Hail Impact Protection Register

ACFI Test Specifications No. 10 Skylights

The most up-to-date version of this document can be found on the internet at:www.hagelregister.ch

Version:	1.05 This version replaces ACFI Test Specifications No. 10 Skylights, Version 1.04
Date:	01/06/2021

Vereinigung Kantonaler Feuerversicherungen VKF
Bundesgasse 20 Postfach 3001 Bern T +41 31 320 22 22 mail@vkg.ch www.vkg.ch

Contents

10 Skylights

10.1 General

The test specifications for the “skylight” component category include additional, component-specific provisions for the standard test, which are not governed by the general test specifications.

Skylights, either single-shell or multiple-shell models, are mounted on a curb and installed in roofs such that they are stationary or such that they can be moved and opened. Unlike continuous light panels, skylights are individual items.

These test specifications apply to any skylights with an outer shell made of glass or plastic. If exposed skylight components consist of materials other than those of the skylight, these materials must be tested according to the component-specific test specifications.

In addition, skylights are divided into two size groups:

- **Group I**: Skylights with an area A less than 1.50 m^2
- **Group II**: Skylights with an area A greater than or equal to 1.50 m^2

The dimensions of the light-transmitting sections must be used when calculating surface areas.

10.2 Intended purpose

The skylight can be installed on roofs and on façades.

10.3 Test specimen

Skylights must be mounted under realistic conditions with the original curb according to the manufacturer’s instructions with original fasteners and flashing caps.

The tightening torque required (dome connection with curb) must be indicated in the test report if this is specified by the manufacturer.

10.4 Test set-up

The curb must be fully resting on the underlying surface.

10.5 Specimen storage prior to testing

The test specimen must be stored under test conditions for at least three days.

10.6 Specimen treatment before testing

The target area is wetted before being impacted and then impacted within the following two minutes.

10.7 Target area

The skylight is to be tested at the following points as a minimum (Figure 1):

1. Middle: Circle with a diameter of 300 mm at the centre of the test specimen
2. Rim: this includes the
   - 2a corner
   - 2b edge
   - 2c attachment points (including fasteners and any flashing caps)
3. Transition trough (area where dome begins to rise)
4. Corner area of frame/dome
5. At other bending points of the dome
6. The highest point in the centre of the dome
7. Welding points
8. Surface impact

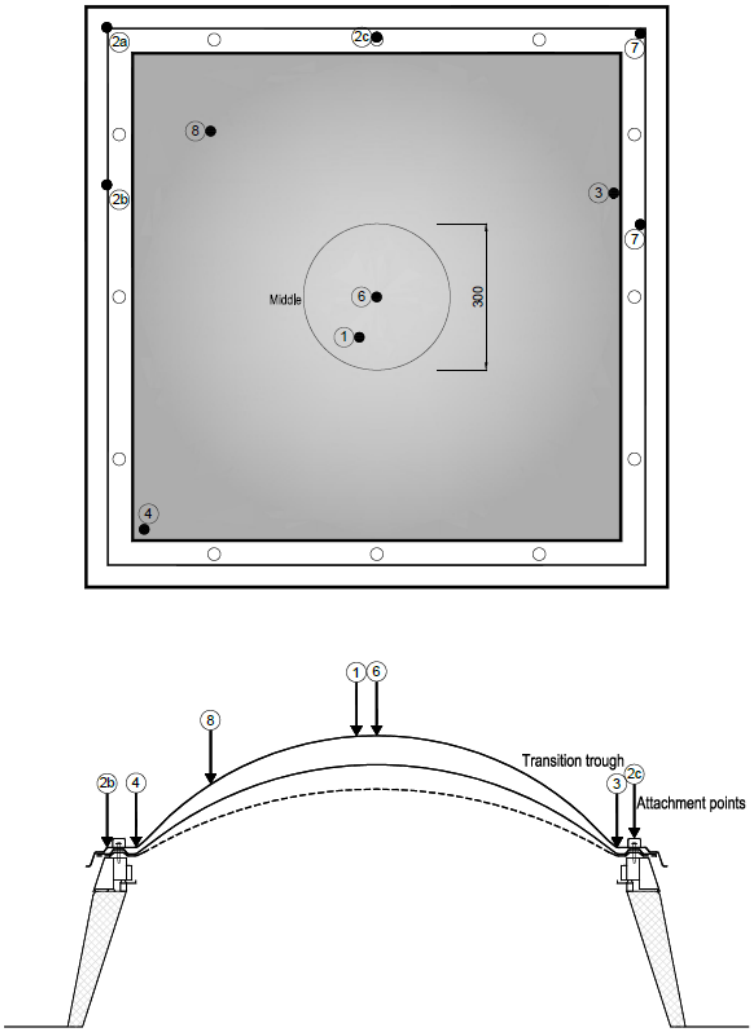

Figure 1 Target areas on the skylight without frame (dimensions in millimetres)

