

SECTION 09 91 33

MINERAL SILICATE EXTERIOR PAINTS/COATINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Application of two coats of exterior mineral silicate paint/coating. Specification includes limited surface preparation.
- B. Related Sections: Related sections include the following:
PLACE RELATED SECTIONS BELOW. EXAMPLES INCLUDE:
 - 1. Section 03 01 00 – Maintenance of Concrete
 - 2. Section 04 21 13 – Brick Masonry
 - 3. Section 04 22 00 – Concrete Unit Masonry
 - 4. Section 09 25 23 – Stucco Repairs
 - 5. Section 09 24 00 – Portland Cement Plastering
 - 6. Section 09 25 23 – Lime Based Plastering
 - 7. Section 09 25 33 – Lime Cement Based Plastering
- C. Related Products *[DELETE ARTICLE C. IN FINAL SPECIFICATION]*
 - 1. Primers and crack fillers
 - a. BEECK Fixative
 - b. BEECK Beeckosil Coarse
 - c. BEECK Bonding Coat Coarse
 - d. BEECK Quartz Filler
 - 2. Water Repellents/Sealers
 - a. BEECK Silane Primer
 - b. BEECK SP Plus

1.2 REFERENCES

- A. General: The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. ASTM (ASTM):
 - 1. ASTM E 96, "Standard Test Methods for Water Vapor Transmission of Materials."
 - 2. ASTM E 514, "Standard Test Method for Water Penetration and Leakage Through Masonry."
 - 3. ASTM G 154, "Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials."
 - 4. ASTM D 6886-12, "Standard Test Method for Determination of the Individual Volatile Organic Compounds (VOCs) in Air-Dry Coatings by Gas Chromatography."
- C. Deutsches Institut für Normung (DIN), European Standard (EN), and International Organization for Standardization (ISO):
 - 1. DIN 18 363 2.4.1, manufacturing standard for silicate coating.

2. ISO 6504, "Paints and varnishes - Determination of hiding power - Part 3: Determination of contrast ratio of light-colored paints at a fixed spreading rate."
3. ISO 2813, "Paints and varnishes - Determination of specular gloss."
4. EN 1062, "Paints and varnishes - Coating materials and coating systems for exterior masonry and concrete - Part 3: Determination of liquid water permeability."
5. DIN EN 1504-2, "Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 2: Surface protection systems for concrete."
6. DIN EN ISO 7783-2, "Coating materials and coating systems for exterior masonry and concrete - Part 2: Determination and classification of water-vapor transmission rate (permeability)."
7. DIN 4102, "Fire Behavior of Building Materials and Building Components - Part 2: Building Components; Definitions, Requirements and Tests."

1.3 DEFINITIONS

- A. Mineral Silicate paint/coating, base coat: The first applied coat of the mineral silicate paint/coating.
- B. Mineral Silicate paint/coating, top coat: The second applied coat of the mineral silicate paint/coating.
- C. Fixative: A Potassium Silicate solution for Thinning Mineral Silicate paints, Priming absorbent surfaces and Consolidating dusting and sanding substrates.

1.4 SYSTEM DESCRIPTION

- A. A materials-compatible highly vapor permeable decorative coating system offering strong weathering protection for exterior exposure.
 1. Mineral Silicate Paint/Coating: An incombustible two coat system comprising of a "Coarse" texture filled base coat and a "Fine" smooth top coat.
 - a. Mineral Silicate paint/coating penetrates the surface and chemically reacts to combine with the substrate through chemical bonds forming a hard amorphous microporous layer with extremely high vapor permeability.
 - b. Unaffected by acids, UV exposure, or air-borne pollutants.
 - c. Unique alkaline mineral layer structure protects against liquid water penetration into the coated substrate and maintains moisture balance through vapor diffusion to keep wall assemblies breathable and dry, thus resisting mold and biological growth.
 - d. Will not reduce substrate vapor permeability.
 - e. Coarse, filling first coat optically blends together the primer coat application and fills existing hairline cracks, crazing and other irregularities.

1.5 SUBMITTALS

- A. Product Data: Submit product data showing material proposed. Submit sufficient information to determine compliance with the Drawings and Specifications. Provide published documentation describing materials, characteristics, and limitations.
- B. Samples: Submit samples for verification purposes, fabrication techniques and workmanship.
- C. Manufacturer's Instructions: Submit manufacturer's instructions including technical data sheets, material safety data sheets, mixing instructions, application requirements, special procedures, and conditions requiring special attention.
- D. LEED Submittals: Submittals that are required to comply with requirements for LEED certification include the following:

1. Low Emitting Materials: Submit certification by the manufacturer confirming that products (i.e., adhesives, sealants, paints, coatings, etc.) meet or exceed the volatile organic compound (VOC) limits set by specific agencies or other requirements. Clearly state VOC limits in the submittal.

