

## 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