

Section 07240

Ultrakote Insulated Concrete Form Finish System Specification

Part 1 GENERAL

1.01 SECTION INCLUDES

- A. Application of Ultrakote coatings over Insulated Concrete Forms (ICF).
- B. Molded expanded polystyrene (EPS) Insulated Concrete Form guidelines.

1.02 SCOPE OF WORK

A. Provide all materials, labor and equipment to install the Ultrakote coatings over insulated concrete form (ICF) substrate.

B. Related sections:

1. Section 03300 Concrete
2. Section 04200 Masonry
3. Section 05400 Light gauge load-bearing metal framing
4. Section 06100 Sheathing
5. Section 07620 Sheet metal flashing and trim
6. Section 07900 Sealants
7. Section 08000 Doors and windows

1.03 REFERENCE DOCUMENTS

A. ASTM:

1. ASTM B-117 (Federal test standard 141 A method 6061) Salt spray fog test method
2. ASTM C-150 Specification for portland cement
3. ASTM C-578 Specification for preformed cellular polystyrene thermal insulation
4. ASTM D-897 (Modified) Bond strength before and after 2000 hours fluorescent UV-condensation type weathering (QUV weather meter)
5. ASTM E-84 Test method of surface burning characteristics of building materials
6. ASTM E-96 Test method for water vapor transmission of materials

B. Other test methods and reference documents:

1. BOCA radiant panel test method for ignitability characteristics of exterior wall systems
2. ICBO freeze thaw test method

C. EIMA standards and documents

1. EIMA 101.86 Standard test method for resistance of exterior insulation and finish systems (EIFS), class PB, to the effects of rapid deformation (impact)
2. EIMA 105.01 Standard test method for alkali resistance of glass fiber reinforcing mesh for use in exterior insulation and finish systems (EIFS), class PB
3. EIMA Guide for use of sealants with exterior insulation and finish systems (EIFS), class PB
4. EIMA Guideline specification for exterior insulation and finish systems (EIFS), class PB
5. EIMA Guideline specification for expanded polystyrene (EPS) insulation board

D. Building code standards

1. Section 1406.0 of the current National building code, building officials and code administrators international (BOCA)
2. Section 717.4 and 717.5 of the current Standard building code, southern building code congress international (SBCCI)
3. UBC standard 26-4 (formerly UBC 17-6) of the current Uniform building code, international conference of building officials (ICBO)

1.04 TERMS / DEFINITIONS

- A. Applicator - the contractor that applies the Ultrakote coatings.
- B. Adhesive - A cementitious material used to attach the insulation board to the substrate.
- C. Aesthetic Joint - A groove in the EPS designed to create aesthetics and used to provide starting and stopping points during the application of the finish coat. A minimum 3/4" thickness of EPS shall remain below the deepest point in the aesthetic groove. Aesthetic joints are not expansion or control joints nor should they be used in lieu of expansion or control joints.
- D. Back wrapping - The application of the reinforced base coat on the exposed edge of the EPS and a minimum of 2 1/2" on each face of the EPS.
- E. Base coat - The material applied to the face of the insulation board and reinforced with one or more layers of mesh to function as the weather barrier.
- F. Base coat mixture - A field mixed blend of adhesive base coat and portland cement.
- G. Building expansion joint - A joint through the entire building structure designed to accommodate structural movement.
- H. Designer Professional - The person or firm that is responsible to create the plans and specifications for the entire project.
- I. Expansion joint - A designed joint in the continuity of a material, assembly or system designed to accommodate movement.
- J. Finish coat - An acrylic based, factory mixed decorative and protective coating that is applied to the base coat.
- K. Insulated concrete form (ICF) - A concrete form manufactured with molded expanded polystyrene board, manufactured to meet or exceed EIFS manufacturer's specifications.
- L. Insulation board - Molded expanded polystyrene board, manufactured in accordance with the EIFS manufacturer's specifications, attached to the substrate and covered with the reinforced base coat and finish.
- M. EPS - Expanded polystyrene board, manufactured in accordance with the EIFS manufacturer's specifications, attached to the substrate and covered with the reinforced base coat and finish.
- N. Reinforcing mesh - Balanced, open weave, basic glass fiber mesh(es) supplied by the manufacturer of the EIFS, treated for compatibility with other materials of the system, which functions to strengthen the system and adds impact resistance.
- O. Mechanical fastener - Typically a plastic washer and a mechanical fastener utilized to attach the insulation board to substrate.
- P. Substrate - The material to which the EIFS is attached.

