Thermoplastic Polyolefin Self-Adhered Membrane Installation Guide

1.0 General Information

1.1 The following section provides the application specifications currently available from Johns Manville (JM) for thermoplastic polyolefin membranes with self-adhering capabilities (TPO-SA - Self-Adhered Membrane).

1.2 All general information contained in this section and the current Johns Manville Commercial/Industrial Roofing Systems Manual should be considered part of these specifications.

1.3 Each specification in this section is eligible to receive a JM Peak Advantage® Guarantee. The system must be installed by a JM Peak Advantage Roofing Contractor. Refer to the information on guarantees in the current JM Single Ply Roofing Systems Manual, or contact the nearest JM sales representative.

1.4 This installation guide clearly differentiates between requirements and recommendations. This guide has been written to assist the specifier to develop a comprehensive bid package. The information is presented in an explanatory fashion rather than the authoritative, instructive manner commonly utilized in construction specifications. When experience, technical knowledge or established testing procedures support a policy or position, it is clearly identified, (i.e., **"JM requires"** or **"is not acceptable"**). When the use of a particular product or practice is undesirable or questionable, the reference is stated as an opinion rather than an absolute fact, (i.e., **"JM recommends"** or **"JM suggests"**). **Please contact JM Technical Service at (800) 922-5922 with any questions.**

1.5 Flashings: Refer to JM Single Ply Roofing Systems Manual for Flashing Details.

1.6 We stress that to obtain a roofing system that will perform properly, workmanship is equally as important as the use of quality materials properly designed into a good roofing specification. The most perfectly manufactured product cannot perform its function if it is not properly installed. The recommendations which are contained in this manual cannot substitute for the knowledge, skill, experience and integrity expected of a qualified professional roofing contractor or the technical expertise of trained architects and engineers.

1.7 JM is not responsible for and will not accept, under any circumstances, any responsibility for the adequacy of a building design, INCLUDING ADEQUACY OF ANY STRUCTURE SUPPORTING THE WEIGHT OF ANY ROOFING SYSTEM. Review of the plans and specifications by a JM representative shall be for the sole purpose of making suggestions or recommendations concerning details for the application of JM roofing systems and products.

1.8 Under no circumstances will JM be responsible for any failure of the roofing systems due to structural defects, damage from other building trades or for failure due to errors in design of any building element.

2.0 Membrane Substrate

2.1 The surface on which the self-adhering thermoplastic membrane (TPO –SA) is to be applied shall be a JM approved roof insulation or cover board: ENRGY 3, ENRGY 3 CGF, SECUROCK Gypsum-Fiber Roof Board, DEXcell FA Glass Mat Roof Board, and DensDeck Prime.

2.2 The surface must be clean, smooth, flat and dry. Any surface contamination should be removed to promote proper membrane adhesion.

3.0 General Guidelines for Application of Materials

3.1 The proper application of roofing materials is as important to the satisfactory performance of the roof system as the materials themselves.

JM suggests the following guidelines for application of all roofing materials.

A. Don't use wet or damaged materials.

B. Never apply any roofing materials during rain or snow, or to wet surfaces. Moisture trapped within the roofing system as a result of this can cause severe damage to the roof membrane and insulation. Any product that has moisture contamination or is wet should be removed and discarded.

C. Review the guidelines for application for roof insulations, coatings and accessories shown in the current JM Single Ply Roofing Systems Manual.

D. Always start application at the low edge of the roof per the individual specification diagram.

E. Membrane can be installed when substrate and ambient temperatures are 20°F (-6.7°C) and above. Membrane can be adhered on the field without the use of additional VOC-containing adhesives. Heed the cold weather application procedures in **Paragraph 3.3** of this section.

3.2 Application

A. Lay and cut all membranes to the desired length, starting with the weldable selvage edge aligned with the low slope roof edge.

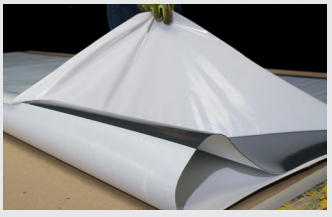
B. Align the weldable selvage edge with the lap line of the previously installed sheet.

C. Align the sheet ends of consecutive membranes. The end laps will be stripped with 8" JM TPO Reinforced Cover Strip at the end (see **Paragraph 3.3**).

D. Allow the membrane to relax 15-30 minutes (colder temperatures might require longer relaxation times).

E. **Method 1:** Start adhering by peeling the release liner from the middle out at a 45 degree angle underneath the sheet. Using help have the other half of the release liner pulled at a 45 degree angle again from the inside out and under the sheet. Remove both sides of the release liner at the same rate, exposing the adhesive and ready for step F in minimum 10' sections.

Method 2: Start adhering by folding the first membrane in half, along the length of the membrane, then peel the release liner at a 45 degree angle. Start with the membrane closer to the low slop roof-edge and with the weldable edge. Always step on the membrane surface to prevent contamination of the adhering surface. An electrostatic charge may develop when peeling the release liner. Keep all flammable materials away while peeling the release liner.



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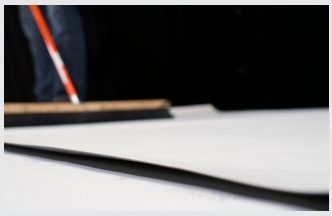
Lightly fluter the membrane and roll the exposed side down smoothing with your hands to promote adhesion. Watch for wrinkles in the material, adjust speed and tension as needed.

