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

**Section 07 90 00 / 07 95 00**

**Tremco® PUMA Expansion Joint System (EJS)
Expansion Joint System**

Specifier: This guide specification section specifies **Tremco PUMA EJS**,

• Designed for use in exposed and/or multi-story parking garages in both new construction and restoration.

**Tremco PUMA Primer** is a methyl methacrylate (MMA) primer that is applied to the concrete to prepare it for the application of Tremco PUMA EJ Basic.

**Tremco PUMA EJ Basic** is a two-part, chemical curing, PUMA modified membrane used as an elastomeric joint compound material.

**Tremco PUMA TC** is a methyl methacrylate (MMA) top coat that is applied after Tremco PUMA EJ Basic has cured. The top coat affords excellent abrasion resistance, UV stability and chemical resistance to complete the Tremco PUMA EJS (Expansion Joint 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 16.02 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 07 95 00 Expansion Control
• Section 08 85 00 Glazing Sealants
• Section 32 13 73 Concrete Paving Joint Sealants

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SECTION 07 90 00 – EXPANSION CONTROL

PART 1 - GENERAL

* + - 1. Section Includes:

1. Polyurethane methacrylate, liquid-applied expansion joint system.

* + - 1. RELATED REQUIREMENTS

Section 03 31 00 Cast-in-Place Concrete

Section 03 60 00 Grouting

Section 04 00 00 Masonry

Section 07 00 00 Thermal and Moisture Protection

Roofing, Above- and Below-grade Waterproofing, Weather Barriers

Section 09 20 00 Plaster and Gypsum Board

Section 09 30 00 Flooring

Section 09 70 00 Wall Finishes

* + - 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 D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

ASTM C661 – Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer

ASTM D1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection

ASTM D570 – Standard Test Method for Water Absorption of Plastics

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

Review requirements for expansion joint products and installation, including joint movement as specified by the engineer of record, surface preparation, substrate conditions, 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 work with work of other Sections.

* + - 1. ACTION SUBMITTALS
1. Product Data: For each component specified, indicating compliance with requirements.
2. Shop Drawings: Submit typical expansion joint drawing(s) indicating pertinent dimensions, general construction, expansion joint opening dimensions and product information.
	* + 1. INFORMATIONAL SUBMITTALS
3. Qualification Data:

Certification of manufacturer's approval of Installer.

1. Product Test Reports: Test data for expansion joint products, by qualified testing agency, indicating proposed expansion joint system meets performance requirements, when requested by Architect.
2. Warranty: Sample of unexecuted manufacturer and installer special warranties.
3. Field quality control reports.
	* + 1. QUALITY ASSURANCE
4. Installer Qualifications: A manufacturer-approved firm with minimum [three] years experience in installation of specified products in successful use on waterproofing 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.
	* + 1. DELIVERY, STORAGE AND HANDLING
5. Accept materials on site in manufacturer's unopened original packaging.
6. Store products in weather protected environment, clear of ground and moisture, within temperature ranges recommended by expansion joint manufacturer.
7. 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."]
	* + 1. ENVIRONMENTAL REQUIREMENTS
8. Environmental Limitations: Apply expansion joint systemwithin the range of ambient and substrate temperatures recommended by manufacturer.

Protect substrates from environmental conditions that affect membrane performance.

Do not apply products to damp or wet substrates or during snow, rain, fog, or mist.

* + - 1. SCHEDULING
1. Schedule work so expansion joint applications may be inspected prior to concealment
	* + 1. WARRANTY
				1. Applicator:  Company specializing in performing the work of this section qualified by system manufacturer for warranted expansion joint installation. Applicator shall submit the following certification for review:

Applicator shall submit documentation from the expansion joint 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 expansion joint system manufacturer agrees to furnish and install expansion joint 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 expansion joint 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: [X] years from date of Substantial Completion.

1. Special warranties specified in this article exclude deterioration or failure of traffic coating materials from the following:

Movement of the structure caused by structural settlement or stresses on the expansion joint system exceeding the movement as specified by the engineer of record.

Mechanical damage caused by outside agents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Products: Provide waterproofing products manufactured by **Tremco, Inc., Commercial Sealants and Waterproofing Division,** 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].

