



APPLICATION INSTRUCTIONS

TREMproof® TRIPLE WATERPROOFING SYSTEM

TREMproof 260 Sprayed Over Paraseal Waterproofing Membrane

1. PURPOSE

- 1.1 The purpose of this document is to establish uniform procedures for installing the TREMproof® Triple Waterproofing System (TWS) on blindside walls and under slab. For submerged conditions or applications, contact your local Tremco Sales or Technical Service Representative.
- 1.2 The techniques involved may require modifications to adjust to jobsite conditions. Tremco recognizes that site specific conditions, weather patterns, contractor preferences, and membrane detailing may require deviation or alteration from these prescribed installation procedures. When such circumstances exist on a project. Tremco recommends that the local Tremco Sales Representative or Technical Services be contacted for assistance as required.

2. SCOPE

- 2.1 This document will provide the necessary instructions for the application of the TREMproof Dual Waterproofing System to qualify for the manufacturer's warranty.

3. SYSTEM COMPONENTS

- 3.1 Recommended materials and their use are as follows. For more information on the following materials, please contact your local Tremco Sales Representative or visit our website for product specific data sheet and application instructions at www.tremcosealants.com.
 - Paraseal LG is a sheet waterproofing membrane consisting of 20 mils of HDPE, expandable granular bentonite and a protective layer of spun-bonded polyester. The bentonite is laminated to the HDPE, creating a dual waterproofing system. For projects that are five feet or less in submerged conditions or for methane conditions, Paraseal GM/LG-20 mil must be used.
 - Paraseal GM/LG-20 mil is a sheet waterproofing and methane mitigating membrane consisting of 20 mils of HDPE, expandable granular bentonite, and a protective layer of spun-bonded polyester. The bentonite is laminated to the HDPE, creating a dual waterproofing system. The HDPE extends beyond the bentonite on the perimeter edges to create a clean surface for Para JT™ Tape and Parastick 'n' Dry® installation.
 - TREMproof 260 is a polymer-enhanced, co-sprayed asphalt emulsion, below-grade waterproofing membrane. It is available in both a spray and roller grade.
 - TREMDrain 1000 or TREMDrain® 6000 and TREMDrain® Total Drain are acceptable drainage courses. Please contact your local Tremco Sales or Technical Services Representative for recommendations on the proper TREMDrain product for your project.
- 3.2 Other accessories:
 - Dymonic® 100 Sealant
 - Para JT™ Tape
 - Paragranular™
 - Paramastic™
 - Paraprimer®
 - Parastick 'n' Dry®
 - Paraterm Bar™
 - Superstop

4. LIMITATIONS

- 4.1 Limit UV exposure to a maximum of 90 days.
- 4.2 Paraseal products require a minimum of 24 psf of compaction/confinement in order to function as designed.
- 4.3 Paraseal products are not to be installed over ponding or standing in water or snow.

- 4.4 Contact Tremco whenever conditions of acid, alkali, salt brine, or gas vapor exist. If ground water is brackish, please contact your local Tremco Sales Representative four weeks prior to a pending application, and provide a water or soil sample for testing purposes in order to determine the correct bentonite formula for your project's application.
- 4.5 Paraseal LG is not for use in submerged conditions.
- 4.6 TREMproof 260 is not for use with potable water.
- 4.7 When applying material below 40 °F (4 °C), contact your local Tremco Sales Representative or Technical Services.

5. STORAGE

- 5.1 Protect from moisture. Store on a skid or pallet and cover with polyethylene or tarp, and do not double stack pallets.
- 5.2 Prevent hydration of bentonite until the sheet is installed and before the TREMproof 260 is applied and cured.
- 5.3 Do not let the TREMproof 260 product freeze prior to being applied to the substrate. It is best to store TREMproof 260 off the floor at an ambient temperature above 50 °C (10 °C). Opened drums should be tightly sealed before storage.

