
| NA lbf | | 90 lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| 400 % | | NA % | | 300 Min. % | | 300 Min. % | | 300 Min. % | | 300 Min. % | |
| NA % | | 250 % | | NA % | | NA % | | NA % | | NA % | |
| MD 0.0 % XD 0.0 % | | 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 % | |
| Pass | | Pass | | Pass | | Pass | | Pass | | Pass | |
| | | Pass | | Pass | | Pass | | Pass | | Pass | |
| 99 % | | NA % | | 92 % | | 92 % | | 92 % | | 92 % | |
| NA % | | 93 % | | NA % | | NA % | | NA % | | NA % | |
| 1584 psi | | NA psi | | 1300 psi | | 1300 psi | | 1300 psi | | 1300 psi | |
| NA lbf | | 91 lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| Pass | | | | Pass | | Pass | | Pass | | Pass | |
| MD 7.952 lbf XD 7.748 lbf | | 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 | |
| NA lbf | | 9 lbf | | NA lbf | | NA lbf | | NA lbf | | NA lbf | |
| KENDALL CO. POLYKEN ROOFING SYSTEMS | | PLYMOUTH RUBBER COMPANY, INC. | | PROTECTIVE COATINGS, INC. | | | | | | | |

# 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-54M | REEVETECH Type 1 | REEVETECH Class A | SMI RUBBER ROOF BLACK Type 1 | SMI RUBBER ROOF BLACK Class A | SMI RUBBER ROOF WHITE Type 1 | SMI RUBBER ROOF WHITE Class A |
|---|---|---|---|---|---|---|
| **1. THICKNESS** | | | | | | |
| **TYPE 1 & 2**-Min. 39 mils in (1.0 mm) | 45 mils | | 45 mils | | 45 mils | |
| -Max. tolerance ± 10% nominal thickness | 7 % | | ±10 % | | ±10 % | |
| **2. STRENGTH OF MEMBRANE** | | | | | | |
| **TYPE 1**-Tensile strength: min. 870 psi (6MPa) | 1700 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) | 240 lbf | | lbf | | lbf | |
| After exposure: | | | | | | |
| Min. of 85% of value before exposure but not less than 68 lbf (300N) | 240 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) | 1750 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) | 1750 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. | | | | | | |

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

| AGAPER E | | .045 WEATHERGARD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Class | Type | Class | Type | Class | Type | Class | Type | Class | Type | Class |
| 1 | A & B | 1 | A | | | | | | | | |
| 45 mils | | 45 mils | | mils | | mils | | mils | | mils | |
| 10 % | | 7 % | | % | | % | | % | | % | |
| 1400 psi | | 1400 psi | | psi | | psi | | psi | | psi | |
| 115 lbf | | NA lbf | | lbf | | lbf | | lbf | | lbf | |
| lbf | | 82 lbf | | lbf | | lbf | | lbf | | lbf | |
| lbf | | lbf | | lbf | | lbf | | lbf | | lbf | |
| % | | % | | % | | % | | % | | % | |
| % | | NA % | | % | | % | | % | | % | |
| 350 % | | 300 % | | % | | % | | % | | % | |
| NA % | | NA % | | % | | % | | % | | % | |
| 4.0 % | | +4 % | | % | | % | | % | | % | |
| Pass | | Pass | | | | | | | | | |
| 3.5 % | | 3 % | | % | | % | | % | | % | |
| % | | % | | % | | % | | % | | % | |
| psi | | psi | | psi | | psi | | psi | | psi | |
| NA lbf | | NA lbf | | lbf | | lbf | | lbf | | lbf | |
| MD 1.0 % XD % | | MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | |
| MD 110 % XD % | | MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | |
| psi | | 1200 psi | | psi | | psi | | psi | | psi | |
| NA lbf | | NA lbf | | lbf | | lbf | | lbf | | lbf | |
| Pass | | | | | | | | | | | |
| 300 % | | 210 % | | % | | % | | % | | % | |
| NA % | | NA % | | % | | % | | % | | % | |
| MD % XD % | | MD ±2.0 % XD ±2.0 % | | MD % XD % | | MD % XD % | | MD % XD % | | MD % XD % | |
| Pass | | Pass | | | | | | | | | |
| | | | | | | | | | | | |
| % | | % | | % | | % | | % | | % | |
| NA % | | NA % | | % | | % | | % | | % | |
| psi | | psi | | psi | | psi | | psi | | psi | |
| NA lbf | | NA lbf | | lbf | | lbf | | lbf | | lbf | |
| Pass | | | | | | | | | | | |
| MD lbf XD lbf | | MD 11.11 lbf XD lbf | | MD lbf XD lbf | | MD lbf XD lbf | | MD lbf XD lbf | | MD lbf XD lbf | |
| NA lbf | | NA lbf | | lbf | | lbf | | lbf | | lbf | |
| WAT PRO, INC. | | WEATHERGARD | | | | | | | | | |

