**Tremco, Inc. Commercial Sealants and Waterproofing**

**Section 07 14 16 COLD FLUID-APPLIED WATERPROOFING GUIDE SPECIFICATION
Horizontal Applications**

Specifier: This guide specification section specifies **Tremco TREMproof® PUMA**, flexible, polyurethane-methacrylate cold-applied membrane.

• Designed for use in planters..

**Tremco PUMA Primer** is a methyl methacrylate (MMA) primer that is applied to the shot blast concrete to prepare it for the application of Tremco PUMA BC base coat.

**Tremco PUMA BC** is a polyurethane methacrylate (PUMA) base coat that bonds firmly to Tremco PUMA Primer. It retains its integrity even if substrate movement causes hair line cracks of up 1/16”. Tremco PUMA BC will prevent water migration between it and its substrate.

**Tremco PUMA BC LM** is a polyurethane methacrylate (PUMA) detail and/or base coat that bonds firmly to Tremco PUMA Primer. It retains its integrity even if substrate movement causes hair line cracks of up 1/16”. It has a higher modulus than Tremco PUMA BC and is used for detailing cracks and control joints prior to the Tremco PUMA BC base coat application.

**Tremco PUMA BC T** is a thixotropic polyurethane methacrylate (PUMA) base coat that bonds firmly to Tremco PUMA Primer. It retains its integrity even if substrate movement causes hair line cracks of up 1/16”. Tremco PUMA BC T will prevent water migration between it and its substrate. Tremco PUMA BC T is used on ramps, vertical rises, detailing and field applied cant beads.

**Tremco PUMA BC R** is a rollable version of Tremco PUMA BC that bonds firmly to Tremco PUMA Primer. It retains its integrity even if substrate movement causes hair line cracks of up 1/16”. Tremco PUMA BC R is used for ramps and upturns.

**Tremco PUMA TC** is a methyl methacrylate (MMA) top coat that is applied after Tremco PUMA WC has cured. Interlaminary adhesion to Tremco PUMA WC is exceedingly strong. The top coat affords excellent abrasion resistance, UV stability and chemical resistance to complete the TREMproof PUMA system. This section is easily edited using several common commercial specification software tools.

We recommend you consult with your Tremco technical representative, who can be contacted through: Tremco, Inc., Commercial Sealants and Waterproofing Division, Beachwood OH; (866) 321-6357); email: techresources@tremcoinc.com; [www.tremcosealants.com](http://www.tremcosealants.com).

Tremco sealant and waterproofing products appear in the following CSI MasterFormat specifications sections:

•Section 07 01 91 Joint Sealant Rehabilitation and Replacement

• Section 07 14 13.01 Hot Fluid-Applied Waterproofing, Deck (TREMproof 6100)

• Section 07 14 13.02 Hot Fluid-Applied Waterproofing, Vegetated Roof (TREMproof 6100)

• Section 07 14 16.01 Cold Fluid-Applied Waterproofing, Vertical and Deck (TREMproof 250GC)

• Section 07 14 16.02 Cold Fluid-Applied Waterproofing, Vertical (TREMproof 250GC)

• Section 07 14 16.03 Cold Fluid-Applied Waterproofing, Deck (TREMproof 250GC)

• Section 07 14 16.04 Cold Fluid-Applied Waterproofing, Vegetative Roof (TREMproof 250GC)

• Section 07 17 16.01 Dual HDPE/Bentonite Waterproofing System(Paraseal)

• Section 07 17 16.02 Dual HDPE/Bentonite Waterproofing System(Paraseal LG)

• Section 07 17 16.03 Dual HDPE/Bentonite Waterproofing System(Paraseal GM)

• Section 07 17 16.05 Dual HDPE/Bentonite Waterproofing System(Paraseal GM/LG 60 mil)

• Section 07 18 00.01 Traffic Coatings, Vehicular

• Section 07 18 00.02 Traffic Coatings, Pedestrian

• Section 07 18 00.03 Traffic Coatings, Mechanical Rooms

• Section 07 27 13 Modified Bituminous Sheet Air Barriers, Vapor-Retarding (ExoAir 110)