1.05 QUALITY ASSURANCE

A. Design and detailing

1. General

- a. Ultrakote's current published details, specifications, data sheets, product information guides and other literature / information are minimum standards and guidelines that shall be followed when designing and detailing a project with the insulated concrete form finishes.
- b. Details shall conform to Ultrakote's details and shall be consistent with the project requirements.
- c. Ultrakote must approve, in writing, any deviations from the standard published details.
- d. The architect, engineer or the design professional of the project should determine where the dew point would occur in relationship to the wall assembly and the project location during summer and winter conditions.

- e. Drip details shall be specified in accordance with Ultrakote's published details.
- f. Exposed insulated concrete form insulation board must be covered with at least one layer of standard mesh embedded in Shurkote base coat adhesive.
- g. Additional insulation in the form of detail bands or decorative shapes shall be encapsulated with a minimum of one layer of standard mesh embedded in Shurkote base coat adhesive.
- h. The minimum slope of inclined surfaces shall not be less than 6" (152 mm) in 12" with a maximum length of 12" unless approved in writing by Ultrakote inclined surfaces which are or could be defined as roofs by the building codes or application are not approved by Ultrakote.
- i. The use of dark colors must be considered in relation to wall surface temperature as a function of local climatic conditions.
- j. The EPS shall be separated from the interior of the building by a 15-minute thermal barrier.
- k. The use and maximum thickness of EPS shall be in accordance with the applicable building codes.
- l. It is responsibility of the design professional and the purchaser to determine if a product is suitable for their intended use. The architect or designer of the project shall be responsible for all decisions pertaining to the design, details, structural capability, attachment details, shop drawings and the like. Ultrakote has prepared specifications, details and data sheets to assist as guidelines for the use and installation of the products. Ultrakote is not responsible for the design, details, structural capability, attachment details and shop drawings whether it is based on Ultrakote's information or not.

2. Substrate

- a. The maximum deflection under full flexural design loads of the substrate system shall not exceed $L/360$.
- b. Acceptable substrates for ICF coatings include forms manufactured of molded expanded polystyrene without exposed metal or plastic ties and of approved insulation materials. Forms with exposed ties shall receive at least 3/4" minimum approved insulation board. This additional insulation board must be installed in accordance with Ultrakote's published details and product information guides and section 3.06 of this specification.
- c. Substrates not approved in the manufacturer's published literature shall be approved by the manufacturer in writing prior to the application of the system.
- d. The project design professional or engineer shall engineer the substrate with regard to the required structural performance.

3. Expansion joints

- a. Expansion joints shall be installed in the wall a maximum of every 75 lineal feet. Reference construction documents for specific locations.
- b. Expansion joints in the system are required at building expansion joints at prefabricated panel joints, where substrates change, at floor lines in wood framed construction and where structural movement is anticipated.

4. Aesthetic joints

- a. Aesthetic joints may be installed to provide sufficient break points in the ICF system to prevent cold joints from occurring in the finish coat.
- b. Aesthetic joints shall not be used in lieu of an expansion or control joint.

5. Sealants

- a. Sealants and backer rod, as required at expansion joints and dissimilar substrates, shall provide a complete watertight system.
- b. The sealants in an expansion joint or any sealant joint that anticipates significant movement, shall be bonded to the reinforced base coat, not the finish coat. The color of the mesh shall not be visible and the texture of the mesh shall not be exposed within base coat at these locations.
- c. All penetrations through the system such as hose bibs, dryer vents, lighting fixtures, air-conditioning hoses, etc. must be properly sealed to insure the integrity of the system.

