

TENNECO TANK FIRE CASE STUDY

The below case study utilizes the Tenneco tank fire, a 150-foot diameter tank in gasoline service, which occurred on August 31, 1983. This fire was extinguished in 45 minutes with 3M ATC at 3% and an application of 0.16 gpm/sq ft.

The plunge test as developed by Dwight P. Williams for a 42-inch diameter tank at an application of 0.06 gpm/sq ft achieved extinguishment in 1 minute and 5 seconds with the 3M ATC at 3% on 93 octane gasoline.

Applying a scale factor of 52 on the plunge test results this would equate to a full scale extinguishment in 50 minutes for tanks up to 250 feet in diameter.

The Signature Series foam achieved an extinguishment on the pan test in 49 seconds at 1% on 93 octane gasoline. By equating the scale factor of 52 on the plunge test results this would result in a full scale extinguishment in 41 minutes for tanks up to 250 feet in diameter.

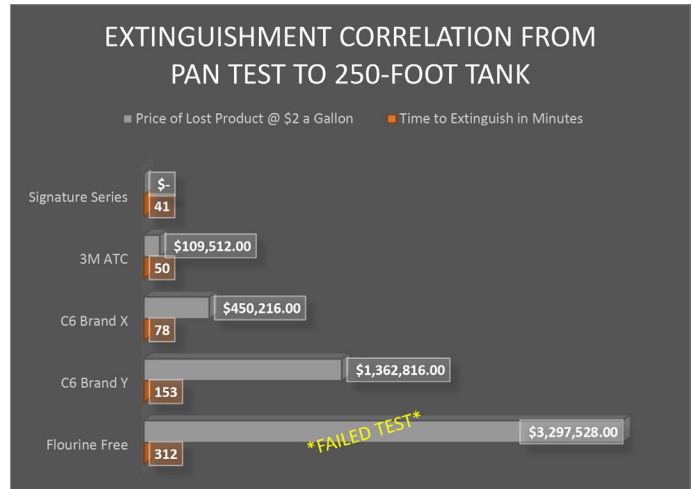
In a full surface tank fire, gasoline will burn off at a rate of 1" in 5 minutes on a 250-foot diameter tank, resulting in 30,420 gallons of product loss every 5 minutes. An approximation of \$2.00 a gallon would be a loss of \$60,840.00 every 5 minutes.

250' Tank (Cost of Product in Feet)
1' = \$7,301,400
2' = \$14,602,800
3' = \$21,904,200
4' = \$29,205,600
5' = \$36,507,000
6' = \$43,808,400
7' = \$51,109,800

Utilizing the above scale factor, the plunge testing of other commercially available C6 and fluorine free foams equated to an extinguishment time of 78 to 153 minutes. The industry acknowledged application for Type III extinguishment is 65 minutes due to the drain time of the finished foam solution. If the recommended application for full surface fire is 65 minutes, how can anything higher be considered successful?

The comparison of the Signature Series foam at 41 minutes to others at 78 minutes results in a loss of product equaling to \$450,216.00.

(3M ATC was utilized to extinguish a 270-foot gasoline tank fire in 65 minutes by the leadership of Dwight Williams.)



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