**Section 215.45 Piping, Tubing and Fittings**

a) All piping, tubing and fittings shall be made of steel or other material suitable for anhydrous ammonia service. Brass, copper or galvanized steel pipe or tubing shall not be used. Cast iron fittings shall not be used. Those parts of valves that are subjected to gas pressure shall be made of steel, ductile (nodular) iron, or malleable iron. Ductile iron shall meet the requirements of ASTM A395 and malleable iron the requirements of ASTM A47.

b) All piping, tubing, and fittings shall be designed for a pressure no less than the maximum pressure to which they will be subjected in service.

c) All piping shall be supported to prevent damage to the pipes. Provisions shall be made for expansion, contraction, jarring, vibration and settling. All refrigeration system piping shall conform to the Refrigeration Piping Code (ASME B31.5) as it applies to anhydrous ammonia.

d) Piping used on non-refrigerated systems shall be at least ASTM A53 Grade B seamless or electric resistance welded pipe. Pipe joints shall be threaded, welded or flanged. Pipe shall be at least Schedule 40 when joints are welded or welded and flanged. Pipe shall be at least Schedule 80 when joints are threaded. Threaded nipples shall be seamless. Welding shall be done by a certified welder.

e) Metal, flexible connections may be used for permanent installations to provide for expansion, contraction, jarring, vibrating and settling. In no case shall the angle of the connection exceed 15 degrees. The connection used for non-refrigerated installations shall have a minimum working pressure of 350 psig and a minimum burst pressure of 1750 psig.

f) Adequate provisions shall be made to protect all exposed piping from physical damage that might result from impact by moving machinery, automobiles or trucks, or any other equipment at the facility. Underground piping is allowable.

g) Joint compounds shall be resistant to ammonia at the maximum pressure and temperature to which they may be subjected in service.

h) After assembly, all piping, fittings, and tubing shall be tested and proved to be free from leaks at a pressure no less than the normal operating pressure of the system.

(Source: Amended at 40 Ill. Reg. 8704, effective July 1, 2016)