

SECTION 09940
DECORATIVE COATINGS

PART GENERAL

SECTION INCLUDES

Coating to be applied to the following exterior surfaces:

_____.
_____.
_____.
_____.

Coating to be applied to the following interior surfaces:

_____.
_____.
_____.
_____.

RELATED SECTIONS

- Section 03300 - Cast-In-Place Concrete.
- Section 04810 - Unit Masonry Assemblies.
- Section 07620 - Sheet Metal Flashing and Trim.
- Section 07900 - Joint Sealers.
- Section 09210 - Gypsum Plaster.
- Section 09215 - Gypsum Veneer Plaster.
- Section 09210 - Portland Cement Plaster.
- Section 09260 - Gypsum Board Assemblies.

REFERENCES

- ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Testing Apparatus.
- ASTM C 67 - Standard Test Methods of Sampling and Testing Brick and Structural Clay Tile.
- ASTM C 150 - Standard Specification for Portland Cement.

ASTM C 297 - Standard Test Method for Tensile Strength of Flat Sandwich Constructions in Flatwise Plane.

ASTM D 412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.

ASTM D 522 - Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.

ASTM D 968 - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.

ASTM D 1653 - Standard Test Methods for Water Vapor Transmission of Organic Coating Films.

ASTM D 2240 - Standard Test Method for Rubber Property -- Durometer Hardness.

ASTM D 2247 - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.

ASTM D 2794 - Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

ASTM D 2805 - Standard Test Method for Hiding Power of Paints by Reflectometry.

ASTM D 3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

ASTM D 3274 - Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation.

ASTM D 4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.

ASTM D 4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.

ASTM D 4258 - Standard Procedure for Surface Cleaning of Concrete for Coating.

ASTM D 4261 - Standard Procedure for Surface Cleaning of

Concrete Unit Masonry for Coating.

ASTM D 4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion-Testers.

ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.

ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

ASTM E 313 - Standard Test Method of Indexes of Whiteness and Yellowness of Near-White Opaque Materials.

ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

ASTM G 53 - Standard Practice for Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials.

DIN 52617 - The Determination of Water Absorption Coefficient of Building Materials; Deutsche Industrie Norm.

EIMA 101.01 - Standard Test Method for Freeze-Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) (modified ASTM C 67); EIFS Industry Members Association (EIMA).

FS TT-C-555B - Coating, Textured (For Interior and Exterior Masonry Surfaces).

SUBMITTALS

Submit under provisions of Section 01300.

Product Data: Manufacturer's descriptive literature and specifications for specified decorative coatings, demonstrating compliance of products with specified requirements.

Selection Samples: For each coating type specified, two sets of color chips representing manufacturer's full range of available colors and finishes.

Verification Samples: For each color and finish selected, two samples, minimum size 8 inches (200 mm) square, representing actual color and finish of products to be installed.

Manufacturer's Qualifications.

Specimen of manufacturer's warranty.

Installer's Qualifications: Include list of previous projects which identifies the following for each project:

Project location and date of completion.

Architect's name, address, and telephone number.

Owner's name, address, and telephone number.

Manufacturer's printed installation instructions for each specified product, including product storage requirements and recommendations for specific project conditions.

Operation and Maintenance Data: Manufacturer's printed instructions and recommendations for maintaining and cleaning of coatings.

QUALITY ASSURANCE

Manufacturer Qualifications: Minimum fifteen years documented experience as single-source producer of products specified in this section, and current member in good standing of Sealant Waterproofing and Restoration Institute (SWRI).

Installer Qualifications: Minimum three years documented experience installing finishes specified in this section, capable of demonstrating successful completion of a minimum of three previous projects of similar size and complexity, and employing applicators having minimum three years experience applying products specified in this section.

Mock-Up: Construct mock-up for each specified coating color and texture, using materials specified in this section.

Construct mock-up as directed, at location indicated or directed.

