

SECTION 12 36 00

COUNTERTOPS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies chemical resistant (also indicated as "acid-resistant") laminate and epoxy resin countertops with integral accessories.
- B. Integral accessories include:
 - 1. Sinks with traps and drains.
 - 2. Eye and Face Wash Units.
 - 3. Mechanical Service fixtures.
 - 4. Electrical Receptacles.
 - 5. Pegboards

1.2 RELATED WORK

- A. Plastic laminate (non-acid-resistant) countertops for custom casework: Section 06 20 00, FINISH CARPENTRY.

1.3 SUBMITTALS

- A. Submit in accordance with SECTION 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Shop Drawings
 - 1. Show dimensions of section and method of assembly.
 - 2. Show details of construction at 1/2 scale.
- C. Samples:
 - 1. 150 mm (6 inch) square samples each top.
 - 2. Front edge, back splash, end splash and core with surface material and booking.

1.4 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.
- B. Composite Panel Association (CPA):
 - A208.1-99Particleboard
- C. American Society of Mechanical Engineers (ASME):
 - A112.18.1-05Plumbing Fixture Fittings
 - A112.1.2-04Air Gaps in Plumbing System
 - A112.19.3-00(R2004)Stainless Steel Plumbing Fixtures (Designed for Residential Use)

- D. American Society for Testing and Materials (ASTM):
- A167-99 (R2004)Stainless and Heat-Resisting Chromium-Nickel
Steel Plate, Sheet and Strip
 - A1008-07Steel, Sheet, Cold-Rolled, Carbon, Structural,
High Strength, Low Alloy
 - D570-98(R2005)Water Absorption of Plastics
 - D785-03Rockwell Hardness of Plastics and Electrical
Insulating Materials
 - D790-07Flexural Properties of Unreinforced and
Reinforced Plastics and Electrical Insulating
Materials
 - D4690-99(2005)Urea-Formaldehyde Resin Adhesives
- E. Federal Specifications (FS):
- A-A-1936Adhesive, Contact, Neoprene Rubber
- F. U.S. Department of Commerce, Product Standards (PS):
- PS 1-95Construction and Industrial Plywood
- G. National Electrical Manufacturers Association (NEMA):
- LD 3-05High Pressure Decorative Laminates
 - LD 3.1-95Performance, Application, Fabrication, and
Installation of High Pressure Decorative
Laminates

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Plastic Laminate: NEMA LD 3; color as selected by Designer from manufacturer's premium range.
1. Concealed backing sheet Type BKL.
 2. Chemical Resistant Surfaces
 - a. Flat components: Type GP-HGL.
 - b. Resistance to reagents:
 - 1) Test with five 0.25 mil drops remaining on surface for 16 hours followed by washing off with tap water, then cleaned with liquid soap and water, dried with soft cotton cloth and then cleaned with naphtha.
 - 2) No change in color, surface texture, and original protectability remaining from test results of following reagents:

98% Acetic Acid	Butyl Alcohol	Acetone
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90% Formic Acid--	Benzine	Chloroform
28% Ammonium Hydroxide	Xylene	Carbon Tetrachloride
Zinc Chloride (Sat.)	Toluene	Cresol
Sodium Carbonate (Sat.)	Gasoline	Ether
Calcium Hypochlorite (Sat.)	Kerosene	Cottonseed Oil
Sodium Chloride (Sat.)	Mineral Oil	40% Formaldehyde
Methyl Alcohol	Ethyl Acetate	Trichlorethylene
Ethyl Alcohol	Amyl Acetate	Monochlorobenzine

- 3) Superficial effects only: Slight color change, spot, or residue only with original protectability remaining from test results of following reagents:

77% Sulfuric Acid	37% Hydrochloric Acid	85% Phenol
33% Sulfuric Acid	20% Nitric Acid	Furfural
85% Phosphoric Acid	30% Nitric Acid	Dioxane

- 4) Minimum height of impact resistance: 300 mm (12 inches).

B. Molded Resin:

1. Non-glare grey epoxy resin compounded and cured for minimum physical properties specified:

Flexural strength	70 MPa (10,000 psi)	ASTM D790
Rockwell hardness	105	ASTM D785
Water absorption, 14 hours (weight)	.01%	ASTM D570

2. Material of uniform mixture throughout.

C. Particleboard: CPA A208.1, Grade 2-M-2.

D. Plywood: PS 1, Exterior type, veneer grade AC not less than five ply construction.

E. Adhesive

1. For plastic laminate FS A-A-1936.
2. For wood products: ASTM D4690, unextended urea resin or unextended melamine resin, phenol resin, or resorcinol resin.
3. For Field Joints:
 - a. Epoxy type, resistant to chemicals as specified for plastic laminate laboratory surfaces.
 - b. Fungi resistant: ASTM G-21, rating of 0.

