



RESFOAM HL 35
Flexible, Hydrophilic Polyurethane Foam and Gel Resin

SECTION 07 10 00
DAMPPROOFING AND WATERPROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES

Products for maintenance of concrete, including the following:

1. Products for waterproofing.

1.2 RELATED SECTIONS

- A. Section 07 – Thermal and Moisture Protection.

1.3 SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Verification Samples: For each finished product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color and patterns.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 5 years' experience in manufacturing similar products.
- B. Installer Qualifications: Minimum 2 years' experience in installing similar products.
- C. Source Limitations: For repair products, obtain each color, grade, finish, type and variety of product from single source and from single manufacturer with resources to provide products of consistent quality in appearance and physical properties.
- D. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 1. Finish areas designated by Architect.
 2. Do not proceed with remaining work until workmanship is approved by Architect.
 3. Refinish mock-up area as required to produce acceptable work.

1.5 PRE-INSTALLATION MEETINGS

- A. Convene at least two weeks prior to starting work of this section.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.



- B. Handling: Handle materials to avoid damage.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Product Performance:

Viscosity at 77°F – ASTM D1638	800 to 900 cps
VOCs (Rule #1113 of California's SCAQDM) *	9.6 g per L
Solids content	100%
- B. Acceptable Manufacturer:

MAPEI North America
1144 E. Newport Center Dr.; Deerfield Beach, FL 33442
Toll-Free for CRS Technical Services: Tel. 888-365-0614
Email: CRS@mapei.com
Web: www.mapei.com
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.
- D. Substitutions: Not permitted.

2.2 POLYURETHANE GROUT

- A. Single-component, water-activated polyurethane used for sealing cracks or joints in concrete structures.
 - 1. Product: Subject to compliance with requirements, provide MAPEI Corporation; Resfoam HL 35.
 - 2. Product shall not be re-dispersible in water after curing.
 - 3. Viscosity: Not less than 800 to 900 cps at 77°F by ASTM D1638.

2.3 MISCELLANEOUS MATERIALS

- A. Portland cement: ASTM C150/C150M, Type I, II or III unless otherwise indicated.
- B. Water: Potable.



2.4 MIXES

- A. General: Mix products, in clean containers, according to manufacturer's written instructions.
 - 1. Do not add water, thinners or additives unless recommended by manufacturer.
 - 2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovels or trowels as units of measure.
 - 3. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Compatible with concrete, masonry and brick structures with continuous moisture exposure.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 MIXING

Before product use, take appropriate safety precautions. Refer to the Safety Data Sheet for details.

- A. Resfoam HL 35 can be injected as a single component when sufficient water is present. It is recommended in certain situations to inject water as a second component by means of a mixing/metering machine (see the "Application Properties" chart on the technical data sheet).
- B. Resfoam HL 35 can be injected directly into the construction joints of manholes at a 1-to-1 ratio with water.

3.3 PREPARATION AND INSTALLATION

Read all installation instructions thoroughly before installation. Jobsite preparation depends on the type of injection method that is selected. Three techniques of injection are described below along with the site preparation.

Activated oakum technique:

The activated oakum technique is a method to help reduce or eliminate heavy water inflow in wide cracks or joints.

- A. Saturate oakum rope or absorbent industrial towels in Resfoam HL 35 and then soak the rope or towels in water. Resfoam HL 35 will begin reacting once dipped in water.
- B. Force the saturated pieces into the leaking crack or joint. Push them deeply into the crack or joint using a blunt instrument. As Resfoam HL 35 expands with the support of the rope or towels, water flow will be reduced, and the rope or towels should be held in place by the expansion.
- C. Proceed by drilling holes and completing either an encapsulation or crack-injection repair.

Crack injection technique:

Active water leaks flowing through cracks at high volume may require the drilling of relief holes to



relieve some of the water pressure. The relief holes may subsequently be repaired with Resfoam HL 35 or hydraulic cementitious patching material.

- A. Prepare the repair area by drilling holes at approximately 45-degree angles to intersect the void (crack, cavity, fissure or joint) at about half the depth of the concrete. Holes are typically drilled on opposing sides of the void in an alternating (staggered) pattern. The spacing is dependent on the crack size, width and configuration, and typically ranges from 6" to 2 feet (15 cm to 61 cm).
- B. Flush all drill waste liberally from holes with water to ensure a clean, wet contact surface before installing packers and injecting material.
- C. Ensure that packers are securely and firmly placed in the pre-drilled holes; once the packer is placed, install the injection tip.
- D. Inject the material by utilizing a single-component pump. Pump pressure typically ranges from 250 psi to 2,500 psi.
- E. If the crack or fissure is dry, inject water at low pressure to wet out the crack and ensure proper reactivity of Resfoam HL 35. Begin injecting Resfoam HL 35 from the lowest packer and watch for material escaping the surface of the crack or adjacent packers. Move systematically up the packers, ensuring that Resfoam HL 35 penetrates the entire surface area of the crack.
- F. For maximum effectiveness, the installer should visually examine the crack or fissure to ensure complete penetration into the crack and check the consistency of the reacted material. Additional water may be needed to wet out the area before injection, or a dual-injection stream of water and Resfoam HL 35 may be required.
- G. As soon as the material has cured, excess material at the site may be removed with a scraper or by waterblasting.

Gel encapsulation technique:

Gel encapsulation is used for below-grade applications where the objective is to seal a leaking structure by creating a membrane on the outside surface of that structure.

- A. Drill holes in a suitable pattern from the inside of the structure all the way through the structure – to allow injection to take place from the inside. The pattern and spacing of holes may vary depending on each repair project. A common drill pattern is shown in Figure 4 on the technical data sheet.
- B. Install packers in each hole and begin injection of material (at the desired water ratio) in one corner. Inject the material – either from cartridges or by utilizing a single-component pump. Pump pressure ranges from 250 psi to 2,500 psi.
- C. Continue injecting in one packer until Resfoam HL 35 penetrates the surrounding drill holes (open packers). Subsequently move to adjoining packers to maintain a “wet edge” of material, moving across the back side of the structure. Move back to the initial packers and repeat. Visual inspection of injection material penetrating the surrounding drill holes or packers will determine the consistency of the reacted material.
- D. For maximum effectiveness in completely filling voids, apply a sufficient amount of Resfoam HL 35 to produce a satisfactory ratio of water to product. Excess material at the site may be removed with a scraper or by waterblasting as soon as the material has cured.

END OF SECTION