Construct each mock-up at location indicated or directed, size ___ feet (___ m) by ___ feet (___ mm).

Obtain Architect's acceptance of mock-up before beginning construction activities of this section; accepted mock-up will be standard by which completed construction activities of this section is judged. Mock-up may not remain as part of Work. Accepted mock-up may remain as part of Work.

Pre-Installation Meeting:

Convene at job site seven calendar days prior to scheduled beginning of construction activities of this section to review requirements of this section. Require attendance by representatives of the following:

Installer of this section.

Other entities directly affecting, or affected by, construction activities of this section. Notify Architect four calendar days in advance of scheduled meeting date.

DELIVERY, STORAGE, AND HANDLING

Store products of this section in manufacturer's unopened packaging until installation.

Maintain storage area conditions for products of this section in accordance with manufacturer's instructions until installation.

PROJECT CONDITIONS

Do not apply coating materials to exterior surfaces until ambient temperature, and surface temperature of surfaces to receive coating materials, is above 40 degrees F (4 degrees C) and is expected to remain so for 24 hours after application of finish coating.

Do not apply coating materials to interior surfaces until structure is weathertight and maintains ambient temperature, and surface temperature of surfaces to receive coating materials, above 40 degrees F (4 degrees C).

SEQUENCING

Sequence construction activities of this section with construction activities of other sections to prevent penetration of substrates after application of finish coatings, and to prevent damage to finish coatings by

subsequent construction activities.

Ensure that sheet metal flashings and trim adjacent to coating applications are installed immediately after finish coating has dried.

Ensure that joint sealers adjacent to coating applications are installed immediately after finish coating has dried.

WARRANTY

Manufacturer's Warranty: Manufacturer's standard warranty against defects in materials.

PART PRODUCTS

MANUFACTURERS

Manufacturer: Sto Finish Systems Division of Sto Corporation; P.O. Box 44609, Atlanta GA 30336-5609; ASD. Tel: (800) 221-2397 or (404) 346-3666, Fax: (404) 346-3119.

Requests for substitution will be considered in accordance with provisions of Section 01600.

Substitutions: Not permitted.

Unless otherwise specified for an individual product or material, supply all products specified in this section from the same manufacturer.

MATERIALS

Smooth Exterior Coating: StoSilco(R) Shield; silicone-enhanced coating.

Minimum solids content: 55 percent by weight; 37 percent by volume.

Surface burning, when tested in accordance with ASTM E 84: Flame spread 0; smoke developed 5.

Flexibility, when tested in accordance with ASTM D 522: Pass 1/2-inch (13 mm) mandrel bend test at 20 degrees F (-7 degrees C), 50 degrees F (10 degrees C), and at 77 degrees F (25 degrees C).

Hiding power, when tested in accordance with ASTM D 2805: 99.6 contrast ratio.

Water vapor transmission, when tested in accordance with modified ASTM E 96: 56 perms (3203 ng/Pa s sq m) for 6-mil (0.15 mm) dry film thickness at 28 days. Accelerated weathering resistance, when tested in accordance with ASTM G 53: No deterioration, cracking or noticeable yellowing after 5000 hours. Chalking, when tested in accordance with ASTM D 4214: 9 rating after 5000 hours. Yellowing index, when tested in accordance with ASTM E 313: 0.41 rating after 5000 hours. Freeze/thaw resistance, when tested in accordance with EIMA 101.01: No delamination or deterioration after 25 cycles. Mildew resistance, when tested in accordance with ASTM D 3274: No mildew growth after 60 days. Salt spray resistance, when tested in accordance with ASTM B 117: No deleterious effects after 500 hours. Water penetration, when tested in accordance with FS TT-C-555B: No water penetration after 24 hours of driving rain. Abrasion resistance, when tested in accordance with ASTM D 4060, with Taber CS-10 wheel: 0.0196 ounce (0.56 g) weight loss at wear through. Adhesion to concrete, when tested in accordance with ASTM D 4541: 300 pounds per square inch (2068 kPa) after 28 days. Tensile strength, when tested in accordance with ASTM D 412: 50 pounds per square inch (345 kPa) after 28 days. Color: Selected from full range of manufacturer's standard colors. Color: _____ . Colors: Specified in SCHEDULES Article of this section.

