

## SECTION 06650

## SOLID POLYMER FABRICATIONS

## PART 1 GENERAL

## 1.1 REFERENCES

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

## AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)

ANSI A136.1	(1967) Organic Adhesives for Installation of Ceramic Tile
ANSI Z124	(1980) Plumbing

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D256	(1984) Test Methods for Impact Resistance of Plastics and Electrical Insulating Materials
ASTM D570	(1981) Test Method for Water Absorption of Plastics
ASTM D638	(1984) Test Method for Tensile Properties of Plastics
ASTM D696	1979 Test Method for Coefficient of Linear Thermal Expansion of Plastics
ASTM D1499	1984 Recommended Practice for Operating Light-and-Water Exposure Apparatus (Carbon-Arc Type) for Exposure of Plastics
ASTM E84	1984a Test Method for Surface Burning Characteristics of Building Materials

## FEDERAL SPECIFICATIONS (FS)

FS WW-P-541E/GEN	(August 1, 1980) Plumbing Fixtures (Lavatories)
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## NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

LD3	(1980) High Pressure Decorative Laminates
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## 1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL DESCRIPTIONS:

SD-01 Data

Solid Polymer Material; F10.

Manufacturer's descriptive data, fabrication and installation instructions, warranty provisions, fabricator/installer bonding certificate.

#### SD-04 Drawings

Solid Polymer Material; GA.

Shop Drawings shall indicate dimensions, component sizes, fabrication details, attachment provisions and coordination requirements with adjacent work.

#### SD 06 Instructions

Solid Polymer Material; F10

Maintenance Manuals shall be submitted indicating manufacturer's care and maintenance data, including repair and cleaning instructions. Provide maintenance kit for [matte] [semi-gloss] [gloss] finishes.

#### SD-09 Reports

Solid Polymer Material; F10

Test Reports shall indicate compliance with specified test methods and performance levels. Safety related test data (flame spread, smoke generation, and smoke toxicity) shall be specific to the color/pattern of the material selected, i.e. solid color or granite pattern color.

#### SD-14 Samples

Solid Polymer Material; GA

Samples, minimum 2 inch by 2 inch, shall indicate full range of color and pattern variation.

### 1.3 DELIVERY, STORAGE AND HANDLING

Materials shall not be delivered to project site until areas are ready for installation. Materials shall be stored indoors and handled to prevent damage. Protective coverings shall be provided to prevent physical damage or staining following installation, for duration of project.

## PART 2 PRODUCTS

### 2.1 SOLID POLYMER FABRICATIONS

#### 2.1.1 Solid Polymer Components

Cast, filled polymer, not coated, laminated or of composite construction, meeting ANSI Z124 and FS WW-P-541E/GEN, having minimum physical and performance properties specified. Superficial damage to a depth of 1/32 inch repairable by sanding or polishing. Thickness and color as specified herein.

2.1.2 Sinks

Sinks shall be [undermount][seamed "S" undermount][seamed bevel mount] style; [\_\_\_\_\_] color; Model #[\_\_\_\_\_].

2.1.3 Lavatories

Lavatories shall be [undermount][seamed "S" undermount][seamed bevel mount] style; [\_\_\_\_\_] color; Model #[\_\_\_\_\_].

2.1.4 Vanity Tops and Bowls

2.1.4.1 Integral Vanity Tops and Bowls

Integral vanity tops and bowls shall be cast, solid polymer material lavatory cast integrally with counter top, [single][double] bowl design; [\_\_\_\_\_] color.

2.1.4.2 Fabricated Vanity Tops and Bowls

Fabricated vanity tops and bowls shall be pre-assembled from solid polymer sinks and counter tops. [specify number of bowls] of color [\_\_\_\_\_] shall be [undermounted][seamed "S" undermounted][seam bevel mounted] to countertop material of [\_\_\_\_\_] color and [1/2][3/4] inch thickness. [backsplash shall be attached with][silicone sealant][joint adhesive]. [endsplashes shall be attached with][silicone sealant][joint adhesive].

2.1.5 Edge Treatment

Edge treatment for tops shall be [\_\_\_\_\_].

