

SECTION 15531

REFRIGERANT PIPING AND SPECIALTIES

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Tube, Fittings and Joints.
2. Refrigeration Specialties.

B. Related Sections:

1. Section 15010 - Basic Mechanical Requirements.
2. Section 15050 - Basic Mechanical Materials and Methods.
3. Section 15650 - Refrigeration.
4. Section 15790 - Air Coils: Refrigeration Coils.

1.02 REFERENCES

A. American National Standards Institute (ANSI):

ANSI B9.1 "Safety Code for Mechanical Refrigeration"
(also known as ANSI/ASHRAE 15).

ANSI B31.5 "Refrigeration Piping", and extend applicable lower pressure limits to pressures below 15 psig.

B. American Welding Society (AWS).

C. American Society for Testing and Materials (ASTM).

1.03 SYSTEM DESCRIPTION

A. Design Requirements:

1. Refrigerants:

- a. This refrigerant piping guide section is written for the typical small project using Group I Refrigerants which are negligibly toxic and non-flammable. The use of HCFC refrigerants is discouraged and the use of CFC refrigerants is unacceptable. Specify refrigerants such as R134a, R410A, and R407C when possible.

**LEED EAp3: CFC Reduction in HVAC&R Equipment and EAc4: Ozone Depletion:
Meet requirements.**

2. Piping:

- a. Specify Type ACR Copper Tube with brazed joints as applicable. Use 15% silver solder.
3. Oil Traps:
 - a. Ascertain that oil traps are not required and design piping to avoid their use whenever possible.
4. Accessory Equipment to include:
 - a. Filter-Drier for liquid line of adequate size, and replaceable if available.
 - b. Sight glass moisture indicator installed in the liquid line at a convenient and accessible location.
 - c. Liquid solenoid valve located near the expansion valve on systems using coil pump-down.
 - d. Service hand valves shall be required on small and extensive or large refrigerant systems. They shall be located for component isolation purposes during normal maintenance.
 - e. Liquid charging port and service valve installed in the liquid line on large systems.
 - f. Oil separators required if evaporator is below 0 degree F and located below condensing unit.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Three year minimum installation experience on projects with refrigeration piping system work similar in scope and nature to that required for the project.

PART 2 - PRODUCTS

2.01 PIPING MATERIALS

A. Line sets are not allowed.

B. Tube, Fittings and Joints:

1. Tube Material:

- a. Size 3/4" and smaller: Soft annealed temper copper tube.
- b. Size 7/8" through 4-1/8": Hard drawn temper copper tube.

2. Type ACR.

3. Fittings: Wrought-copper, solder-joints, ANSI B16.22

4. Joints: Brazed or soldered with material having shear strength of 10,000 PSI or greater.

2.02 REFRIGERANT VALVES

A. Globe and Check Valves:

1. Manufacturers:
Henry Valve Co.
Parker Hannifin Corp.
Singer
Sporlan Valve Co.

B. Solenoid Valves:

1. Manufacturers:
Alco Controls Division, Emerson Electric Co.
Automatic Switch Co.
Sporlan Valve Co.

C. Refrigeration Accessories (Strainers, Moisture-Liquid Indicators, Filter-Driers, Evaporator Pressure Regulators, Discharge Line Mufflers, Expansion Valves, Superheat Adjustment):

1. Manufacturers:
Alco Controls Division, Emerson Electric Co.
Henry Valve Co.
Parker Hannifin Corp.
Sporlan Valve Co.

2.03 COMPRESSORS

- A. Specify 5-year extended warranty.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Specify that it is not acceptable to vent to atmosphere when using refrigerant for testing systems.
- B. In general for project specifications, remove "Design Requirements" sub-paragraph A in Part 1, paragraph 1.02 "System Description" of this Design Guide and use list to expand on specific requirements of installation for each product specified.
- C. Specify condensate pans which slope toward drain.
- D. Pressure Test – System shall hold 150 psi nitrogen charge for a 24-hour period, and be inspected by HVAC representative.
- E. Evacuation – System shall be evacuated to 250 microns, and inspected by HVAC representative.

END OF SECTION