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

| | NEOPRENE Polychloroprene | | | | CSPE HYPALON | PIB |
|---|---|---|---|---|---|---|
| **PRODUCT NAME ►** | **SURE-SEAL NEO** | **GACO SYSTEM II NEOPRENE-BLACK** | **GACO SYSTEM II NEOPRENE-GRAY** | **PLYSHIELD NEOPRENE** | **CSPE HYPALON UNIROOF** | **PIB 1000** |
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Reinforcement | None | None | None | Yes | None | Yes |
| b) Color | Grey/Black | Black | Gray | Black | White | Black |
| c) Installed wt. (lbs. per sq. ft. w/o ballast) | .46 | .45 | .45 | .28 | .25 | .32 w/o backing |
| **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 | Heat Weld | Pressure Weld |
| **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. | | Existing Roof |
| **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°F-120°F | 25°F-160°F |
| **10. FLASHING MATERIAL** | Elastoform | Uncured Neo | Uncured Neo | Uncured Neo | Hypalon | PIB |
| **11. FLASHING METHOD** | Adhesive | Contact Adhesive | Contact Adhesive | Contact Adhesive | Cement | Cement & Solvent |
| **12. PRE-FORMED ACCESS AVAILABLE** | Yes | No | No | No | Yes | Yes |
| **13. COUNTRY OF ORIGIN** | USA | USA | USA | USA | UK | USA |
| **14. COUNTRY OF MANUFACTURE** | USA | USA | USA | USA | UK | USA |
| **15. YEAR FIRST COMMERCIAL USE** | | | | | | |
| a) Foreign (Year) | 1960 | 1973-Saudi Arabia | 1973-Saudi Arabia | | 1963 | 1968 |
| b) U.S.A. (Year, City-first installed) | 1960-Carlisle | 1961-Wash., D.C. | 1961-Wash., D.C. | 1963-Denver | 1978-LaVerne, CA | 1979-St. Louis |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq. ft.) | | | | | | |
| a) Foreign | | 71,000 Black & Gray | 71,000 Black & Gray | | 325,000 | Not Available |
| b) U.S.A. | Thousands | 180,000 Black & Gray | 180,000 Black & Gray | 154,000 | 3,000 | Not Available |
| **17. WARRANTY** *(See "Important Notes")* | | | | | | |
| a) Duration (years) | 10 | 10 | 10 | 10 | 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 | See Literature | • | • | | • | • |
| e.2 Consequential damages | • | • | • | • | • | • |
| **18. LIMITATIONS OR RESTRICTED USE** | See Literature | See Specifications | See Specifications | | None | Contact Supplier |
| **19. UL** *(See "Important Notes")* | | | | • | | • |
| **20. FM** *(See "Important Notes")* | | • | • | | | • |
| **21. METHOD OF DISTRIB.** | Distrs./Reps. | Distrs./Reps. | | Direct | Distributors | Sales Reps |
| **22. # REGIONAL SERVICE LOCATIONS** | 39 | 31 | | 4 | 6 | 24 |
| **23. LICENSED APPLICATOR AGREEMENT** | Yes | Yes | | Yes | Yes | Yes |
| **24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)** | Field, Seminars Factory | Field, Seminars | | Field | Field | Field, Seminars |
| **25. SALES INFORMATION; CONTACT** | Don Kyle | 1-800-441-7464 | | Charles Taft | J. Whittemore | |
| **26. TECHNICAL INFORMATION; CONTACT** | Ed Kane | 1-800-441-7464 | | Steve Condren | J. Whittemore | R. Bradley |
| **COMPANY►** | CARLISLE SYNTEC SYSTEMS | GATES ENGINEERING CO., INC. | | PLYMOUTH RUBBER CO. INC. | CENTRAL STATES ASSOC. CORP. | CARBOLINE CO. |

