



SHORT FORM SPEC

MECHANICALLY-ATTACHED ROOFING SYSTEM

This GUIDE-SPEC is a brief outline of Versico's VersiFlex Mechanically-Attached Roofing System requirements and is intended for use as a submittal with a bid package. Specifiers and the Versico Authorized Roofing Contractor must comply with our VersiFlex Specification prior to design or bid.

PART I GENERAL

1.01 DESCRIPTION

The VersiFlex Mechanically-Attached Roofing System incorporates VersiFlex Polyvinyl Chloride (PVC) membrane, available in 81" wide field sheets and 40.5" perimeter sheets. All sheets are mechanically attached over an approved insulation/underlayment to an acceptable roof deck with the appropriate Versico Fasteners and Fastening Plates. The membrane is available in white, tan or gray and in thicknesses of 50-mil (100' long), 60-mil (80' long) or 80-mil (65' long). Adjoining sheets of VersiFlex membrane are overlapped and joined together with a minimum 1-1/2 inch wide heat weld. Membrane fastening requirements are outlined in "Attachment II" in Versico's VersiFlex Specification.

Notes: Projects utilizing 50-mil membrane are eligible for a maximum 10-year System Warranty. For a 15-year Total System Warranty, minimum 60-mil membrane must be specified. When a 20-year Total System Warranty is required, 80-mil membrane must be used.

1.02 QUALITY ASSURANCE

- A. This roofing system must be installed by a Versico Authorized Roofing Contractor in compliance with shop drawings as approved by Versico. There must be no deviations made without the **PRIOR WRITTEN APPROVAL** of Versico.
- B. Upon completion of the installation, an inspection will be conducted by a Field Service Representative of Versico to ascertain that the membrane roofing system has been installed according to Versico's published specifications and details applicable at the time of bid.
- C. This roofing system meets **Underwriters Laboratories (UL)** and **Factory Mutual (FM)** requirements. For specific code approvals achieved with this roofing system, refer to the VersiFlex Code Approval Guide, Factory Mutual Approval Guide or Underwriters Fire Resistance and Roofing Materials and Systems Directories.

1.03 SUBMITTALS

- A. To ensure compliance with Versico's warranty requirements, the following projects should be forwarded to Versico for review prior to installation, preferably prior to bid.
 - 1. Projects with fasteners specified to exceed 12".
 - 2. Air pressurized buildings, canopies and buildings with large openings where the total wall opening exceeds 10% of the total wall area where openings are located.

3. Cold storage buildings and freezer facilities.
 4. Projects where the membrane is expected to come in direct contact with petroleum-based products or other chemicals.
- B. Along with the project submittals (shop drawings and Request for Warranty), the roofing contractor must include pullout tests when the pullout values are less than the VersiFlex Specification requirements.
- C. For all projects (prior to project inspection by Versico) a final shop drawing must be approved by Versico.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the job site in the original, unopened containers labeled with the manufacturer's name, brand name and installation instructions.
- B. Store VersiFlex membrane on provided pallets in the original undisturbed plastic wrap.
- C. Job site storage temperatures in excess of 90°F may affect shelf life of curable materials (i.e., adhesives and sealants).
- D. When liquid adhesives and sealants are exposed to lower temperatures, restore to a minimum of 60°F before use.
- E. Do not store adhesive containers with opened lids due to the loss of solvent, which will occur from flash off.
- F. Insulation and underlayment must be stored so it is kept dry and is protected from the elements. Store insulation on a skid and completely cover with a breathable material such as tarp or canvas. If insulation is lightweight, it should be weighted to prevent possible wind damage.

1.05 JOB CONDITIONS

- A. This system **must not be applied** on projects where the **slope exceeds 18"** in one horizontal foot. When the roof slope exceeds 5" per horizontal foot, use of an automatic welding machine may be more difficult. A hand held welder should be specified.
- B. Existing roofing material must be investigated by the specifier and all wet material must be removed.
- C. Existing phenolic insulation and sprayed-in-place urethane roofs must be removed prior to installation of this system.
- D. The use of a vapor retarder to protect insulation and reduce moisture accumulation within an insulated assembly should be investigated by the specifier. Consult the publications by ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.) and NRCA (National Roofing Contractors Association) for specific information.
- E. Coordination between trades is essential to avoid unnecessary traffic over sections of the roof and to prevent damage to the membrane roofing system.

1.06 WARRANTY

All warranties are available for commercial projects only.

- A. 10-year Membrane System or Total System Warranty is available for a charge for projects that use 50-mil, 60-mil or 80-mil membrane.
- B. A 15-year Total Roofing System Warranty is available for a charge for projects that use 60-mil or 80-mil membrane.

Mechanically-Attached Roofing Systems over cementitious wood fiber or gypsum decks, upon review, may receive a maximum 15-year Total System Warranty when building height is not greater than 40' and a minimum of 3 perimeter sheets are utilized.

- C. A 20-year Total System Warranty is available for a charge for projects utilizing 80-mil thick VersiFlex membrane and incorporating additional design enhancements as outlined in this specification.

