

WAC 296-307-40031 What requirements apply to the transfer of liquids?

(1) Anhydrous ammonia must always be at a temperature suitable for the material of construction and design of the receiving containers. Ordinary steels are not suitable for refrigerated ammonia. See Appendix R of API Standard 620 "Recommended Rules for Design and Construction of Large Welded Low-Pressure Storage Tanks" for materials for low temperature service.

(2) At least one attendant must supervise the transfer of liquids from the time the connections are first made until they are finally disconnected.

(3) Flammable gases or gases that will react with ammonia (such as air) must not be used to unload tank cars or transport trucks.

(4) Containers must be charged or used only on authorization of the owner.

(5) Containers must be gauged and charged only in the open atmosphere or in buildings approved for that purpose.

(6) Pumps used for transferring ammonia must be recommended and labeled for ammonia service by the manufacturer.

(a) Pumps must be designed for at least 250 psig working pressure.

(b) Positive displacement pumps must have installed, off the discharge port, a constant differential relief valve discharging into the suction port of the pump through a line large enough to carry the full capacity of the pump at relief valve setting. The setting and installation must be according to the pump manufacturer's recommendations.

(c) On the discharge side of the pump, before the relief valve line, there must be a pressure gauge graduated from 0 to 400 psig installed.

(d) Plant piping must contain shut-off valves located as close as practical to pump connections.

(7) Compressors used for transferring or refrigerating ammonia must be recommended and labeled for ammonia service by the manufacturer.

(a) Compressors, except those used for refrigeration, must be designed for at least 250 psig working pressure. Crank cases of compressors not designed to withstand system pressure must be protected with a suitable safety-relief valve.

(b) Plant piping must have shut-off valves located as close as practical to compressor connections.

(c) A safety-relief valve large enough to discharge the full capacity of the compressor must be connected to the discharge before any shut-off valve.

(d) Compressors must have pressure gauges at suction and discharge graduated to at least one and one-half times the maximum pressure that can develop.

(e) Adequate means, such as drainable liquid trap, must be provided on the compressor suction to minimize the entry of liquid into the compressor.

(f) Where necessary to prevent contamination, an oil separator must be provided on the discharge side of the compressor.

(8) Loading and unloading systems must be protected by suitable devices to prevent emptying of the storage container or the container being loaded or unloaded if the hose is cut. Backflow check valves or properly sized excess flow valves must be installed where necessary to provide this protection. In the event that valves are not practical, remotely operated shut-off valves may be installed.

(9) Meters used to measure liquid anhydrous ammonia must be recommended and labeled for ammonia service by the manufacturer.

(a) Liquid meters must be designed for a minimum working pressure of 250 psig.

(b) The metering system must incorporate devices that will prevent the inadvertent measurement of vapor.

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