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

| PIB Polyisobutylene | | | CPE Chloronated Polyethylene | | | | | Other *continued→* |
|---|---|---|---|---|---|---|---|---|
| ALPHAGARD | GEOFLEX | TROPIGARD | ALKORFLEX 35093 | ALKORFLEX 35094 | ALKORFLEX 35096 | COOL TOP 40 | FLEXHIDE CPE | BOND GREY 35 |
| 60 Mil PIB 40 Mil Fleece | Polyester | 60 Mil PIB 40 Mil Fleece | None | None | Polyester Fiber | Polyester | Polyester | Polyester |
| Black | Black | Black | Light Grey | Light Grey | Light Grey | White | White | Grey |
| .57 | .57 | .57 | .33 | .30 | .30 | .31 | .30 | .22 |
| None | None | None | None | None | None | None | None | None |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| Self-sealing | Self-sealing | Self-sealing | Solvent/Heat | Solvent/Heat | Solvent/Heat | Heat | Solvent/Heat | Heat Weld |
| 10 | 12 | 13 | 10 | | 10 | | | |
| Asphalt/Adhesive | • | Asphalt or Adhesive | | • | | | | • |
| Asphalt/Adhesive | | Asphalt or Adhesive | | • | | • | Mech. Fastened | • |
| • | • | • | | | • | | | |
| Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level | Dead Level |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | | • | • | • | • |
| • | • | • | • | | • | | • | • |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | | • | • | • | • |
| Recovery Board | • | Recovery Board | • | • | • | • | • | • |
| | | Existing Smooth Asphalt BUR | | | | Extruded Polystyrene, Isocyanurate | Extruded Polystyrene, Isocyanurate | |
| None | None | None | None | None | None | None | None | None |
| 20°F-100°F | 20°F-100°F | 20°F-100°F | 0°F-115°F | 0°F-115°F | 0°F-115°F | 0°F-120°F | | None |
| Unbacked PIB | PIB | Unbacked PIB | CPE Coated Metal | CPE Coated Metal | CPE Coated Metal | Cool Top 40 & CPE Coated Metal | Coated Metal | Conventional |
| Solvent/Weld | Cement & Solvent | Solvent/Weld | Solvent/Heat | Solvent/Heat | Solvent/Heat | Heat | Solvent/Heat | Conventional |
| Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Germany | West Germany | Germany | Belgium | Belgium | Belgium | USA | USA | USA |
| Germany & USA | USA | Germany &USA | Belgium | Belgium | Belgium | USA | USA | USA |
| 1950 | 1960 | 1950 | 1973 | 1976 | 1974 | | | |
| 1977-St. Louis | 1979-St. Louis | 1978-Amsterdam, NY | 1979-Madison | 1980-St. Louis | 1979-Madison | 1978-Newark | 1982-Stanhope | 1981-Kentucky |
| 8,200,000 | 7,000,000 | 75,000,000 | | | | | | |
| 165,000 | 70,000 | 1,500,000 | >20,000 | >20,000 | >50,000 | 250,000 | | |
| 10 | 5 or 10 | 10 | 10 | 10 | 10 | 10 | 5 or 10 | 10 |
| No | Yes | Available on Request | | | | | | |
| | | | | | | | | |
| • | • | • | • | • | • | • | • | • |
| | • | • | • | • | • | | | |
| | | | | | | • | • | • |
| | • | | | | | | | |
| • | • | • | • | • | • | • | • | • |
| • | • | • | • | • | • | • | • | • |
| Yes e Specifications | Yes See Literature | Yes See Specifications | | | | Consult Cooley | Petroleum, Coal Tar Products See Specifications | See Specifications |
| • | • | Class A & B | • | | • | • | | • |
| • | • | • | | | • | • | | • |
| Distrs./Reps. | | Distrs./Reps. | Mfgr./Reps. | | | Mfgr./Reps. | Licensed Contractors Only | Contrs./Direct |
| 2 | 4 | 2 | | | | 2 | 1 | |
| Yes | Yes | Yes | Yes | | | Yes | Yes | Yes |
| Yes | Field, Seminars Factory | Yes | On Job Training | | | Field, Seminars | Field, Seminars, Factory | Yes |
| harles Kellar | Joe Chew | Ron Utzler | Office | | | Office | G. Schubert | Steve Irwin |
| erner H. Huhn | Joe Chew | Ron Utzler | Office | | | Office | F. Neuwirth | Wayne Holden |
| R COMPANY | REPUBLIC POWDERED METALS | TROPICAL INDUSTRIAL COATINGS, INC. | ALKOR-DIVISION OF THE SOLVAY AMERICAN CORP. | | | COOLEY ROOFING SYSTEMS INC. | U.S. MINERAL PRODUCTS CO. | BOND COTE SYSTEMS |

