

SECTION 09800

ACOUSTICAL PANELS

PART 1 – GENERAL

1.1. DESCRIPTION

- A. Acoustical wall and ceiling panels.

1.2. REFERENCES

- A. ASTM E84.

1.3. PERFORMANCE REQUIREMENTS

- A. Surface burning characteristics.
 - 1. Flame spread: 15.
 - 2. Fuel contributed: 0.
 - 3. Smoke developed: 0.

- B. Absorption coefficients:

Test	125	250	500	1000	2000	4000	NRC
2" A	.15	.26	.62	.94	.64	.92	.60
2" C-40	.42	.89	1.19	.85	1.08	.94	1.00

1.4. SUBMITTALS

- A. Follow 01340 with product data showing performance values and panel dimensions, color, and fastener description.

1.5. QUALITY ASSURANCES

- A. Company specializing in manufacturing acoustical ceiling and wall panel products with a minimum of three (3) years of satisfactory documented experience.
- B. Installer: Company specialized in installing acoustical ceiling and wall products with a minimum of three (3) years of satisfactory documented experience.

1.6. DELIVERY, STORAGE AND HANDLING

- A. Follow manufacturer's written instructions.

PART 2 – PRODUCTS

2.1. MANUFACTURERS

- A. Tectum, or approved equal

2.2. MATERIALS

- A. Acoustical panels.
 - 1. Material: Wood fibers bonded with inorganic hydraulic cement binder.
 - 2. Size: Two-inch (2") thick, factory-standard-width, beveled edge panels. Sizes per the Drawings.
 - 3. Fasteners: Stainless steel, approved by panel manufacturer.
 - 4. Color: Gray.

PART 3 – EXECUTION

3.1. INSPECTION

- A. Inspect the supporting structure and the conditions under which the work is to be erected.
- B. Building must be weather tight and dry.
- C. Mounting surface must be true, straight and planar.
- D. Do not proceed with erection until unsatisfactory conditions have been corrected.

3.2. INSTALLATION

- A. Install component parts level, plumb, true to line, and with uniform joints and reveals.
- B. Secure to structure with non-staining and non-corrosive shims, anchors, fasteners, spacers, and fillers.
- C. Anchor component parts securely in place as shown by mechanical attachment system, which will comply with performance requirements.
- D. Complete finishing of walls or ceilings prior to installation.
- E. Install panels: Directly over surface. (Type A mounting.)
- F. Use fasteners approved by the manufacturer. For overhead installation space fasteners as recommended by the manufacturer but in no case more than 12 inches on center along nailers and 24 inches on center at butt ends of panels.
- G. Minimize number and length of panel joints.

3.3. PROTECTION

- A. Protect panels from damage and dirt. Replace damaged or soiled panels.

END OF SECTION

SECTION 09900

PAINTING

PART 1 – GENERAL

1.1. DESCRIPTION

- A. This Section covers field painting, including surface preparation, finish coats, priming, piping identification, protection of surfaces, and related work.
 - 1. Surfaces shall have at least three (3) coats of paint, including primer, at conclusion of field painting unless otherwise specified.
 - 2. Apply number of coats required to obtain minimum dry film thicknesses specified.

1.2. QUALITY ASSURANCE

- A. Reference to federal or military specifications.
 - 1. Reference defines only general type and quality.
 - 2. Not intended to limit acceptable materials to an exact formulation.
- B. First field coat over shop-painted or previously-painted surfaces shall cause no wrinkling, lifting, or other damage to underlying paint.
- C. Apply paint compatible with underlying coats as recommended by paint manufacturer.
- D. Do not adulterate, thin, or add other material not included in the paint formulation.
- E. Consistency and Viscosity.
 - 1. Factory mix paint to proper consistency and viscosity for hot weather application without thinning.
 - 2. Thin paint only as necessary to obtain recommended coverage at lower application temperatures.
 - 3. Do not reduce wet film thickness of applied paint by addition of paint thinner, or for any other reason, below recommended coverage rate.
- F. Paint used for intermediate and finish coats shall be guaranteed by paint manufacturer to be:
 - 1. Mercury-free.
 - 2. Use lead-free paints if available.
 - 3. Taste and odor free in filter box and submerged locations.