Smooth Exterior Coating: StoSilco(R) Lastic Coating; silicone-enhanced elastomeric coating.

Minimum solids content: 63 percent by weight; 50 percent by volume.

Dry-to-touch time: 40-51 minutes at 90 degrees F (32 degrees C), 60-90 minutes at 75 degrees F (24 degrees C), 8-12 hours at 40 degrees F (4.4 degrees C),

Surface burning, when tested in accordance with ASTM E 84: Flame spread 5; smoke developed 5.

Elongation, when tested in accordance with ASTM D 412: Minimum 540 percent.

Flexibility, when tested in accordance with ASTM D 522: Pass 180-degree 1/8-inch (3 mm) mandrel bend

test at -30 degrees F (-34 degrees C).
Water absorption, when tested in accordance with DIN 52617: 0.177 ounces per square foot per 24-hour period (0.0254 kg/sq m/24-hr).
Water vapor transmission, when tested in accordance with ASTM E 96 (modified ASTM D 1653): 14 perms (800 ng/Pa s sq m) for 15-mil (0.38 mm) dry film thickness at 28 days.
Accelerated weathering resistance, when tested in accordance with ASTM G 53: No deterioration, cracking or noticeable yellowing after 2000 hours.
Chalking, when tested in accordance with ASTM D 4214: 9 rating after 2000 hours.
Yellowing index, when tested in accordance with ASTM E 313: 1.1 rating after 2000 hours.
Dirt pick-up resistance, when tested in accordance with ASTM D 3274: 97 percent reflectance retained after 1 hour.
Freeze/thaw resistance, when tested in accordance with EIMA 101.01: No cracking, delamination or deterioration after 25 cycles.
Mildew resistance, when tested in accordance with ASTM G 53: No mildew growth after 21 days.
Salt spray resistance, when tested in accordance with ASTM B 117: No deleterious effects after 300 hours.
Water penetration, when tested in accordance with FS TT-C-555B: No water penetration after 24 hours of driving rain.
Adhesion to concrete, when tested in accordance with ASTM D 4541: 135 pounds per square inch (931 kPa) after 28 days.
Durometer Shore A hardness, when tested in accordance with ASTM D 2240: 35-40 at 28 days.
Tensile strength, when tested in accordance with ASTM D 412: 120 pounds per square inch (827 kPa) after 28 days.
Color: Selected from full range of manufacturer's standard colors.
Color: _____.
Colors: Specified in SCHEDULES Article of this section.

Textured Exterior Coating: StoSilco(R) LIT Textured Coating; silicone-enhanced, with marble aggregate finish.
Surface burning, when tested in accordance with ASTM E 84: Flame spread 0; smoke developed 15.
Flexibility, when tested in accordance with ASTM D 522: Pass 4-inch (100 mm) mandrel bend test.

Water absorption, when tested in accordance with DIN 52617: 0.016 ounces per square foot per hour (0.005 kg/sq m/hr).

Water vapor transmission, when tested in accordance with modified ASTM E 96: 42 perms (2402 ng/Pa s sq m) at 28 days.

Accelerated weathering resistance, when tested in accordance with ASTM G 53: No deterioration, cracking or noticeable yellowing at 10-power magnification after 5000 hours.

Chalking, when tested in accordance with ASTM D 4214: 9 rating after 2000 hours, 8 rating after 5000 hours.

Yellowing index, when tested in accordance with ASTM E 313: 0.77 rating after 5000 hours.

Freeze/thaw resistance, when tested in accordance with EIMA 101.01: No delamination or deterioration after 90 cycles.