2.1.6 Performance Characteristics

PROPERTY	REQUIREMENT (min or max)	TEST PROCEDURE
Tensile Strength	5000 psi min.	ASTM D638
Flexural Strength	7000 psi min.	ASTM D790
Flexural Modulus	1.0 x 10 <sup>6</sup> min.	ASTM D790
Elongation	0.3% min.	ASTM D638
Hardness	90-Rockwell "M" scale min.	ASTM D758
	52-Barcol Impressor min.	ASTM D2583
Thermal Expansion	3.5 x 10 <sup>-6</sup> in/in/deg C. max.	ASTM D696
	1.95 x 10 <sup>-6</sup> in/in/deg F. max.	
Color Stability	No change, 100 hours min.	NEMA LD3-3.10
Wear and	Passes	ANSI Z124.3

PROPERTY	REQUIREMENT (min or max)	TEST PROCEDURE
Cleanability		
Abrasion Resistance	No loss of pattern Max Weight loss (1000cycles)=0.9g.	NEMA LD3-3.01 ANSI Z124.3
Boiling water Surface Resistance	No Change	NEMA LD3-3.05
High Temperature Resistance	No Change	NEMA LD3-3.06
Impact Resistance Notched Izod Gardner	0.24 ft.-lbs.min. 9.0 ft-lbs min.	ASTM D256, Method A ASTM D3029
Ball drop 1/4" sheet	36" min, 1/2 lb ball, no failure	NEMA LD3-303
1/2" sheet	140" min, 1/2 lb ball, no failure	
3/4" sheet	200" min, 1/2 lb ball, no failure	
Bowls (point impact)	No cracks or chips	ANSI Z124.3 and 124.6
Stain Resistance	Passes	ANSI Z124.3
Weatherability	No change, min. 1000 hours	ASTM D1499
Fungi and Bacteria	No Attack	ASTM G21, ASTM G22
Specific Gravity	1.6 min	
Water Absorption	24 hrs. 0.05	Long Term 0.50 (1/4")
Weight (% max.)	0.10	0.90 (3/4")
Flammability		ASTM E84
Flame spread	1/4" 25 max	solid colors 1/2" 25 max
Smoke Developed	30 max	3/4" 25 max
Class	1	1
		1
		particulate patterns
	1/4"	1/2"
		3/4"

PROPERTY		REQUIREMENT (min or max)	TEST PROCEDURE
Flame spread	25 max	25 max	25 max
Smoke Developed	30 max	30 max	30 max
Class	1	1	1
Pittsburgh Protocol Toxicity (as used by NY state)		solids-80 grams minimum rating particulate patterns-65gms minimum	"LC50" Test

2.2 ACCESSORY PRODUCT

2.2.1 Joint Adhesive

Joint adhesive shall be two-part adhesive kit to create inconspicuous, non-porous joints by chemical bond.

2.2.2 Panel Adhesive

Panel adhesive shall be neoprene based panel adhesive meeting ANSI A136.1, Underwriter's Laboratories (UL) listed)

2.2.3 Sealant

Sealant shall be mildew-resistant, FDA and UL listed silicone sealant in colors matching components.

2.2.4 Sink/Bowl Mounting Hardware

Hardware shall include bowl clips and fasteners for attachment of undermount sinks/lavatories.

2.2.6 Conductive Tape

Conductive tape shall be manufacturer's standard foil tape, 4 mils thick, applied around the edges of cutouts containing hot or cold appliances.

2.2.7 Insulating Felt Tape

Insulating felt tape shall be manufacturer's standard product for use with conductive tape to insulate solid polymer surfaces from hot/cold appliances.

2.3 FABRICATION

Components shall be factory fabricated to the greatest extent practical to sizes and shapes indicated on approved Shop Drawings. Joints shall be formed between components using manufacturer's standard joint adhesive. Joints shall be reinforced with 2 inch wide strips of solid polymer material. Factory cutouts shall be provided for plumbing fittings and bath accessories as indicated on the Drawings. Component edges shall be cut and finished with clean, sharp returns. Contours and radii shall be routed to template, with edges smooth. Defective and inaccurate work shall be rejected. Inlay work shall be performed in accordance with manufacturer's product data, using acrylic or methacrylate inlay material and color

indicated on the Drawings.

#### 2.3.1 Gloss

Finished surfaces shall receive a uniform [matte finish with a gloss range of 5-20] [semi-gloss finish with a gloss range of 20-50] [polished finish with a gloss range of 50-80].

