



SUPERIOR PRODUCTS COATINGS INC.

SECTION 01007 – SUPER THERM®

09900 CSI format-revised 06-09-2010

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A Technical Data Sheets, Application Instructions, and Material Safety Data Sheets, apply to this Section.

1.2 RELATED SECTIONS

- A As projects and substrates vary, the particular sections related are dependent on an individual type of application and are to be clarified for that specific application.

1.3 SUMMARY

- A This specification covers preparation of surfaces, performance and completion of coating of all exterior/interior surfaces, roof surfaces and exposed steel supports and other deteriorated areas of roof, walls or surfaces and posts throughout, or over any surface as required by the Drawings and Specifications specified herein.
- B The specification refers to a ceramic coating used to act as a building wrap to minimize air, water and moisture infiltration. Additionally, as a thermal barrier, insulating walls, roofing, supports, equipment and other substrates that require protection from heat radiation and/or other forms of heat sources. The prevention of the initial heat load into a substrate from this radiation reduces the heat available for transfer through the substrate and into the cool side, thus reducing thermal conduction and the lack of incidental heat created.

1.4 DESCRIPTION

- A SUPER THERM® is a water-based, high-performance coating which exhibits strength and toughness while providing a unique protection from heat radiation. Using a combination of low-density ceramics in an industrial grade resin system, SUPER THERM® also guards against corrosion while providing mold and mildew, and vapor and moisture resistance.

1.5 SUBMITTALS

- A Performance Data Requirements.
 - 1. American Society of Testing and Materials (ASTM)
 - a. ASTM B-117 / D-1654; Salt Spray (Fog); Results; Passed 450 Hours.
 - b. ASTM C-411; High-Temperature Surface Performance; Results; no warping, cracking, de-lamination, or color change.
 - c. ASTM C-1371; Emissivity; Results; 0.91%.
 - d. ASTM C-1371; Reflectivity; Results; 0.85% light bounce.

- e. JIS (Japanese Institute of Standards) A 5759 Reflectivity of Light and Radiation for Short Wave (Visual) and Long Wave (Infrared). Short Wave block – 92.2% and Long Wave block – 99.5%.
- f. ASTM D-412; Tensile Strength; Results; 444 psi.
- g. ASTM D-522; Mandrel Bend; Results; 1” (25mm) bend, ¼” (6mm) bend.
- h. ASTM D-1653; Water Vapor Permeability; Results; Passed.
- i. ASTM D 3273-82T / D 3274; Fungal Resistance; Results; Passed.
- j. ASTM D-4060; Abrasion Resistance (Taber test); Results; 0.06g.
- k. ASTM D-6904; Resistance to Wind Driven Rain for Exterior Coatings (Fed Spec TT-C-555B)
- l. ASTM D-7088; Resistance to Hydrostatic Pressure for Coatings (Fed Spec TT-C-555B)
- m. ASTM E-84 (NFPA 255); Flame Spread / Smoke Developed; Results; Class “A” Rating.
- n. ASTM E 84-89; Flame Spread / Smoke Developed; Results; Flame Index “0”, Smoke Index “0”.
- o. ASTM E 108 Flame Spread over Pitch Roof Structure.
- p. ASTM E-96; Water Vapor Transmission; Results; Less than .01, Perms 8.8.
- q. ASTM E 903-96 Spectral Reflectance 80% - only 0.6% loss in performance over three years in field.
- r. ASTM G 53 1000 hours UV exposure.
- s. ASTM C 236-89(93) Thermal Transmittance/Conductance (Fiberglass board having 0.52 conductance (BTU/square foot/hour/F) SUPER THERM at 10 mil dry having 0.31 (BTU/square foot/hour/F) and one coat of both sides of wall, each coat at 10 dry mils having 0.21(BTU/square foot/hour/F).
- t. ASTM E1269 Heat Capacity by Differential Scanning Colorimeter.
- u. ASTM E 1461(92) Thermal Diffusivity/Conductivity by Flash Method Std BTU flow through metal plate being 367.20 reduced with one coat of SUPER THERM to 3.99.
- v. China Center for Technical Testing:
- w. GB/T 1771-91 Resistance to Salt Fog (2000 hrs.) – passed
- x. GB/T 1866-88 Manual Aging (2000 hrs.) – passed.
- y. GB/T 10834-88 Resistance to Salt Water (1000 hrs.) – passed
- z. GB/T 5219-85 Adhesion (Pulling Apart Method) – passed
- aa. GB/T 1733-93 Boiling Water Immersion (8 hrs.) – passed
- bb. International Maritime Association: IMO A.653.(16) Flame Spread Test passed for Bulkhead, wall and ceiling linings.
- cc. NASA (National Aeronautic and Space Administration) NASA 8060.1 B/C Flammability Test – passed , Class A with “0” flame spread.
- dd. NASA 8060.1C Toxic Off-gassing Test “K” rating for “0” off gassing.
- ee. ABS (American Bureau of Shipping) testing, IMO (International Maritime Org) and US COAST GUARD APPROVAL.
- ff. MSC 41, Smoke Toxicity – passed.



