**Section 03540: Cementitious Underlayment**

Note to Architect: The following are specifications for AccuLevel™ H40 covering a typical installation. For special conditions and other types of applications please consult with your local AccuCrete® representative.

**Part 1: General**

 **1.1 Scope**

1. 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.
2. Work includes self-leveling underlayment for interior finish but is not limited to
3. AccuLevel™ H40
4. Division 3 Concrete Topping
5. Division 9 Sound Control, patching and leveling underlayments
6. References
7. ASTM C109 Air Cure 28 Days Test method for Compressive Strength of Hydraulic Cement Mortars (Using 2-inch or (50-mm) Cube Specimens)
8. ASTM F2419 Standard Practice for Installation of Thick Poured Gypsum Concrete Underlayments and Preparation of the Surface to Receive Resilient Flooring
9. ASTM C33 Standard Specification for Concrete Aggregates
10. ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor using Anhydrous Calcium Chloride
11. ASTM E492 Standard Test Method for laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
12. ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements

**1.2 Qualifications**

1. All materials, unless otherwise indicated, shall be manufactured by Arcosa Specialty Materials, and shall be installed in accordance with its current printed procedures by an AccuCrete Authorized licensed applicator.
	1. **Delivery / Storage**
2. All materials shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Avoid ambient temperature below 40 degrees F. Do not allow bags to get wet. Products shall not be used beyond shelf life. Damaged or deteriorated materials shall be removed from the project.

**1.4 Conditions**

1. Prior to the application, the building envelope must be enclosed (all windows, doors, roofing, and other openings). AccuCrete® Prime can be poured after drywall or when needed prior to drywall installation. Consult your licensed AccuCrete® contractor for details.
2. The interior of the building must be enclosed, protected from sun and wind. Ambient and substrate temperatures must be maintained at a minimum temperature of 50 degrees F for 24 hours prior to the start of the installation and maintained during the installation for a period of seventy-two (72) hours after the installation of AccuCrete® Prime. Provide continuous ventilation and heat to remove excess moisture after installation until underlayment is dry. The absence of condensation on windows will confirm adequate ventilation.

**Part 2: Products**

**2.1 Products**

1. Cementitious Underlayment: AccuLevel™ H40, 5000 to 7000 psi compressive strength per ASTM C109, air cure 28 days, depending upon mix design, sand gradation, water content and slump size. Recommended thickness 3/8 inch to 1-1/2 inch in a single lift.
2. No single application of AccuLevel™ H40 should exceed 1-1/2 inches in depth. Consult licensed applicator on how to achieve depths greater than 1-1/2 inches. AccuLevel™ H40 is a proprietary fast-applied, quick setting polymer-modified hydraulic cement for use in poured in place and pre-cast concrete construction in commercial and institutional buildings. It provides a cost- effective lightweight fire- resistant floor leveling underlayment in residential, multifamily, commercial, institutional as well as new and renovation type construction. AccuLevel™ H40 can be poured over wood subfloors (reinforcing mesh is required to pour over damaged, weak or voids in wood subfloors. Shot blasting is not required for most applications. Water per bag 3 to 4.25 US gallon per 80 lb. bag. Dry density average 100-125 lb./cubic foot. ASTM-E84- Flame Spread :0, Fuel Contribution:0, Smoke Density:0, AccuLevel™ H40 is Greenguard Gold Certified.
3. Primer: AccuCrete® Primer 8818 or manufacturer-approved primer over wood or concrete substrates. The number of coats will vary depending on primer and application.
4. Water: Potable water, free of contaminants.
5. Sand: 0.80 to 1.40 cubic feet of washed mason or concrete sands meeting AccuCrete® minimum gradation criteria.
6. Sealer: Manufacturer-approved floor sealer.
7. AccuQuiet® D18 Ultra Low compression Sound Mat 3/16” Thickness. AccuQuiet® D25 Ultra Low Compression Sound Mat ¼” Thickness. AccuQuiet® DX38 Ultra Low Compression Sound Mat 3/8” Thickness. All AccuQuiet® Sound Mats are 80% post-industrial recycled content.