6. Flashings

- a. When wood framed construction is used, sill pans with three sided end dams shall be installed prior to window frame installation and designed to collect and direct water to the exterior of the reinforced base and finish coat.
- b. Metal flashing shall be installed at heads of openings.
- c. Continuous metal flashing shall be installed at heads of ganged windows.
- d. Flashing shall be installed at rooflines in a manner to prevent any intrusion of water behind the EIFS. This shall include the use of roof kick-out flashing at roof terminations.
- e. When the EIFS is applied to the chimney, a chimney cricket shall be installed.
- f. Wooden decks must be flashed before system is installed. Refer to Ultrakote's details.

B. Qualifications

1. The EIFS manufacturer shall have manufactured exterior insulation and finish systems for at least 10 years.
2. The applicator shall be knowledgeable in the proper installation of the Ultrakote coatings.
3. The applicator shall have demonstrated the ability to install the system on projects of similar size and complexity.
4. The applicator shall provide the proper equipment, manpower and supervision on the jobsite to install the system in compliance with project plans and specifications.
5. The insulation board manufacturer shall be approved by Ultrakote to produce EPS in accordance with Ultrakote's specifications.
6. The sealant contactor shall be experienced in the installation of high performance industrial and commercial sealants.
7. When requested, erect sample wall mock-up using materials and joint details required for final work. Provide special features as directed for sealant and contiguous work. Build mock-up at the site where directed of full thickness, indicating the proposed color, texture and workmanship to be expected in the completed work. Obtain architect's acceptance of the mock-up in regard to aesthetic quality before start of work. Retain mock-up during construction as a standard for judging completed work. Do not alter, move or destroy mock-up until work is completed and until final acceptance of the project by architect.

1.06 SUBMITTALS

- A. The applicator shall submit a list of completed projects of like size and complexity.
- B. The applicator shall submit a certificate of training indicating that they have been given instructions on the proper installation of the Ultrakote systems and coatings.
- C. The applicator shall submit EIFS manufacturer's current literature, brochures, specifications and details.

D. The applicator shall submit sufficient samples of each finish texture and color selected. The samples shall be prepared with the same tools and techniques required for the actual project. Color and texture should be approved based on the jobsite mock-up samples.

E. The applicator shall provide any shop drawings that may be applicable to the project for approval by the project architect.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver all materials in original unopened packages with labels intact. Verify all quantities, colors and textures against bill of lading.

B. Store all materials protected from direct exposure to weather conditions and at temperatures not less than 40°F (4°C) or greater than 110°F (43°C).

C. Stack insulation board flat, fully supported off the ground and protected from direct exposure to the sun.

D. Material safety data sheets (MSDS) shall be supplied for the components of the EIFS and be available at the job site.

1.08 JOB CONDITIONS

A. Ambient air temperature shall be 40°F (4°C) or greater and rising at the time of installation of the Ultrakote products and shall remain at 40°F (4°C) or greater for at least 24 hours after application.

B. Supplemental heat and protection shall be provided as required when the temperature and conditions are not in accordance with installation requirements. Sufficient ventilation and time shall be provided to ensure that materials have sufficiently dried prior to removing supplemental heat.

C. Adequate protection shall be provided to prevent weather conditions (humidity, temperature and precipitation) from having an effect on the curing or drying time of Ultrakote materials.

D. Adjacent materials and the Ultrakote coatings shall be protected during installation and while curing from weather and shall be protected from site damage.

E. Coordinate installation of the Ultrakote coatings with related work specified in other sections to ensure that the wall assembly is protected to prevent water from getting behind the system. The cap flashing and backer rod and sealant shall be installed as soon as possible after the finish coat has been properly cured. When this is not possible, temporary protection shall be provided immediately in this area.

F. All sealants shall be installed in a timely manner. Protect open joints from water intrusion during construction with backer rod or temporary covering until permanently sealed.

G. Sufficient manpower and equipment shall be employed to ensure a continuous operation, free of cold joints, scaffolding lines and texture variations, etc.

1.09 REPAIR AND MAINTENANCE

A. Refer to Ultrakote specific repair and maintenance manual.

B. The property owner or their designated representative shall inspect the sealants and flashings annually to verify that the products are not allowing water intrusion. If any sealant and/or flashing needs repair it should be done immediately.

1.10 LIMITED MATERIALS WARRANTY

A. A limited coatings material warranty shall be issued upon the receipt of a properly completed warranty request form.

Part 2 PRODUCTS**2.01 GENERAL**

A. All components of the Ultrakote coatings shall be obtained from Ultrakote or its authorized distributors. No substitutions of, or additions of other materials shall be submitted without prior written permission from Ultrakote. Substitutions or additions will void the warranty.

