

SECTION 23 05 53

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Related Documents: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Work Included:
 - 1. Prepare and paint Division 23 equipment, accessories, ductwork, piping and miscellaneous materials located in Equipment Rooms, Boiler Rooms, pipe trenches and other utility areas housing mechanical equipment and materials.
 - 2. Identification of piping in exposed and accessible locations.
 - 3. Marking and designation of equipment.
- C. Work Not Included:
 - 1. Painting of ductwork, piping or equipment located on the building exterior.
 - 2. Painting of ductwork, piping or equipment exposed in finished areas other than those listed under WORK INCLUDED above.
- D. Related Sections:
 - 1. Section 09 90 00 – Painting and Coating
 - 2. Section 23 00 10 – HVAC General Requirements
 - 3. Section 23 05 00 – Common Work Results for HVAC
 - 4. Section 23 07 00 – HVAC Insulation
 - 5. Section 23 20 00 – HVAC Piping and Pumps
 - 6. Section 23 30 00 – HVAC Air Distribution
 - 7. Section 23 70 00 – Central HVAC Equipment
 - 8. Section 23 80 00 – Decentralized HVAC Equipment
 - 9. Division 26 - Electrical

1.2 REFERENCED STANDARDS:

- A. General: The following standards or codes (latest edition) form a part of this specification to the extent indicated by the reference thereto.
- B. American National Standards Institute (ANSI):
 - 1. ANSI A13.1 Scheme for Identification of Piping Systems

- C. American Society for Testing and Materials (ASTM):
 - 1. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
 - 2. ASTM C 411 Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation
- D. National Fire Protection Association (NFPA):
 - 1. Standard 255 Method of Test of Surface Burning Characteristics of Building Materials
- E. Underwriters Laboratories, Inc. (UL)
 - 1. Standard 723 Tests for Surface Burning Characteristics of Building Materials
- F. California Department of Health Services
 - 1. Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Except as otherwise specified, materials shall be the products of the following manufacturers:
 - 1. Sherwin-Williams
 - 2. Pratt and Lambert
 - 3. Pittsburgh Paints (PPG)
 - 4. Benjamin Moore
 - 5. Porter Paints
 - 6. Seton Identification Products

2.2 MATERIALS:

- A. Deliver all paints and materials to the project site in their unopened original containers with all labels intact and legible at the time of use.
- B. All coatings exposed to supply and return airstreams and where applied to exposed surfaces in a return air plenum, shall have a composite flame spread rating not exceeding 25, and a smoke developed rating not exceeding 50 as tested under procedure ASTM E-84-75, NFPA 255 and UL 723. Coatings shall not flame, glow, smolder or smoke when tested in accordance with AS
- C. TM C411, latest edition.

- D. Sherwin-Williams Industrial Maintenance Coatings System 4000 products are listed below to establish color and a standard of quality.
1. All Hangers and Supports: One coat Series 54 Gloss Black Alkyd Enamel.
 2. All major items of equipment and equipment supports including boilers, compressors, pumps, tanks, air handling units, condensers, fans and all other similar items shall be painted as follows:
 - a. Uninsulated hot surfaces on equipment, operating at or above 150°F, shall be painted with two coats of No. B59S8 Heat Resistant Aluminum.
 - b. Other equipment surfaces of aluminum, iron and steel shall be primed with one coat of No. B50Y1 Zinc Chromate Primer. Galvanized surfaces shall be chemically prepared and primed with one coat of Galvite B50W3 Primer. Field insulated surfaces shall be primed with No. B28W200 Wall Primer. Where equipment is furnished with factory prime or finish coat, only patch priming is required at any damaged areas before finish coats are applied. Finish all equipment with two coats of Series 54 Alkyd Gloss Enamel, No. SW4063 Robotic Blue. Exterior of belt guards and other protective guards shall be finished with two coats of Series 54 Alkyd Gloss Enamel, No. SW4084 safety yellow color. Interior of and all items covered by belt guards and other protective guards shall be finished with two coats of No. SW4083 safety orange color.
 - c. Nameplates and Testing Agency Labels on equipment or machinery shall not be painted.
 3. Ducts:
 - a. Interior duct behind all grilles, registers and diffusers shall be painted with one coat of flat black prime or flat black finish paint.
 - b. Exposed in equipment rooms and other unfinished areas such as storage areas and utility type spaces; uninsulated galvanized steel ducts shall be chemically prepared and primed with one coat of Galvite B50W3 Primer. Aluminum ducts and insulated ducts with aluminum jacket shall be primed with one coat of No. B50Y1 Zinc Chromate Primer. Canvas or paper insulation jacket shall be primed with one coat of No. B28W200 Wall Primer. Finish with Series 54 Alkyd Gloss Enamel, gray No. SW4028 Gypsum applied in sufficient number of coats to effectively cover the prime coat.
 4. Piping: Exposed in equipment rooms and where connections are made to equipment located in storage rooms and other utility type areas.
 - a. Priming:
 - 1) Insulation Canvas or Paper Jacket: One coat No. B28W200 Wall Primer.