Mildew resistance, when tested in accordance with ASTM D 3273: No mildew growth after 60 days.

Salt spray resistance, when tested in accordance with ASTM B 117: No deleterious effects after 700 hours.

Water penetration, when tested in accordance with FS TT-C-555B: No water penetration after 24 hours of driving rain.

Water resistance, when tested in accordance with ASTM D 2247: No deleterious effects after 42 days.

Abrasion resistance, when tested in accordance with ASTM D 968: No cracking, checking, or loss of film integrity at 1057 quarts (1000 l) sand.

Adhesion to concrete, when tested in accordance with ASTM D 4541: 120 pounds per square inch (827 kPa) after 28 days.

Color and texture: Selected from full range of manufacturer's standard selections.

Color _____; _____ texture.

Colors and textures: Specified in SCHEDULES Article of this section.

Textured Exterior Coating: StoSilco(R) FlexFinish Elastomeric Textured Coating; silicone-enhanced, with marble aggregate finish.

Surface burning, when tested in accordance with ASTM E 84: Flame spread 5; smoke developed 5.

Elongation, when tested in accordance with ASTM D 412: Minimum 500 percent at 28 days.

Flexibility, when tested in accordance with ASTM D 522: Pass 1/2-inch (13 mm) and 1/8-inch (3 mm) mandrel bend tests at -30 degrees F (-34 degrees C).

Water absorption, when tested in accordance with DIN 52617: 0.27 ounces per square foot per hour (0.830 kg/sq m/hr).

Water vapor permeability, when tested in accordance with ASTM D 1653: 16 perms (915 ng/Pa s sq m) at 28 days.

Accelerated weathering resistance, when tested in accordance with ASTM G 53: No deterioration, cracking or noticeable yellowing after 2000 hours.

Chalking, when tested in accordance with ASTM D 4214: 9 rating after 2000 hours.

Yellowing index, when tested in accordance with ASTM E 313: 0.26 rating after 2000 hours.

Dirt pick-up resistance, when tested in accordance with ASTM D 3274: 96 percent reflectance retained after 1 hour.

Freeze/thaw resistance, when tested in accordance with EIMA 101.01: No deleterious effects after 25 cycles.

Mildew resistance, when tested in accordance with ASTM G 21: No mildew growth after 21 days.

Water penetration, when tested in accordance with FS TT-C-555B: No water penetration after 24 hours of driving rain.

Adhesion to concrete, when tested in accordance with ASTM D 4541: 115 pounds per square inch (793 kPa) after 28 days.

Tensile strength, when tested in accordance with ASTM D 412: 55 pounds per square inch (379 kPa) after 28 days.

Color and texture: Selected from full range of manufacturer's standard selections.

Color _____; _____ texture.

Colors and textures: Specified in SCHEDULES Article of this section.

Textured Exterior Coating: Stolit; acrylic coating with marble aggregate texture.

Surface burning, when tested in accordance with ASTM E 84: Flame spread 5; smoke developed 5.

Fire resistance rating effect on existing wall assembly, when tested in accordance with ASTM E 119: No change.

Flexibility, when tested in accordance with ASTM D 522: Pass 4-inch (100 mm) mandrel bend test.

Water absorption, when tested in accordance with DIN 52617: 0.162 ounces per square foot per hour (0.049 kg/sq m/hr).

Water vapor transmission, when tested in accordance with ASTM E 96 (modified ASTM D 1653): 37 perms (2116 ng/Pa s sq m).

Accelerated weathering resistance, when tested in accordance with ASTM G 53: No deleterious effects at 10-power magnification after 5000 hours.

Chalking, when tested in accordance with ASTM D 4214: 9 rating after 2000 hours, 8 rating after 5000 hours.

Yellowing index, when tested in accordance with ASTM E 313: 1.5 rating after 5000 hours.

Freeze/thaw resistance, when tested in accordance with EIMA 101.01: No cracking, delamination or deterioration after 90 cycles.