1.3. SUBMITTALS

- A. Product and Color Selection.
 - 1. Submit color cards for paints proposed to be used.
- B. Submit complete descriptive specifications to ENGINEER for review.
 - 1. Include guarantee required under 1.2.F.

1.4. PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver paint to the job site in original, unopened containers with labels intact and include:
 - 1. Manufacturer's name.
 - 2. Type of paint.
 - 3. Manufacturer's stock number.
 - 4. Color.
 - 5. Instructions for reducing, where applicable.
- B. Store paint inside and do not allow to freeze.

1.5. JOB CONDITIONS

- A. Weather.
 - 1. Apply paint only when:
 - a. Surface and ambient temperatures are between fifty degrees Fahrenheit (50° F.) and ninety degrees Fahrenheit (90° F.) when using a water-thinned coating and between forty-five degrees Fahrenheit (45° F.) and ninety-five degrees Fahrenheit (95° F.) for other types of coatings.
 - b. The temperature is expected to stay above freezing in the period that the coating is to dry.
 - c. Metal temperature and atmospheric conditions will not cause condensation on surface of metal.
- B. Protection.
 - 1. Use drop cloths, tape, or other effective methods to protect surfaces from spraying, spattering, or spilling of paint.
 - 2. Remove paint deposited on surfaces which are not being painted at that time.
 - 3. Surface clean and spot paint with aluminum paint surfaces, except metals, when bituminous paints are spilled or dropped on them. Cover with specified paints.
 - 4. Exposed concrete or masonry not specified to be painted which is damaged by paint shall be:
 - a. Removed and rebuilt.
- C. CONTRACTOR is responsible for:
 - 1. Paint applied during wet, damp, or foggy weather or when windblown dust, dirt, debris, or insects will collect on freshly applied paint.
 - 2. Damage to painted surfaces prior to acceptance by OWNER.

PART 2 – PRODUCTS

2.1. MATERIALS

- A. Paints selected for each type surface shall be the system of a single manufacturer.

2.2. ACRYLIC ENAMEL, GLOSS; F.S. TT-E-489, CL. A.

- A. Surface Prep: SSPC-SP6, Commercial Blast.

- B. Use a vinyl wash primer as a pretreatment on all galvanized steel to be painted; no other primer required. Use a tie-coat if manufacturer recommends.
 - 1. Tnemec, 115 Uni-Bond DF Tneme-Grip.
 - 2. Sherwin-Williams, DTM Vinyl Wash Primer.
 - 3. Or equal.

- C. Primer for all other surfaces.
 - 1. Porter, U-Primer Red 284.
 - 2. Tnemec, N69-1255, Hi-Build Epoxoline II.
 - 3. Sherwin-Williams, ProIndustrial ProCryl Universal Primer.
 - 4. Or equal.

- D. Finish Coats.
 - 1. Porter, IA24 Semi-Gloss.
 - 2. Tnemec, 1028-Color, Enduratone.
 - 3. Sherwin-Williams SherCryl HPA.
 - 4. Or equal.

- E. Minimum dry film thickness in mils.

1.	Primer	3.0
2.	Finish	<u>3.0</u>
	TOTAL	5.0

2.3. EPOXY-POLYAMIDE ENAMEL

- A. Surface Prep and Primers: Follow manufacturer's recommendations:
 - 1. Concrete and Masonry: Brush-off blast clean concrete to remove laitance, form release agents, and other foreign matter. Test for moisture using plastic film method after not less than twenty-eight (28) days of concrete curing.
 - 2. Ductile Iron Pipe: Light commercial blast, SSPC-SP6.
 - 3. Steel and Cast Iron: Commercial blast, SSPC-SP10.

- B. Finish coats.
 - 1. Porter, MCR-43.
 - 2. Tnemec, Series N69, Hi-Build Epoxoline II.
 - 3. Sherwin-Williams Macropoxy 646 FC Epoxy
 - 4. Or equal.

- C. Minimum dry film thickness in mils.
 - 1. Primer: (If recommended by manufacturer).
 - 2. Finish Coats: If primer not used, use one (1) finish coat at 3.0 mils, plus top coat:

With Primer	TOTAL	10.0
Without Primer	TOTAL	11.0

2.4. ACRYLIC EPOXY SEMI-GLOSS

- A. Surface Prep: Follow manufacturer's recommendations.

