

U.S. Fire Administration / National Fire Academy

Coffee Break Training

Topic: Protecting Tank Supports

Learning objective: The student shall be able to describe the minimum fire protection requirements for structural support of elevated flammable and combustible liquid storage tanks.

Bulk flammable and combustible liquid tanks often are elevated like these horizontal tanks to employ gravity for product transfer and dispensing. The tank supports may be steel, concrete, or masonry. Tanks also may be supported by a single horizontal row of wooden timbers if the timbers are not more than 12 inches tall.

One potential safety concern is the effect of a pool fire in the diked area beneath the tanks. The extremely high temperatures from burning liquids can weaken unprotected steel supports, resulting in a structural collapse that could cause catastrophic tank failure.



Steel supports and pilings for Class I, II, and IIIA liquid tanks more than 12 inches above the ground must be protected to a fire resistance rating of at least 2 hours, or be protected by an approved water spray system to cool the steel.

The 2-hour fire resistance requirement is based not on the Standard Time-Temperature Curve, but must be in compliance with ASTM E-1529, *Test Method for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies*.

For additional information, refer to *International Fire Code*[®], Chapter 34; or *NFPA 1, Uniform Fire Code*[™], Chapter 66.