1.6 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer Qualifications: Provide evidence that Manufacturer is a firm engaged in the manufacture of mineral silicate paint/coatings of types required, and whose products have been in use for a minimum of fifteen years.
2. Applicator Qualifications: *(BELOW, KEEP ONE AND DELETE THE OTHER)*
 - a. Provide evidence Applicator is a firm having a minimum of three years of successful application experience with projects similar in type and scope to that required for this project, and having passed a product certification training course provided by the manufacturer prior to the execution of this unit of work.
 - b. Provide evidence Applicator is a firm having successful application of products within this specification with at least one project in the last 24 months similar in type and scope to that required for this project, and having passed a product certification training course provided by the manufacturer prior to the execution of this unit of work.

B. Mock ups:

1. Prior to application of the work, fabricate and erect mock ups for each type of finish and application to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution.
2. Build mock ups to comply with the following requirements using materials indicated for final unit of work.
3. Locate mock ups as directed by the Architect.
4. Demonstrate the proposed range of aesthetic effects and workmanship to be expected in the completed work.
5. Obtain the Architect's acceptance of mock ups before start of final unit of work.
6. Retain and maintain mock ups during construction in undisturbed condition as a standard for judging completed unit of work.
7. Maintain a record of approved mock up's product mixing and application steps to incorporate into final unit of work to ensure color consistency and textural aesthetics.

C. Tracking Job Progress with Daily Logs

1. Maintain a daily record of the weather conditions, of material ordered and delivered, material used, inspections, areas of work that began, areas of work that were completed, and questions raised and answers received.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the Project site in supplier's or manufacturer's original wrappings and containers, labeled with manufacturer's name, material and product brand name, and lot number, if any.
- B. Store materials in their original undamaged packages and containers inside a well ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity. Check Manufacturers Product data for additional storage information.

1.8 PROJECT CONDITIONS

A. Environmental Requirements:

1. Do not apply in freezing conditions, when rain is expected, or in high winds.

1.9 WARRANTY

- A. Provide manufacturer's written product warranty.
 1. Warranty period from date of Substantial Completion is 15 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design:
 1. Items specified are to establish a standard of quality for design, function, materials, compatibility, performance, warranty, and appearance.
 2. Equivalent products by listed manufacturers are acceptable.
 3. The Architect is the sole judge of the basis of what is equivalent.
- B. Listed Manufacturers
 1. BEECK Mineral Paints, 8161 Regent Parkway #101, Fort Mill, South Carolina 29715. Telephone 704-940-3603. Email info@beeckmineralpaints.com Web: www.BeeckMineralPaints.com

2.2 MATERIALS

- A. Mineral Silicate Paint/Coating, Base Coat: Provide mineral silicate based opaque paint/coating meeting or conforming to:
 1. DIN 18 363 2.4.1, manufacturing standard for silicate coating
 2. DIN 4102-A2 & EN 13501-1, non-flammable standard – will not burn.
 3. ASTM E 96 Vapor Permeability – 75 to 85 perms.
 4. ASTM G 154 Accelerated Weathering – no fading, cracking, peeling.
 5. ASTM E 514 62-MPH Wind-Driven Rain Test – no water penetration.
 6. ASTM D 6886-12 Standard Test Method for Individual Volatile Organic Compounds (VOCs) – Less than 5 grams per liter VOC (Volatile Organic Content) white or fully tinted.
 7. Having mineral fillers in grains from 0 to 0.5 mm.
 8. Tinted equal to the top finish coating.
 9. Basis of Design: "BEECK Beeckosil Coarse", BEECK Mineral Paints.
- B. Mineral Silicate Paint/Coating, Top Coat: Provide mineral silicate based opaque paint/coating meeting or conforming to:
 1. DIN 18 363 2.4.1, manufacturing standard for silicate coating
 2. DIN 4102-A2 & EN 13501-1, non-flammable standard – will not burn.
 3. ASTM E 96 Vapor Permeability – 75 to 85 perms.
 4. ASTM G 154 Accelerated Weathering – no fading, cracking, peeling.
 5. ASTM E 514 62-MPH Wind-Driven Rain Test – no water penetration.
 6. ASTM D 6886-12 Standard Test Method for Individual Volatile Organic Compounds (VOCs) – Less than 5 grams per liter VOC (Volatile Organic Content) white or fully tinted.
 7. Tinted to the desired finish color.
 8. Basis of Design: "BEECK Beeckosil Fine", BEECK Mineral Paints.

C. Thinner for Mineral Silicate Paint/Coating: Provide a Pure Potassium Silicate solution free from organic content.

1. DIN 4102, EN 13501-1, Class A1 non-flammable standard – will not burn.
2. ChemVOCFarbV Cat. A/h, Test Method for Volatile Organic Compounds (VOCs) – Zero (0) grams per liter VOC (Volatile Organic Content).
3. Basis of Design: “BEECK Fixative”, Beeck Mineral Paints.

