

## Technical Update 24

### Site hose testing

This Technical update clarifies a number of issues that have been raised relating to the conduct of site hose testing.

#### Division of test area into test lengths

Section 9 of CWCT *Standard test methods for building envelopes* describes the hose test. The procedure described in clause 9.5.2 requires a 1500 mm length of joint to be tested for a 5 minute period with the hose moved back and forth along the joint at a rate of 1500 mm in 30 seconds.

It is often more convenient to vary the length of joint to be tested and this is acceptable. Where this is done the duration of the spray period should be determined from the rate of 1 minute per 300 mm length of joint. The duration of the test should not be less than 1 minute.

For some systems, such as stick curtain wall, it should be possible to define the test area so that it is a multiple of 1500 mm wide and a multiple of 1500 mm high. However, where discrete elements are to be tested, such as a window set into a rainscreen wall, the vertical or horizontal dimension of the window may be less than 1500 mm, or may not be an exact multiple of 1500 mm. Likewise if there are intermediate (e.g. staggered or intermittent) frame elements that are less than 1500 mm in length.

In such cases, the operator may either choose to combine horizontal and vertical joints in each 1500 mm spray length, or they may reduce the spraying time to compensate for a shorter joint length.

For example, consider a window that is 1000 mm wide by 1250 mm high:

Using the first approach the operator may elect to spray the lower 250 mm of each jamb along with the sill (giving a total length of 1500 mm) in five minutes, then the remaining 1000 mm of each jamb with half of the head (500 mm, giving a total of 1500 mm), in two sequences of five minutes each.

Using the second approach, the operator may spray the 1000 mm joint along the sill in 3 minutes 20 seconds, followed by each jamb in two sets of 4 minutes 10 seconds, then the 1000 mm head joint in a further 3 minutes 20 seconds.

Regardless of the approach chosen, the operator shall not spray a joint length greater than 1500 mm at a time, and the operator shall ensure that the hose passes along the entire joint length under test a total of ten times in the allotted time period.

Where the length of joint to be tested is no greater than 5000 mm it should normally be tested as a single length.

Where the length of joint to be tested exceeds 1500 mm it should be split into a number of approximately equal sections as close to 1500 m as possible.

When a length of joint to be tested is subdivided into sections, sections less than 600 mm long should be avoided where possible.

### **Failure criteria where leakage observed below the area under test**

Clause 9.6.3 of the CWCT Standard test methods for building envelopes states:

*'If any water leakage occurs it shall be reported that the building envelope has failed and details of water leakage shall be marked on a drawing of the specimen.'*

This clause does not limit the location of the leakage to the test area. CWCT considers that the appearance of any water on the inside of the façade in or below the area under test means that you cannot say that the test area has passed unless the presence of the water can be shown to be unrelated to the area under test. The area below the test area may extend for many floors – there have been examples of water penetration 10 floors or more below the test area.

Where water is observed on the inside of the façade below the area of application of water, it may have arisen in one of the following routes:

- 1) Penetration through the façade in the test area has occurred but has not been observed and water has tracked down the inside of the façade behind finishes; this would be a failure in the test area;
- 2) Water has entered the façade within the test area but tracked down within the façade before emerging through the inner face of the façade at a lower level. This may be due to a failure in the test area allowing too much water to enter the system but may indicate a failure of the drainage system below the test area;
- 3) Water has run down the outside of the façade before penetrating the façade at a lower level. In this case the test area is satisfactory but there may be defects in the area below the test area. It is possible that water flowing down the outside of the façade is being channelled into a concentrated area which has overwhelmed a detail, and that the façade in that area would pass a hose test if tested in the normal way
- 4) Water has run down the outside of the façade before entering the building through an opening in the façade (window, ventilator, unfinished area etc). In this case the test area has passed the hose test.

Where water is observed on the inside of the façade below the test area, the path of the water through the façade needs to be determined in order to establish whether the test area has passed. Retesting after providing protection to the outside of the façade below the test area may demonstrate that the leakage is due to cause 3 or 4 and hence conclude that the test area has passed. If this does not resolve the issue the path of water leakage can be assessed following the guidance in Technical Note 101.