UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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05/11, CHG 1: 08/17

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USACE / NAVFAC / AFCEC / NASA	**UFGS-09 96 59 (May 2011)** **Change 1 - 08/17**

Preparing Activity: NAVFAC	**Superseding** **UFGS-09 96 59 (April 2006)**

UNIFIED FACILITIES GUIDE SPECIFICATIONS

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SECTION 09 96 59

HIGH-BUILD GLAZE COATINGS
05/11, CHG 1: 08/17

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NOTE: This guide specification covers the requirements for epoxy-polyamide, polyurethane, and epoxy polyester high performance, architectural wall coating systems for interior and exterior surfaces.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable item(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).
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NOTE: Except for moisture-curing polyurethane, they are two-component systems and contain fillers that help provide the high-build. They are intended for application to concrete, masonry, plaster or wallboard, and also may be used on wood, metal, or fiberglass. The coatings are available in gloss or semigloss and are sometimes called tile-like coatings or liquid glaze coatings. Some of the coatings are high in Volatile Organic Compounds (VOC). The specifier must ensure that selected products do not exceed allowable VOC requirements.
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****
NOTE: On the drawings, show:

1. Locations for wall coating systems.

2. Finish schedule.

****

PART 1 GENERAL

1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a Reference Identifier (RID) outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM E84	(2020) Standard Test Method for Surface Burning Characteristics of Building Materials

MASTER PAINTERS INSTITUTE (MPI)

MPI 31	(2012) Varnish, Polyurethane, Moisture Cured, Gloss (MPI Gloss Level 6)
MPI 71	(2012) Varnish, Polyurethane, Moisture Cured, Flat (MPI Gloss Level 1)
MPI 72	(2016) Polyurethane, Two-Component, Pigmented, Gloss (MPI Gloss Level 6-7)

SOCIETY FOR PROTECTIVE COATINGS (SSPC)

SSPC SP 5/NACE No. 1	(2007) White Metal Blast Cleaning
SSPC SP 6/NACE No.3	(2007) Commercial Blast Cleaning
SSPC SP 10/NACE No. 2	(2007) Near-White Blast Cleaning

1.2 SUBMITTALS

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NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list, and corresponding submittal items in the text, to reflect only the submittals required for the project. The Guide Specification technical editors have classified those items that require Government approval, due to their complexity or criticality, with a "G". Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item if the submittal is sufficiently important or complex in context of the project.

For Army projects, fill in the empty brackets following the "G" classification, with a code of up to three characters to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

The "S" classification indicates submittals required as proof of compliance for sustainability Guiding Principles Validation or Third Party Certification and as described in Section 01 33 00 SUBMITTAL PROCEDURES.

Choose the first bracketed item for Navy, Air Force, and NASA projects, or choose the second bracketed item for Army projects.

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Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

High-Build Glaze Coatings

Submit three copies of coating manufacturer's printed product data.

SD-04 Samples

High-Build Glaze Coatings; G[, [_____]]

Submit color chips of standard colors.

Coating System; G[, [_____]]

Submit rigid panels on which the complete coating system is applied. Submit panels of the same materials as the surfaces to which the coating system is to be applied.

SD-06 Test Reports

Filler Material

Primers

Top Coating

SD-07 Certificates

Qualifications of Installer

SD-08 Manufacturer's Instructions

Wall Coating System

Submit instructions covering application of the wall coating system, including surface preparation, detailed application procedures, number and types of coats required, maximum and minimum application temperatures, and induction, pot life, and intercoat cure times. Safety Data Sheets (SDS) shall address all components of the paint coating system, including solvents, primers, and other hazardous materials.

1.3 DELIVERY, STORAGE, AND HANDLING

1.3.1 Acceptance at Site

Deliver materials to the project site in original, factory-sealed containers or packages labeled with identification of contents, manufacturer's name and address, manufacturer's tradename or trademark, date of manufacture, specification number, batch number, color, instructions for use, and recommendations for protective measures against toxicity.

1.3.2 Storage and Protection

Protect and store materials under cover in dry, well-ventilated areas. Keep in original tightly sealed containers or packages, and in such sequence that oldest stocks are used first. Store at temperatures between 4 and 49 degrees C 40 and 120 degrees F. Do not use material that is more than one year old from the date of manufacturing.