• Section 07 27 23 Board Product Air Barriers, Vapor Permeable (SECUROCK ExoAir 430)

• Section 07 27 26.01 Fluid-Applied Membrane Air Barriers, Vapor-Retarding (ExoAir 120)

• Section 07 27 26.02 Fluid-Applied Membrane Air Barriers, Vapor Permeable (ExoAir 220)

• Section 07 27 26.03 Fluid-Applied Membrane Air Barriers, Vapor Permeable (ExoAir 230)

• Section 07 92 00 Joint Sealants

• Section 08 85 00 Glazing Sealants

• Section 32 13 73 Concrete Paving Joint Sealants

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SECTION 07 14 16 – COLD FLUID-APPLIED WATERPROOFING

1. GENERAL

**Tremco, Inc. Commercial Sealants and Waterproofing**

**Section 07 14 16 COLD FLUID-APPLIED WATERPROOFING
Vertical Deck Applications**

Specifier: This guide specification section specifies **Tremco TREMproof**® **PUMA**,

• Designed for use on foundation walls, retaining walls, and most backfilled applications.

This section is easily edited using several common commercial specification software tools.

We recommend you consult with your Tremco technical representative, who can be contacted through: Tremco, Inc., Commercial Sealants and Waterproofing Division, Beachwood OH; (866) 321-6357); email: techresources@tremcoinc.com;  [www.tremcosealants.com](http://www.tremcosealants.com).

Tremco sealant and waterproofing products appear in the following CSI MasterFormat specifications sections:

• Section 07 01 91 Joint Sealant Rehabilitation and Replacement
• Section 07 14 13.01 Hot Fluid-Applied Waterproofing, Deck (TREMproof 6100)
• Section 07 14 13.02 Hot Fluid-Applied Waterproofing, Vegetated Roof (TREMproof 6100)
• Section 07 14 16.02 Cold Fluid-Applied Waterproofing, Vertical (TREMproof 250GC)
• Section 07 14 16.03 Cold Fluid-Applied Waterproofing, Deck (TREMproof 250GC)
• Section 07 14 16.04 Cold Fluid-Applied Waterproofing, Vegetative Roof (TREMproof 250GC)
• Section 07 17 00 Bentonite Waterproofing (Paraseal GM/LG 60 mil)
• Section 07 18 00.01 Traffic Coatings, Vehicular
• Section 07 18 00.02 Traffic Coatings, Pedestrian
• Section 07 18 00.03 Traffic Coatings, Vehicular and Pedestrian
• Section 07 27 13 Modified Bituminous Sheet Waterproofing, Vapor-Retarding (ExoAir 110)
• Section 07 27 23 Board Product Waterproofing, Vapor Permeable (SECUREROCK ExoAir 430)
• Section 07 27 26.01 Fluid-Applied Membrane Waterproofing, Vapor-Retarding (ExoAir 120)
• Section 07 27 26.02 Fluid-Applied Membrane Waterproofing, Vapor Permeable (ExoAir 220)
• Section 07 27 26.03 Fluid-Applied Membrane Waterproofing, Vapor Permeable (ExoAir 230)
• Section 07 84 13 Penetration Firestopping
• Section 07 84 46 Fire-Resistive Joint Systems
• Section 07 92 00 Joint Sealants
• Section 08 85 00 Glazing Sealants
• Section 32 13 73 Concrete Paving Joint Sealants

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* + - 1. SUMMARY
				1. Section Includes:

1. Cold fluid-applied waterproofing for planters.

2. [Protection course] [Drainage panels] [Insulation].

* + - 1. RELATED REQUIREMENTS

Section 03 31 00 "Cast-in-Place Concrete" for moisture curing of concrete waterproofing substrate.

Section 04 20 00 "Unit Masonry" for compatibility with flashing components.

Division 07 “Air Barrier” section for wall waterproofing and interface coordination.