2.02 MATERIALS

A. Adhesives

1. Shurkote WB: an acrylic based product mixed one-to-one by weight with portland cement for use as the adhesive to bond insulation board to an approved substrate.

2. Shurkote DB: a polymer based cementitious product mixed with 5 to 6 quarts of water for use as an adhesive.

B. Insulation board

1. Insulation board and ICF shall meet or exceed ASTM C-578 and Ultrakote's requirements for EPS.

2. Nominal 1.0 pcf, aged expanded polystyrene.

3. Flame spread and smoke development shall be 25 and 450 or less respectively per ASTM E-84.

4. Maximum size 2'x4'x4". Refer to actual contract documents to determine actual insulation board thickness.

C. Reinforcing mesh

1. Detail mesh: nominal 4.5 oz/sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Ultrakote and Shurkote base coats and conforming to ASTM D-76, D-579, D-5035 and MIL-Y-1140.

2. Standard mesh: nominal 4.5 oz/sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Ultrakote and Shurkote base coats and conforming to ASTM D-76, D-579, D-5035 and MIL-Y-1140.

3. Medium mesh: nominal 6.0 oz/sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Ultrakote and Shurkote base coats and conforming to ASTM D-76, D-579, D-5035 and MIL-Y-1140.

4. Intermediate mesh: nominal 11 oz/sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Ultrakote and Shurkote base coats and conforming to ASTM D-76, D-579, D-5035 and MIL-Y-1140.

5. High impact mesh: nominal 20 oz/sq. yd. open weave glass fiber fabric, treated for alkaline resistance and compatibility with Ultrakote and Shurkote base coats and conforming to ASTM D-76, D-579, D-5035 and MIL-Y-1140.

D. Base coats

1. Shurkote DB: a polymer based cementitious product mixed with 5 to 6 quarts of water for use as an adhesive.

2. Shurkote WB: an acrylic based product mixed one-to-one by weight with portland cement designed for use with reinforcing mesh as the base coating over the insulation board. (This product shall be used where indicated on the construction drawings when a leveling base coat is required).

E. Ultrakote finish: Ultrakote finishes are acrylic-based or elastomeric based wall coatings available in a variety of colors and textures. The following textures are available:

1. Swirl texture: the traditional riled texture
2. Medium texture: a medium sand texture
3. Coarse texture: a heavy coarse sand texture
4. Fine: a very fine sand texture

F. Water: shall be clean and potable without any foreign matter in the solution, which may affect the color and setting qualities of the cement, adhesive, base or finish coat.

G. Cement: type I or I-II portland cement meeting ASTM C-150.

H. Sealant systems: reference sealant specification, section 07900.

Part 3 EXECUTION

3.01 INSPECTION

A. Prior to the application of the Ultrakote coatings the substrate shall be examined for compliance with the contract documents and Ultrakote specifications. The substrate shall have no planar irregularities greater than 1/4" in 10'. The general contractor and architect shall be advised in writing of any discrepancies. Work shall not proceed until unsatisfactory conditions are corrected.

3.02 MIXING

A. Shurkote WB: Mix at a weight ratio of 1 to 1 with portland type I or I/II, white or grey cement. Mix using a 1/2", 400-500 RPM drill motor and mixing paddle. Let stand for 3-5 minutes and remix until the desired consistency is achieved. Small amounts of clean water can be added for workability. Do not over mix.

B. Shurkote DB: Add 5 to 6 quarts of water with the 50 lb bag in a clean bucket for mixing. Mix with a mixing paddle and a 400-500 RPM drill motor. Let stand for 3-5 minutes and remix until the desired consistency is achieved. Small amounts of clean water can be added for workability. Do not over mix.

C. Ultrakote finishes: Mix the finish coat with a mixing paddle and a 1/2", 400-500 RPM drill motor. Small amounts of water can be added for workability. Mix until reaching a uniform consistency (it is important that the same amount of water be added to each pail to ensure a consistent color).