1.4 ENVIRONMENTAL REQUIREMENTS

1.4.1 Protection During Cleaning

Personnel engaged in solvent-cleaning of galvanized metal and aluminum, or cleaning concrete, masonry, or portland cement plaster with 5 to 10 percent solution of hydrochloric acid, shall wear the appropriate personal protective equipment to prevent skin and eye contact and fumes inhalation. Ventilate all work areas properly.

1.4.2 Personnel Protection During Coating Applications

Personnel painting with high-build glaze coating systems shall wear the appropriate personal protective equipment to prevent skin or eye contact or inhalation. Ensure employees use and maintain solvent-resistant, personal protective equipment for the whole body. Emergency eye wash and water supplies shall be available near the work area for emergency flushing of the eyes and body. Coating applications shall be performed only in areas with good ventilation. Smoking will not be permitted in the area where coating is being applied. Wall and room temperature at the time of coating application and curing shall be in accordance with the manufacturer's instructions.

1.4.3 Protection During Application of Polyurethane Paints

Mix and apply polyurethane paints only in specifically designated areas with local exhaust ventilation and other environmental control measures as recommended on the basis of an on-site industrial hygiene survey. Supply and use air respirators in closed areas where adequate ventilation cannot be obtained.

1.5 QUALIFICATIONS OF INSTALLER

Installation shall be by an applicator approved by the manufacturer of the surfacing materials. Furnish a written statement from the manufacturer indicating that the installer is acceptable.

PART 2 PRODUCTS

2.1 WALL COATING SYSTEM

2.1.1 Filler Material

As recommended by the coating system manufacturer.

2.1.2 Primers

As recommended by the coating system manufacturer.

2.1.3 Top Coating

****

NOTE: Select wall coatings compatible with the surfaces they are to cover and in accordance with:

1. High Performance Architectural Coatings (HIPAC). They are tough, durable, organic systems applied to a continuous (seamless) high-build film and cure to a hard glaze finish. They are resistant to continuous heat and humidity, abrasion, staining, chemicals, and biological growth. They are used in areas where high humidity, wear, or unusual chemical resistance requirements, particularly to soiling, are required, and where strong detergents are used to maintain sanitary conditions. Stall showers, public halls and stairways, lavatories, locker areas, animal pens, and biological laboratories are typical areas where these coatings are recommended. Other areas of use are in food processing, dairies,

restaurants, schools, and air terminals. HIPAC systems should be used only as complete systems, and as recommended by the manufacturer. Minimum dry film thickness is 0.075 mm 3 mils for each of two coats. Furnished in Gloss, and Semigloss.

These coatings are for interior use and are formulated with any one of the following resins: Epoxy-polyamide, epoxy polyester, or aliphatic or aromatic polyurethane resins:

a. Epoxy-polyamide - chemical- and corrosion-resistant, adhesive, alkali-resistant, water-tolerant.

b. Epoxy-polyester - chemical-resistant, abrasion-and impact-resistant, fire-resistant, low odor.

c. Aliphatic or aromatic polyurethane - flexible, abrasion- and impact-resistant.

2. Two component, epoxy-polyamide for interior use. For metal, wood, concrete, masonry surfaces, and painted surfaces where high gloss or glaze type finish, extreme workability and resistance to abrasion and stains is desired. Particularly useful for hallways, kitchens, bathrooms, laundries and hospitals where maintenance of sanitary conditions is important. Minimum dry film thickness is 0.075 mm 3 mils for each of two coats. Maximum volatile organic compounds (VOC) to be 340 grams/liter.

3. MPI 31 or MPI 71. Single component, moisture-curing urethane. For floors, walls, machinery, equipment and other surfaces where good abrasion resistance, color retention, gloss retention, graffiti resistance and good resistance to acids, alkalis, solvents, strong cleaners and sanitizers, fuel and chemicals are necessary. Can also be used on concrete floors, brick and masonry surfaces (properly conditioned), metals (properly primed), and wood (properly prepared and sealed.) Minimum dry film thickness is 0.075 mm 3 mils for each of 3 coats.

****

a. High Performance Architectural Coating, [Epoxy-Polyamide][Epoxy-Polyester][Polyurethane][, Gloss][, Semigloss]

b. Two component, epoxy-polyamide for interior use.

[c. MPI 31, Single Component, Moisture-curing Urethane, clear, gloss top coat.]

[d. MPI 71, Single Component, Moisture-curing Urethane, clear, flat top coat.]

[e. MPI 72, Two-Component, Pigmented, gloss level 6.]