Section 07 72 73 "Membrane Leak Detection System" for requirements for EFVM leak detection system installation and membrane leak testing.

Section 07 76 13 "Roof Pavers" for requirements for roof ballast and roof decking pavers and support pedestal systems.

Section 07 92 00 "Joint Sealants" for joint sealants and accessories and joint preparation.

Section 07 90 00/07 95 00 "Expansion Control/Protection" for expansion joint systems.

Section 32 97 00 "Vegetated Roof Assemblies" for growing media, plantings, filter fabrics, root barriers, and related components.

Section 33 46 00 "Subdrainage" for drainage pipe and conduits, drainage panels, and filter fabrics.

* + - 1. REFERENCES
				1. References, General: Versions of the following standards current as of the date of issue of the project apply to the Work of this Section.
				2. ASTM International (ASTM): [www.astm.org:](http://www.astm.org/)

ASTM C920 - Standard Specification for Elastomeric Joint Sealants

ASTM C1193 - Standard Guide for Use of Joint Sealants

ASTM C1127 - Standard Guide for Use of High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane with an Integral Wearing Surface

ASTM C1305 Standard Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane

ASTM D638 Standard Test Method for Tensile Properties of Plastics

ASTM D1353 Standard Test Method for Nonvolatile Matter in Volatile Solvents for Use in Paint, Varnish, Lacquer, and Related Products

ASTM D1640 Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings

ASTM D2240 Standard Test Method for Rubber Property—Durometer Hardness

CSA S413 for Parking Structures

ASTM C957 - Standard Specification for High-Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane With Integral Wearing Surface

* + - * 1. U. S. Environmental Protection Agency (EPA): [www.epa.gov](http://www.epa.gov):

40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings

* + - 1. ADMINISTRATIVE REQUIREMENTS
				1. Preinstallation Conference: Conduct conference at Project Site.

Review requirements for waterproofing products and installation, including surface preparation, substrate conditions, expansion joints as required, project and manufacturer's details, installation procedures, checklist of required tools and sundries, mockups, testing and inspection requirements, protection and repairs, and coordination and sequencing of waterproofing work with work of other Sections.

* + - 1. ACTION SUBMITTALS
				1. Product Data: For each type of waterproofing product (and expansion joint accessory if applicable) specified, including:

Technical data indicating compliance with requirements.

Substrate preparation instructions and recommendations.

* + - * 1. Shop Drawings: Show locations for waterproofing system components. Show details for each type of substrate, joints, corners, and edge conditions, including flashings, counterflashings, penetrations, transitions, and terminations.
			1. INFORMATIONAL SUBMITTALS
				1. Qualification Data: For Installer, manufacturer, (and waterproofing Inspector).

Certification of manufacturer's approval of Installer.

* + - * 1. Low-Emitting Product Certificate: For waterproofing products specified to meet volatile organic emissions standards.
				2. Product Test Reports: Test data for waterproofing products and waterproofing system, by qualified testing agency, indicating proposed waterproofing meets performance requirements, when requested by Architect.
				3. Warranty: Sample of unexecuted manufacturer and installer special warranties. E. Field quality control reports.
			1. QUALITY ASSURANCE
				1. Installer Qualifications: A manufacturer-approved firm with minimum [three] years experience in installation of specified or similar products in successful use on similar projects, employing workers trained by manufacturer, including a full-time on-site supervisor with a minimum of [three] years experience installing similar work, and able to communicate verbally with Contractor[, Architect,] and employees.
				2. Manufacturer Qualifications: A qualified manufacturer [listed in this Section] with minimum three years experience in manufacture of waterproofing as one of its principal products.

Manufacturer’s product submitted has been in satisfactory operation on three similar installations for at least three years.

Approval of Manufacturers and Comparable Products: [Submit] [Prime bidder must submit] the following in accordance with project substitution requirements, within time allowed for substitution review:

Completed and signed Substitution Request form.

Product data, including certified independent test data indicating compliance with requirements.

Sample shop drawings from similar project.