D. Additives shall not be added to Ultrakote's materials unless written approval has been received from Ultrakote.

3.03 PREPARATION

A. Protect contiguous work from damage during application of the Ultrakote coatings. Temporary covering may be required to prevent overspray or splattering of exterior finish coatings on other work.

B. Protect substrate from inclement weather during installation. Prevent infiltration of moisture behind the system that may affect the substrate or the adhesion of the insulation board to the substrate.

C. Adhesive, base coats and finishes shall not be installed when ambient air temperature is below 40°F (4°C). The temperature shall remain at or above 40°F (4°C) during mixing, application and until materials have cured.

D. Sufficient scaffolding, manpower and tools shall be provided to prevent cold joints.

E. The substrate shall be clean to obtain optimum bond between substrate and adhesive used to attach insulation board.

F. Flashings shall be installed, by others or the EIFS applicator in this item is included in the initial bid, as required by construction documents and Ultrakote's details in a manner to prevent the intrusion of water behind the insulation board. All flashing materials should direct the water to the exterior face of the finished system.

3.04 INSTALLATION, GENERAL

- A. Comply with the manufacturers' current published instructions (specifications, details, data sheets and technical bulletins) for the installation of the Ultrakote insulated concrete form finishes.
- B. Comply with local building codes.

3.05 BACKWRAPPING

- A. Adhesively secure reinforcing detail or standard mesh to the substrate positioned so that a minimum of 2 1/2" of the mesh is onto the substrate. (The reinforcing mesh shall be wide enough to encapsulate the edge of the insulation board and cover both the substrate and the face of the insulation board a minimum of 2 1/2").
- B. After the insulation board is applied, complete the back wrapping procedure by applying the base coat, embedding the remaining mesh and returning it onto the face of the insulation board.
- C. Where sealants are applied the reinforcing mesh color shall not be visible and the texture of the base coat shall be smooth so that the pattern of the mesh is covered.
- D. Apply finish in accordance with manufacturer's details (finish shall not be applied to areas where the design professional has anticipated dynamic movement or at an EIFS to EIFS joint).

3.06 INSULATION APPLICATION

- A. Adhesive method
 1. Approved substrates for adhesive application: insulated concrete forms meeting ASTM C578, type 1 with a density of 1 pcf or greater.
 2. Notched trowel method - Shurkote DB or Shurkote WB shall be applied to the entire surface of one face of the approved insulation board with a 3/8" deep x 3/8" wide x 3/4" o.c spacing square notched trowel. Run notches vertically so that water can drain through the system.
 3. Do not apply the adhesive directly to the substrate,
 4. Do not adhere the edges of the insulation board to each other.
 5. Apply the approved insulation board over a dry substrate with the long edge oriented horizontally.
 6. The application of the insulation board shall commence at the base of the wall from a level line of support.
 7. After the adhesive has been applied to insulation board it shall be installed by sliding it into place until it abuts adjoining insulation board.
 8. Apply uniform pressure over the entire surface of the insulation board to achieve contact with the substrate. Periodically check the contact of the adhesive to the substrate by removing a piece of insulation board. Proper adhesive contact should be demonstrated by the evidence of similar amounts of adhesive adhered to both the insulation board and the substrate. The cohesive break should occur when the board is removed. If the cohesive break has occurred prior to the adhesive set the substrate is more than likely out of place and should be corrected to meet minimum standards of this specification. If a cohesive failure does not occur contact an Ultrakote representative.
 9. The insulation board shall be installed in a running bond pattern with staggered vertical joints.
 10. Insulation boards shall be interlocked at the inside and outside corners.
 11. Insulation board joints shall be offset from the sheathing joints a minimum of 6".
 12. Insulation board joints shall be offset from the corners of openings.

13. Allow for proper spacing at windows, doors, penetrations and other openings so that sealant systems can be installed in accordance with Ultrakote's specification, details and the construction documents.
14. Provide a proper joint through insulation board where expansion joints occur in substrates and where required in the system.
15. The insulation board shall be butted tightly. Any gaps greater than 1/6" (1.6 mm) between insulation boards shall be filled with silvers of insulation board. Adhesive shall not be used to adhere foam when filling gaps.
16. Gaps between insulation boards shall not be filled with adhesive or base coat materials.
17. Allow adhered insulation to remain undisturbed for a period of 12 hours prior to rasping the foam.
18. Rasp the entire surface of the insulation board to level any irregularities, surface deterioration and to roughen the surface of the insulation board. All irregularities greater than 1/16" (1.6 mm) shall be sanded flat.
19. Cut aesthetic joints as indicated on construction drawings. Always maintain a minimum 3/4" of insulation board under aesthetic joints.
20. Clean rasped insulation board in preparation for base coat application.