F. Fasteners:

1. Metals used for welding same metal as materials joined.

2. Use studs, bolts, spaces, threaded rods with nuts or screws suitable for materials being joined with metal splice plates, channels or other supporting shape.

2.2 SINKS

A. Molded Resin:

1. Cast or molded in one piece with interior corners 25 mm (one inch) minimum radius.
2. Minimum thickness of sides and ends 13 mm (1/2 inch), bottom 16 mm (5/8 inch).
3. Molded resin outlet for drain and standpipe overflow.
4. Provide clamping collar permitting connection to 38 mm (1-1/2 inch) or 50 mm (2 inch) waste outlet and trap, making sealed but not permanent connection.

2.3 TRAPS AND FITTINGS

A. Material as specified in DIVISION 22, PLUMBING.

B. For Molded Resin Sinks:

1. Chemical resisting P-traps and fittings for chemical waste service.
2. Provide traps with cleanout plug easily removable without tools.

C. Air Gap Fittings: ASME A112.1.2.

2.4 WATER FAUCETS

A. ASME A112.18.1.

1. Cast or forged brass, compression type with replaceable seat and stem assembly or replaceable cartridge; chrome finish.
2. Indexed lever handles either with or without head.
3. Gooseneck minimum clearance above countertop of 190 mm (7-1/2 inches), bent 180 degrees for vertical discharge.
4. Swing spouts elevated to clear handles.
5. Exposed brass surfaces chromium plated.
6. Cast combination hot and cold fixture with one piece body for multiple outlets.
7. Adapter type connection which will permit field conversion of swing spouts to fixed or gooseneck grouts or vice versa.
8. Pedestals Top for Laboratory:
 - a. Modern design tapered to a round base, factory assembled and tested.
 - b. Brass shanks, locknuts and washers for attaching to top or curbs.

B. Laboratory Faucets:

1. Female 9 mm (3/8 inch) IPS threaded outlet for attachment of filter pumps, hose connectors, anti-hose nozzle, or laminar flow control device on spout end.
2. Provide angle type vacuum breaker for fixture, designed for low flow, with built-in floating disk and renewable seat in vacuum breaker body.

C. Deionized Water Fixture:

1. Deck mounted.
2. Gooseneck spout with handle arranged for self closing and with hold open feature to open and close an inert silicone diaphragm valve.
3. Faucet designed to be chemically inert and resistant to leaching of inorganic contaminants, enhancement of bacteria growth, and internal corrosion.

D. Eye and Face Wash Unit Pull-Out-Type:

1. Deck mounted; ANSI Z358.1 requirement for drench hose.
2. Designed for vandal resistant push-down squeeze control valve and 8 foot PVC hose.
3. Eye and face wash, dual head, provide a soft stream for flushing action.
4. Valve, when opened; remain open until manually closed.

E. Manifold, Tube-Washing:

1. Deck mounted
2. Three valved outlet, plus one bleeder outlet.
3. Vacuum breaker, and loose key stops with integral check valve.

2.5 FUEL GAS, LABORATORY AIR AND LABORATORY VACUUM FIXTURES

- A. Comply with criteria for faucets except as specified.
- B. Needle valves with stainless steel replaceable cone and valve seat.
- C. Provide valve with a bonnet with exterior packing and packing gland designed to permit valve to be repacked while under pressure.
- D. Valves withstand a minimum pressure of 700 kPa (100 psi) without leakage.
- E. Equip valves with four-arm handles and serrated hose ends. Do not provide laminar flow control device.
- F. Provide duplex fixtures except where otherwise shown.
- G. Factory assembled and tested.

2.6 FIXTURE IDENTIFICATION

- A. Code fixtures with full view plastic index buttons.