2.1.4 High-Build Glaze Coatings Systems Requirements

Provide a complete coating system from a single manufacturer. The system shall have a flame spread index of not more than 25 and a smoke developed index of not more than [50] [_____], when tested in accordance with ASTM E84.

2.2 COLORS

****
NOTE: Indicate colors on the finish schedule. When colors are identified by a manufacturer's name and designation, include the optional sentence in brackets. If the "architectural finishes display board" is used, it must be on display in the office of the Contracting Officer. The architectural display board should be used only to supplement the information contained on the drawings.
****

Top coating colors shall be [as indicated] [and] [as shown on the architectural finishes display board]. [Colors indicated by reference to manufacturer's name and designations are for color identification only and are not intended to limit selection of other manufacturer's products with similar colors.]

2.3 SOURCE QUALITY CONTROL

2.3.1 Top Coat Testing

****
NOTE: Choose one of the following options.
****

[High Performance Architectural Coating: Abrasion resistance with 100 mg maximum loss, scrubability, resistance to heat and humidity, and impact resistance tests.]

[Epoxy-polyamide: abrasion resistance and steam resistance tests.]

[MPI 31 abrasion resistance and resistance to water tests [and, resistance to accelerated weathering test, for loss of gloss, and chalking, with continuous exposure to light and intermittent exposure to water spray].]

PART 3 EXECUTION

3.1 Examination

3.1.1 Verification of Surface Conditions

Before commencing work, inspect surfaces to receive coatings and report to the Contracting Officer, in writing, of unsatisfactory surfaces. Inspection shall include examining the nature and condition of surfaces before, during, and after painting application, and reporting the same on a systematic basis. Inspection shall include ensuring that manufacturer's recommended procedures are followed during each stage of surface preparation and paint application.

3.2 PREPARATION

3.2.1 Protection

Remove, mask, or otherwise protect hardware, fixtures, accessories, and parts in contact with coated surfaces, and other parts that are factory-finished such as motors, sensing devices, thermostats. Protect adjacent surfaces to confine coatings to designated areas. Correct defects caused by installed equipment prior to finishing. Reinstall removed work after completion of each area.

3.2.2 Moisture

****

NOTE: Select moisture percentage allowable in accordance with substrate materials: 15 percent maximum for concrete, masonry, and portland cement plaster surfaces and 8 percent maximum for gypsum plaster surfaces.

****

Surfaces shall be dry to receive finishes. Measure moisture content of substrate with probe-type moisture meter implanted into backing. Moisture content shall not exceed [8] [15] percent.

3.2.3 [Restoration

****

NOTE: Include this paragraph only for work on repair projects where painting of existing substrate surfaces is included.

****

Prior to application of coatings, touch up and restore all substrates where damaged or defaced.

]3.2.4 Surface Preparation

Prepare surfaces in accordance with the coating manufacturer's printed instructions. Remove contaminants including splinters, mortars, rust and other products of corrosion, disintegrated coatings, and other substances that could interfere with adhesion of the coating system to the substrate.

3.2.5 Additional Preparation for Specific Materials

3.2.5.1 Sealants and Caulkings

Remove loose, cracked, or otherwise defective sealant materials and replace with new sealant as specified in Section 07 92 00 JOINT SEALANTS. Sealant materials shall be compatible with wall coating system materials.

3.2.5.2 Foreign Substances

Remove foreign substances by water washing, steam cleaning, cleaning compounds or detergents, or other procedures.

3.2.5.3 [Previously Painted or Coated Surfaces

****

NOTE: The 25 percent area is visual only. Lesser area percentage may be removed fully at the recommendation of the user. Delete this paragraph if project does not include painting of existing surfaces.
****

Remove loose or scaling materials prior to application of wall coating. Repair, smooth, sand, spackle, or otherwise treat to render imperceptible in the finished work defects such as scratches, nicks, cracks, gouges, spalls, alligatoring, and irregularities due to partial peeling of previous paint coatings. Where impractical to satisfactorily eliminate defects by other means, remove existing coatings from the entire surface, repair surface as necessary, prime, and repaint. Completely remove coating in areas where more than 25 percent of the existing substrate material has failed.

]3.2.5.4 Ferrous Metals

Prepare ferrous metals in accordance with SSPC SP 5/NACE No. 1, SSPC SP 6/NACE No.3, or SSPC SP 10/NACE No. 2, as recommended by the manufacturer.