6. SUBSTRATE PREPARATION

6.1 WOOD LAGGING WITH STEEL PLIES

- 6.1.1 Be sure all lagging board nails are pounded flush or removed. Check for missing or damaged lagging boards and repair using concrete grout, treated wood, or both. Fill or cover any gaps between lagging board exceeding 1" (2.5 cm) using concrete grout or treated plywood.
- 6.1.2 If top of steel I-beams are to be removed, either pre-burn the front face and half-way through the webbing or cover the front face with a cement board to prevent damage to the installed membrane.

6.2 AUGERED CAISSON

- 6.2.1 When the surface of the individual augered piers, which make up the caisson wall, are relatively smooth, Paraseal membrane may be installed directly against piers. However, the shoring between each pier must first be filled in with a concrete grout and all sharp projections must be removed from the caisson wall.
- 6.2.2 When the surfaces of the augered piers are very rough and irregular, minimum 3/4" (19 mm) or thicker exterior-grade plywood must be anchored every 12" (30 mm) OC to the caisson wall. The void created behind the plywood shall be filled with sand or aggregate. The proper plywood thickness and anchor spacing shall be determined by a civil, structural, or soil engineer at the site and is dependent on the height of the caisson wall, the span on the plywood between piers and the resultant lateral pressure exerted by the sand/aggregate fill.

6.3 STEEL SHEET PILING

- 6.3.1 Where the waterproofing is going to be in continuous contact with the profile of the steel piling, all sharp protrusions must be removed.
- 6.3.2 Where the waterproofing installation is going to span the sheet piling voids, sheets of a minimum 3/4" (19 mm) or thicker exterior-grade plywood should first be installed across the void and shot or fastened into place every 12" (30 cm) OC. The void behind the plywood should be filled with sand and/or aggregate. The proper plywood thickness and anchor spacing shall be determined by a civil, structural, or soil engineer at the site and depends on the height of the piling, the span of the plywood and the resultant lateral pressure exerted by the sand fill.

6.4 SHOTCRETE WITH CONCRETE PILES

- 6.4.1 Prior to the installation of the Paraseal membrane against the shotcrete wall, remove all sharp protrusions and fill all voids which exceed 2" (5 cm) wide by 1" (2.5 cm) deep with concrete grout. Fill smaller voids with Paramastic, Dymonic 100, or concrete grout.

6.5 SLURRY WALL

- 6.5.1 Prior to the installation of the Paraseal membrane against the exposed slurry wall, clean off all mud and dirt. Remove all sharp protrusions and fill all voids which exceed 2" (5 cm) wide by 1" (2.5 cm) deep with concrete grout. Smaller voids shall be filled with Paramastic, Dymonic 100, or concrete grout.

7. SUBSTRATE PREPARATION

- 7.1 All penetrations shall be secured prior to detailing. For single pipe penetrations, refer to Tremco standard details. Multiple penetrations shall be spaced a minimum of 6" (15 cm) apart to allow for proper detailing. If 6" (15 cm) spacing is not available, contact your local Tremco Sales Representative or Technical Services for a job-specific recommendation. If sealed or cored pipes are present, contact your local Tremco Sales Representative or Technical Services.
- 7.2 Expansion joints should be treated in accordance with Tremco standard details. Please refer to the Tremco website at www.tremcosealants.com for specific details.
- 7.3 Following good concrete industry practices, Superstop waterstop should be used at all construction cold joints. Install Superstop a minimum of 2" (5 cm) from face of wall. It is recommended to apply a Paraprimer to clean

- surface prior to adhering to Superstop on vertical and horizontal surfaces. Remove release paper to expose adhesive. Butt ends together and fasten with washer-headed nails every 12" (30 cm) OC.
- 7.4 If nails are pounded flush in the lagging boards, install a protective layer of approved TREMDrain drainage mat over the I-beam.

