



TECHNICAL BULLETIN

Field Water Testing

Glazing system performance is always an important topic in our industry and very present in the potential long-term liability of contractors. One of the most crucial performance issues for glazing contractors is water infiltration, effectively understood as any uncontrolled water that appears on any normally exposed interior surface, that is not contained or drained back to the exterior, or that can cause damage to adjacent materials or finishes. Water infiltration from the testing of glazing systems is also one of the most common points of failure and the subject of this technical bulletin.

Generally, field water testing is referred to as either Ambient Testing or Static testing. Ambient field water testing (AAMA 501.2) is the process of delivering sprayed water to the exterior of the system at a sustained pressure of between 30-35 psi applied from a $\frac{3}{4}$ " diameter hose fitted with a special nozzle. For the actual test, a five-foot section is chosen that bears both the frame and a joint in the glass. The nozzle is held one foot away from the glass and slowly moved back and forth for the duration of the 5-minute test. The chosen area is soaked from the lowest horizontal member to any adjacent vertical framing. During the test, a member of the testing team would be inside to monitor the wall and check for any leakage. Once the horizontal is tested, each adjacent vertical would then be tested, followed by the next horizontal above as the testing continues upward.





Static field water testing (ASTM E1105) is the process of delivering sprayed water to the exterior of the system, but under a negative pressure applied typically to the interior of the wall. This is accomplished by using an internal chamber to the interior of the building, simulating pressure differentials between the exterior and interior space. The water is typically delivered from a calibrated spray rack at a rate of 5 gal/ft²-h, for a minimum duration of 15 minutes. Minimum static pressure is typically 6.24 psf, and can be performed either using a uniform negative pressure (constant throughout the test), or cyclical negative pressure (typically three cycles of 5 minute pressure with 1 minute release).

Static water testing is a more difficult test to pass as the negative static air pressure is actually pulling the water through the system and can simulate a wind driven rain. Other than fully sealed systems or systems based upon compression gasketing whereas no water is allowed in, successful field water testing requires attention to some specific system design fundamentals.

First of all, weep holes must be present and of adequate size/configuration to evacuate the build-up of water, while not allowing too much in at the same time.

Second and more relevant to the static water testing pressures, gutter or sill heights must be adequate for the build-up of water that occurs under these static pressures. These heights are defined as “water head” and vary depending upon the static pressures, as illustrated below.

The basic premise of this chart is that water will build-up in a sill or horizontal to a certain height before gravity allows it to exit.

Pressure (psf)	Inches of Water
6.24	1.20
8.00	1.54
10.00	1.92
12.00	2.30
15.00	2.88

Understanding these fundamentals allows for the proper evaluation of system applications and their ability to comply with performance requirements.