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

| | OTHER FABRICATED SHEET APPLIED MEMBRANES | | | | | |
|---|---|---|---|---|---|---|
| **PRODUCT NAME ►** | **DURO-LAST** | **OTTO SINGLE-PLY STR** | **SEAL-DRY, 30 MILS** | **SEAL-DRY, 34 MILS** | **FIBERTITE** | |
| **1. PRODUCT DESCRIPTION** | | | | | | |
| a) Reinforcement | Reinforced Polyester | Woven Fiberglass | Polyester | Fiberglass | Polyester | |
| b) Color | White | White | White | White | Light Grey | |
| c) Installed wt. (lbs. per sq. ft. w/o ballast) | .21 | .19 | .25 | | .25 | |
| **2. COATING REQUIRED** | None | None | None | None | None | |
| **3. USE** | | | | | | |
| a) New roofing | • | • | • | • | • | |
| b) Reroofing | • | • | • | • | • | |
| **4. FIELD LAP JOINT METHOD** | Heat Gun | Air Cure | Heat Weld | Heat Weld | Heat Weld | |
| **5. TYPE OF ROOF SYSTEM** | | | | | | |
| a) Loose laid/ballasted (ballast: lbs. per sq. ft.) | | | • | • | | |
| b) Partially adhered-method | | | Mech. Fastened | Mech. Fastened | Mech. Fastened | |
| c) Fully adhered-method | Mechanically | • | • | • | | |
| d) Protected Membrane Roofing Assembly | | | | | | |
| **6. MINIMUM SLOPE** | Any | 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 | | | • | • | Check With Manufacturer | |
| **8. RESTRICTED REGIONS** *(See "Important Notes")* | None | None | None | None | None | |
| **9. WORKABLE TEMP RANGE** | −30°F-160°F | No Restrictions | −30°F-160°F | −30°F-160°F | −10°-160°F | |
| **10. FLASHING MATERIAL** | Roof Material | Same Materials & Silicone Caulking | Roof Membrane | Roof Membrane | TPE | |
| **11. FLASHING METHOD** | Heat Gun & Metal | Air Cure | Heat Weld | Heat Weld | Heat Weld | |
| **12. PRE-FORMED ACCESS AVAILABLE** | Yes | Not Necessary | Yes | Yes | Yes | |
| **13. COUNTRY OF ORIGIN** | USA | USA | USA | USA | USA | |
| **14. COUNTRY OF MANUFACTURE** | USA | USA | USA | USA | USA | |
| **15. YEAR FIRST COMMERCIAL USE** | | | | | | |
| a) Foreign (Year) | | | | | 1974 | |
| b) U.S.A. (Year, City-first installed) | 1978 | 1979-Kansas City | | | 1968-Sarasota | |
| **16. NO. OF SQUARES INSTALLED** (1 square=100 sq. ft.) | | | | | | |
| a) Foreign | None | | | | 10,000 | |
| b) U.S.A. | 100,000 | 10,000 | | | 40,000 | |
| **17. WARRANTY** *(See "Important Notes")* | | | | | | |
| a) Duration (years) | 20 | 10 | 15 | 15 | 10 | |
| b) Renewable after inspection | No | | No | No | | |
| c) Scope of coverage (repair of leaks) | | | | | | |
| c.1 Material only | Last 10 Years | | | | | |
| c.2 Workmanship & material | First 10 Years | • | • | • | • | |
| 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** | None | See Specifications | None | None | See Specifications | |
| **19. UL** *(See "Important Notes")* | • | | In Test | In Test | • | |
| **20. FM** *(See "Important Notes")* | • | | In Test | In Test | • | |
| **21. METHOD OF DISTRIB.** | Reps./Dealers | Licensed Distrs. | Reps./Installers | | Direct | |
| **22. # REGIONAL SERVICE LOCATIONS** | | | | | 3 | |
| **23. LICENSED APPLICATOR AGREEMENT** | Yes | Yes | Yes | | Yes | |
| **24. APPLICATOR TRAINING (FIELD, SEMINARS, FACTORY)** | Field, Factory | Yes | Field, Seminars, Factory | | Field, Seminars, Factory | |
| **25. SALES INFORMATION; CONTACT** | Bill Frederick | Tom Olsen | Bill Shroyer | | Sam Eisentrout | |
| **26. TECHNICAL INFORMATION; CONTACT** | John Burt | John Sweeney | Jack Givens | | Sam Eisentrout | |
| **COMPANY►** | 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-54M | 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 mils | | 60 mils | | 60 mils | |
| -Max. tolerance ± 10% nominal thickness | ±10 % | | 10 % | | 10 % | |
| **2. STRENGTH OF MEMBRANE** | | | | | | |
| **TYPE 1**-Tensile strength: min. 870 psi (6MPa) | 1750 psi | | 2000 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%) | % | | % | | % | |
| **4. ELONGATION AT BREAK** | | | | | | |
| **TYPE 1**-Min. 300% elongation | 360 % | | 350 % | | 650 % | |
| **TYPE 2**-Min. 200% elongation | 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. | | | | | | |