2.3 EQUIPMENT

A. Tools:

1. Mineral Silicate Paint/Coating, Base and Top Coats: Apply by natural bristle façade brush, professional roller, or professional airless spray equipment and back-roll as required for even distribution.

2.4 FINISHES

A. Mineral Silicate Paint/Coating, Base and Top Coats:

1. Apply in full coverage evenly distributed coats to a smooth mineral matte finish without lap lines, voids, “holidays”, or drips. Compare manufacturer-verified mock up consumption data with application consumption data to ensure enough product is applied.
2. Maintain a wet edge and even coat to prevent sight lines and textural differences.
3. Apply enough product to prevent shading and textural differences in the base coat that contribute to striping. Apply product without stops on continuous surfaces from corner to corner.
4. When rolling product, roll off finishing in same direction across the entire façade to prevent shading differences that can affect appearance and color.
5. When spraying product:
 - a. Do not strain mineral silicate base coat.
 - b. Remove paint filters from spray gun and spray pump.
 - c. Use only new hoses. Used hoses may contain paint thinners or solvents.
 - d. Paint thinners and cleaning solvents are not compatible with mineral silicate paints/coatings.
 - e. Clear gun and spray equipment with warm soapy water and rinse well with clean water to remove residual paint thinners and solvents.
 - f. Never use tips with smaller orifices than recommended. Smaller tips clog and prevent proper coating application. Improper application voids warranty and shortens longevity of the coatings.
 - g. Prevent overspray drift or misting onto glass or other surfaces which you do not intend to coat.
6. When working from scaffolding, work as a team moving across façade maximum eight (8) vertical feet per applicator to ensure complete coverage and maintaining a wet edge. Working left to right and top to bottom of each section.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Confirm by examination the areas and conditions under which the work is to be applied for compliance with manufacturer’s instructions. Do not proceed with the work until unsatisfactory conditions have been corrected.

1. Verify substrate is secure, sound, dry, and absorbent, and free of dirt, grease, salts, oil-based paints, release agents, curing agents, and other bond breakers.
2. Verify substrate has no pretreatments or priming materials applied unless such conditions are approved by manufacturer.
3. Verify surfaces or materials to be coated are fully cured to manufacturer recommendations.
4. Verify surfaces or materials to be coated are not sanding, chalking or highly absorbent.
5. Confirm coating surfaces are less than 40 percent relative humidity as measured by a masonry moisture meter prior to application of mineral silicate paints/coatings.
6. Beginning of the work shall indicate acceptance of the areas and conditions as satisfactory by the Applicator.

3.2 PREPARATION

A. Protection:

1. Lay ground cloths and take measures as necessary to protect surfaces subject to contact by products specified by this Section.
2. Mineral Silicate Paint/Coatings may etch or bond to glass, metal, and concrete.

3.3 APPLICATION

A. Conform to reviewed product data, manufacturer's written instructions, and provisions of the Contract Documents.

B. Plan the work properly.

1. Maintain temperature during and after application. Substrate and ambient air temperature must be between 41 °F (5 °C) and 86 °F (30 °C).
2. Work ahead of the sun on shaded façades to avoid working on hot substrates.
3. Work to logical stopping points (corners, seams, architectural features, etc.).
4. Apply mineral silicate paints/coatings as directed by 2.4 FINISHES.
5. Protect from wind and rain prior to, during, and for a minimum 24 hours after application.
6. Obtain manufacturer's written instructions for application outside of the above parameters.

C. Mineral Silicate Paint/Coating:

1. Pretreatment for highly absorbent surfaces and sanding or chalking substrates:
 - a. Prime highly absorbent surfaces and sanding or chalking substrates with a solution of Fixative and water according to manufactures recommendations.
(Delete Pretreatment if not needed)
2. Base Coat:
 - a. Following manufacturers recommendations thin mineral silicate coarse paint/coating with maximum 20 percent Fixative (1 gallon with 24 oz.) according to surface conditions. Stir well by hand or 600-800 RPM mixing equipment. Care should be taken not to introduce air into the product.
 - b. Apply base coat of thinned or unthinned mineral silicate coarse paint/coating.
 - c. Allow minimum 12 hours drying time.
3. Top Coat:
 - a. Do not thin mineral silicate fine paint/coating. Stir well by hand or 600-800 RPM mixing equipment. Care should be taken not to introduce air into the product.
 - b. Apply top coat of mineral silicate paint/coating.

4. Touch Up:
 - a. Some colors touch up well, some do not. Always perform a test and allow the touch up to cure minimum 12 hours before evaluation. Colors become lighter upon drying.
 - b. For colors that do not touch up well, expect corner to corner recoating for acceptable results.
 - c. When touching up or recoating, use the same tools and techniques for best results.
 - d. Articulate the application confining the recoating to the borders of the repair.

3.4 CLEANING

- A. Clean tools, spills, and accidental drips immediately with plenty of water.
- B. Leave applications clean and premises free from residue and debris from work of this Section.

END OF SECTION