



Hacker Industries, Inc.

FIRM-FILL® High Strength Recommended Specifications

PART I: GENERAL

1.1 Scope

Specify to meet project requirements. The conditions of the Contract (General, Supplementary, and other conditions) and the General Requirements (sections of Division 1) govern the provisions of this section.

1.2 Qualifications

- A. **Supplier:** Hacker Industries, Inc., Newport Beach, California
- B. **Installer:** Installation of FIRM-FILL® High Strength shall be by a Licensed Applicator of Hacker Industries, Inc., using mixing and pumping equipment with a water meter approved by Hacker Industries, Inc.
- C. All materials specified herein shall be approved by Hacker Industries, Inc., Newport Beach, CA. All others must receive prior approval.
- D. Compressive strength shall be specified from 2500 to 3800 psi (17.2 to 26.2 MPa).
- E. Materials shall be delivered in their original, unopened packages, and protected from exposure to the elements before and after delivery. Do not allow bags to get wet. Product shall not be used beyond shelf life.
- F. **Certification:** Upon completion of this portion of the work, and as a condition of its acceptance, deliver to the architect a certificate from Hacker Industries, Inc., and signed by the Licensed Applicator, stating that the material used in this work complies with the specified requirements.

PART II: PRODUCTS

2.1 Materials

- A. **Gypsum Concrete:** FIRM-FILL® High Strength, as supplied by Hacker Industries, Inc.
- B. **Subfloor Primer:** Hacker Floor Primer or approved equal
- C. **Sand:** 1/8" (3 mm) or less washed plaster, masonry sand or silica sand meeting requirements of Hacker Industries, Inc. Sand Guidelines
- D. **Water:** Potable and free from impurities
- E. **Sealer:** Hacker TopCoat™ SP (if specified)

2.2 Mix Design: See section 3.3



PART III: PREPARATION

3.1 Condition of Subfloor

- A. Subfloor shall be structurally sound, broom cleaned and free from oil, grease, paraffin, laitance or other contaminants before the arrival of Hacker Licensed Applicator. The concrete substrate shall be 28 days or older and must be tested for moisture in accordance with ASTM F710.
- B. Before installation, the General Contractor (GC) shall inspect and approve the condition of the subfloor and test the existing subfloor for moisture.

3.2 Preparation of Subfloor

- A. **Leak Prevention:** All cracks and voids shall be filled with a quick-setting patching or taping compound, or equal, where leakage may occur.
- B. Prime concrete subfloors using Hacker Floor Primer based upon job conditions.
- C. Hacker Floor Primer is not always required over concrete substrates. Multiple coats may be required over porous concrete or plank. The Hacker Licensed Applicator can give specific recommendations. (Note: For rehabilitation work or pours over old concrete, consult a Licensed Applicator or Hacker Industries, Inc. for recommended preparation.)

3.3 Mixing Instructions

- A. 5 to 7 gallons (18.9 to 26.5 L) of water and sand as specified per 80-pound (36.3-kg) bag of FIRM-FILL® High Strength. Do not overwater. Water amount will change with wetness of sand.
- B. FIRM-FILL® High Strength mix proportions, mix designs and methods shall be in strict accordance with Hacker Industries, Inc.'s recommendations.

3.4 Underlayment Application

- A. **Scheduling:**
 - 1. Installation of FIRM-FILL® High Strength shall not begin until the building is enclosed, including roof, windows, doors and other openings.
 - 2. FIRM-FILL® High Strength shall be installed before or after the installation of drywall, as specified.



B. Application:

1. The minimum thickness of FIRM-FILL® High Strength varies with the type of concrete subfloor. FIRM-FILL® High Strength can be featheredged in low traffic areas over all concrete subfloors. The maximum thickness of FIRM-FILL® High Strength shall be 3-1/2" (89 mm) in one lift.
2. Install FIRM-FILL® High Strength at specified thickness by placing contents of bags, sand and water into the approved high-speed mixing device with a water meter and blending for a minimum of one minute. FIRM-FILL® High Strength shall be pumped onto floor areas, spreading and screeding to a smooth surface. Place as continuously as possible until installation is complete so that no FIRM-FILL® High Strength slurry is placed against FIRM-FILL® High Strength that has obtained its initial set, except at authorized joints.
3. FIRM-FILL® High Strength is suitable for interior applications only and shall be covered by a finished floor covering.

C. Protection: After installation, temporary wood planking shall be placed by the GC wherever the floor underlayment will be subject to wheeled and/or concentrated loads. The GC shall not place concentrated loads—such as pallets of material, drywall, taping compounds or any heavy items which may cause deflection—in the middle of the floor or in hallways.

D. Drying: Before, during and after installation of FIRM-FILL® High Strength, building interior shall be ventilated and heated to a minimum of 50°F (10°C) to ensure completion of the drying process. The GC must supply adequate ventilation and heat until the FIRM-FILL® High Strength is dry. If necessary, the GC shall provide mechanical ventilation. Do not install finished floor coverings until the FIRM-FILL® High Strength is tested for dryness. Consult flooring contractor for recommended procedures to test for dryness and acceptable levels of moisture. To avoid potential problems during the drying process, the GC shall consult Hacker Industries, Inc.'s Drying Conditions Flyer and information contained on Hacker Industries, Inc.'s website for additional information concerning drying of this product.

3.5 Preparation for Installation of Floor Coverings

- A. Sealing:** Any areas where the underlayment surface has been damaged shall be cleaned and sealed regardless of floor covering specified. Floor covering manufacturers' specifications and requirements supersede these recommendations.
- B. Floor Covering Procedures:** Please see Hacker Industries, Inc.'s Guidelines for Installing Finished Floor Coverings. The document is not a warranty and shall be used as a guideline only. See also ASTM F2419 for recommended procedures.



3.6 Field Quality Control

- A. Slump Test:** FIRM-FILL® High Strength shall be tested for slump at the beginning of each installation in order to establish the required slump. Slump tests shall then be taken periodically during installation to verify that the required slump is maintained. Slump tests shall be conducted using a 2" by 4" (51 mm by 102 mm) cylinder. The acceptable patty size shall be 7" (178 mm) plus or minus 1/2" (13 mm) in diameter.
- B. Field Samples:** Testing shall be done in accordance with ASTM C472 Modified testing procedures using split brass molds. Prior to independent testing, consult Hacker Industries, Inc. for proper ASTM procedures.

Warranty: Subject to express warranty stated on Hacker Industries, Inc.'s website.