- B. Primer:
 - 1. Tnemec, 151 Elasto-Grip FC.

2. Pittsburgh Paints, Polyamide Block Filler.
3. Sherwin Williams, Pro-mar 200 Latex Wall Primer.
4. Or equal.

C. Finish coats:

1. Tnemec, Series 113, Tneme-Tufcoat.
2. Pittsburgh Paints, Pitt-Glaze High Solids Acrylic-Epoxy Water-base.
3. Sherwin Williams, Water-Based Tile Clad Epoxy.
4. Or equal.

D. Minimum dry film thickness in mils.

- | | |
|-----------------|------------|
| 1. Primer | 2.0 |
| 2. Finish coats | <u>4.0</u> |
| TOTAL | 6.0 |

2.5. COAL TAR, MEDIUM CONSISTENCY or EPOXY POLYAMID-AMINE

A. Surface Prep: SSPC-SP6, commercial blast.

B. Primer: Self-priming unless manufacturer recommends use of a prime coat.

C. Finish Coats.

1. Koppers, Bitumastic Super Service Black.
2. Porter, Tarmastic 100.
3. Tnemec, 46-465 HB Tnemecol.
4. Or equal.

D. Minimum dry film thickness, 20 mils total.

2.6. SURFACES NOT TO BE PAINTED

A. Location schedule.

1. Exposed surfaces of aluminum, except ductwork.
2. Polished or finished stainless steel. Unfinished stainless steel shall be painted.
3. Nickel or chromium.
4. Galvanized surfaces, except piping, conduit, ductwork, and other items specifically noted.
5. Piping concealed in inaccessible plumbing chases and above suspended ceilings.
6. Rubber and plastics, including fiberglass reinforced plastics.
7. Acoustical panel ceilings.
8. Surfaces specified to be factory finished.

2.7. OTHER SURFACES

A. Factory-finished surfaces.

1. Touch up and repair damaged coating on pumps, motors, speed reducers, electrical control panels, lockers, casework, and all other items furnished with finish factory coating.
2. Use same or similar paint used by equipment manufacturer.

PART 3 – EXECUTION

3.1. SURFACE PREPARATION

- A. Surfaces to be painted shall:
 - 1. Be dry, free of dirt, dust, sand, grit, mud, oil, grease, rust, loose mill scale, or other objectionable substances.
 - 2. Meet strictest recommendations of paint manufacturer for surface preparation.
 - 3. Be free of oil and grease by use of solvents or detergents before mechanical cleaning is started.
 - 4. Be free of cracks, pits, projections, or other imperfections which would prevent formation of a smooth, unbroken paint film.
- B. Perform cleaning and painting operations in a manner which will prevent dust or other contaminants from settling on freshly painted surfaces.
- C. Remove gloss and dull the surface of previously painted surfaces for proper adhesion of top coats.
- D. Touch-up paint and repair of previously painted surfaces.
 - 1. Clean, sand, or wire brush such surfaces in a manner that edges of adjacent paint are feathered or otherwise smoothed.
 - 2. Touch-up and repair of painted surfaces shall not be noticeable when completed.
 - 3. Completely remove paint made brittle or otherwise damaged by heat of welding and repair as stated above.
- E. Ferrous Metal Surfaces.
 - 1. Scrape and wire brush weld surfaces to remove slag and weld spatter if not removed by specified surface preparation.
 - 2. Do not use tools which produce excessive roughness.
 - 3. Tightly adhering mill scale that cannot be lifted with a sharp knife need not be removed.
- F. Concrete Surfaces.
 - 1. Remove dirt, dust, efflorescence, oil or grease stains, or other foreign substances, by wire or fiber brushing or scrubbing, scraping, or other appropriate methods.
 - 2. Use a solvent or detergent to remove oil or grease prior to mechanical cleaning.
- G. Concrete Block Surfaces.
 - 1. Point voids and openings.
- H. Wood Surfaces.
 - 1. Sand smooth.
 - 2. Wipe off dust before painting.
- I. Gypsum surfaces.
 - 1. Surface to be clean and dry.
- J. Copper Tubing.
 - 1. Remove flux residue from joints.

