

## The Hose Stream Test: What it does and does not tell you about the performance of fire protective glazing materials.

A lot has been said about the hose stream test by its proponents, but little has been said about its intended purpose under U.S. fire test standards as a means of evaluating fire protective assemblies. Proponents claim that the hose stream is necessary to assure acceptable fire performance of glazing in 45-minute transoms and sidelites, but the following facts show why the test is not relevant as a performance standard.

**FACT: The hose stream test was developed to measure the structural integrity of a fire assembly – not the thermal stress performance of glazing materials.**

NFPA 252 describes the basis for the hose stream test as follows:

“The application of water produces stresses in the assembly and provides a measure of its structural capability. Weights were once used to provide a measure of the assembly to withstand impact. The hose stream is considered to be an improvement in uniformity and accuracy over the weights.”

The hose stream replaced the weights and provides a measure of impact performance in relation to structural capability. It was never intended to be used as a performance test for thermal stress in glazing materials.

**FACT: The hose stream test does not provide relevant data regarding thermal stress performance of glazing in real fire conditions.**

Since the hose stream test was never intended to measure thermal stress of glazing, its test protocol was not developed to evaluate thermal shock failure of glazing in the field. Hose stream proponents have not shown that the test performance of a glazing product has any relation to its ability to withstand thermal shock in the field.

The only field evidence of fire performance of glazing products tested without hose stream proves that these products do withstand thermal shock from fire sprinklers. Moreover, millions of square feet of these glazing materials have been installed worldwide since 1983 without a single report of thermal shock or other fire performance failure in the field.

**FACT: The hose stream test is not required for fire-rated constructions of less than one hour. NFPA 251, Standard Methods of Fire Tests of Building Constructions and Materials, specifically excepts (makes an exception for) constructions rated less than one hour.**

Exemption No. 1: The hose stream test shall not be required in the case of constructions having a resistance period indicated in the fire endurance test of less than one hour.

The current hose stream exemption for 20-minute assemblies – doors, transoms and sidelites – is consistent with the general exception for fire resistant constructions rated less than one hour. U.S. codes and fire test standards recognize there is no need for the hose stream test where only minimum 20-minute fire protection is required.

**FACT: The hose stream is not required under international fire test standards accepted by other major world markets.**

International fire test standards used in other areas do not include the hose stream test, but measure structural integrity of fire assemblies by other tests. As a result, many more glazing products are available in other major world markets, but not the U.S.

**FACT: The hose stream test does not measure the performance capability of glazing to prevent spontaneous ignition of combustibles on the non-fire side.**

Proponents claim the hose stream test should be required for 45-minute transoms and sidelites, but not 20-minute doors because doors will have clear spaces on both sides for traffic. But that doesn't mean that combustibles might be located next to or above the door.

The hose stream test has nothing to do with the ability of glazing to protect against radiant heat transmission. The ability of glazing to limit radiant heat transfer is measured by a completely different performance test standard. So even if combustibles are close enough to present a legitimate risk of fire

spread through 45-minute transoms and sidelites, the hose stream test is not the way to address the risk of radiant heat transmission.

### **Summary of the Hose Stream Test**

- 1) The hose stream test measures the structural integrity of building components.
- 2) The hose stream test does not measure thermal stress performance of glazing materials.
- 3) The hose stream test does not measure radiant heat protection performance of glazing materials.