3.2.5.5 Galvanized Metal

Clean and dry, using solvent, galvanized metal surfaces of detrimental foreign matter such as oil, grease, and other contaminants. Prior to coating application, pretreat the surface material in accordance with manufacturer's printed instructions for pretreatment compound mixing and application.

3.2.5.6 Aluminum

Using solvent, clean surfaces of oils, grease, and other lubricants. Remove dirt, water-soluble chemicals, and similar surface contaminants by washing with water, or water and detergent. When detergents are used, rinse with clear water. Pretreat these surfaces prior to coating application in accordance with manufacturer's printed instructions.

3.2.5.7 Concrete, Masonry, and Portland Cement Plaster

Cure new concrete and masonry surfaces a minimum of 30 days prior to painting. Repair concrete surfaces before coating. Clean surfaces to be coated, removing dirt, fungus, grease, oil, asphalt, tar, and other foreign substances. Remove efflorescence, chalk, and similar substances from concrete, masonry, portland cement, and plaster surfaces in the following manner:

a. Wash with a 5 to 10 percent aqueous solution of hydrochloric acid and rinse the surface with clean water and allow to dry.

b. Free surfaces from mortar deposits and form release agents.

c. Remove laitance from surfaces by etching with hydrochloric acid solution.

d. Rinse the surface again with clean water and allow to dry.

e. Sand cracked surfaces smooth and fill with filler compatible with the

substrate and coating materials.

f. Apply filler until surfaces are completely filled (pin-hole free) and smooth.

g. Sand lightly and wipe clean.

[h. Apply the filler in [one][two] coat[s], to a [wet] [dry] film thickness of [_____] millimeters mils [for each coat], measured with a Tooke gage or similar thickness measuring gage].

3.2.5.8 Gypsum Plaster

Thoroughly dry and clean gypsum plaster before application of coatings. Remove lime deposits by sanding lightly. Sand cracked surfaces smooth; and fill with joint treatment compound compatible with plaster and coating materials. Sand lightly and wipe clean. Surfaces of plaster shall age a minimum of 30 calendar days and pass the following test: Using an electric moisture meter, when more than 8 percent moisture is indicated, surfaces are not sufficiently cured to be coated.

3.2.5.9 Woodwork

****
NOTE: Select corresponding option or options applicable to the project. Delete this paragraph if project does not include woodwork areas.
****

Provide a surface which is dry, smooth, and free from raised grain or other imperfections. Fill nail holes, cracks, joints, crevices, and other blemishes with materials compatible with the coating materials, and sand smooth and flush with adjacent wood surfaces before application of coatings. Sand in the direction of the grain. Back-prime wood in contact with or built into concrete, masonry, or plaster as specified in Section 09 90 00 PAINTS AND COATINGS. Prime end cuts and edges. [Seal with a mixture of equal parts of shellac and alcohol or knot sealer.] [Treat as specified for defects such as knots, resins, gum, or extractives].

3.2.5.10 Gypsum Wallboard

Reinforce and conceal joints of gypsum wallboard panels as specified in Section 09 29 00 GYPSUM BOARD. Apply a skim coat of gypsum plaster over the gypsum wallboard. Sand smooth, fill with joint treatment compound, sand lightly, and wipe clean surfaces prior to application of glaze coating.

3.3 COATING APPLICATION

Apply coating system over specified filler where applicable.

3.3.1 Apply Coating

After preparing surface, apply coating system directly to metal, gypsum wallboard, gypsum plaster, and previously painted surfaces in accordance with the manufacturer's instructions. Provide alkali-resistant primers for concrete, masonry, and portland cement plaster surfaces.

3.3.2 Thickness Test

Measure dry film thickness of coating system, excluding filler coat, with a Tooke gage or similar thickness measuring gage. Any paint damaged during thickness measurement shall be repaired to match the original.

3.3.3 Interior Application

****
NOTE: Specify the dry film thickness of the coating required over the filler, in accordance with the type of substrate for specified coating.
****

Apply wall coating system in accordance with manufacturer's specifications with a spreading rate to produce a dry film thickness of [_____] mm mils for each of [two] [three] coats applied. Protect coated surfaces after application and during the curing periods.

3.3.4 Exterior Application

****
NOTE: Specify the dry film thickness of the coating required over the filler, in accordance with the type of substrate for specified coating.
****

Mix and apply wall coating system in accordance with manufacturer's specifications with a spreading rate to produce a dry film thickness of [_____] mm mils for each of [two][three] coats applied. Protect coated surfaces during curing periods.

-- End of Section --