8. MEMBRANE APPLICATION

- 8.1 If a drainage mat is required, install approved TREMDrain drainage mat. Refer to the TREMDrain application instructions on our website at www.tremcosealants.com (or by clicking the link below) for more information. Contact your Tremco Sales Representative or Technical Services for additional information.
http://www.tremcosealants.com/fileshare/ApplicationInstructions_Hyland/TREMDrain_Series_Drainage_Mats_A1.pdf
- 8.2 Paraseal membrane shall be installed with the bentonite side facing the installer. Seams may run either vertically or horizontally with equal performance.
- 8.3 All seams are lapped a minimum of 4" (10 cm) for wood lagging, fasten all seams using wide-crown staples every 3" (7.6 cm) OC. For concrete shoring, fasten all seams using a washer headed nail every 12" (30 cm) OC.
- 8.4 For shotcrete walls, all horizontal seams should be lapped with the open edge aiming upward. Vertical seams should not occur at either inside or outside vertical corners.
- 8.5 When the placement on either footings or a mat slab is scheduled prior to waterproofing installation, a horizontal starter strip of Paraseal membrane should be installed first. Refer to the detail drawings on the Tremco website at www.tremcosealants.com.
- 8.6 When there is below slab-on-grade and/or below-footing waterproofing, the tie-in detail between wall and floor waterproofing varies depending on the below-grade waterproofing system. Contact your local Tremco Sales Representative or Technical Services for recommendations.
- 8.7 Temporarily terminate Paraseal membrane at the top of the earth retaining system by folding it over and tacking it in place.
- 8.8 All penetrations should be placed through the Paraseal membrane prior to the placement of the TREMproof 260.
- 8.9 TREMPROOF 260 APPLICATION
- 8.9.1 TREMproof 260 shall be applied at 100 wet mils, co-sprayed, to achieve 60 dry mils.
- 8.9.1 Screws and screed pins may be placed through the Paraseal membrane only when placed 4" (1.2 M) above submerged conditions. The screws and screed pins must be pre-placed through a 1" (2.5 cm) square piece of Superstop waterstop and tied with wire. Then the assembly shall be sprayed and covered completely, including all penetrations, with TREMproof 260.
- 8.9.3 Spray TREMproof 260 between 2,200 and 2,800 lb/in² (psi) (155 and 197 kg/cm²). For best results, use a .535 or .539 spray tip. Attention must be taken during the application process to ensure a consistent homogeneous membrane. Use a wet film thickness gauge and stating of material to ensure proper minimum thickness is achieved.
- 8.9.4 The membrane should be applied over the bentonite to a minimum of 100 wet mils. An estimated maximum coverage rate of 10 ft²/gal (1.6 M²/L) will yield the desired wet mil thickness at application.
- 8.9.5 Co-spraying, which is the required application method for TWS, involves the use of a specialized dual-head spray gun and other support equipment where an accelerant is sprayed in tandem with the TREMproof 260. When co-spraying, TREMproof 260, the pressure should remain between 2,200 and 2,800 psi (155 and 197 kg/cm²) on the TREMproof 260 (high pressure) side and between 85 and 100 psi (6 and 7 kg/cm²) on the accelerant (low pressure) side. The recommended tip size is .539 on the high-pressure side and .627 on the low-pressure side.
- 8.9.6 The accelerant used in the co-spray process is water (~98%) mixed with calcium chloride (~2%). Accelerant is mixed at a 1:5 ratio (1 part accelerant to 5 parts TREMproof 260) at the spray gun.
- 8.9.7 Prepare accelerant solution by mixing 77% calcium chloride flakes with water as follows: 16.6 oz (465 g) of 77% calcium chloride flakes per 5 gal (19 L) of water. Tremco has partnered with Spray Equipment to evaluate a number of sprayer or pump options for TREMproof 260. Contact Spray Equipment at 800-666-6072 for detailed equipment recommendations or validation of existing equipment. For more information, please review ExoAir Fluids and TREMproof 260 Spraying Guide Technical Bulletin on the Tremco website at www.tremcosealants.com.
- 8.10 WALL PLACEMENT
- 8.10.1 Prior to wall placement, repair any damaged areas of the applied system with roller-grade TREMproof 260.
- 8.10.2 Detail and rebar supports shall be concrete dobies or plastic sand chairs. Contact your local Tremco Sales Representative or Technical Services for specific instructions.

- 8.10.3 If the structural wall is poured-on-place, the concrete should not be dropped from higher than 4' (1.2 M), and the concrete should be forced towards the formwork and not the membrane. If the structural wall is shotcrete, the spray should be blown as per Tremco detail in 4' (1.2 M) lifts, so it does not lodge between the seam lap.

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