

FIRE SAFETY - ROOFLIGHTS

Bauder Supplied Rooflights and Structural Glazing

CONTEXT

Building fire safety rules are set out in the Building Regulations Approved Document Part B. Within this, the key aspects affecting rooflights are:

'That sufficient provision is made in the design of a building that, in the event of a fire, the occupants can escape to a place of safety by their own efforts.'

Therefore it is incumbent on the building designer to ensure that if rooflights form any part of the escape route (in the ceiling above the route or if the route is across a roof featuring rooflights) then the rooflights must meet the appropriate standards. For instance, if a rooflight has acrylic glazing, the acrylic materials could ignite and cause burning droplets to fall on the escape route below.

The only specification that will satisfy this situation is a rooflight with a 30 minute or one hour fire rating.

Glass is the main glazing material to achieve this.

'That the internal linings of a building do not support a rapid spread of fire.'

Modern rooflights are usually double or triple skinned in thermoplastic or double glazed in glass. The internal skin and the inside faces of the rooflight upstand are internal linings and therefore within the scope of section B2. This states that the internal linings shall inhibit the spread of fire within a building and resist the flame over their surfaces. It also states that *'they shall if ignited have a rate of energy release which does not significantly contribute to the fire'*.

'That the structure of the building should not collapse prematurely and should slow the spread of fire through the building and in unseen cavities and voids by providing fire-resisting walls and partitions where necessary.'

Correctly made and fitted rooflights do not impact on the structural integrity of a building.

'That the spread of fire between buildings be discouraged by spacing them apart sufficiently and by controlling the number, size and performance of the openings on boundaries.'

This can be affected by the choice of glazing materials. The building regulations are very clear about applicable restrictions.

'That the building be designed in such a way that it aids the emergency services to fight the fire and effect rescue of persons caught inside.'

There is mixed opinion as to the role of rooflights in aiding the emergency services. One opinion is that the inclusion of polycarbonate in a roof will aid the situation by melting and producing a vent for the escape of hot and toxic fumes from the fire below.

Conversely, others argue that the opening of a vent in the roof will feed the fire with oxygen and thus make the situation worse.



It is reassuring to know that the polycarbonates used in Bauder rooflights give off very low toxicity fumes in a fire and do not produce flaming droplets that could spread a fire to a lower level. Bauder rooflights do not use acrylic materials due to poor fire ratings and fragility.

Personal interpretation enables rooflights to be classified from two different perspectives: either it is an insertion into a roof and therefore clearly a rooflight, or it may be viewed as an integral part of the roof construction. Different requirements cover each opinion. However, the common requirements for each are very similar:

BS 476-7:1997: TEST FOR SURFACE SPREAD OF FLAME

This tests the flammability of a material and its ability to spread a fire and so endanger life. Materials are classified class 1, class 2, class 3 or class 4 with class 4 being the worst and class 1 the best. All polycarbonate thickness' from 1.5 mm up to 6 mm have either a class 1 or class 1Y rating (dependent on the test date: earlier tests are rated 1, later tests are rated 1Y).

BS 476-6:1989: TEST FOR FIRE PROPAGATION

This measures the contribution that the tested material will make to a fire in the event of it burning. The material performance is calibrated into sub-indices of i1 and i2. An acceptable result gives an i1 rating of less than 6 and an i2 rating of less than 12. All material thickness' from 1.5 mm up to 6 mm have performance results where i1 is less than 6 and i2 is less than 12.

CLASS O

This gives an overall indication of fire performance and can only be applied to materials that have achieved the appropriate standards.

The classification was created as part of the 1985 Building Regulations approved document B but is not part of the British Standard fire testing regime.

A material is classified as class O if it achieves:

BS 476 part 7: class 1

BS 476 part 6: where i1 is less than 6 and i2 is less than 12.

Although still referred to, the class O classification is no longer current.

TPa

This classification was developed to allow for anomalies in the test methods described above that do not wholly suit the testing of thermoplastic materials. Any material classified as TPa may be regarded as class O.

All polycarbonate materials 3mm or thicker are classified as TPa according to the building regulations (PVC is also thus classified).

TPb

This includes all polycarbonates that cannot be classified as TPa.

RESTRICTIONS

ROOFLIGHT LININGS

Class O materials can be used without exception. No area limit.

TPa materials can be used over any space except protected stairwells. No area limit.

TPb materials can only be used up to certain maximum areas.

ROOF COVERINGS

Approved Document B considers rooflights to be part of the roof covering. When used in rooflights, a rigid thermoplastic sheet product made from polycarbonate which achieves a class 1 rating for surface spread of flame when tested to BS 476-7 surface spread of flame tests for materials can be regarded as having an AA (National class) designation according to BS476-3 or Broof(t4) (European class) classification.

GLASS IN FIRE

Where glass rooflights are not required to be specifically fire rated (where the rooflight does not bridge a fire break, does not form part of a protected stairway or escape route, nor is identified by the Fire Officer for any other reason), Approved Document B, confirms that unwired glass at least 4mm thick can be regarded as having an AA designation; and therefore can be used up to boundaries, and without restriction.

Need more information?

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Bauder rooflights use only glass or polycarbonate with TPa and AA ratings.