

## SPECIFICATION

Sections 07 90 00 / 07 95 00

EMSHIELD DFR3 by EMSEAL

Preformed, Pre-Compressed, Self-Expanding, Fire Rated Sealant System with Tensionless Silicone Pre-Coated Surface, Watertight, Traffic Durable, 3 Hour UL2079 Rated, Primary Seal for Horizontal Expansion Joints

### 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 3 - Cast-in-Place Concrete
  - 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 to be used in the work.
- 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 be free in composition of any waxes or wax compounds using FTIR and DSC testing.
- F. 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

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

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.

1.06 Warranty – Manufacturer’s standard warranty shall apply.

1.07 LEED Building Performance Requirements: Projects within 500 miles of Toronto, ON may qualify for additional "Regional Material" LEED credit. The VOC of the silicone must not exceed 50 grams/liter.

### PART 2 – PRODUCT

#### 2.01 General

- A. Provide traffic durable, watertight, 3 hour fire rated, expansion joint for isolation joints and expansion joints in decks and floors. Typical locations include, but are not limited to the following: applications for joints over occupied space, below-grade, stair tower perimeters, elevator perimeters, stadium tread and risers, parking deck joints, treatment plant perimeters and covers, and structural expansion joints. System shall perform waterproofing, fire-rating, traffic bearing and movement-accommodation functions as the result of a single installation and without the addition of fire blankets, fire barriers, mineral wool, coverplates, etc.
- B. Provide EMSHIELD DFR3 as manufactured by EMSEAL JOINT SYSTEMS LTD and as indicated on drawings for horizontal-plane expansion joint locations.
- C. Sealant system shall be comprised of the following components: 1) fire-retardant-impregnated foam pre-coated on the underside with an intumescent fire-proofing material, 2.) pre-coated on the traffic surface with highway-grade, fuel resistant silicone, 3) field-applied epoxy adhesive primer, 4) field-injected silicone sealant bands. Impregnation agent to have proven non-migratory characteristics.

- D. Material shall be capable of movements of up to +25%, -25% (50% total) of nominal material size. Standard sizes from 1/2" (25mm) to 4" (100mm). Depth of seal is 4" (100 mm).
- E. Silicone coating to be highway-grade, low-modulus, jet-fuel resistant 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.
- F. EMSHIELD DFR3 to be installed into manufacturer's standard field-applied epoxy adhesive. EMSHIELD DFR3 is to be installed slightly recessed from the surface such that when the field-applied injection band of silicone is installed between the substrates and the foam-and-silicone-bellow(s), the system will be essentially flush with the substrate surface.
- G. 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.
- H. Manufacturer's Checklist must be completed by expansion joint subcontractor and returned to manufacturer at time of ordering material.

## 2.02 Fabrication

EMSHIELD DFR3 by EMSEAL must be supplied precompressed to less than the joint size, packaged in shrink-wrapped lengths (sticks).

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

- i. The contractor shall provide properly formed and prepared expansion joint openings constructed to the exact dimensions and elevations shown on manufacturer's standard system drawings or as shown on the contract drawings. Deviations from these dimensions will not be allowed without the written consent of the engineer of record.
- ii. 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 DFR3 being installed. Refer to Manufacturers Installation Guide for detailed step-by-step instructions.
- iii. No drilling, or screwing, or fasteners of any type are permitted to anchor the sealant system into the substrate.
- iv. System to be installed by qualified sub-contractors only according to detailed published installation procedures and/or in accordance with job-specific installation

instructions of manufacturer's field technician.

**B. Clean and Protect**

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

Rev. 11-25-2014