**2.2 Manufacturer**

1. Arcosa Specialty Materials, 1550 Double Drive, Norman, OK 73069, 800-624-5963

**2.3 Substitutions**

1. Require Approval

**Part 3: Execution**

**3.1 Preparation**

1. Subfloor should be structurally sound, properly fastened, and dry. Subfloor must be clean and free of all dust, mud, oil, grease, and any other contaminants prior to pouring the underlayment. All cracks or voids must be filled.
2. Wood substrate: Limit design of subfloor and framing to minimum L/360 for live and dead loads. Wood panels must be securely attached to the floor joists with approved fasteners and properly spaced. Wood should be APA rated and T&G or back blocked at joints. Other wood products such as particle board are not satisfactory as a subfloor.
3. Concrete substrate: Concrete must be structurally sound, dry, and free of surface contamination and must meet the live and dead load deflection standards of L/360. If the concrete is new verify it has been properly cured for at least 28 days and is dry, moisture free and have no efflorescence prior to the installation of AccuLevel™ H40. All cracks and potential leaks must be sealed or patched with a fast-drying, cement based patching compound. Plumbing and electrical penetrations should be packed with insulation and sealed. Any loose or weak material present on substrate must be mechanically removed. The substrate should be thoroughly sealed with AccuCrete® Primer 8818 or an approved primer/sealer. In all cases where vapor emissions might be an issue, a test of the pressure must be conducted per ASTM E-1869. This test must show a minimum vapor emission rate of 5 lbs./1000 sq. ft./24 hours.
4. AccuLevel™ H40, typically does not require mechanical profiling of substrates over clean, well bonded, structurally sound substrates for pedestrian traffic areas. Ground in dirt, old loose flooring adhesive, and carpet backing, must be mechanically profiled. When heavy rolling loads or point loads are anticipated, the substate must be profiled to enhance the bond to the surface.
5. AccuLevel™ H40 should not be used to bridge moving cracks or expansion joints. All joints must be honored through to the surface.
6. AccuLevel™ H40 is not a wear surface and are not intended for use as a structural element. Products are for interior use only and is suitable for areas where periodic exposure to moisture is anticipated.
7. Once AccuLevel™ H40 is fully dry and passed a dryness test, the application of a surface sealer is recommended prior to the installation of all glue down or thin set finished flooring. Test AccuLevel™ H40 for dryness prior to the installation of floor goods using a Delmhorst G-79 Moisture Meter. A reading of 5 or below on the B range is considered acceptable for the installation of floor goods. All instructions or recommendations by the finished floor goods manufacturer supersede this recommendation.
8. Wear a NIOSH approved dust mask and provide ventilation when mixing product.

**3.2 Mixing**

1. Add 3.0 to 4.25 gallons of water to one 80 lb. bag of AccuLevel™H40 following recommendations outlined in the applicator manual.

**3.3 Application**

1. In most cases, shotblasting or profiling is not required. Where heavy rolling loads or point loads are anticipated shotblasting is required to enhance the bond to the surface. Prime all subfloors prior to the installation of AccuLevel™H40. Use AccuCrete® Primer 8818 or an approved primer at the recommended application rate. Over wood substrates or in cases where a bond is not anticipated, reinforcing lath is recommended.
2. When applications require a sound mat, rolls are loose laid on the subfloor, seams tightly joined and sealed. The perimeter of rooms, adjoining walls, all fixable objects, and mechanical penetrations must be isolated with perimeter isolation strip. Refer to AccuQuiet™ product literature or AccuCrete Applicator manual for details
3. AccuQuiet™ D18 3/16” thick. AccuCrete Thickness Compressive Strength Recommendations:
4. Residential/Multifamily Construction 0.75” using a 2000 psi mix design.
5. Light Commercial; 1” using a 3000-psi mix design
6. AccuQuiet™ D25 ¼” thick. AccuCrete Thickness Compressive Strength Recommendations:
7. Residential/Multifamily Construction: ¾” using a 2000 psi mix design
8. Light Commercial: 1” using a 3000-psi mix design
9. AccuQuiet™ DX38 3/8” thick. AccuCrete Thickness Compressive Strength Recommendations:
10. Residential/Multifamily Construction: 1” using a 2000 psi mix design
11. Light Commercial: 1’using a 3000-psi mix design
12. Pour AccuLevel™H40 over properly prepared substrate, while spreading and finishing to a smooth surface. AccuLevel™ H40 recommended thickness 3/8 inch to 1-1/2 inch in a single lift depending upon mix design, sand gradation, and water.
13. Except for authorized joints, spread product in a continuous, monolithic application, taking caution to not pour any wet slurry against any material that has already achieved an initial set.

D. AccuLevel™ H40 is dry enough for light trade traffic within hours. Full cure is reached within 28 days. Curing and drying time depends on thickness, humidity, and ventilation conditions.

**3.4 Field Quality Control**

1. Cube samples must be taken on each job as a record of the strength of the pour. A minimum of one set of three cubes should be taken for each pour and at least one set of three cubes per 10,000 square feet that is poured per ASTM F2419. The cubes are formed from molds made from non-rusting or non-corroding material. Cubes are tested in accordance with ASTM C472M.
2. Slump Test. AccuLevel™ G50 should be tested for slump at the beginning of each installation. Slump tests should be conducted periodically during the installation to confirm the required slump is maintained. Slump test apparatus using a 2-inch by 4-inch cylinder. Slump tests on wood will vary from plexiglass. The acceptable patty should be 10 to 11 inches with a target of 10.5 inches on plexiglass. The acceptable patty shall be 9 to 10 inches with a target of 9.5 inches on wood.

**3.4 Preparation for installation of a glued down floor covering.**

1. After installation protect floor with plywood for heavy traffic areas and heavy-duty non-staining floor protection paper for all other areas.
2. After the underlayment has dried, spray or roll on an approved sealer prior to the in applications where the floor goods Installation of manufacturer requires a special adhesive or installation system, the floor goods Floor Goods manufacturers’ recommendations will supersede all others.
3. Any damaged areas of the underlayment must be repaired prior to the installation of the sealer. Oil based sweeping compounds are prohibited. Use only AccuCrete® approved sealer and recommended by the manufacturer. Sealer to be applied by the finished flooring contractor.
4. Fasteners in underlayment must be designed for use with concrete/masonry.
5. Underlayment must be dry prior to installing finished floor. Follow flooring manufacturer recommendations regarding moisture levels and vapor retarders prior to installing finished floor.
6. Allow for adequate curing or setting time prior to allowing traffic on finished floor.