gg. ASTM D 4541 Standard Method for Pull-off Strength

Note: Some tests run in triplicate. Above values may show averaged results.

- B Manufacturer's current product data sheet which includes the following information:
1. Generic type of coating.
 2. Performance data with certified test reports.
 3. Recommended dry film thickness.
- C Bidders desiring to use coatings other than those specified shall submit their proposal in writing to the Architect at least ten (10) days prior to the bid opening. Substitutions which decrease the film thickness, the number of coats applied, change the generic type of coating or fail to meet the performance criteria of the specified materials will not be approved. All primers and topcoats plus the seam sealer and pit filler shall be furnished by the same manufacturer to ensure compatibility.

1.6 QUALITY ASSURANCE

- A Qualifications
1. All work shall be performed by skilled craftsmen qualified to perform the required work in a manner comparable with the best standards of practice.
 2. Continuity of personnel shall be maintained and transfers of key personnel shall be coordinated with the Architect.
 3. The Contractor shall provide a supervisor/superintendent at the work site during the cleaning and application operation.
 4. The supervisor/superintendent shall have the authority to sign change orders, coordinate work and make decisions pertaining to the fulfillment of the contract.
 5. The manufacturer of the coatings may have a factory representative on site if desired by the factory.

1.7 HANDLING, STORAGE AND SAFETY

- A All materials delivered to job-site shall be in original sealed and labeled containers of the coating manufacturer.
- B All coatings shall be stored in facilities designed for the purpose of coating storage and mixing. Storage areas shall be located away from open flames, be well ventilated, and be capable of maintaining ambient storage temperature as recommended by the coating manufacturer.
- C Coatings, reducing agents, and other solvents must be stored in original containers until opened. If not re-sealable, then they must be transferred to UL approved safety containers.



- D Provide proper ventilation, personal protection and fire protection for storage before, during and after application.

1.8 ENVIRONMENTAL REQUIREMENTS

- A Coating shall be applied in an enclosed area or during good weather.
- B Surface temperature shall be a minimum of 40 degrees F and 5 degrees F above dew point.
- C The coating shall have no exposure to freezing temperatures after application (day or night) until fully cured. (applicator must consider temperature and wind-chill factor)
- D Air and surface temperatures shall be within limits prescribed by the manufacturer for the coating being applied and work areas shall be reasonably free of airborne dust at the time of application and while coating is drying.

1.9 WARRANTY

- A Submit a specimen of the Manufacturer's ten-year roofing warranty and/or the Manufacturer's ten-year vertical wall warranty, or standard 10 year material warranty.
 1. Applicator/Contractor must be certified by the Manufacturer.
 2. Applicator/Contractor shall comply with the Manufacturer's warranty procedures and requirements.
 3. Applicator/Contractor shall provide a copy of the project drawings, plus photographs which include descriptions of the project and all unusual details, with the form. Before, during, and after photos shall be submitted with project profile to the Manufacturer at the end of the project prior to issuance of warranty.
 4. Completed warranty registration forms must be returned to the Manufacturer's Warranty Department with appropriate signatures of the contractor and building owner no later than 15 days after completion of the project.
 5. A Representative of the Manufacturer may inspect the project upon completion and within 6 months after completion. All defective work shall be repaired in accordance with this specification and to the satisfaction of the Manufacturer/Architect/Owner.
 6. Applicator/Contractor shall provide warranty inspections throughout the duration of the warranty period.



PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

- A Drawings and Specifications are based on SUPER THERM[®], a one-part, water-based, ceramic coating manufactured by Superior Products International II, Inc., Shawnee, Kansas, Distributed by Superior Products Coatings Inc. Tel. (770) 594-0083.
- B Equivalent materials of other manufacturers may be substituted for approval of the Architect. Requests for substitution shall include manufacturer's literature for each product giving the name, generic type, descriptive information and performance data certified by a qualified testing laboratory as referenced in Article 1.5 above, and in Section 01630.

2.2 MATERIALS

- A Colors, where not specified, shall be "White" for the insulation coating of SUPER THERM. Coatings may be color tinted by the Manufacturer. Architect will select colors from manufacture's complete range of available colors. Unauthorized tinting of the coating will void any warranty from the manufacturer.
- B Walls and Roof: The coating utilized shall be SUPER THERM[®], which is a water based, ceramic coating containing 68 percent solids by volume. Film thickness must be 10.0 mils dry film thickness applied at 100 square feet/gallon. Check and comply with manufacturer's recommended technical data sheets for adjustments or other requirements to compensate for porosity and other surface adjustments.
- C All materials are to be lead and chromate free.

2.3 EQUIPMENT

- A The applicator's/contractor's coating equipment shall be designed for application of materials specified and shall be maintained in first class working condition. Contractor's Equipment shall be subject to approval of the Architect.
 - 1. Recommended spray equipment is airless sprayer (3,000 psi or more) with carbon steel or titanium tip sized between .029 and .032.
 - 2. Remove filters from the gun handle and spray machine prior to application as they will trap the ceramics.
- B In accordance with requirements set forth by regulatory agencies applicable to the construction industry, the manufacturer's printed instructions and appropriate technical bulletin's, the contractor shall provide and require use of protective life-saving equipment for persons working in or around the project site.
- C Equipment shall include protective helmets which shall be worn by all persons while in the vicinity of the work.



- D Where ventilation is used to control hazardous exposure, all equipment shall be explosion-proof. Ventilation shall reduce the concentration of air contaminants to the degree that a hazard does not exist.
- E Whenever the occupational noise, exposure exceeds State and Federal maximum allowable sound levels, the contractor shall provide and require the use of approved ear protective devices.
- F All temporary ladders and scaffolding shall conform to applicable safety requirements. They shall be erected where requested by the Architect to facilitate inspection and be moved by the contractor to locations requested by the Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A All structural repairs must be made before preparation of surface and application of product begins.
- B Thoroughly examine surfaces scheduled to be coated prior to commencing work.
- C Report in writing to the Owner's representative any condition that may affect proper application and overall performance of the coating system.
- D Do not proceed with work until such conditions have been corrected.
- E Commencing with work indicates acceptance of existing conditions and responsibility for performance of applied coating.

3.2 SURFACE PREPARATION

- A General:
 - 1. Comply with manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.
 - 2. Material applied prior to approval of the surface by the Architect shall be removed and reapplied to the satisfaction of the Architect at the expense of the Contractor.
 - 3. Dust, dirt, oil, grease or any foreign matter that will affect the adhesion or durability of the coating must be removed by washing with citrus cleaner. Surface must be complete dry and clean.
 - 4. Surfaces are to be tested for salt contamination. Chlor-Rid or an equivalent is to be used if salts are present.
 - 5. All surface preparation and repairs shall be approved by the Architect/Owner before primer is applied.
- B Concrete Present Surface Conditions:



1. Proper jointing will minimize cracking which could transmit through the coating system. Coordinate with Section 03300.
2. Concrete must be a minimum of 30 days old before applying floor systems.
3. Remove all dirt, oil, tar, grease, or contaminants using citrus cleaner.
4. Test for moisture on newly laid concrete or concrete suffering from hydrostatic pressure by following ASTM D-4253 Plastic Sheet Test. Tape down a clear piece of plastic to the concrete floor for 24 hours. If moisture collects or slab has darkened, the moisture/vapor transmission is too high for coating.
5. All unsound concrete surface materials shall be repaired or replaced prior to coating application according to the specification for a filled and smooth surface. Repair concrete must be cured before applying product.
6. Repair cracks prior to coating application.
7. Expansion joints are treated before the coating is applied.
8. New concrete shall be water cured. If Curing Compounds or Hardeners or used, all off gassing must be completed before coating. Absolutely no Sealing Compounds over new concrete can be used that will be coated.

