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Association des établissements cantonaux d'assurance incendie

**SWISS
HAIL IMPACT PROTECTION
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**APIB Test Specification No. 08
Exterior Insulation and finish
System (EIFS)**

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8 Exterior insulation and finish system (EIFS)

8.1 General information

The test specifications for the “EIFS” component category includes additional, component-specific provisions for the standard test, which are not governed by the general test specifications. The following test specifications apply to EIFS. The hail impact resistance of the finish is dependent, among other things, on the granular structure of the finish and its surface treatment (painting or coating). The test applies to insulation thicknesses equal to, or greater than, those of the test specimen.

EIFS is considered in separate test specifications.

8.2 Intended use

These test specifications include EIFS for application on façades.

8.3 Test specimen

The finish (e.g., stucco) is always tested on the insulation material on which it is applied in practice. The EIFS test specimen contains at least 3 insulation sections that form a T-shaped joint (Figure 1). The exterior insulation is applied on a rigid test substrate (such as a building board made of wood, fibre cement or cement board). This exterior insulation must be attached according to the manufacturer’s specifications (e.g., fully adhered with mortar or spot attached with plate anchors or fasteners). The test specimen has a length of 1200 mm and a width of 1000 mm. The finish is continuous across the specimen, has a defined granular composition with a coated or painted surface, and includes a base layer having a defined, fixed thickness. At least two side surfaces and edges of the test specimen must be covered with the finish material. The description of the test specimen must be recorded in the test report.

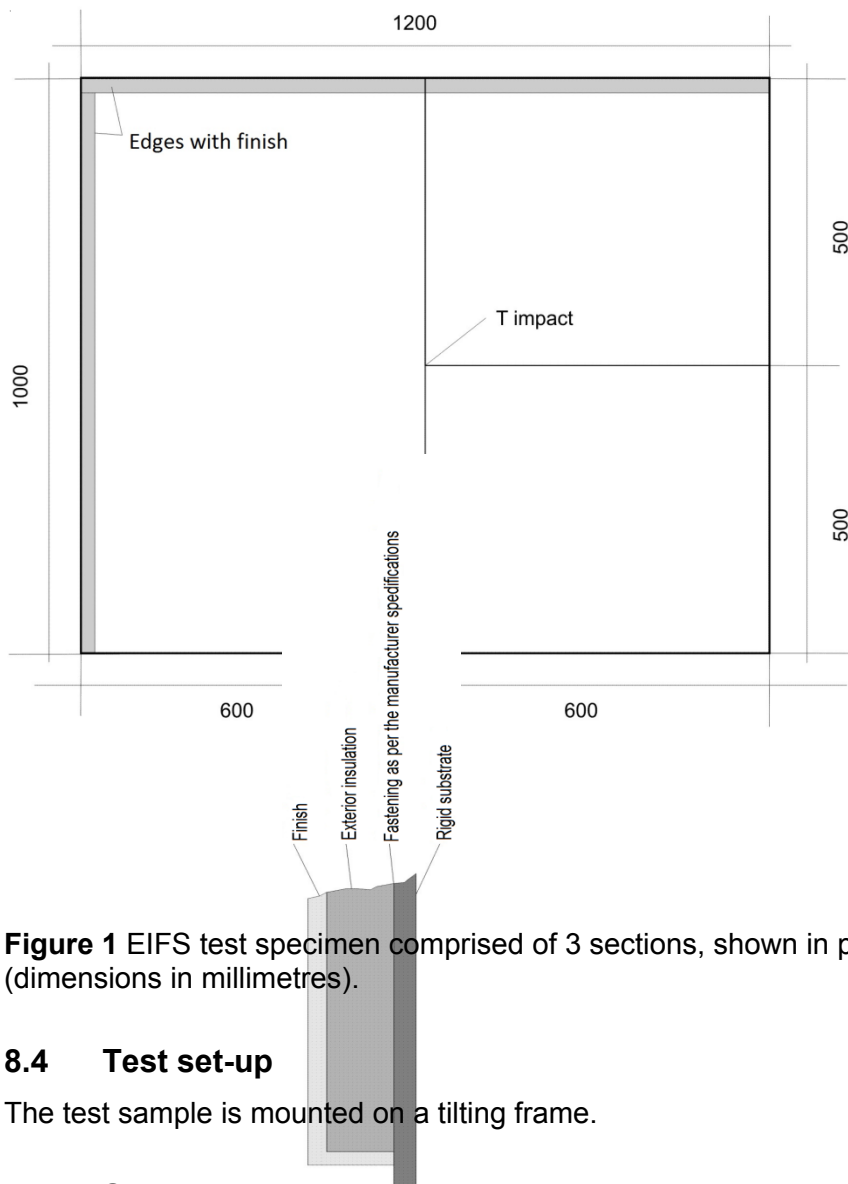


Figure 1 EIFS test specimen comprised of 3 sections, shown in plan view and cross section (dimensions in millimetres).

8.4 Test set-up

The test sample is mounted on a tilting frame.

8.5 Specimen storage prior to testing (conditioning)

The finish must be at least 28 days old at the time of testing.

8.6 Specimen treatment prior to testing

The finish surface is wet 3 times using a damp sponge at intervals of 30 s. The projectiles must be fired no less than one minute after the third wetting and within two minutes of the third wetting.