B. Use following colors and codes:

SERVICE	COLOR	CODE	COLOR OF LETTERS
Cold Water	Dark Green	CW	White
Hot Water	Red	HW	White
Laboratory Air	Orange	AIR	Black
Fuel Gas	Dark Blue	GAS	White
Laboratory Vacuum	Yellow	VAC	Black
Deionized Water	White	DI	Black
Oxygen	Light Green	OXY	White
Nitrogen	Gray	N	Black
All Other Gases	Light Blue	CHEM.SYM.	Black

2.7 ELECTRICAL RECEPTACLES

- A. Hospital grade per electrical specifications.
- B. Curb Mounted Receptacles:
 - 1. NEMA 5-20R duplex in galvanized steel box.
 - 2. Chromium plated brass or steel face plate.
- C. Pedestal Mounted Receptacles:
 - 1. NEMA 5-20R duplex installed in double faces.
 - 2. Polished stainless steel or aluminum, or chromium plated brass pedestal.

2.8 COUNTERTOPS

- A. Fabricate in largest sections practicable.
- B. Fabricate with joints flush on top surface.
- C. Fabricate countertops to overhang front of cabinets and end of assemblies 25 mm (one inch) except where against walls or cabinets.
- D. Provide 1 mm (0.039 inch) thick metal plate connectors or fastening devices (except epoxy resin tops). Do not locate joints above knee spaces.
- E. Join edges in a chemical resistant waterproof cement or epoxy cement.
- F. Fabricate with end splashes where against walls or cabinets.
- G. Splash Backs and End Splashes:
 - 1. Not less than 1 inch thick.
 - 2. Height 100 mm (4 inches) unless noted otherwise.
 - 3. Laboratories heights or where fixtures or outlets occur: Not less than 150 mm (6 inches) unless noted otherwise.
 - 4. Fabricate epoxy splash back in maximum lengths practical of the same material.

H. Drill or cutout for sinks, and penetrations.

1. Accurately cut for size of penetration.

I. Plastic Laminate Countertops:

1. Fabricate plastic laminate on five-ply plywood or particleboard core 1 inch thick with plastic laminate backing sheet.
2. Front edge over cabinets not less than 38 mm (1-1/2 inches) thick except where plastic "T" insert is used, not less than 19 mm (3/4 inch) thick.
3. Exposed Surface and edges of laboratory chemical resistant surface shall be 3mm PVC Edgebanding.

J. Molded Resin Tops:

1. Molded resin with drip groove cut on underside of overhanging edge.
2. Joints: Epoxy Type.
3. Secure reagent shelves to counter tops with fasteners from underside and seal seam.
4. Provide tops with drip grooves to divert spillage away from cabinet faces, "marine" edges on fronts and sides, and drain board grooves.
5. Provide cutouts for sinks, cup sinks, electrical boxes, and other penetrations as indicated.

K. Pegboards: In configurations as shown on Drawings, 1 inch thick.

Provide 2-inch wide, stainless steel drip trough sloped to drain with drain tube extending into sink.

1. At End Island Sinks: Clear, acrylic.
2. Elsewhere: Molded resin, grey color to match molded resin tops.
3. Pegs: White polypropylene pegs. Provide Owner with a supply of button plugs equal to 25% of pegs furnished. Provide button plugs in unused peg holes.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Before installing countertops verify that wall surfaces have been finished as specified and that mechanical and electrical service locations are as required.

B. Secure countertops to supporting rails of cabinets with metal fastening devices, or screws through pierced slots in rails.

1. Where type, size or spacing of fastenings is not shown or specified, submit shop drawings showing proposed fastenings and method of installation.
2. Use round head bolts or screws.

3. Use epoxy or silicone to fasten the epoxy resin countertops to the cabinets.

4. Use wood screws for wood or plastic laminate tops; minimum penetration into top 16 mm (5/8 inch), screw size No 8, or 10.

C. Rubber Moldings:

1. Where shown install molding with butt joints in horizontal runs and mitered joints at corners where ceramic tile occurs omit molding.

2. Fasten molding to wall and to splashbacks and splashends with adhesive.

D. Install pegboards according to manufacturer's recommended procedures. Set pegboard in continuous bead of silicone sealant.

E. Sinks: Install molded resin sinks with epoxy compound to form watertight seal with underside of molded resin top.

1. Install sink with not less than two channel supports with threaded rods and nuts at each end, expansion bolted to molded resin top.

2. Design support for a twice the full sink weight.

3. Install with overflow standpipes.

F. Faucets, Fixtures, and Outlets:

1. Seal opening between fixture and top.

2. Secure to top with manufacturers standard fittings.

G. Set pegboard in continuous sealant on top of backsplash. Install pegs in pegboard and do not epoxy in place unless directed by Owner.

3.2 PROTECTION AND CLEANING

A. Tightly cover and protect against dirt, water, and chemical or mechanical injury.

B. Clean at completion of work.

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