2. Remove gloss with fine grade sandpaper to improve bond.
3. Wipe tubing and joints with a clean rag soaked in xylol immediately before painting.

K. PVC Plastic.

1. Remove wax and oil by wiping with a solvent of type used for specified primer.
2. Remove gloss with fine grade sandpaper.

L. Hardware.

1. The following items need not be cleaned prior to painting if there is no evidence of dirt, corrosion, oil or grease film, or other foreign material.
 - a. Hardware and hardware items such as bolts, screws, washers, springs, and grease fittings.

3.2. FIELD PRIMING

A. Surfaces of equipment, steel, and ductile iron.

1. Prime surfaces that have not been shop primed.
2. Remove shop coatings that are damaged or have failed and field prime surfaces.

3.3. LOCATION SCHEDULE

Painting System	Locations
1. Acrylic-Enamel Gloss	<ul style="list-style-type: none"> a. All surfaces of structural and miscellaneous steel exposed in <u>exterior</u> locations. (Galvanized surfaces are not to be painted unless noted). b. Exposed surfaces of hoists.
2. Acrylic-Enamel, Semi-Gloss	<ul style="list-style-type: none"> a. All surfaces of structural and miscellaneous steel exposed <u>inside buildings</u>. (Galvanized surfaces are not to be painted). b. All exposed surfaces of electrical conduit <u>inside buildings</u>, including fittings, boxes, supports, and accessories therefore, after proper priming on the ground floor. c. Surfaces of ductwork exposed inside buildings after proper priming.
3. Epoxy-Polyamide, Enamel	<ul style="list-style-type: none"> a. All concrete and concrete block surfaces (except for floor surfaces and areas designated on Drawings or in Specifications to receive other finishes which are exposed to view in <u>interior</u> locations on the ground floor. b. All exposed surfaces of pumps, motors, speed reducers, and other machines and equipment, metal cabinet enclosures. c. All exposed surfaces of new and existing ductile iron, copper, and steel piping <u>inside buildings</u>, including valves, fittings, flanges, bolts, supports, and accessories therefore.
4. Acrylic Epoxy, Semi-Gloss	<ul style="list-style-type: none"> a. Gypsum wallboard ceilings and walls which are exposed to view in <u>interior</u> locations.
5. Coal Tar, Medium Consistency	<ul style="list-style-type: none"> a. All metal surfaces, unless otherwise specified, which will be buried, all or in part, including valves and valve boxes and bolted pipe fittings and harnesses laid in the ground. b. All exterior surfaces of ductile iron piping exposed in manholes, valve vault, and similar locations, including valves, fittings, flanges, bolts, supports, and accessories. c. Miscellaneous cast iron castings, if not foundry- dipped, use one (1) coat only including manhole rings and covers.

3.4. PIPING IDENTIFICATION

- A. Identify exposed existing and new piping with lettering or tags designating service of each piping system.
 - 1. Provide flow directional arrows.
 - 2. Completely paint with indicated colors piping scheduled for color coding, except surfaces specified to be unpainted shall have segments painted with specified coding color long enough to accommodate required lettering and arrows.
 - 3. Paint other piping not specified to be coded to match adjacent surfaces, unless otherwise designated by ENGINEER.

- B. Lettering Location.
 - 1. Provide lettering and flow direction arrows as follows:
 - a. Near equipment served.
 - b. Adjacent to valves.
 - c. Both sides of walls and floors where pipe passes through.
 - d. At each branch or tee.
 - e. At intervals of not more than twenty-five feet (25') in run of pipe.
 - 2. If, in the opinion of the ENGINEER, the foregoing requirements result in an excessive number of labels or arrows on a run of pipe, the number required may be reduced as directed in the field.

- C. Metal Tags.
 - 1. Tag and chain materials: Aluminum or stainless steel.
 - 2. Provide metal tags instead of lettering where the outside diameter of pipe or pipe covering is five-eighths-inch (5/8") or smaller.
 - 3. Stamp-in or engrave identifying lettering on tags and fasten to the pipe with suitable chains.
 - 4. Color code pipes even when metal tags are used.