Project references: Minimum of five installations of similar system not less than five years old, with Owner and Architect contact information.

Name and resume of proposed qualified Inspector.

Sample warranty.

* + - * 1. Waterproofing Inspector Qualifications: A technical representative of manufacturer not engaged in the sale of products and experienced in the installation and maintenance of the specified waterproofing system, qualified to perform observation and inspection specified in Field Quality Control Article, to determine Installer’s compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Inspector shall be one of the following:

An authorized full-time technical employee of the manufacturer.

An independent party certified as a waterproofing inspector acceptable to Architect, retained by the Contractor.

* + - * 1. Testing Agency Qualifications: Qualified independent agency experienced in the installation of the specified waterproofing system, and qualified to perform observation and inspection specified in Field Quality Control Article to determine Installer’s compliance with the requirements of this Project, acceptable to Architect, retained by the Contractor.
				2. Mockups: Provide waterproofing mockup application within mockups required in other sections, or if not specified, in an area of not less than 90 sq. ft. of surface where directed by Architect for each type of substrate condition. Include examples of surface preparation, crack and joint treatment, waterproofing application, and flashing, transition, and termination conditions, to set quality standards for execution.

Include intersection of deck waterproofing with adjacent vertical waterproofing and moisture control system.

If applicable, include no less than 13 ft (3.96m) including a minimum of one splice joint of Willseal® Expansion Joint System.

* + - 1. DELIVERY, STORAGE AND HANDLING
				1. Accept materials on site in manufacturer's unopened original packaging.
				2. Store products in weather protected environment, clear of ground and moisture, within temperature ranges recommended by waterproofing manufacturer.
				3. Construction Waste: Store and dispose of packaging materials and construction waste in accordance with requirements of Division 01 Section ["Construction Waste Management"] ["Temporary Facilities and Controls."]
			2. ENVIRONMENTAL REQUIREMENTS
				1. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by manufacturer.

Protect substrates from environmental conditions that affect membrane performance.

Do not apply waterproofing to a damp or wet substrate or during snow, rain, fog, or mist.

* + - 1. SCHEDULING
				1. Coordinate installation of waterproofing with completion and coordination of interfacing trades with waterproofing.
				2. Schedule work so waterproofing applications may be inspected prior to concealment.
				3. Ensure waterproofing materials are cured before covering with other materials.
			2. WARRANTY
				1. Applicator: Company specializing in performing the work of this section qualified by system manufacturer for warranted membrane installation. Applicator shall submit the following certification for review:

Applicator shall submit documentation from the membrane manufacturer to verify contractor’s status as a qualified approved applicator for warranted installations

* + - * 1. Special Manufacturer's Warranty: Manufacturer's standard form in which waterproofing manufacturer agrees to furnish and install waterproofing material to repair or replace those materials installed according to manufacturer's written instructions that exhibit material defects or otherwise fail to remain watertight as specified under normal use within warranty period specified.

Access for Repair: Owner shall provide unimpeded access to the Project and the waterproofing system for purposes of testing, leak investigation, and repair, and shall reinstall removed cladding and overburden materials upon completion of repair.

Cost Limitation: Manufacturer's obligation for repair or replacement shall be limited to the original installed cost of the work.

Warranty Period: [**Twenty**] years date of Substantial Completion.

