

SPECIFICATION  
Sections 07 90 00 / 07 95 00

EMSHIELD WFR2 / EMSHIELD WFR3 by EMSEAL

Preformed, Pre-Compressed, Self-Expanding, Fire Rated Sealant System with Silicone Pre-Coated  
Surface,  
Watertight, Energy-Efficient, 2 or 3 Hour Rated, Exterior and Interior Wall Joints

\*\*\*\*NOTE to specifier: select WFR2 for two-hour applications and WFR3 for three-hour applications and delete the other or if using both systems make reference to respective locations in the spec and on the drawings\*\*\*\*

PART 1 – GENERAL

1.01 Work Included

- A. The work shall consist of furnishing and installing waterproof, fire rated expansion joints in accordance with the details shown on the plans and the requirements of the specifications. Preformed sealant shall be silicone pre-coated, preformed, pre-compressed, self-expanding, sealant system.
- B. Related Work
  - Division 4 - Masonry
  - Division 7 - Thermal & Moisture Protection
  - Division 7 - Sealants, Caulking and Waterproofing
  - Division 7 - Joint Firestopping

1.02 Submittals

- A. General – Submit the following according to Division 1 Specification Section.
- B. Standard Submittal Package – Submit typical expansion joint drawing(s) indicating pertinent dimensions, general construction, expansion joint opening dimensions and product information.
- C. Sample of material is required at time of submittal.
- D. All products must be identified by a UL listing number and must be listed in the UL and ULC Online Certification Directories as proof that they have been tested according to UL 2079 and manufactured under UL’s “Follow Up” service.
- E. All products must be certified by independent laboratory test report to exceed the requirements of curtain wall performance tests ASTM E330, E283-04, and E331. Product must meet or exceed hurricane-force wind loading with no deflection at both positive and negative pressures up to 4954 Pascals - equal to 200 mph winds (ASTM E330-02-procedure A).
- F. All products must be certified by independent laboratory test report to ASTM E90-09 and to meet or exceed an STC 62 in STC 68 wall and OITC 52 rating in an OITC 52 wall.
- G. All products must be certified by independent laboratory test report to be free in composition of any waxes or wax compounds using FTIR and DSC testing.
- H. All products shall be certified in writing to be: a) capable of withstanding 150°F (65°C) for 3 hours while compressed down to the minimum of movement capability dimension of the basis-of-design product (-25% of nominal material size) without evidence of any

bleeding of impregnation medium from the material; and b) that the same material after the heat stability test and after first being cooled to room temperature will subsequently self-expand to the maximum of movement capability dimension of the basis-of-design product (+25% of nominal material size) within 24 hours at room temperature 68°F (20°C).

#### 1.03 Product Delivery, Storage and Handling

- A. Deliver products to site in Manufacturer's original, intact, labeled containers. Handle and protect as necessary to prevent damage or deterioration during shipment, handling and storage. Store in accordance with manufacturer's installation instructions.

#### 1.04 Basis-of-Design

- A. All joints shall be designed to meet the specified performance criteria of the project as manufactured by: (USA & International) EMSEAL JOINT SYSTEMS, LTD 25 Bridle Lane, Westborough, MA 01581-2603, Toll Free: 800-526-8365. (Canada) EMSEAL, LLC 120 Carrier Drive, Toronto, Ontario, Canada M9W 5R1 Toll Free: 800-526-8365. [www.emseal.com](http://www.emseal.com)
- B. Alternate manufacturers must demonstrate that their products meet or exceed the design criteria and must submit certified performance test reports performed by nationally recognized independent laboratories as called for in section 1.02 Submittals. Submittal of alternates must be made three weeks prior to bid opening to allow proper evaluation time.