- D. Lettering.
 - 1. Paint, stencil, or use snap-on markers on piping.
 - 2. Snap-on markers.
 - a. Plastic sleeves equivalent to Seton Name Plate "Setmark."
 - 3. Letter size, as follows:

Outside Diameter of Pipe or Covering	Minimum Height of Letters
5/8 inch and smaller	Metal tags – 1/4 inch
3/4 inch through 4 inch	3/4 inch
5 inch and larger	2 inches

- E. Color Coding and Lettering Schedule.
 - 1. Color code piping for following services.
 - 2. Use six-inch (6") wide bands spaced along pipe at five-foot (5'-0") intervals, where bands are scheduled.

Letter	Color of Pipe	Color of Letters
Alum Solution	Orange (SW4083)	Black
Backwash Waste	Light Brown (SW4003)	Black
Carbon Solution	Black	White
Chlorine (gas, liquid, or vent)	Yellow (SW4084)	Black
Chlorine (solution)	Yellow with Red Band (SW4084 & SW4081)	Black
Compressed Air	Dark Green (SW4071)	White
Drain	Dark Gray (SW4025)	White
Fluoride Solution	Light Blue with Red Band (SW4061 & SW4081)	Black
Grease	Black with Yellow Band (Black & SW4084)	White
Lime Solution	Light Green (SW4069)	Black
Natural Gas	Red (SW4081)	White
Polymer	Light Brown with Red Bands (SW4003 & SW4081)	Black
Potable Water (Hot or Cold)	Dark Blue (SW4086)	White
Raw Water	Olive Green (SW4070)	Black
Sample	Light Gray with Green Band (SW4019 & SW4071)	Black
Sewer and Waste	Dark Gray (SW4025)	White
Sludge	Dark Brown (SW4009)	White
Other Lines	Light Gray (SW4019)	Black

3. Paint electrical conduits to match adjacent ceiling or wall surfaces.
4. Paint vent lines to match surfaces they adjoin.
5. Special, paint the following items:

Item	Color
Hoists, hooks, and blocks	Yellow and black stripes (SW4084 & Black)
Valve handwheels and levers	Red (SW4081)

6. Paint equipment designations and numbers on or adjacent to equipment which is identified on Drawings by equipment designations.
 - a. Pumps.
 - b. Valves.
 - c. Flow-meters.
 - d. Other items of equipment identified on Drawings.
 - e. Paint numbers of at least two inches (2") high or as designated by ENGINEER.
 - f. Do not paint designations on pipe hangars, roof drains, and other non-operable items.

3.5. APPLICATION

- A. Apply paint in a neat manner, with finished surfaces free of runs, sags, ridges, laps, and brush marks.
 1. Tint the first top coat differently from the finish top coat if the same paint is to be used to assure complete coverage.
 2. Paint all exposed surfaces, including sides and edges.
- B. Do not apply successive coats until each previous paint coat is hard and dry through entire paint film.
 1. Apply each coat in a manner that will produce an even film of uniform and proper thickness.
 2. Do not apply any coat at a rate of coverage per gallon which is greater than maximum rate recommended by manufacturer.
 3. Avoid paint films showing runs, sags, ridges, laps, brush marks, checks, blisters, teardrops, or fat edges.
 - a. Remove paint containing such defects and repaint.
- C. Priming.
 1. Provide a brush coat of primer to edges, corners, crevices, welds, bolts, and nuts before painting of metal surfaces.
 2. Give special attention to filling crevices.
- D. Repaint abraded and otherwise damaged portions of shop-applied paint.
- E. Welded seams and other uncoated surfaces.
 1. Use specified primer on:
 - a. Welded seams and other uncoated surfaces.
 - b. Field installed bolts, nuts, and washers.
 - c. Surfaces where paint has been damaged by heat.
 2. Do not apply finish coats to patch, spot, or touch-up painting until prime coat is dry and hard.

3.6. FIELD QUALITY CONTROL

- A. Mixing and Thinning.
 1. Thoroughly mix paint each time any is withdrawn from container.
 2. Keep paint containers tightly closed except when withdrawing paint.

3. Thin only as necessary to obtain recommended coverage at lower application temperatures.
 4. Wet film thickness of applied paint shall not be reduced:
 - a. By addition of paint thinner or otherwise.
 - b. Below that represented by the recommended coverage rate.
- B. ENGINEER shall measure all coating systems with a film gauge to verify that minimum specified thicknesses have been obtained.

END OF SECTION