Mildew resistance, when tested in accordance with ASTM D 3273: No mildew growth after 42 days.

Salt spray resistance, when tested in accordance with ASTM B 117: No deleterious effects after 500 hours.

Water penetration, when tested in accordance with FS TT-C-555B: No water penetration after 24 hours of driving rain.

Water resistance, when tested in accordance with ASTM D 2247: No deleterious effects after 28 days.

Abrasion resistance, when tested in accordance with ASTM D 968: No cracking, checking, or loss of film integrity at 1057 quarts (1000 l) sand.

Adhesion to concrete, when tested in accordance with ASTM D 4541: 90 pounds per square inch (620 kPa) after 28 days.

Color and texture: Selected from full range of manufacturer's standard selections.

Color _____; _____ texture.

Colors and textures: Specified in SCHEDULES Article of this section.

Textured Exterior Coating: Sto FlexFinish; acrylic elastomeric coating with marble aggregate texture.

Surface burning, when tested in accordance with ASTM E 84: Flame spread 15; smoke developed 5.

Elongation, when tested in accordance with ASTM D 412: Minimum 200 percent for neat film.

Flexibility, when tested in accordance with ASTM D 522: Pass 1/2-inch (13 mm) mandrel bend test at -30 degrees F (-34 degrees C), 26 degrees F (-3.3 degrees C), 32 degrees F (0 degrees C), and at 86 degrees F (30 degrees C).

Water absorption, when tested in accordance with DIN 52617: 0.375 ounces per square foot per hour (0.113 kg/sq m/hr).

Water vapor permeability, when tested in accordance with ASTM D 1653: 12 perms (686 ng/Pa s sq m).

Dirt pick-up resistance, when tested in accordance with ASTM D 3274: 89 percent reflectance retained after 1 hour.

Water penetration, when tested in accordance with FS TT-C-555B: No water penetration after 24 hours of driving rain.

Adhesion to concrete, when tested in accordance with ASTM D 4541: 95 pounds per square inch (655 kPa) after 28 days.

Tensile strength, when tested in accordance with ASTM D 412: 60 pounds per square inch (414 kPa) after 28 days.

Color and texture: Selected from full range of manufacturer's standard selections.

Color _____; _____ texture.

Colors and textures: Specified in SCHEDULES Article of this section.

Textured Interior Coating: Sto Decocoat; acrylic coating.

Surface burning, when tested in accordance with ASTM E 84: Flame spread 0; smoke developed 5.

Flexibility, when tested in accordance with ASTM D 522: Pass 1/8-inch (3 mm) mandrel bend test.

Water absorption, when tested in accordance with DIN 52617: 0.375 ounces per square foot per hour (0.113 kg/sq m/hr).

Water vapor permeability, when tested in accordance with ASTM D 1653: 28 perms (1601 ng/Pa s sq m).

Volatile organic content (VOC): 3.85 ounces per quart (100 gm/l).

Mildew resistance, when tested in accordance with ASTM G 21: No mildew growth after 14 days.

Abrasion resistance, when tested in accordance with Ebner Abrasion Test: 1.50 percent weight loss.

Adhesion, when tested in accordance with ASTM D 4541, after 28 days: 15 pounds per square inch (103 kPa) to gypsum board prior to substrate failure, 125 pounds per square inch (862 kPa) to concrete, and 100 pounds per square inch (689 kPa) to primed metal.

Impact resistance, when tested in accordance with ASTM D 2794: No failure up to 70 inch-pounds (886,200 N m) at 28 days.

Tensile strength, when tested in accordance with ASTM D 412: 25 pounds per square inch (207 kPa) after 28 days.

Color and texture: Selected from full range of manufacturer's standard selections.

Color _____; _____ texture.

Colors and textures: Specified in SCHEDULES Article of this section.

Surface Preparation Materials: Manufacturer's proprietary materials indicated, specified in manufacturer's instructions, or recommended by manufacturer for correct application of coating materials, including the following:

Surface conditioner: Acrylic-based surface sealer and hardener for chalking substrates or highly-absorptive substrates.

