

**15 214 ARGON PIPING**

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**PART 1 GENERAL****RELATED DOCUMENTS**

10 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**SUMMARY**

15 Related Sections include the following:

- A. Division 15 Section "Meters and Gages" for thermometers, pressure gages, and fittings.

**SUBMITTALS**

20 Product Data: For the following:

- A. Special-purpose valves.

25 Piping Certification: Certificates of compliance with ASTM B 819 for precleaned copper tubing.

Certificates of inspections and tests specified in "Field Quality Control" Article in Part 3 of this Section.

30 Maintenance Data: For special-duty valves and specialties to include in maintenance manuals specified in Division 1.

**QUALITY ASSURANCE**

Source Limitations: Obtain vacuum specialties through one source from a single manufacturer.

35 Listing and Labeling: Provide electrically operated specialties specified in this Section that are listed and labeled.

- A. Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.

**40 DELIVERY, STORAGE, AND HANDLING**

Deliver and store large piping specialties on shipping skids, small specialties in containers, and piping with end protection.

45 Store precleaned and sealed pipe, fittings, valves, and specialties with sealing plugs and sealing packaging intact.

50 Label pipe, fittings, valves, and specialties that have not been precleaned, and that have been precleaned but have seal or packaging that is not intact, with temporary labels indicating that cleaning is required before installation.

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**PART 2 PRODUCTS**

**PIPES AND TUBES**

General: Applications of the following pipe and tube materials are indicated in Part 3 "Piping Applications" Article.

Medical Gas, Copper Tube: ASTM B 819, seamless, drawn temper, factory cleaned for medical gas service, purged, and with ends sealed.

**PIPE AND TUBE FITTINGS**

General: Applications of the following pipe and tube fitting materials are indicated in Part 3 "Piping Applications" Article.

Precleaned, Wrought-Copper Fittings: ASME B16.22, solder-joint, pressure type. Fittings may be factory cleaned, purged, and sealed according to ASTM B 819 or field cleaned, purged, and sealed as specified below in "Preparation" Article.

Wrought-Copper Fittings: ASME B16.22, solder-joint, pressure type.

Bronze-Tube Flanges: ASME B16.24, Class 300.

Flexible Pipe Connectors: Bronze hose, covered with bronze wire braid with copper-tube or bronze-flanged ends brazed to hose.

**JOINING MATERIALS**

General: Applications of the following piping joining materials are indicated in Part 3 "Piping Applications" Article.

Brazing Filler Metals: AWS A5.8, BCuP copper-phosphorus-series alloys. Flux is prohibited unless used with bronze fittings.

Threaded-Joint Tape: PTFE plastic.

Gasket Material: ASME B16.21, nonmetallic, flat, asbestos free, and suitable for oxygen service.

**SPECIAL-DUTY VALVES**

Ball Valves, 4-Inch NPS (DN100) and Smaller: MSS SP-110, Class 150, 600-psig (4140-kPa) CWP, ASTM B 584 bronze body and bonnet, 3-piece, bolted-body construction; chrome-plated brass ball, full port; blowout proof; bronze or brass stem; PTFE or TFE seats and seals; threaded or solder-joint end connections; and vinyl-covered steel lever handle with locking device.

Check Valves, 4-Inch NPS (DN100) and Smaller: Bronze-body, straight-through pattern, spring-loaded ball check valve, designed for 300-psig (2070-kPa) minimum working pressure.

Safety Valves: Bronze body with settings to match system requirements.

A. Pressure Safety Valves: ASME construction and labeled.

B. Vacuum Relief Valves: Specialty manufacturer's option.

Pressure Regulators: Brass or bronze body and trim; spring-loaded, diaphragm-operated, relieving type; manual pressure-setting adjustment; rated for 250-psig (1725-kPa) minimum inlet pressure; and capable of controlling delivered pressure within 0.5 psig for each 10-psig (5.0 kPa for each 100-kPa) inlet pressure.

**TEST GASES**

Nitrogen for Pressure Testing: CGA G-10.1, oil free, dry, and at least Grade D.

Nitrogen for Flow Testing: CGA P-9, oil free and dry.

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### **PART 3 EXECUTION**

#### **PREPARATION**

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Cleaning: If factory-precleaned and -capped piping is unavailable or if precleaned piping must be recleaned because of exposure, follow procedures for alkaline washing and meet cleanliness requirements in ASTM B 819.

15 Protect cleaned piping before and during installation.

#### **PIPING APPLICATIONS**

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Argon Piping: Precleaned, medical gas, copper tube with precleaned, wrought-copper fittings and brazed joints.

#### **PIPING INSTALLATION**

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Refer to Division 15 Section "Basic Mechanical Materials and Methods" for basic piping installation and joint construction.

Install piping next to equipment, accessories, and specialties to allow service and maintenance.

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Transition and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.

Flanges may be used on aboveground piping, unless otherwise indicated.

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Install supports and anchors according to Division 15 Section "Hangers and Supports."

Spacing between Hangers: As described in NFPA 99 and NFPA 99C.

Valve Applications: Use ball valves specified in this Section for main shutoff and zone valve duties.

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Install thermometers and pressure gages according to Division 15 Section "Meters and Gages."

Purge piping using oil-free, dry nitrogen after installing piping but before connecting to service-outlet valves, alarms, and gages.

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#### **PIPING SPECIALTY INSTALLATION**

Install piping specialties according to NFPA 99 and NFPA 99C.

#### **CONNECTIONS**

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Connect piping to equipment, accessories, and specialties with unions. Install with ball valve.

#### **LABELING AND IDENTIFICATION**

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Install labeling on piping, valves, valve-box covers, air manifolds, and alarm panels according to NFPA 99 and NFPA 99C.

Refer to Division 15 Section "Mechanical Identification" for labeling and identifying materials.

### **FIELD QUALITY CONTROL**

5 Argon Piping Tests: Perform the following:

- A. System Clearing: Purge piping using oil-free, dry nitrogen after installing piping but before installing service outlets, alarms, and gages.
- 10 B. Pressure Test: Subject each section of piping to test pressure of 150 to 200 psig (1035 to 1380 kPa). Maintain test until joints are examined for leaks by means of soapy water.
- C. Standing-Pressure Test: Install assembled system components after testing individual piping systems as specified above. Subject systems to 24-hour standing-pressure test at 20 percent above normal line pressure, but not less than 66 psig (455 kPa).
- 15 D. Repair leaks and defects with new materials and retest system until satisfactory results are obtained.
- E. Repair systems and replace components that fail tests specified.

Certification: Certify that specified inspections, tests, and procedures have been performed and report results. Include the following:

- 20 A. Inspections performed.
- B. Procedures, materials, and gases used.
- C. Test methods used.
- 25 D. Results of tests.

30 **END OF SECTION**