3.07 BASE COAT PREPARATION

- A. Inspect adhered insulation board to ensure the installation meets the requirements set forth in Ultrakote's specification, details, data sheets, product information guides and the construction documents. Make necessary repairs to ensure the installation meets the requirements prior to commencement of the base coat application.
- B. Rasp insulation as noted above.
- C. Complete the back wrapping at all system terminations by embedding the reinforcing mesh as described in section 3.05 of this specification.
- D. Install minimum 9 1/2" x 12" diagonal reinforcement at all windows, doors, louvers or other penetration corners. Apply field mesh as soon as possible after diagonal mesh application.
- E. Reference architectural documents for locations of designed impact classifications.

3.08 BASE COAT APPLICATION

- A. Apply the base coat to the entire surface of the insulation board to the thickness required for the specified reinforcing mesh to be applied in a given area. The thickness of the mesh will dictate the overall thickness of any particular base coat. Thicker mesh will render a thicker base coat and will also require more basecoat adhesive.
- B. Immediately embed Ultrakote reinforcing mesh into wet base coat with a trowel, working from the center toward the edges, until the mesh is fully covered and a smooth surface is achieved. The color of the mesh shall not be visible but a slight mesh pattern may be visible.
- C. The standard reinforcing mesh base coat can be applied in a single layer and requires that the mesh be lapped 2 1/2" (64 mm) minimum on all sides.
- D. The standard reinforcing mesh shall be continuous through all interior and exterior corners extending beyond the corner a minimum of 12" from both directions creating a minimum of two layers of standard reinforcing mesh on all interior and exterior corners.
- E. Medium mesh can be applied in one layer yet it may require an additional coat of base coat mixture to properly embed the mesh after the first coat has dried.
- F. Intermediate and high impact mesh should be edge butted and will require additional layer of properly embedded and lapped standard mesh.

- G. EPS shapes shall be encapsulated with properly embedded reinforcing mesh or be pre-coated by others.
- H. Allow the base coat to cure a minimum of 12 to 24 hours prior to additional base coat or finish coat applications.

3.09 ULTRAKOTE FINISH COAT APPLICATION

A. Surface irregularities in the base coat, such as trowel marks, insulation board lines and reinforcing mesh laps shall be corrected prior to the finish application.

B. Apply the Ultrakote finish in the color and texture as approved by the project owner or the project architect with sufficient manpower and equipment to insure a continuous operation without cold joints, scaffolding lines, etc. Texture finish shall match approved jobsite samples. Thickness and coverage will vary depending on the specified final appearance.

C. Trowel application

1. Apply the Ultrakote finish to the clean, dry and cured base coat with a stainless steel trowel.
2. Level the surface to a uniform thickness of the largest aggregate in the finish (3/32" to 1/8").
3. Float the finish with a plastic float in a uniform motion to achieve the desired texture. (Refinish cannot be floated. A second application of the refinish shall be applied to create the desired texture).

D. Spray application

1. Prime surface with Ultrakote Ultraprime tinted to match the selected finish color. Allow primer to cure a minimum of 12 hours prior to finish coat application.
2. Using a conventional plaster hopper gun or a proven pump, spray finish over the primer base coat to achieve desired texture using a circular overlapping pattern keeping the spray gun at a 90° angle to the surface and maintaining the same distance to the wall at all times.
3. Be cautious of flooding an area with too much finish because it may appear shinier when it dries.

F. Provide protection from rain and temperature below 40°F (4°C) for a minimum of 24 hours after application. Longer protection may be necessary during lower temperatures and/or higher humidity conditions.

3.10 JOB SITE CLEANUP

A. Clean work area in accordance with contract documents removing all excess materials, droppings and debris. Clean adjacent surfaces.