

**SECTION 23 82 16**  
**AIR COILS**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

Heating and cooling coils for air handling unit and duct applications.

**1.2 RELATED WORK**

- A. Section 23 05 11, COMMON WORK RESULTS FOR HVAC AND STEAM GENERATION.
- B. Section 23 73 00, INDOOR CENTRAL-STATION AIR-HANDLING UNITS.

**1.3 QUALITY ASSURANCE**

- A. Refer to paragraph, QUALITY ASSURANCE, Section 23 05 11, COMMON WORK RESULTS FOR HVAC AND STEAM GENERATION.
- B. Unless specifically exempted by these specifications, heating and cooling coils shall be tested, rated, and certified in accordance with ARI Standard 410 and shall bear the ARI certification label.

**1.4 SUBMITTALS**

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Literature and Data for Heating and Cooling Coils: Submit type, size, arrangements and performance details. Present application ratings in the form of tables, charts or curves.
- C. Provide installation, operating and maintenance instructions.
- D. Certification Compliance: Evidence of listing in current ARI Directory of Certified Applied Air Conditioning Products.
- E. Coils may be submitted with Section 23 73 00, INDOOR CENTRAL-STATION AIR-HANDLING UNITS.

**1.5 APPLICABLE PUBLICATIONS**

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. Air Conditioning and Refrigeration Institute (ARI):  
Directory of Certified Applied Air Conditioning Products  
ARI 410-02.....Forced-Circulation Air-Cooling Air-Heating  
Coils.
- C. American Society for Testing and Materials (ASTM):  
B75/75M-02.....Seamless Copper Tube (Metric)
- D. National Fire Protection Association (NFPA):  
70-05.....National Electric Code

- E. National Electric Manufacturers Association (NEMA):  
250-03.....Enclosures for Electrical Equipment (1,000 Volts  
Maximum)
- F. Underwriters Laboratories, Inc. (UL):  
1996-01.....Electric Duct Heaters

## **PART 2 - PRODUCTS**

### **2.1 HEATING AND COOLING COILS**

- A. Conform to ASTM B75 and ARI 410.
- B. Tubes: Minimum 16 mm (0.625 inch) tube diameter; Seamless copper tubing.
- C. Fins: 0.1397 mm (0.0055 inch) aluminum or 0.1143 mm (0.0045 inch) copper mechanically bonded or soldered or helically wound around tubing.  
Provide copper fins for sprayed coil applications and reheat coils for Operating Rooms.
- D. Headers: Copper, welded steel or cast iron. Provide seamless copper tubing or resistance welded steel tube for volatile refrigerant coils.
- E. "U" Bends, Where Used: Machine die-formed, silver brazed to tube ends.
- F. Coil Casing: 1.6 mm (16 gage) galvanized steel with tube supports at 1200 mm (48 inch) maximum spacing. Construct casing to eliminate air bypass and moisture carry-over. Provide duct connection flanges.
- G. Pressures kPa (PSIG):

Pressure	Water Coil	Steam Coil	Refrigerant Coil
Test	2070 (300)	1725 (250)	2070 (300)
Working	1380 (200)	520 (75)	1725 (250)

- H. Protection: Unless protected by the coil casing, provide cardboard, plywood, or plastic material at the factory to protect tube and finned surfaces during shipping and construction activities.
- I. Vents and Drain: Coils that are not vented or drainable by the piping system shall have capped vent/drain connections extended through coil casing.
- J. Cooling Coil Condensate Drain Pan: Section 23 73 00, INDOOR CENTRAL-STATION AIR-HANDLING UNITS.

### **2.2 STEAM DISTRIBUTING TUBE COILS**

- A. Conform to ASTM B75 and ARI 410.
- B. Minimum 9.5 mm (3/8-inch) steam distributing tubing installed concentrically in 25 mm (one-inch) OD condensing coil tubes.

### **2.3 INTEGRAL FACE AND BYPASS TYPE STEAM COIL**

- A. Exempt from ARI Test and Certification.
- B. Conform to ASTM B75 and ARI 410.

- C. Minimum 16 mm (5/8-inch) steam tube installed in concentrically 25 mm (one-inch) OD diameter tube.
- D. Casing: 1.9 mm (14 gage) galvanized steel with corrosion resistant paint.
- E. Tubes and Bypasses: Vertical or horizontal.
- F. Dampers: Interlocking opposed blades to completely isolate coil from air flow when unit is in bypass position; 1.6 mm (16 gage) steel, coated with factory applied corrosion resistant baked enamel finish. Provide damper linkage and electric operators.

#### **2.4 WATER COILS, INCLUDING GLYCOL-WATER**

- A. Drainable Type (Self-Draining, Self-Venting); manufacturer standard:
  - 1. Cooling, all types.
  - 2. Heating or preheat.
- B. Cleanable Tube Type; manufacturer standard:
  - 1. Well water applications.
  - 2. Waste water applications.

#### **2.5 VOLATILE REFRIGERANT COILS**

- A. Continuous circuit, straight tubes, dry expansion type equipped with multi-port distribution header, less expansion valve.
- B. Minimum 16 mm (5/8-inch) tube diameter.
- C. Designed for R22 or other EPA approved refrigerants.

### **PART 3 - EXECUTION**

#### **3.1 INSTALLATION**

- A. Follow coil manufacturer's instructions for handling, cleaning, installation and piping connections.
- B. Comb fins, if damaged. Eliminate air bypass or leakage at coil sections.

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