#### 2.3.2 Thermoforming

Thermoforming shall comply with manufacturer's product data. Molds shall be constructed of plywood in "male/female" sections matching component shapes. Component parts shall be shaped prior to joining and finishing. Pieces shall be cut to finished dimensions with edges sanded and nicks and scratches removed. Heat the entire component uniformly between 275-325 degrees Fahrenheit during forming. Prevent blistering, whitening and cracking of solid polymer material during forming. Defective material shall be rejected.

#### 2.3.3 Color Inlay

Color inlay shall comply with manufacturer's product data. Groove for inlay shall be routed to straight edge or pattern indicated on the Drawings with groove completely filled to overflowing, without air bubbles or voids, using bulk acrylic material furnished by polymer manufacturer. Inlay shall be sanded, finished, and touched up for uniform appearance.

#### 2.3.4 Material Inlay

Material inlay shall comply with manufacturer's product data, using [wood-name/species] [brass] [other material] as shown on the Drawings.

#### 2.3.5 Backsplashes

Coved backsplashes shall be [field] [shop] fabricated with 1/2 inch radius cove at intersection of counters and backsplashes [and intersection of backsplash and endsplashes].

#### 2.3.6 Wall Cladding/Wainscotting with Silicone Sealant Joints

Wall cladding/wainscotting with flexible joints shall be 1/4 inch thick, with 1/8" wide joints every 30"-60", sealed with manufacturer's silicone sealant matching polymer material color. Wall cladding/wainscotting shall be adhesively applied to solid substrates. Wall cladding/ wainscotting shall be [\_\_\_\_\_] color.

#### 2.3.7 Wall Cladding/Wainscotting with Hard Seams

Wall cladding/wainscotting with hard seams shall be 1/4 inch thick, with butt joints between sheets made with joint adhesive. 1/8" silicone filled expansion joints to be provided every 10'-15'. Wall cladding/wainscotting shall be attached to solid subwall using silicone sealant. Wall cladding/wainscotting shall be [\_\_\_\_\_] color.

#### 2.3.8 Commercial Tub/Shower Walls

Commercial tub/shower walls shall consist of four 1/4 inch thick, full height panels with batten strips to conceal joints, vertical edge and ceiling trim strips, adhesively applied to [existing, sound ceramic

tile] [water-resistant wallboard] using thin-set neoprene based panel adhesive or Type 1 ANSI A 136.1-1967 solvent based adhesive. Tub surrounds shall be [\_\_\_\_\_] color.

#### 2.3.9 Shower/Toilet Partitions

Shower/toilet partitions shall consist of pilasters and panels fabricated of 3/4 inch thick polymer material with pilasters attached at floor and ceiling. Provide with hardware for attachment of panels to pilasters and [plastic laminate] [polymer material] doors as indicated on the Drawings.

#### 2.3.10 Reception Area/Nurses Station

Reception area/nurses station shall consist of vertical surfaces of [1/4] [1/2] [3/4] inch thick polymer material and horizontal surfaces of [1/2] [3/4] inch thick polymer material, adhesively joined with inconspicuous seams, having edge details as indicated on the Drawings. Reception areas/nurses station shall be [\_\_\_\_\_] color.

#### 2.3.11 Bumper Rails

Bumper rails shall be fabricated of polymer material to size and shape, of thickness and with edge details indicated on the Drawings, adhesively joined with inconspicuous seams. Provide back-up piece fabricated of solid polymer material, as detailed. Install bumper rails without exposed fasteners. Bumper rails shall be [\_\_\_\_\_] color.

#### 2.3.12 Interior Steps

Interior steps (maximum of three) shall be fabricated of 1-inch thick plywood stringers, one at each end and spaced no more than one foot apart, with 1" plywood horizontal tread supports and 1/4-inch thick kickers. Stringers and risers shall be covered with [1/4-inch] [1/2-inch] thick polymer material, [\_\_\_\_\_] color. Treads shall be covered with 1/2" thick polymer material, [\_\_\_\_\_] color. Surfaces shall be sanded with 120 grit sandpaper.

#### 2.3.13 Seats

Seats shall be constructed of 1/2-inch thick polymer material covering a support surface and attached as indicated on the Drawings.

#### 2.3.14 Laboratory Tops

Laboratory tops shall be [1/2] [3/4] inch thick polymer material, adhesively joined with inconspicuous seams, having edge details as indicated on the Drawings. Laboratory tops shall be [\_\_\_\_\_] color[, complete with specified sinks]. Surfaces shall not be effected by Class 1 reagents.