1. PRODUCTS
	* + 1. MANUFACTURERS
				1. Basis-of-Design Products: Provide waterproofing products manufactured by **Tremco, Inc., Commercial Sealants and Waterproofing Division, An RPM Company**, Beachwood OH; (866)321-6357; email: techresources@tremcoinc.com; [www.tremcosealants.com](http://www.tremcosealants.com/), [or comparable products of other manufacturer approved by Architect in accordance with Instructions to Bidders and Division 01 General Requirements]. If applicable, provide expansion joint products manufactured by Willseal, Hudson, NH; [www.willseal.com](http://www.willseal.com) .
				2. Source Limitations: Provide waterproofing system materials and accessory products from single source from single manufacturer.
			2. PERFORMANCE REQUIREMENTS
				1. General: Waterproofing system shall be capable of performing as a continuous watertight installation and as a moisture drainage plane transitioned to adjacent flashings and discharging water to the building exterior. Waterproofing shall accommodate normal substrate movement and seal expansion and control joints, construction material transitions, opening transitions, penetrations, and perimeter conditions without resultant moisture deterioration.
				2. VOC Content: Zero VOC’s and compliant with authorities having jurisdiction.
				3. Compatibility: Provide waterproofing system materials that are compatible with one another and with adjacent materials under conditions of service and application required, as demonstrated by waterproofing manufacturer based on testing and field experience.
			3. WATERPROOFING MEMBRANE
				1. Cold Fluid-Applied Waterproofing: Polyurethane-methacrylate (PUMA)-based membrane. A two-component methacrylate-based (PUMA) liquid membrane. Tremco TREMproof PUMA (horizontal waterproofing system).

Basis of Design Product: **Tremco, Inc., Tremco PUMA BC or BC LM**.

VOC Content: 0 g/L, all grades.

Elongation ASTM D638 407%

Low Temperature ability and Crack Bridging, ASTM C1305: Pass.

Tensile Strength D638 at 75 degrees F1680 PSI

* + - 1. ACCESSORY MATERIALS
				1. General: Accessory materials as described in manufacturer's written installation instructions, recommended to produce complete waterproofing system meeting performance requirements, and compatible with waterproofing material and adjacent materials.
				2. Substrate Patching Material: Waterproofing manufacturer's standard trowel-grade filler material.
				3. Primer: Tremco PUMA Primer.
				4. Detailing Membrane: Tremco PUMA BC T thixotropic polyurethane methacrylate based membrane for use in detailing and field applied cant beads.
				5. Flashing Membrane for Vertical and penetration applications: Tremco PUMA BC R
				6. Crack filler and Patching material; Tremco PUMA WC and silica sand
				7. Top Coat: Tremco PUMA TC
				8. Initiator: Tremco PUMA Initiator/Initiator+, used to catalyze all PUMA/MMA resins
				9. Cleaner: Tremco PUMA Cleaner
				10. Joint Sealant: ASTM C920, approved by waterproofing manufacturer for adhesion and compatibility with waterproofing and accessories.
				11. Basis of Design Product: **Tremco, Dymonic 100**.
				12. Expansion Joint Pre-compressed or Closed Cell, Monolithic Foam System. Foam Structure Must not Contain Unbonded Foam Laminations;

**Willseal® Coreseal** for use in both vertical and horizontal below grade system applications requiring +/-25% movement capability, closed cell, and a lightweight seal.

**Willseal® Color Coreseal** for use in both vertical and horizontal below grade system applications requiring +/-25% movement capability, closed cell, and a lightweight seal.

**Willseal® Color Coreseal – CM** for use in both vertical and horizontal below grade Tremco system applications requiring +/-25% movement capability, closed cell, and a lightweight seal with an integrated waterproofing membrane.

**Willseal® 250 BG** for use in below grade applications, requiring +/- 50% movement capability

1. EXECUTION
	* + 1. EXAMINATION
				1. Surface Condition: Before applying waterproofing materials and accessories, examine substrate and conditions to ensure substrates are fully cured, smooth, clean, dry, and free from high spots, depressions, loose and foreign particles and other deterrents to adhesion, and conditions comply with manufacturer's written recommendations.

Verify concrete and masonry surfaces are visibly dry, have cured for time period recommended by waterproofing manufacturer, and are free from release agents, curing agents, laitance, and other contaminates. Test for capillary moisture by plastic sheet method according to ASTM D4263 moisture level must be less than 6%. Test for waterproofing adhesion per manufacturer's recommended method. Notify Architect of unsatisfactory conditions.

Verify the concrete has a #3-4 ICRI CSP and a minimum compressive strength of 3000 psi

Verify masonry joints are filled with mortar and struck flush.