- 2) Insulation Aluminum Jacket: One coat No. B50Y1 Zinc Chromate Primer.
 - 3) Bare Iron or Steel or Copper: One coat No. B50Y1 Zinc Chromate Primer.
 - 4) Galvanized Steel: Pipes and ductwork shall be chemically prepared and primed with one coat of Galvite B50W3 Primer.
 - 5) Asphalt Coated Pipe: One coat No. B28W200 Wall Primer.
- b. Finish: All pipe lines and the supports or hangers therefore, shall be finished with Series 54 Alkyd Gloss Enamel, gray No. SW4028 Gypsum applied in sufficient number of coats to effectively cover the prime coat. Painting of pipe hangers is specified hereinbefore.
 - c. Materials shall be as recommended by the manufacturer for the surface to be finished.
 - d. Unless otherwise specified, primer shall be by the same manufacturer as the finish coat.
 - e. Materials shall not be thinned or cut except as recommended by the coating manufacturer. Thinners shall be by the same manufacturer as the primer and finish coat.
- E. Valve tags ([S]) shall be neat circular brass with designations stamped thereon, attached with solid brass jack chain to each valve stem or handle.
- F. Each item of equipment such as pumps, air handlers, etc., and equipment control devices such as motor starters, disconnect switches, etc. shall be properly marked with laminated engraved plastic nameplates ([S]) fastened with sheet metal screws, bolts or permanent adhesive. Pressure sensitive tape is not acceptable.
- G. All piping, insulated and uninsulated, shall be identified ([S]) with Seton Setmark or equal wrap around piping system markers and arrow flow directional marker. Markers shall be pre-coiled, semi-rigid plenum-rated plastic or polyester with sealed color graphics. Markers shall be minimum 12 inches long with 1-¹/₄ inch high letters, formed to cover entire circumference of the pipe. Markers shall be attached to piping using plenum-rated plastic tie wraps. Pipe identification shall use the same designations or abbreviations used on the drawings. Marker colors shall be in accordance with ANSI.
- H. For field applications within the weatherproofing system, all paints, adhesives and sealants shall comply with the requirements of the California Health Services Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers.

PART 3 - EXECUTION

3.1 WORKMANSHIP:

- A. The work shall be accomplished by qualified mechanics skilled in the painting trade. Painting of equipment, piping, ductwork and other materials shall not commence until

all testing is complete and systems are ready for operation. Materials shall be applied according to manufacturer's directions. All containers shall be securely closed when not in use. Flammable materials shall not be stored on premises. Flammable waste shall be disposed of daily in devices approved for such purposes. Materials shall be evenly spread, and smoothly flowed on without runs or sags. Each coat shall be thoroughly dry before application of succeeding coats.

3.2 PROTECTION OF WORK:

- A. The painters shall protect all adjacent surfaces with drop covers during the process of painting. Upon completion, paint spots, if any, shall be removed from all surfaces.

3.3 PREPARATION OF SURFACE:

- A. Surfaces to be painted shall be completely dry before applying paint. Metal surfaces shall be cleaned with mineral spirits before applying materials. Rust and scale shall be removed by wire brushing or sanding. Galvanized surfaces shall be chemically pretreated with crystalline (zinc phosphate) phosphate in strict accordance with the manufacturer's recommendations. Surfaces shall not be painted when the temperature is, or is likely to be, near the freezing point, nor when they are exposed to hot sun.

3.4 IDENTIFICATION OF PIPES AND EQUIPMENT:

- A. Equipment: After all other painting is completed, each piece of equipment shall be properly identified with nameplates. Identification symbols and designations shall be the same as shown on the Contract Documents. Where equipment is installed above lay-in ceilings (VAV boxes, cabinet unit heaters, fan coil units, dampers, or similar), an additional plastic nameplate shall be adhered to the face of the T-bar support so that it can be identified from within the space.
- B. Apply piping system markers after completion of required insulation and finishes on piping systems. Markers shall be applied in the following locations and where identified by the Engineer:
 1. At each valve and at connection to equipment.
 2. At every tee and branch connection.
 3. At each riser including branch risers from mains.
 4. At each side of a pipe passage through floors, walls and partitions.
 5. Every 15 feet on straight runs of piping mains and branches.
 6. Within 6 feet of elbows (each side).
 7. At access doors or similar points that permit view of concealed piping.
 8. Markers shall be provided on all piping above lay-in ceilings.
 9. Provide arrow markers showing direction of flow incorporated into, or adjacent to, each piping system marker.
 10. Apply all piping system markers where view is unobstructed, and legends can be read and easily identified.
 11. Apply all tags and piping system markers in accordance with the supplier's instructions.

END OF SECTION 23 05 53