C Dirt, Oil, Tar, Grease, and Contaminants Removal:

1. Power wash surface (3,500 psi or more unless directed by manufacturer) with citrus cleaner to remove all dirt, oil, tar, grease, or contaminants and previous coatings not tightly bonded.
2. Surfaces are to be tested for salt contamination. Chlor-Rid or an equivalent is to be used if salts are present.
3. When surface is clean, rinse well with water and pick up all rinse water using industrial wet/dry vacuum.
4. Surface must be completely dry and clean.

3.3 MIXING INSTRUCTIONS

- A Prior to application of SUPER THERM[®], the coatings shall be mixed mechanically or by hand for three minutes, then applied.
- B SUPER THERM[®] nor any of the coatings should be diluted or thinned. Water should not normally be mixed with SUPER THERM[®]. However, if coating becomes dry in pail, then add small amount of water, remix, and continue application. (maximum: 1 pint per 5 gallon pail)
- C Colors only shall be mixed during the manufacturing process, unless otherwise instructed by manufacturer.

3.4 APPLICATION INSTRUCTIONS

- A SUPER THERM[®] can be applied by brush, roller, or airless sprayer.
1. If application is by brush, use a soft or medium bristle brush. Two coats will be required to achieve the desired thickness when using a brush.
 2. If application is by roller, use a 3/4 inch nap roller. Two coats will be required to achieve the desired thicknesses when using a roller.



3. If application is by spray, use a standard airless sprayer (3,000 psi or more) with a carbon steel or titanium tip sized between .029 and .032.
4. Remove filters from the gun handle and spray machine prior to application, as they will trap the ceramics.

B SUPER THERM[®] must be applied at no less than at total of 16 mils wet/10 mils dry (100 square/feet per gallon).

C If SUPER THERM[®] is applied during a period of high humidity or if there is rain after application, bubbles may appear on the surface. Do not puncture the bubbles. This is normal and the coating will continue to cure with no effect on the performance or appearance of the coating. Bubbles will disappear without a trace or imprint.

3.5 INSPECTION

A After application of each coating in the specified system and its surface has cured, measure its thickness with a property calibrated Nordson Microtest Dry Film Thickness Gauge, or equivalent. (Use an instrument such as a Tooke gauge if a destructive tester is deemed necessary). Follow standard method for measurement of dry paint thickness. The Architect shall, at his discretion, use the contractor's or his own equipment to perform similar inspections.

B Make as many determinations as needed to ensure the specified thickness are achieved. The contractor shall apply additional coat(s), at no extra cost to the Owner, to all surfaces having less dry film thickness than specified until the specified thickness is achieved.

C The coating contractor shall permit the Owner's representative and/or coatings manufacturer (as requested by Owner) to inspect his work for conformance to this specification. Owner reserves the right to reject all work which does not comply with this specification.

3.6 CLEAN UP

A Upon completion, painting contractor shall clean up and remove from site all surplus materials, tools, appliance, empty cans, cartons and rubbish which result from painting work. Site shall be left in a neat and orderly condition.

B Remove all protective drop clothes and masking from surfaces not being painted. Provide touch-up around same areas as directed by Owner's representative.

C Remove all splatters and drippings.

D Upon completion of the work, all staging, scaffolding and containers shall be removed from the site or destroyed in a manner approved by the Architect.



- E The contractor shall keep the area of his work in a clean condition and shall not permit blast cleaning materials to accumulate as to constitute a nuisance or hazard to the execution of the work or the operation of the existing facilities.

3.7 PROTECTION

- A Diligence should be taken to ensure that vehicles, equipment, fixtures, miscellaneous hardware, etc. are protected against coating spillage, over-spray, etc.
- B Surfaces not to be coated will be marked, removed, or otherwise covered to protect against cleaning and coating application procedures and weather. Such damages shall be corrected at no expense to the Owner. Care shall be exercised to avoid lapping on glass or hardware. Finished surfaces shall be free from defects or blemishes.
- C Protective coverings or drop clothes shall be used to protect floors, fixtures, and equipment.
- D Surfaces, from which materials cannot be removed satisfactorily, shall be repainted as required to produce a finish satisfactory to the Architect.

END OF SECTION