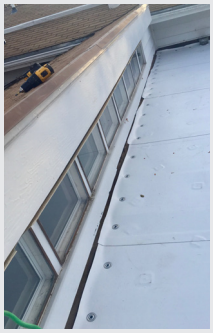
Repeat steps on the other side of the membrane.

F. Broom in once both sides are down to promote adhesion and remove air pockets utilizing a stiff broom, starting from the middle out to the edges.



G. Roll-in the adhered membrane with 100lb split steel roller completely. Ensure the surface of the roller is clean and free of foreign material to prevent damage to the membrane.

H. Attached the membrane at parapet walls, penetrations and any angle changes using JM approved fasteners and plates.



3.3 Cold Weather Application (Below 40ºF [4.5ºC])

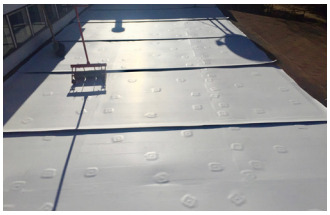
3.3.1 General Instructions for Cold Weather TPO-SA Installations

Roof applications utilizing TPO-SA membranes below 40°F (4.5°C) to 20°F (-6.7°C) require special measures to ensure proper performance of the roofing system. JM requires that the following guidelines be followed:

Use extra care to ensure that any moisture is removed from the deck surface. The presence of moisture may cause poor adhesion or voids in the self-adhering membrane which in turn can entrap moisture within the roofing system.

- Membranes must maintain temperatures above 20°F (-6.7°C) all times during installation. In situations where the membrane is stored on the roof, it is possible for the temperature of the membrane roll to be lower than the ambient air temperature. Sun exposure on the membrane during the relaxation period will allow for increased membrane temperatures.
- Broom-in and roll-in the membrane thoroughly to ensure adhesion.
- Install only as much roofing material as can be completed and covered in one day.
- Thoroughly dry all weld surfaces prior to welding.
- Exercise caution when walking on dew, frost, ice or snow covered roofs since the membrane may be extremely slippery.
- The use of temporary roofs should be strongly considered if construction schedules require roof applications in cold or rainy weather.
- **Always comply with published safety procedures for all products being used. See the "Introduction" section of the current JM Single Ply Roofing Systems Manual, SDS & SIU and container labels for health and safety recommendations.**

3.3 Membrane Seaming for side laps is achieved by employing an approved automatic heat welder or hand held heat gun with a hand-held roller. Continuously weld a minimum 1½" (38.1 mm) wide seam following standard welding and inspection practices. End laps are seamed by stripping with 8" JM TPO Reinforced Cover Strip following standard practices. See Detail T-MS-11.



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3.4 Membrane Flashings (T-FW details): JM standard flashing and self-adhering (SA) flashing membranes can be used with TPO self-adhered roof installations. Refer to **Paragraph 3.5** for specific instructions for self-adhering flashing membranes. Install all membrane flashings at the same time as the roof membrane. Do not use temporary flashings. If water penetrates the flashings, immediately replace all affected materials. Use only JM TPO-SA, adhered or mechanically attached flashings or prefabricated flashings, depending on job circumstances. Follow standard recommendations and practices for adhered or mechanically attached flashings.

Terminate all JM Membrane flashings per the applicable detail. Reference details T-FW-B9, B10, B11, B12, B20 and B21 for approved base tie-in conditions.

3.5 Self-adhering Membrane Flashings can be installed directly to smooth approved substrates when substrate temperatures are 20°F (-6.7°C) and rising.

- Approved smooth substrates are wood, SECUROCK Gypsum-Fiber Roof Board, DensDeck Prime, and ProtectoR HD.
- All surfaces must be swept clean and free from oil, grease, rust, scale, loose paint and dirt.
- For approved substrates with a porous and rough surface, including concrete and smooth faced CMU and Dexcell Cement Board, prime with JM All Season Sprayable Bonding Adhesive, SA Primer or SA Primer LVOC prior to installation of membrane.
- APA OSB for vertical applications in temperatures between 20°F - 40°F the membrane must be installed using the JM All Season Sprayable Bonding Adhesive, JM SA Primer or JM SA Primer LVOC.
- Do not install JM TPO-SA Flashing Membrane in direct contact with asphalt.
- Refer to JM TPO applicator guides or detail drawings for instructions.

Secure adhered flashings to the parapet wall at 60" (152.4 cm) vertical intervals. Reference Details T-FW-I details. All adhered surfaces must be compatible with JM TPO roofing membranes. Extend all flashings a minimum of 8" (20.32 cm) above the roof level. Contact JM Technical Services for recommendations if this cannot be done. Terminate all JM Membrane flashings per the applicable detail.

4.0 Thermoplastic Olefin Self-adhered Membrane (TPO-SA)

- JM TPO-SA membranes have a factory applied adhesive on the back side of the roofing membrane for self-adhering capabilities.
- JM TPO-SA is available in 60 mil thickness and delivered in 10' (3.05 m) width for field application.
- Long-term Storage: TPO-SA membrane should be stored between 60°F (16°C) and 90°F (32°C).
- Shelf-life: 12 months from manufacturing date, and based on standard storage conditions.

5.0 Health and Safety

5.1 JM develops and maintains Safety Data Sheets (SDS) and Safety Use Instructions (SUI) for all of its products. These SDS & SUI contain health and safety information for development of appropriate product handling procedures to protect the users of our products. These SDS & SUI are available on the JM Web site, www.jm.com/roofing and should be read and understood by all involved personnel prior to using and handling JM materials. In addition to the SDS & SUI, JM products have health and safety precautions printed on the product label or packaging. The user is strongly urged to become familiar with this information prior to using the product, and observe certain precautions during use.