8.7 Target area and angle of impact

The test specimen is impacted in 3 diverse areas (Figure 2):

- Surface: The surface is impacted in two locations taking into account the following minimum distances (75 mm from the edge, 150 mm between target areas)
- Edge: The edge is impacted at two locations. The distance from the target area to the specimen edge is 1/5 of the projectile diameter. The distance between target areas is a minimum of 150 mm

- Joint zone: This zone is 50 mm wide. The midline of the joint zone corresponds to the midline of the impact width (see Figure 3 for the term "impact width"). Three target areas along the joints formed by the three EIFS sections comprising the test specimen must be impacted.

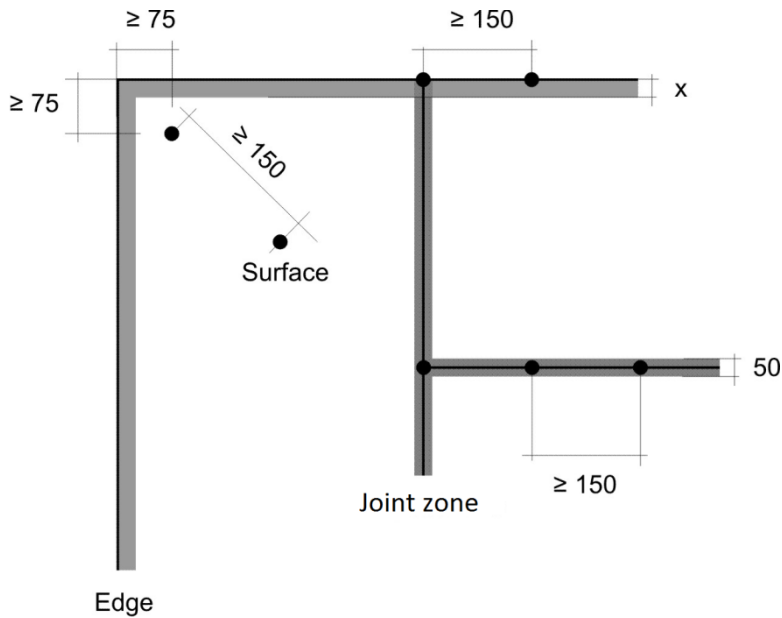


Figure 2 Three distinct areas (surface, edge, and joint zone) where impact testing of the EIFS specimen is performed, shown in plan view. (x: 1/5 projectile diameter, dimensions in millimetres)

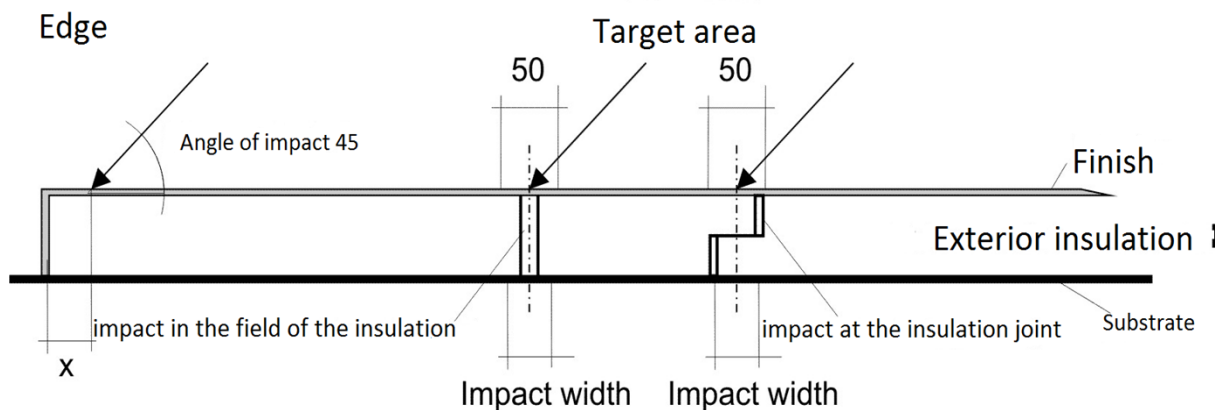


Figure 3 Cross-section example of target areas showing impact in the field of the insulation and at a joint in the insulation. The edge area of the specimen is also illustrated. (x: 1/5 projectile diameter, dimensions in millimetres)

Several tests can be performed on one test specimen. The distance between target areas must be at least 150 mm. The angle of impact is 45°. Any other critical target areas that exist must also be tested (refer to Part A).

8.8 Component function

The finish is tested for watertightness and appearance.

8.9 Damage criterion

Watertightness: The component is watertight provided that no crack is visible. If any crack is visible (excluding shrinkage cracks and similar), the component is damaged regarding watertightness. The condition of the finish base layer must also be inspected visually.

Appearance: The component is not damaged regarding appearance provided no depression or surface change is visible. If a depression or surface change is visible, the component is damaged.

8.10 Measuring method

Watertightness: The watertightness test is based on the presence of cracks. Cracking is checked using a magnifying glass (6-fold magnification) with the specimen illuminated with front lighting. Coloured water is applied for one hour at the target areas. The specimen is then cut open and examined for layer separation, material separation and related phenomena (structural damage). The tapping technique (Specht test) is another suitable method for determining watertightness.

Appearance: The "appearance" function is checked for the presence of any depressions or surface changes. The test is performed visually in daylight or artificial light without glare at a distance of 5 m from the object.

8.11 Existing standards and regulations (not exhaustive)

- SIA 243 (2008): Exterior insulation and finish system
- SIA 118/243 (2008): General conditions for exterior insulation and finish system – terms and conditions of standard SIA 243:2008
- SIA 279 (2004): Thermal insulation materials