



Coffee Break Training - Fire Protection Series

Building Construction: Hose Stream Testing

No. FP-2013-35 August 27, 2013

Learning Objective: The student will be able to describe the standard criteria for hose stream testing of fire-rated assemblies.

Fire resistance-rated assemblies, such as fire doors, fire walls and dampers, must undergo rigorous performance testing before they are recognized in model codes and standards. In addition to being exposed to heat and flames, assemblies must survive a hose stream test.

The hose stream test is intended to provide a standardized way of evaluating the assemblies' ability to remain intact after a fire exposure test lasting up to one hour. The test assesses hose stream impact, erosion and cooling effects in a consistent manner. It is not intended to replicate conditions that firefighters might create when attacking a fire.



The hose stream test is intended to evaluate fire assemblies' ability to remain intact. (Photo/Architectural Testing, York, Pennsylvania)

Following the fire exposure test, a hose stream is directed first at the middle and then at all parts of the fire assembly that were exposed to heat. The stream is delivered through 2 1/2-inch (63.5 millimeter) hose and discharged through play pipe constructed in accordance with Underwriters Laboratories (UL) 385, *Standard for Play Pipes for Water Supply Testing in Fire Protection Service*. The play pipe is outfitted with a 1 1/8-inch (28.6 millimeter) discharge standard-taper, smooth-bore pattern tip without a shoulder at the orifice.

The nozzle orifice is placed 20 feet (6.1 meters) from the center of the exposed surface of the test specimen. Water spray pressures vary based on the estimated fire resistance period described in the table.

Resistance Period (hours)	Water pressure at base of nozzle (psi)	Water pressure at base of nozzle (kPa)	Duration per 100 ft ² (minutes)	Duration per m ² (minutes)
≥ 8	45	310	6	0.65
4 to 8	45	310	5	0.54
2 to 4	30	207	2 1/2	0.27
1 1/2 to 2	30	207	1 1/2	0.16
1 to 1 1/2	30	207	1	0.11
<1*	30	207	1	0.11

*This is optional. The hose stream test is not required for assemblies rated less than one hour.

The hose stream test criteria can be found in the following standards: UL 263/American Society for Testing and Materials E119, *Standard for Fire Tests of Building Construction and Materials* and National Fire Protection Association 252, *Standard Methods of Fire Tests of Door Assemblies*. For a brief video demonstrating the hose stream test on a window assembly, visit <http://www.youtube.com/watch?v=8vHKTFfIAH8>.

For information on National Fire Academy classes on building construction, please visit <http://1.usa.gov/14XhC2i>.



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