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

| NEOPRENE | | CSPE HYPALON | | PIB *continued →* | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LYSHIELD NEOPRENE | | UNIROOF | | PIB 1000 | | | | | | | |
| Type | Class | Type | Class | Type | Class | Type | Class | Type | Class | Type | Class |
| 2 | A | 1 | A | 1 (w/backing) | A | | | | | | |
| 0.8 mils | | 39 mils | | w/backing 100; w/o backing 57 mils | | mils | | mils | | mils | |
| +4.0-2.0 % | | 10 % | | 10 % | | % | | % | | % | |
| NA psi | | 1200 psi | | 380 psi | | psi | | psi | | psi | |
| 90 lbf | | NA lbf | | NA lbf | | lbf | | lbf | | lbf | |
| 76 lbf | | lbf | | 72 lbf | | lbf | | lbf | | lbf | |
| 69 lbf | | lbf | | 72 lbf | | lbf | | lbf | | lbf | |
| 90 % | | % | | 99 % | | % | | % | | % | |
| NA % | | NA % | | NA % | | % | | % | | % | |
| NA % | | 854 % | | 550 % | | % | | % | | % | |
| 250 % | | NA % | | NA % | | % | | % | | % | |
| NA % | | % | | 10 % | | % | | % | | % | |
| Pass | | Pass | | Pass | | | | | | | |
| 3.4 % | | 0.0 % | | <2 % | | % | | % | | % | |
| 10 % | | 0.0 % | | <5 % | | % | | % | | % | |
| NA psi | | 1200 psi | | 360 psi | | psi | | psi | | psi | |
| 88 lbf | | NA lbf | | NA lbf | | lbf | | lbf | | lbf | |
| MD +0.3 % XD +0.3 % | | MD 0.0 % XD 0.0 % | | MD <3 % XD <3 % | | MD % XD % | | MD % XD % | | MD % XD % | |
| MD 85 % XD 85 % | | MD % XD % | | MD 95 % XD 95 % | | MD % XD % | | MD % XD % | | MD % XD % | |
| NA psi | | psi | | 360 psi | | psi | | psi | | psi | |
| 98 lbf | | NA lbf | | NA lbf | | lbf | | lbf | | lbf | |
| Pass | | Pass | | Pass | | | | | | | |
| NA % | | 854 % | | 300 % | | % | | % | | % | |
| 205 % | | NA % | | NA % | | % | | % | | % | |
| MD 1.0 % XD 1.0 % | | MD 0.0 % XD 0.0 % | | MD 2 % XD 2 % | | MD % XD % | | MD % XD % | | MD % XD % | |
| Pass | | Pass | | Pass | | | | | | | |
| Pass | | Pass | | Pass | | | | | | | |
| NA % | | 100 % | | 95 % | | % | | % | | % | |
| 95 % | | NA % | | NA % | | % | | % | | % | |
| NA psi | | 1200 psi | | 360 psi | | psi | | psi | | psi | |
| 95 lbf | | NA lbf | | NA lbf | | lbf | | lbf | | lbf | |
| Pass | | | | 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 | |
| 10 lbf | | NA lbf | | NA lbf | | lbf | | lbf | | lbf | |
| PLYMOUTH RUBBER COMPANY, INC. | | CENTRAL STATES ASSOC. CORP. | | CARBOLINE COMPANY | | | | | | | |