#### 2.3.15 Table Tops

Table tops shall be [1/2] [3/4] inch thick polymer material, adhesively joined with inconspicuous seams, having edge details as indicated on the Drawings. Tops shall be [\_\_\_\_\_] color.

#### 2.3.16 Bar Tops

Bar tops shall be [1/2] [3/4] inch thick polymer material, adhesively joined with inconspicuous seams, having edge details as indicated on the Drawings.

Bar tops shall be [\_\_\_\_\_] color, [complete with specified sinks of [\_\_\_\_\_] color].

#### 2.3.17 Window Sills

Window sills shall be [1/2][3/4] inch thick polymer material, adhesively joined with inconspicuous seams, having edge details as indicated on the Drawings. Window sills shall be [\_\_\_\_\_] color.

#### 2.3.18 Hot Cafeteria Surfaces

Hot cafeteria surfaces shall be [1/2][3/4] inch thick polymer material, adhesively joined with inconspicuous seams, having edge details as indicated on the Drawings. Provide expansion joints in counter tops as indicated on the Drawings. Make cut-outs to templates furnished by the manufacturer. Reinforce seams and cut-outs as recommended by the manufacturer. Provide insulation between polymer material and adjacent hot and cold food wells. Thermally isolate hot applications from cold. Cafeteria surfaces shall be \_\_\_\_\_ color.

#### 2.3.19 Cold Cafeteria Surfaces

Cold cafeteria surfaces shall be [1/2][3/4] inchthick polymer material, adhesively joined with inconspicuous seams, having edge details as indicated on the Drawings. Provide expansion joints in counter tops as indicated on the Drawings. Make cut-outs to templates furnished by the manufacturer. Reinforce seams and cut-outs as recommended by the manufacturer. Provide insulation between polymer materials and adjacent cold surfaces. Thermally isolate hot applications from cold. Cafeteria surfaces shall be [\_\_\_\_\_] color.

#### 2.3.20 Counter Tops With Traditional, Undermount Sinks

Counter tops with traditional, undermount sinks shall be [1/2][3/4] inch thick polymer material overhanging [single sink][double sink][double sink with molded drainboard]. Edge details shall be as indicated on the Drawings. Counter tops shall be complete with [\_\_\_\_\_] inch high by [\_\_\_\_\_] inch thick backsplash [and endsplashes] attached with silicone sealant. Manufacturer's standard sink mounting hardware shall be provided. Seam between sink and counter top shall be sealed with silicone sealant. Color of counter tops and splashes shall be [\_\_\_\_\_] color. Sink shall be [\_\_\_\_\_] color.

#### 2.3.21 Counter Tops With Undermount "S" Sinks

Counter tops with undermount "S" sinks shall be [1/2][3/4] inch thick polymer material with [single sink][double sink][double sink with molded drainboard]. Edge details shall be as indicated on the Drawings. Counter tops shall be complete with [\_\_\_\_\_] inch high by [\_\_\_\_\_] inch thick backsplash [and endsplashes] attached with silicone sealant. Seam between sink and counter top shall be sealed with joint adhesive. Color of counter tops and splashes shall be [\_\_\_\_\_] color. Sink shall be [\_\_\_\_\_] color.

#### 2.3.22 Counter Tops With Flush Bevel Mount Sinks

Counter tops with flush bevel mount sinks shall be [1/2][3/4] inch thick polymer material, having edge details as indicated on the Drawings, complete with [single sink][double sink][double sink with molded

drainboard]. Counter tops shall be complete with [\_\_\_\_\_] inch high by [\_\_\_\_\_] inch thick backsplash [and endsplashes] attached with silicone sealant. Counter tops and splashes shall be [\_\_\_\_\_] color. Sink shall be [\_\_\_\_\_] color.

#### 2.3.23 Counter Tops With Step-Down, Bevel Mount Sinks

Counter tops with step-down, bevel mount sinks shall be [1/2][3/4] inch thick polymer material, having edge details as indicated on the Drawings, complete with [single sink][double sink][double sink with molded drainboard]. Counter tops shall be complete with [\_\_\_\_\_] inch high by [\_\_\_\_\_] inch thick backsplash [and endsplashes] attached with silicone. Counter tops and splashes shall be [\_\_\_\_\_] color. Sink shall be [\_\_\_\_\_] color.

