



Coffee Break Training - Fire Protection Series

Hazardous Materials: Transfer Piping at Bulk Tanks

No. FP-2013-27 July 2, 2013

Learning Objective: The student shall be able to describe the requirements for product transfer piping connected to bulk storage tanks.

Product transfer pipe connected to bulk tanks should be installed and tested to meet the requirements of National Fire Protection Association 30, *Flammable and Combustible Liquids Code*. The design, fabrication, assembly, test and inspection of piping systems should be suitable for the working pressures and structural stresses for which they will be used.

Piping systems should be liquid tight and connected by joints that are welded, flanged, threaded or mechanically attached. The pipe in the illustration is welded and flanged.

Pipes, valves, faucets, couplings, flexible connectors, fittings and other parts that may be under pressure should meet the material specifications and pressure and temperature requirements of American Society of Mechanical Engineers B31, *Code for Pressure Piping*, except as follows:



This product transfer piping must be installed and tested so it is liquid tight.

- Ductile (nodular) iron should meet the specifications of American Society for Testing and Materials A 395, *Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures*.
- Storage tank valves and their tank connections should be steel or ductile iron, except as follows:
 - Storage tank valves may be constructed of materials other than steel or ductile iron where the chemical characteristics of the liquid stored are not compatible with steel or where the valves are installed inside the tank.
 - Externally installed valves may be constructed of other materials if they have a ductility and melting point comparable to steel or ductile iron and are capable of withstanding the stresses and temperatures involved in fire exposure, or the valves are protected from fire exposures, such as by materials having a fire resistance rating of not less than two hours.
- Low melting point materials such as aluminum, copper and brass; materials that soften on fire exposure such as plastics; or nonductile materials such as cast iron may be used **underground** within the pressure and temperature limitations of ASME B31.
- Low melting point materials may be used aboveground outdoors or inside buildings if they are:
 - Resistant to fire damage.
 - Located so that leaks from pipe failures will not create exposure problems.
 - Located where leaks can be controlled with one or more accessible, remotely located valves.
- Piping systems should be supported and protected against physical damage, including damage from stresses arising from settlement, vibration, expansion or contraction. The installation of nonmetallic piping should be in accordance with the manufacturer's instructions.

For additional information, refer to NFPA 30, Chapter 27.



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