#### 1.05 Quality Assurance

- A. The General Contractor will conduct a pre-construction meeting with all parties and trades involved in the treatment of work at and around expansion joints including, but not limited to, concrete, mechanical, electrical, HVAC, landscaping, masonry, curtain wall, waterproofing, fire-stopping, caulking, flooring and other finish trade subcontractors. All superintendents and foremen with responsibility for oversight and setting of the joint gap must attend this meeting. The General Contractor is responsible to coordinate and schedule all trades and ensure that all subcontractors understand their responsibilities in relation to expansion joints and that their work cannot impede anticipated structural movement at the expansion joints, or compromise the achievement of watertightness or life safety at expansion joints in any way.
- B. Warranty – Manufacturer's standard warranty shall apply.
- C. LEED Building Performance Requirements:
  - 1) The VOC of the silicone must not exceed 40 grams/liter.
  - 2) Products must be proved to be certified by independent test report to exceed the requirements of curtain wall performance tests ASTM E330, E283-04, and E331. Product must meet or exceed hurricane-force wind loading with no deflection at both positive and negative pressures up to 4954 Pascals - equal to 200 mph winds (ASTM E330-02-procedure A).
  - 3) Products must be proved to have been certified by independent test report in accordance with ASTM C518-04 and demonstrate an R-Value per 1-inch (25mm) of depth of not less than 1.03 at as-installed nominal joint size compression.
  - 4) Products must be proved to have been certified by independent test report to ASTM E90-09 and to meet or exceed the STC and OITC rating for the project.
  - 5) Product must be proved by independent test report to have air permeability not to exceed 0.02 L/(s.m<sup>2</sup>) at 75 Pascals as required by the Air Barrier Association of America (ABAA) and in accordance with ASTM E283-04.

## PART 2 – PRODUCT

### 2.01 General

- A. Provide watertight, energy-efficient, 2 or 3 hour fire rated, exterior and interior joints in vertical-plane walls (above-grade). Typical locations include applications for exterior wall joints and interior wall joints where a 2 or 3 hour fire rating is required or desired. System shall perform waterproofing, fire-rating, movement-accommodation functions as well as contribute to thermal insulation and sound attenuation as the result of a single installation and without the addition of ancillary fire-blankets, mineral wool, coverplates, etc.
- B. Provide EMSHIELD WFR2 / EMSHIELD WFR3 as manufactured by EMSEAL JOINT SYSTEMS LTD and as indicated on drawings for vertical expansion joint locations.
- C. Sealant shall be silicone pre-coated, preformed, pre-compressed, self-expanding, 2 hour-rated, sealant system. Sealant system shall be comprised of the following components: 1.) fire-retardant-impregnated foam pre-coated on both sides with an intumescent fire-proofing material and pre-coated at the outer layers with waterproof silicone, 2.) field-applied epoxy adhesive primer, 3.) field-injected silicone sealant bands.
- D. Material shall be capable of movements of +25%, -25% (50% total) of nominal material size. Standard sizes from 1/2" (25 mm) to 6" (250 mm). Depth of seal is 4" (100 mm) for WFR2 and 5" (128mm) for WFR3.
- E. Silicone external color facings to be low-modulus, waterproof silicone factory- applied to the foam while it is partially pre-compressed to a width greater than maximum joint extension and cured before final compression. When compressed to final supplied dimension, a bellow(s) to handle movement must be created in the silicone coating. Silicone coatings to be available in a range of not less than 26 standard colors for coordination with typical building materials. Separate colors may be chosen for each coated surface.
- F. Select the sealant system model appropriate to the movement and design requirements at each joint location that meet the project specification or as defined by the structural engineer of record.
- G. Manufacturer's Checklist must be completed by expansion joint subcontractor and returned to manufacturer at time of ordering material.

### 2.02 Fabrication

- A. EMSHIELD WFR2 / EMSHIELD WFR3 by EMSEAL JOINT SYSTEMS LTD must be supplied precompressed to less than the joint size, packaged in shrink-wrapped lengths (sticks).
- B. Directional changes and terminations into horizontal plane surfaces to be provided by factory-manufactured universal-90-degree single units containing minimum 12-inch long leg and 6-inch long leg or custom leg on each side of the direction change or through field fabrication in strict accordance with published installation instructions.

## PART 3 – EXECUTION

### 3.01 Installation

- A. Preparation of the Work Area

1. The General contractor shall provide properly formed and prepared expansion joint openings constructed to the exact dimensions and elevations shown on the contract drawings. Deviations from these dimensions will not be allowed without the written consent of the engineer of record.
2. The contractor shall clean the joint opening of all contaminants immediately prior to installation of expansion joint system. Repair spalled, irregular or unsound joint surfaces using accepted industry practices for repair of the substrates in question. Remove protruding roughness to ensure joint sides are smooth. Ensure that there is sufficient depth to receive the full depth of the size of the EMSHIELD WFR2 / EMSHIELD WFR3 being installed plus at least ¼-inch (6mm) for the application of corner beads. Refer to Manufacturers Installation Guide for detailed step-by-step instructions.
3. No drilling, or screwing, or fasteners of any type are permitted to anchor the sealant system into the substrate.

### 3.02 Clean and Protect

- A. Protect the system and its components during construction. Subsequent damage to the expansion joint system will be repaired at the general contractor's expense. After work is complete, clean exposed surfaces with a suitable cleaner that will not harm or attack the finish.

END OF SECTION