Primers: Silicone-enhanced or acrylic-based.

Crack repair material: Fiber-reinforced acrylic-based material formulated for mixing with Portland cement; used with specified fiber reinforcement material for repair of substrate cracks up to 1/8 inch (3 mm) wide.

Filler material: Acrylic-based flat filler.

Patching and leveling material for applications up to 1/16 inch (1.5 mm) thick: Single-component, polymer-modified, cement-based material containing fiber reinforcement.

Patching and leveling material for applications up to 1/4 inch (6 mm) thick: Single-component, polymer-modified, cement-based material containing fiber reinforcement; used with or without specified fiber reinforcement material.

Reinforcing Mesh: Symmetrical, interlaced, open-weave glass-fiber reinforcing fabric mesh, nominal weight 4.8 ounces per square yard (163 g/sq m), with minimum 25 percent by weight alkaline-resistant coating.

Waterproofing Finish for Sloped Surfaces: Sto Flexyl; fiber-reinforced acrylic-based material formulated for mixing with Portland cement.

Portland Cement: ASTM C 150, Type 1.

Water: Clean, potable, not containing materials which would impair appearance or performance of coating materials.

MIXES

Mix materials specified to be site-mixed in accordance with manufacturer's mixing instructions; do not dilute finish coatings except as instructed.

Mix only enough materials that can be applied during working time recommended by manufacturer; do not retemper mixes.

Do not add anti-freeze admixtures or other admixtures which may adversely affect performance or appearance of coating materials.

PART EXECUTION

EXAMINATION

Inspect substrates to receive coatings for the following:

- Contamination: Presence of foreign matter which might affect coating performance or appearance.
- Delamination, damage, defects, or deterioration.
- Cracking: Measure widths of cracks; record locations.
- Surface absorption and chalking.
- Moisture content: Use moisture meter of type recommended by manufacturer to determine if moisture content is within limits recommended by manufacturer.
- Surface plane within tolerances required in manufacturer's instructions.

PREPARATION

Correct unacceptable conditions reported by installer.

Protect surfaces adjacent to locations of coating application; do not allow coating materials on surfaces not indicated to receive them.

Prepare substrates to receive coating materials in accordance with manufacturer's instructions and as follows:

- Remove loose, damaged, or deteriorated materials.
- Remove surface contaminants on concrete surfaces in accordance with ASTM D 4258.
- Remove surface contaminants on concrete masonry surfaces in accordance with ASTM D 4261.
- Repair surface defects using patching and leveling material.

Repair surface cracks using patching and leveling material, or patching and leveling material with fabric reinforcement, according to manufacturer's recommendations for crack size.
Apply surface conditioner to chalked or absorbent surfaces.
Apply skim coat to level substrates to required plane tolerances.
Trowel-apply waterproofing material with fabric reinforcement to sloped surfaces; immediately embed fabric reinforcement, lapping seams 2-1/2 inches (64 mm).

APPLICATION

Apply prime and finish coats in accordance with manufacturer's instructions; do not exceed manufacturer's recommended spread rate for coating materials.

Do not allow coatings to be applied over sealant joints, cold joints, expansion joints, or control joints.

At sloped surfaces, use waterproofing finish coating with reinforcing mesh.

Apply continuous void-free and pinhole-free finish coating.

Finish final coats to match accepted mock-up.

PROTECTION

Protect installed coatings from damage by subsequent construction activities.

Repair installed coatings, if damaged by subsequent construction activities, in accordance with manufacturer's recommendations, so repairs are not visible at a distance of 10 feet (3 m).

SCHEDULES

Location: Exterior concrete walls.

Type _____.

Color: _____.

Texture: _____.

Location: Interior gypsum board walls at corridors.

Type _____.
Color: _____.
Texture: _____.

END OF SECTION