2.2 PERFORMANCE REQUIREMENTS

1. General: Provide watertight expansion joint system that is capable of accommodating movement as specified by the engineer of record.
2. Compatibility: Provide expansion joint system materials that are compatible with one another and with adjacent materials under conditions of service and application required, as demonstrated by manufacturer based on testing and field experience.
	1. EXPANSION JOINT SYSTEM
3. Expansion Joint System: Manufacturer's polyurethane-methacrylate system for extreme exterior exposure conditions, traffic-bearing, seamless, high-solids-content, cold liquid-applied, elastomeric, waterproofing expansion joint system with integral wearing surface.
4. Basis of Design Products: Tremco, Inc., **Tremco PUMA EJS** installed in the **Tremco Beveled Anchor Profile**.
5. Primer: Two-component, chemically curing methyl methacrylate
6. **Tremco PUMA Primer**
7. Joint Compound Material: Polyurethane methacrylate- based (PUMA) joint compound. A 2- component methacrylate-based (PUMA) liquid membrane, self-flashing and self-adhering field applied material. Tremco PUMA EJS (expansion joint system).
8. Basis of Design Product: **Tremco, Inc., Tremco PUMA EJ Basic**.
9. VOC Content: 0 g/L.
10. Elongation, ASTM D412: 218%.
11. Low Temperature Crack Bridging, ASTM C 1305: Pass.
12. Low Temperature Flexibility, ASTM D1970: Pass.
13. Tensile Strength, D412 at 75 degrees Fahrenheit, 752 psi.
14. Tear Strength, ASTM D624 Die C, 175 psi.
15. Shore A Hardness, ASTM D661, 89.
16. Top Coat: Methyl Methacrylate
17. **Tremco PUMA TC**
18. Color: As selected by Architect from manufacturer's full range.
19. Aggregate: Manufacturer's standard aggregate for each use indicated of particle sizes, shape, and minimum hardness recommended in writing by expansion joint manufacturer.
20. 16-30 mesh silica sand for the top coat.

2.4 ACCESSORY MATERIALS

1. General: Accessory materials as described in manufacturer's written installation instructions, recommended to produce complete expansion joint system meeting performance requirements, and compatible with joint compound material and adjacent materials.
2. Substrate Patching Material: As specified by manufacturer’s written application instructions.
3. Initiator, Benzoyl Peroxide.
4. **Tremco PUMA Initiator**, used to catalyze all PUMA components.
5. Cleaner:
6. **Tremco PUMA Cleaner**.
7. Joint Sealant: ASTM C920, approved by expansion joint manufacturer for adhesion and compatibility with expansion joint system and accessories.
8. Basis of Design Product: **Tremco, Dymonic 100**.

PART 3 - EXECUTION

3.1 EXAMINATION

1. Surface Condition: Before applying expansion joint materials, 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.

1. Verify concrete surfaces are visibly dry, have cured for time period recommended by traffic coating manufacturer, and are free from release agents, curing agents, laitance, and other contaminates and a minimum compressive strength of 4000 psi.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

1. Surface Preparation: Clean, prepare, and treat substrates in accordance with ASTM C1127 and traffic coating manufacturer's written instructions.
2. Remove contaminants, curing compounds, and film-forming coatings from substrates.
3. Remove projections and excess materials and fill voids with manufacturer's recommended substrate patching material.
4. Mechanically abrade concrete surfaces to a uniform profile in accordance with ASTM D4259 and meeting ICRI Surface Profile CSP 3. Do not acid etch.
5. Clean prepared surfaces in accordance with ASTM D4258.
6. Protect adjacent finished surfaces by masking. Mask termination point on vertical surfaces.

3.3 EXPANSION JOINT INSTALLATION

1. Primer: Prime substrates at required rate. Allow to cure before proceeding.
2. Start application with manufacturer's authorized representative present.
3. Apply expansion joint system into the Tremco Beveled Anchor Profile according to manufacturer’s written instructions.
4. Apply number of coats of specified compositions for expansion joint system at locations indicated on Drawings, per manufacturer’s written installation instructions.
5. Cure expansion joint system. Prevent contamination and damage during application and curing stages.

3.4 FIELD QUALITY CONTROL

1. Testing Agency: Engage a qualified testing agency to inspect substrate conditions, surface preparation, traffic coating application, protection, and drainage components, and to furnish reports to Architect.
2. Coordination of Testing: 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.
3. Do not cover Work until testing and inspection is completed and accepted.
4. Reporting: Forward written inspection reports to the Architect within 3 working days of the inspection and test being performed.
5. Correction: Correct deficient applications not passing tests and inspections, make necessary repairs, and retest as required to demonstrate compliance with requirements.

3.5 CLEANING AND PROTECTING

A. Clean spills, stains, and overspray resulting application utilizing cleaning agents recommended by manufacturers of affected construction. Remove masking materials.

B. Protect expansion joint system from damage from subsequent work.

END OF SECTION