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

| | | PIB Polyisobutylene | | | CPE Chloronated Polyethylene | |
|---|---|---|---|---|---|---|
| **PRODUCT NAME►** | | **ALPHAGARD** | **GEOFLEX** | **TROPIGARD** | **ALKORFLEX 35093** | **ALKORFLEX 35094** |
| Product Description► | | PIB | PIB | PIB | CPE | CPE |
| **1. Thickness** | Method: | Own quality control (high frequency) | ASTM D751 | Own quality control (high frequency) | ASTM D3083 | ASTM D3083 |
| | **Results:** | **100 mil ±10%** | **100 mils** | **100 mil ±10%** | **48 mil** | **40 mil + fleece** |
| **2. Tensile Strength** | Method: | ASTM D412 & 0882 | ASTM D412 & D882 | ASTM D412 & D882 | ASTM D412 | ASTM D412 |
| | **Results:** | **550 psi** | **550 psi** | **500 psi** | **2000 psi MD & XD** | **2000 psi MD & XD** |
| **3. Lap Joint Strength** | Method: | ASTM D751 | | ASTM D751 | ASTM D412 | ASTM D412 |
| | **Results:** | **159.5 lbf** | | **159.5 lbf** | **>75% MD & XD** | **>75% MD & XD** |
| **4. Elongation at Break** | Method: | ASTM D882 | ASTM D882 with backing | ASTM D882 | ASTM D412 | ASTM D412 |
| | **Results:** | **410%** | **410%** | **410%** | **>400% MD & XD** | **>400% MD & XD** |
| **5. Tensile set** | Method: | ASTM D395 (Method B) | | ASTM D395 (Method B) | ASTM D412 | ASTM D412 |
| | **Results:** | **91.5%** | | **91.5%** | **<5.0%** | **<5.0%** |
| **6. Low Temperature Flexibility** | Method: | ASTM D2136, – 40 °F/ – 40 °C | ASTM D2136 | ASTM D2136, – 40 °F/ – 40 °C | Mandrel test | Mandrel test |
| | **Results:** | **Satisfactory; 3 of 3 passed** | **– 40°F** | **Satisfactory; 3 of 3 passed** | **– 40°F** | **– 40°F** |
| **7. Water Absorption** | Method: | ASTM D570 | ASTM D570, percent by weight (24 hr. immersion) | ASTM D570 | ASTM E96 | ASTM E96 |
| | **Results:** | **0.032%** | **0.032%** | **0.032%** | **<1.0%** | **<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 | | |
| | **Results:** | | **– 0.7%** | | | |
| **9. Heat Aging** | Method: | ASTM D573 after 6 hrs. | ASTM D573, after 6 hrs.@376 °F | ASTM D573 after 6 hrs. | CGSB standard 37-GP-56M, test 2, test 4 & delamination | CGSB standard 37-GP-56M, test 2, test 4 & delamination |
| | **Results:** | **2.3% loss@376°F** | **2.3%** | **2.3% loss @376°F** | **Passed** | **Passed** |
| **10. Ozone Resistance** | Method: | DIN 4102 (no U.S. test) | | DIN 4102 (no U.S.test) | ASTM D3041, 100 hrs | ASTM D3041, 100 hrs |
| | **Results:** | **Excellent** | | **Excellent** | **Passed** | **Passed** |
| **11. Resistance to Accelerated Weathering** | Method: | U.S. Testing | | U.S. Testing | Xenon 1200 DIN 53387 Xenon 150 DIN 53387 | Xenon 1200 DIN 53387 Xenon 150 DIN 53387 |
| | **Results:** | **15,000 hrs.** | | **15,000 hrs.** | **20,000 hrs.** | **20,000 hrs.** |
| **12. Dynamic Impacting (Puncturing)** | Method: | FTMS 191 (Method 5120) | | FTMS 191 (Method 5120) | | |
| | **Results:** | **208.4 lbs** | | **208.4 lbs** | | |
| **13. Tear Resistance** | Method: | ASTM D1004 | | ASTM D1004 | ASTM D624 | ASTM D624 |
| | **Results:** | **176 lbs/in thickness** | | **176 lbs/in thickness** | **>335 lbs/in MD & XD** | **>335 lbs/in MD & XD** |
| **14. Tearing Strength** | Method: | ASTM D751 a. Method B b. Grab 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** | **a. 92 pli b. 190 pli** | **a. 52 lbs b. 139.4 lbs** | | |
| **15. Low Temperature Impact** | Method: | ASTM D2136,-1/8″ mandrel | | ASTM D2136,-1/8″ mandrel | ASTM D746 | ASTM D746 |
| | **Results:** | **No cracks@ – 30°F** | | **No cracks@ – 30°F** | **– 50°F** | **– 50°F** |
| **16. Permeability** | Method: | ASTM E96 | ASTM E96 (Procedure A) gms/24 hr./in² | ASTM E96 | ASTM E96, Procedure E @100 °F | ASTM E96, Procedure E @100 °F |
| | **Results:** | **0.01 perm** | **0.112 W.V.T.** | **0.01 perm** | **0.6 g/m²d** | **0.6 g/m²d** |
| **17. Dimensional Change After Stress Relaxation** | Method: | ASTM (24 hrs.@212 °F) | | ASTM (24 hrs.@212 °F) | ASTM D1204, 6 hrs.@176 °C | ASTM D1204, 6 hrs.@176 °C |
| | **Results:** | **– 0.7%** | | **– 0.7%** | **< ±2-0%** | **< ±2-0%** |
| **18. Cone Penetration** | Method: | | | | DIN 53443, Blatt 2, d = 1.5mm | DIN 53443, Blatt 2, d = 1.5mm |
| | **Results:** | | | | **1600 N@ + 23°C** | **1600 N@ + 23°C** |
| **COMPANY►** | | **AGR COMPANY** | **REPUBLIC POWERED METALS** | **TROPICAL INDUSTRIAL COATINGS, INC** | **ALKOR-DIVISION OF THE SOLVAY AMERICAN CORP.** | |