#### 2.3.24 Lav Tops With Traditional, Undermount Lavatories

Lav tops with traditional, undermount lavatories shall be [1/2][3/4] inch thick polymer material overhanging [specify number] lavatory bowl[s]. Edge details shall be as indicated on the Drawings. Lav tops shall be complete with [\_\_\_\_\_] inch high by [\_\_\_\_\_] inch thick backsplash [and endsplashes] attached with silicone sealant. Manufacturer's standard lavatory mounting hardware shall be provided. Seam between lavatory and counter top shall be sealed with silicone sealant. Color of counter tops and splashes shall be [\_\_\_\_\_] color. Lavatory bowl[s] shall be [\_\_\_\_\_] color.

#### 2.3.25 Lav Tops With Undermount "S" Lavatories

Lav tops with undermount "S" lavatories shall be [1/2][3/4] inch thick polymer material with [specify number] lavatory bowl[s]. Edge details shall be as indicated on the Drawings. Lav tops shall be complete with [\_\_\_\_\_] inch high by [\_\_\_\_\_] inch thick backsplash [and endsplashes] attached with silicone sealant. Seam between lavatory and counter top shall be sealed with joint adhesive. Color of counter tops and splashes shall be [\_\_\_\_\_] color. Lavatory bowl[s] shall be [\_\_\_\_\_] color.

#### 2.3.26 Lav Tops With Flush Bevel Mount Lavatories

Lav tops with flush bevel mount lavatories shall be [1/2][3/4] inch thick polymer material, having edge details as indicated on the Drawings, complete with [specify number] lavatory bowl[s]. Lav tops shall be complete with [\_\_\_\_\_] inch high by [\_\_\_\_\_] inch thick backsplash [and endsplashes] attached with silicone sealant. Counter tops and splashes shall be [\_\_\_\_\_] color. Lavatory bowl[s] shall be [\_\_\_\_\_] color.

#### 2.3.27 Lav Tops With Step-Down, Bevel Mount Lavatories

Lav tops with step-down, bevel mount lavatories shall be [1/2][3/4] inch thick polymer material counter tops, having edge details as indicated on the Drawings, complete with [specify number] lavatory bowl[s]. Lav tops shall be complete with [\_\_\_\_\_] inch high by [\_\_\_\_\_] inch thick backsplash [and endsplashes] attached with silicone sealant. Counter tops and splashes shall be [\_\_\_\_\_] color. Lavatory bowl[s] shall be [\_\_\_\_\_] color.

#### 2.3.28 Integral Lav Tops And Lavatories

Integral lav tops and lavatory bowls shall be one-piece, cast polymer material units, having edge details as indicated on the Drawings, complete with integral backsplash. [endsplashes of size shown on the Drawings shall

be attached with silicone sealant]. Lav tops and lavatories shall be [\_\_\_\_\_] color.

### 2.3.29 Handicap Accessible Lav Tops With Undermount "S" Lav

Lav tops with undermount "S" sinks shall be [1/2][3/4] inch thick polymer material with [specify number] seamed undermount bowl[s]. Edge details shall be as indicated on the Drawings. Lav tops shall be complete with [\_\_\_\_\_] inch high by [\_\_\_\_\_] inch thick backsplash [and endsplashes] attached with silicone sealant. Seam between sink and counter top shall be sealed with joint adhesive. Color of counter tops and splashes shall be [\_\_\_\_\_] color. Sink shall be [\_\_\_\_\_] color.

## PART 3 EXECUTION

### 3.1 JOB MOCK-UP

Prior to final approval of Shop Drawings, erect at project site one full size mock-up of each component for review. Should mock-up not be approved, re-fabricate and reinstall until approval is secured. Remove rejected units from project site. Approved mock-ups may remain as part of finished work.

### 3.2 INSTALLATION

Install components plumb, level and rigid in accordance with approved Shop Drawings and product data. Form field joints using manufacturer's recommended adhesive, with joints inconspicuous in finished work. Adhere sinks and lavatories to tops using manufacturer's recommended adhesive and mounting hardware. Provide backsplashes and endsplashes as indicated on the Drawings. Adhere to tops using manufacturer's adhesive. Clean all assembled components before requesting acceptance. After acceptance, protect against damage during completion of the remaining project items. Components damaged by other trades after acceptance will be repaired or replaced at the General Contractor's cost. Component supplier will provide a repair/replace cost estimate to the General Contractor who shall approve estimate before repairs are made.

Make plumbing connections to sinks in accordance with Division 15, Mechanical.

-- End of Section --