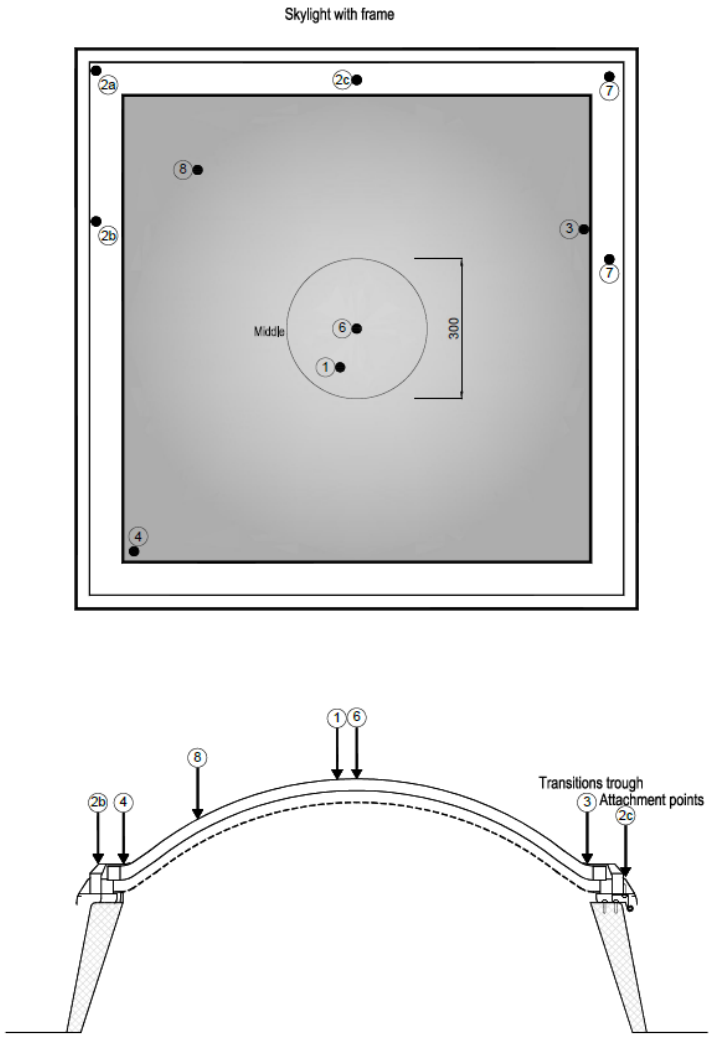

Figure 2 Target areas on the skylight with frame (dimensions in millimetres)

The angle of impact is 90° in relation to the base of the dome.

10.8 Component function

10.8.1 Skylights made of glass

The component is tested for watertightness, mechanics (functional efficiency of the opening and closing mechanism) and appearance.

10.8.2 Skylights made of plastic

The component is tested for watertightness, light transmission, mechanics (functional efficiency of the opening and closing mechanism) and appearance.

10.9 Damage criterion

10.9.1 Skylights made of glass

Watertightness: The skylight is considered to be damaged if fractures or cracks are detected in the outermost shell. If there are changes that can be detected by hand (e.g. differences in elevation in the frame), the skylight is also considered to be damaged.

Mechanics: The skylight is considered to be damaged if it is no longer possible to open or close the skylight smoothly. It is also considered to be damaged if fractures or cracks or other mechanical/physical damage to the inner shell(s) are/is detected or if the attachment points (excluding any flashing caps) are damaged.

Appearance: The skylight is considered to be damaged if fractures or cracks are detected in the outermost shell. This is also the case if fractures or cracks are detected in the inner shell(s).

10.9.2 Skylights made of plastic

Watertightness: The skylight is considered to be damaged if fractures, cracks or material stretching are/is detected in the outermost shell (glass or frame).

Mechanics: The skylight is considered to be damaged if it is no longer possible to open or close the skylight smoothly. It is also considered to be damaged if fractures or cracks or other mechanical/physical damage to the inner shell(s) are/is detected or if the attachment points (excluding any flashing caps) are damaged.

Light transmission: The skylight is considered to be damaged if changes to the surface of the outermost shell are detected. This is also the case if cracks or fractures are detected in the inner shell(s).

Appearance: The skylight is considered to be damaged if fractures or cracks are detected in the outermost shell. This is also the case if cracks or fractures are detected in the inner shell(s).

10.10 Measuring method

Watertightness: The outermost shell of the skylight is checked visually for cracks, fractures and material stretching from a distance of 0.5 m. The edge of the dome is scanned manually.

Mechanics: The skylight is opened and closed five times. In addition, the inner shells, the inner layers and the attachment points (including fastening elements) are checked visually for cracks or fractures from a distance of 0.5 m.

Light transmission: The presence of surface changes such as material stretching or other internal material defects is checked visually using a back light from a distance of 5 m.

Appearance: The skylight must be checked from the inside and from the outside. If the skylight can be opened, it must be checked when it is closed and when it is opened. The appearance of the skylight is visually inspected for all purposes under all possible lighting conditions and from different angles to the test specimen at a distance of 5 m from the test specimen.

10.11 Additional specifications

The nominal and measured material thickness values are to be indicated in the test report. The nominal dimensions must be indicated in the ACFI hail protection approval report. The thickness of the external shell is determined at dome level and at the edge near the target areas. At least three measurements must be made at each (total of at least six measurements).

Within a group (group I, group II), the test results also apply to other versions of the same skylight in compliance with the following rules:

- The test results of square or rectangular skylights can be applied in both directions without further provision of evidence. The frame structure must be identical if test results are to be applied to other versions
- The test results of square or rectangular skylights can be applied to round skylights without the further provision of evidence, but not the other way round. The frame structure must be identical if test results are to be applied to other versions
- The test results of a skylight with a transparent outer shell can be applied to skylights with an opaque outer shell without the further provision of evidence, but not the other way round.
- The test results of skylights that can be opened can be applied to fixed skylights without the further provision of evidence, but not the other way round.

The dimensions [= weight] in grams for a freely defined piece of the outer shell of several different skylights must be indicated in each test report.

The distance between the individual target areas must be at least 150 mm.