* + - * 1. Proceed with installation only after unsatisfactory conditions have been corrected.
			1. INTERFACE WITH OTHER WORK
				1. Sequencing of Work: Coordinate sequencing of waterproofing work with work of other sections that form portions of building envelope moisture control to ensure that expansion joints, flashings and transition materials can be properly installed and inspected.
				2. Subsequent Work: Coordinate waterproofing work with work of other sections installed subsequent to waterproofing to ensure complete inspection of installed waterproofing and sealing of waterproofing penetrations necessitated by subsequent work.
			2. PREPARATION
				1. Clean, prepare, and treat substrates in accordance with waterproofing manufacturer's written instructions.

Mask adjacent finished surfaces.

Remote contaminants and film-forming coatings from substrates.

Remove projections and excess materials and fill voids with substrate patching material.

Prepare and treat joints and cracks in substrate per ASTM D 4258 and waterproofing manufacturer's written instructions.

For accessory materials, follow manufacturers application instructions.

* + - * 1. Detail Preparation: Prepare non-moving shrinkage cracks, large cracks, construction joints, expansion joints, projections and protrusions, penetrations, drains, and changes in plane in accordance with waterproofing manufacturer's written instructions and details, using accessory materials specified.
			1. WATERPROOFING INSTALLATION
				1. Apply waterproofing material within manufacturer’s recommended application temperature ranges.
				2. Primer: Apply primer to substrates at required rate, using a roller or brush. Allow to dry.
				3. Start application with manufacturer's authorized representative present.
				4. Cold Fluid-Applied Waterproofing: Apply waterproofing in total wet film thickness and with methods recommended in writing by waterproofing manufacturer’s application instructions.
				5. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates and reapply waterproofing components.
			2. PROTECTION INSTALLATION
				1. Protection Course:

Apply Tremco PUMA TC to areas exposed to pedestrian traffic and long term UV exposure greater than 3 weeks. Planter applications require Tremco 20-mil or 40-mil polyethylene sheet root barrier or VR RootBloc 10, 20 or 40.

* + - * 1. Drainage Panel: Place and secure drainage panels using methods that do not penetrate waterproofing. Face geotextile away from deck substrate. Lap edges and ends of geotextile.
				2. Insulation: Install one or more layers of board insulation as required, staggering joints. Fit within 1/2 inch (12 mm) of projections and penetrations.
			1. FIELD QUALITY CONTROL
				1. Contractor's Inspector: Contractor shall engage manufacturer's qualified representative during the work to perform tests, including documenting of waterproofing prior to concealment.

Contractor's Inspector shall measure membrane thickness with mil gauge at least once for every 100 sq. ft. (10 sq. m).

Provide written report of tests and inspections.

Where applicable, inspect transitional material such as expansion joints, flashings, insulation are installed per manufacturers recommendations.

* + - * 1. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
				2. Testing Agency: [**Owner will engage**] [**Engage**] a qualified testing agency to inspect substrate conditions, surface preparation, waterproofing application, protection, and drainage components, and to furnish reports to Architect.

Testing includes EFVM inspection prior to concealing deck waterproof membrane as specified in Section 07 72 73 "Membrane Leak Detection System."

* + - * 1. Coordination of Inspection: Cooperate with testing agency. Allow access to work areas and staging. Notify testing agency in writing of schedule for Work of this Section to allow sufficient time for testing and inspection.

Do not cover Work until testing and inspection is completed and accepted.

* + - * 1. Reporting: Forward written inspection reports to the Architect within 10 working days of the inspection and test being performed.
				2. Correction of Work: Correct deficient applications not passing tests and inspections, make necessary repairs, and retest as required to demonstrate compliance with requirements.
			1. CLEANING AND PROTECTING
				1. Clean spills, stains, and overspray resulting application utilizing cleaning agents recommended by manufacturers of affected construction. Remove masking materials.
				2. Protect waterproofing from damage from subsequent work. Protect waterproofing materials from exposure to UV light for period in excess of that acceptable to waterproofing manufacturer; replace overexposed materials and retest.

END OF SECTION