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

| | | CPE Chloronated Polyethylene | | | Other Fabricated Sheet Applied Membranes *continued→* | |
|---|---|---|---|---|---|---|
| **RODUCT NAME►** | | ALKORFLEX 35096 | COOL TOP 40 | FLEXHIDE CPE | BOND GREY 35 | DURO-LAST |
| Product Description► | | CPE | CPE | CPE | NITRITE ALLOY | TRIMERIC POLYMER COATED POLYESTER |
| . Thickness | Method: | ASTM D3083 | ASTM D374, Method A | ASTM D374, Method A | ASTM D3083 | ASTM D751 |
| | Results: | 44 mils | 40 mils | 45 mils | .035 in min | 30 mils |
| . Tensile Strength | Method: | ASTM D412 | ASTM D882 | ASTM D751, Grab method | a. ASTM D751, Grab method<br>b. ASTM D882 | a. ASTM D751, Grab method<br>b. ASTM D882 |
| | Results: | 2200 psi MD & XD | 2500 psi | 224 lbs | a. 390 × 415 lbs<br>b. 6000 psi | a. 350 × 390 lbs<br>b. 6000 psi |
| . Lap Joint Strength | Method: | ASTM D412 | ASTM D751 | ASTM D751, Modified Grab method | ASTM D751 | ASTM D751 |
| | Results: | >75% MD & XD | 95% of material breaking strength | 92% of material breaking strength | 350 lbs | 350 lbs |
| . Elongation at Break | Method: | ASTM D1682 | ASTM D751 | | ASTM D751 | ASTM D751 |
| | Results: | >15% MD & XD | 27% | | 28% | 27% |
| . Tensile set | Method: | ASTM D412 | | | | |
| | Results: | <5.0% | | | | |
| . Low Temperature Flexibility | Method: | Mandrel Test | MIL C-20696B | ASTM D2136, 1/8″ mandrel | ASTM D2136 | ASTM D2136 |
| | Results: | −40°F | −40°F | −40°F, pass | −30°F, No cracks | −30°F, No cracks |
| . Water Absorption | Method: | ASTM E96 | ASTM D2842-69, Modified | | | |
| | Results: | <1.0% | 0.2% | | | |
| . Dimensional Stability After Water Absorption | Method: | | | ASTM D1204, 176°F, 30 min | | |
| | Results: | | | 0.5% | | |
| . Heat Aging | Method: | CGSB standard 37-GP-56M, test 2, test 4, & delamination | ASTM D751 | ASTM D751, after 7 days @176°F | 176°F, 7 days | 176°F, 7 days |
| | Results: | Passed | 100% of breaking strength | Retains 100% breaking strength | Retains 95% of tensile strength | Retains 95% of tensile strength |
| . Ozone Resistance | Method: | ASTM D3041, 100 hrs | | | ASTM D1149, 100 pphm, 1/8″, 104°F, 1/8″ bent loop | ASTM D1149, 100 pphm, 1/8″, 104°F - 7 days |
| | Results: | Passed | | | No cracks, 7X | No cracks, 7X |
| . Resistance to Accelerated Weathering | Method: | Xenon 1200 DIN 53387<br>Xenon 150 DIN 53387 | a. Twin carbon arc FED 195, Method 5804<br>b. Desert sun ASTM E838 | | FS191, Method 5804, carbon and w/water spray | FS191, Method 5804, carbon and w/water spray |
| | Results: | 20,000 hrs. | a. 15,000 hrs<br>b. 3 yrs | | No cracking | No cracking |
| . Dynamic Impacting (Puncturing) | Method: | | | | FS101B, Method 2031 | FS101B, Method 2031 |
| | Results: | | | | 250 lbs | 250 lbs |
| . Tear Resistance | Method: | ASTM D624 | ASTM D2262 | | | ASTM 751, Tongue |
| | Results: | >335 lbs/in MD & XD | Warp 60 lbs<br>Fill 85 lbs | | Same as tear strength | 90×90 lbs |
| . Tearing Strength | Method: | | | ASTM D751 (Tongue Tear) 8″×8″ specimen | ASTM D751, 8″×10″ sample | ASTM D751, Tongue |
| | Results: | | | 81 lbs | 90×100 lbs | 90×90 lbs |
| . Low Temperature Impact | Method: | ASTM D746 | | ASTM D746 | ASTM D2136, −30°F | |
| | Results: | −60°F | | −50°F pass | No cracking | |
| . Permeability | Method: | ASTM E96, Procedure E @100°F | ASTM E96 | ASTM E96 | (Permeance) ASTM E96, Method A | a. ASTM E96, Proc. B<br>b. ASTM E96 (WVT), Proc. B, Method A |
| | Results: | 0.6 g/m²d | 1.62 perms | 0.4 perms | 0.379 U.S. perms | a. 0.151g/hr<br>b. 0.151g/hr/m² |
| . Dimensional Change After Stress Relaxation | Method: | ASTM D1204, 6 hrs@176°F | ASTM D1204 | ASTM D1204, 176°, 30 min | | |
| | Results: | <±0.5% | Less than 1.0% | 0.5% | | |
| . Cone Penetration | Method: | DIN 53443, Blatt 2, d=1.5mm | | | | |
| | Results: | 1500 N@+23°C | | | | |
| **COMPANY►** | | ALKOR-DIVISION OF THE SOLVAY AMERICAN CORP. | COOLEY ROOFING SYSTEMS, INC. | U.S. MINERAL PRODUCTS CO. | BOND COTE SYSTEMS | DURO-LAST ROOFING, INC. |