Note: Total System Warranty projects require that only materials from among those manufactured or marketed by Versico be specified and used to complete the roofing system. Some of the materials included are: insulation, membrane, flashing, adhesives, sealants, fasteners and plates and termination bars. Versico Edgings and Copings must also be specified when metal fascia systems are to be covered by the Versico Warranty.

- D. Standard peak gust wind speed coverage is 55 mph (measured 10 meters above ground). Greater wind speed coverage, up to 72 mph peak gusts, is available upon request.

PART II PRODUCTS

2.01 GENERAL

The components of this roofing system are to be products of Versico or accepted by Versico as compatible. The installation, performance or integrity of products by others, when selected by the specifier and accepted by Versico, is not the responsibility of Versico and is expressly disclaimed by the Versico Warranty.

2.02 MEMBRANE

VersiFlex white, gray or tan 50-mil (100' long), 60-mil (80' long) or 80-mil (65' long) reinforced Polyvinyl Chloride (PVC) membrane is used for this system. Field membrane sheets are 81" wide. Perimeter sheets are 40.5" wide. For physical properties of the membrane, refer to page 4. (Gray and tan colored membrane are not standard stocking items and require a lead time).

2.03 RELATED MATERIALS

VersiFlex Non-Reinforced or Reinforced Flashing, Bonding Adhesive, Cut Edge Sealant, Water Cut-Off Mastic, PT-304 Sealant, PVC Membrane Cleaner, One-Part Pourable Sealer, Heat Weldable Walkway Pads, Pre-Molded Inside and Outside Corners, Pipe Flashings and Sealant Pockets.

PART III EXECUTION

3.01 GENERAL

- A. When feasible, begin the application at the highest point of the highest roof level and work to the lowest point to prevent moisture infiltration and to minimize construction traffic on completed sections. This will include completion of all flashings, terminations and daily seals.
- B. Follow criteria outlined in the VersiFlex Specification to prepare the roof deck or the existing substrate prior to the application of the new roofing system.

3.02 ROOF DECK CRITERIA

- A. Proper substrate shall be provided by the building owner. The structure shall be sufficient to withstand normal construction loads and live loads.
- B. Defects in the roof deck must be reported and documented to the specifier, general contractor and building owner for assessment. The Versico Authorized Contractor shall not proceed with installation unless defects are corrected.
- C. Acceptable decks and the applicable Versico Fasteners:
 - 1. **Steel, 22 gauge or heavier** - Versico HPVX Fasteners/ Plates or HPV-XL Fasteners/Plates are required with a minimum pullout of 500 pounds per fastener.
 - 2. **Lightweight Insulating Concrete over steel** - Versico HPVX Fasteners/Plates or HPV-XL Fasteners/Plates are required with a minimum pullout of 360 pounds per fastener (into steel deck below the lightweight concrete).
 - 3. **Structural Concrete, rated 3,000 psi or greater** – Versico CD-10 or MP 14-10 Fasteners (with HPVX Plates) are required with a minimum pullout of 800 pounds per fastener.
 - 4. **Wood Plank or minimum 15/32 thick Plywood** - Versico HPVX Fasteners/Plates or HPV-XL Fasteners/Plates are required with a minimum pullout of 360 pounds.
 - 5. **Oriented Strand Board (OSB), minimum 7/16" thick**; The Versico HPVX Fasteners/Plates or HPV-XL Fasteners/Plates are required with a minimum pullout of 300 pounds per fastener.
 - 6. **Cementitious Wood Fiber and Gypsum** - The Versico NTB Fastener is required with a minimum pullout of 300 pounds.

3.03 SUBSTRATE PREPARATION

- A. On retrofit-recover projects, cut out and remove wet insulation, as identified by specifier, and fill all voids with new insulation so it is relatively flush with existing surface.
- B. For all projects, substrate must be even without noticeable high spots or depressions, and must be free of accumulated water, ice or snow.
- C. Clear the substrate of debris and foreign material. Fresh bitumen based roof cement must be removed or concealed.

3.04 INSTALLATION

Refer to the applicable Material Safety Data Sheets and Technical Data Bulletins for applicable cautions and warnings.

A. Insulation Attachment

1. Versico Insulation shall be mechanically fastened to the roof deck as follows:
 - a. For Recovery Board, Dens-Deck or minimum 1-1/2" thick Polyisocyanurate, a minimum of 5 fasteners and plates per 4' x 8' board are required.
 - b. For Polyisocyanurate less than 1-1/2" thick or Foamular or DOW Extruded Polystyrene, any thickness, a minimum of 6 fasteners and plates per 4' x 8' board are required.

Note: VersiFlex PVC membrane cannot be installed directly over extruded polystyrene insulation. A layer of MP Safeguard Mat must be installed over the insulation prior to installing membrane (approved with white VersiFlex membrane only).
 - c. Insulation boards 4' x 4', regardless of thickness, must be fastened at the minimum rate of 1 fastener and plate every 4 square feet.
2. Versico HPVX Plates, Seam Fastening Plates (2" diameter) or Insulation Fastening Plates (3" diameter) may be used with appropriate Versico Fastener for insulation attachment.