# 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►** | | OTTO SINGLE-PLY | SEAL-DRY, 30 MILS | SEAL-DRY, 34 MILS | FIBERTITE | |
| Product Description► | | SILICONE FIBERGLASS | POLYESTER REINFORCED CPA | FIBERGLASS REINFORCED CPA | POLYESTER REINFORCED TPE | |
| 1. Thickness | Method: | ASTM D1777-64 | FS 191, Method 5030.2<br>ASTM D751 | ASTM D751 | ASTM D3083 | |
| | Results: | 29 mils | 30 mils min | 34 mils | 30 mils min | |
| 2. Tensile Strength | Method: | ASTM D579-66 | FS 191, Grab method 5100,<br>ASTM D751 | ASTM D751, Grab tensile | a. ASTM D882<br>b. ASTM D751, Grab method | |
| | Results: | 20.000 psi | 390×390 lbs min | 330 lb ×250 lb | a. 8500 psi<br>b. 375 lbs×350 lbs | |
| 3. Lap Joint Strength | Method: | | | ASTM D903, Adhesion | ASTM D751 | |
| | Results: | | | 13 lbs | >300 lbs | |
| 4. Elongation at Break | Method: | ASTM D412, Die C | FS 191, Method 5102 | FS 191, Method 5102 | ASTM D751 | |
| | Results: | 280% | 20%×30°F min | 6%×5% | 20% warp, 30% fill | |
| 5. Tensile set | Method: | | | | | |
| | Results: | | | | | |
| 6. Low Temperature Flexibility | Method: | ASTM D2176-69 MOD<br>180° bend @ -80° | | ASTM D2136, -30°F,<br>1/8" mandrel | ASTM D2136 | |
| | Results: | No cracks | | No cracks | -30°F, no cracks | |
| 7. Water Absorption | Method: | 24 hr test | ASTM D570@70°F,<br>@122°F, 48 hrs | | ShelterRite water<br>wicking test, 24 hrs | |
| | Results: | No change | 1.5% max, 2.0% max | | 1/8"max | |
| 8. Dimensional Stability After Water Absorption | Method: | 24 hr test | ASTM D570@70°F,<br>@122°F, 48 hrs | | ShelterRite water<br>wicking test, 24 hrs | |
| | Results: | No change | No change | | Less than 0.2% | |
| 9. Heat Aging | Method: | | 14 days@175°F | | 160°F - 7 days | |
| | Results: | | No cracking, crazing, blistering | | >95% strength retention | |
| 10. Ozone Resistance | Method: | | | | 3 days at 100pphm - 100°F<br>& 3 days at 300 pphm - 100°F | |
| | Results: | | | | No cracking | |
| 11. Resistance to Accelerated Weathering | Method: | Atlas & Q-panel weatherometer | ASTM D2565 weatherometer | | Carbon arc weatherometer<br>w/water spray, 5000 hrs | |
| | Results: | +24,045 hrs, no change | 2000 hrs, no cracking<br>crazing, blistering | | No cracking | |
| 12. Dynamic Impacting (Puncturing) | Method: | FTM 191-5122-2 | FS 101B, Method 2031 | FS 101B, Method 2031 | FS 101B, Method 2031 | |
| | Results: | 775 lbs | 250 lbs min | 112 lbs | 250 lbs | |
| 13. Tear Resistance | Method: | FTM 191-5136 | FS 191, Method 5134,<br>ASTM 0751, 8"×8" sample | | ASTM D751 8"×10" sample | |
| | Results: | 60 lbs×33 lbs | 160 lbw×190 lbf | | 100 lbs | |
| 14. Tearing Strength | Method: | | FS 191, Method 5134,<br>ASTM D751, 8"×8" sample | | ASTM D751 8"×10" sample | |
| | Results: | | 160 lbw×190 lbf | | 100 lbs | |
| 15. Low Temperature Impact | Method: | ASTM D2176-69 MOD | | | ASTM D2136 -30°F | |
| | Results: | No cracking | | | No cracking | |
| 16. Permeability | Method: | ASTM E96-66, Method B | | | Water Vapor Transmission,<br>ASTM E96, Proc A | |
| | Results: | 7.2 | | | 1.3 g/m²/24h | |
| 17. Dimensional Change After Stress Relaxation | Method: | | | | 37-GP-54M | |
| | Results: | | | | Shall not change<br>more than 0.24 | |
| 18. Cone Penetration | Method: | | | | 37-GP-54M | |
| | Results: | | | | Pass | |
| **COMPANY►** | | OTTO FABRIC, INC. | SEAL DRY/U.S.A., INC. | | SEAMAN CORP. | |