B. Membrane Placement, Attachment and Heat Welding

1. A minimum of two perimeter sheets shall be installed at edges of each roof level and 81" wide membrane shall be installed in the field of the roof.

Membrane sheets shall be mechanically attached with the appropriate Versico Fastener/Fastening Plate spaced 6", 12" or 18" on center, depending on project criteria, within the membrane splice. Refer to the VersiFlex Specification for required number of perimeter membrane sheets and fastener spacing.
3. Overlap adjacent membrane sheets approximately 5-1/2" at those locations where Fastening Plates are located (along length of the membrane) and a minimum of 2" at end roll sections (width of the membrane).
4. Heat weld the membrane sheets a minimum of 1-1/2" with an Automatic Heat Welding Machine.

C. Additional Membrane Securement

The membrane must be secured at the perimeter of each roof level, roof section, expansion joint, curb, skylight, interior wall, penthouse, etc., at any angle change which exceeds 2" in one horizontal foot and at all other penetrations in accordance with Versico's Details published with Versico's Specifications.

D. Membrane Flashing

Flash all walls and curbs with VersiFlex reinforced membrane. Non-Reinforced membrane shall be limited to inside and outside corners, field fabricated pipe seals, scuppers and Sealant Pockets where the use of pre-molded accessories are not practical. Terminate the flashing in accordance with an appropriate VersiFlex Termination Detail.

E. Other Related Work

1. **Walkways** are required for all traffic concentration points (i.e., roof hatches, access doors, rooftop ladders, etc.), regardless of traffic frequency. Walkways are also required if regular maintenance (once a month or more) is necessary to service rooftop equipment. Walkways are considered a maintenance item and are excluded from the Versico Warranty.
 - a. VersiFlex Heat Weldable Walkway Rolls are required when walkway pads are specified and are heat welded to the VersiFlex Membrane.
 - b. When concrete pavers are used, they shall be loose laid and installed in conjunction with a slip sheet of reinforced membrane. Concrete pavers are not recommended when the roof slope is greater than 2" per 1 horizontal foot.
 - c. Versico Interlocking™ Rubber Pavers, 24" X 24" X 2", weighing approximately 6 pounds per square foot may be loose laid directly over the membrane. Installation instruction sheets are available from Versico.
2. **Copings, counterflashing and other metal work**, not supplied by Versico, shall be fastened to prevent metal from pulling free or buckling and sealed to prevent moisture from entering the roofing system or building.

Attach copies of the applicable Versico Details that pertain to the individual project to complete a bid package submittal.

Membrane Physical Properties

| Physical Property | Test Method | Property of Unaged Sheet | Property After ASTM D3045 aging 56 days @ 176° F |
|---|--|---|--|
| Tolerance on Nominal Thickness, % | ASTM D 751 | ± 10 | |
| Thickness over scrim, in. (mm) 50-mil & 60-mil 80-mil | ASTM D 4434 Optical Method (avg. of 3 areas) | 0.016 (0.406) min. 0.025 (0.635) min. | |
| Breaking Strength, lbf/in. (kN/m) | ASTM D 751 (Grab Method) | 200 (35) min. 300 (53) typical | 90% min. retention of original breaking strength |
| Elongation at Break of fabric, % | D 751 | 15 min. 25 typical | 90% min. retention of original elongation |
| Tearing Strength, lbf (N) 8 x 8 in. specimen | ASTM D 751 (B-Tongue Tear) | 45 (200) min. 100 (445) typical | |
| Low Temperature Bend, | ASTM D 2136 | -40 (-40) max. -50 (-46) typical | |
| Linear Dimensional Change (shrinkage), After 6 hours at 176° F (80° C) | ASTM D 1204 | +/- 0.5 max. -0.3 typical | |
| Ozone resistance, 100 pphm, 168 hours | ASTM D1149 | No cracks | |
| Resistance to water absorption After 7 days immersion 158° F (70° C) Change in mass, % | ASTM D 570 | 3.0 max. 2.0 typical | |
| Field seam strength lbf/in. (kN/m) Seam tested in peel after welding | ASTM D1876 | 25 (4.4) min. 60 (10.5) typical | |
| Water vapor permeance, Perms | ASTM E 96 | 0.10 max. 0.05 typical | |
| Puncture resistance, lbf (N) (see supplemental section for additional puncture data) | FTM 101C Method 2031 | 250 (1110) min. 280 (1245) typical 50-mil 320 (1423) typical 60-mil 380 (1690) typical 80-mil | |
| Resistance to xenon-arc weathering Xenon-Arc, 6300 kJ/m ² total radiant exposure, visual condition at 10X (ASTM D 4434 light & spray cycle) | ASTM G155 0.35 W/m ² 63 ° C 5000 hours | No cracks No crazing | |
| B.P.T. is black panel temperature | | | |

Copyright 2005 Versico Incorporated

Versico, and VersiFlex are trademarks of Versico Incorporated.
Foamular is a trademark of UC Industries, Inc.

Versico Incorporated, 3485 Fortuna Drive, Akron, OH 44312
Phone: 800-992-7663 <http://www.versico.com>