



EUROPEAN ASSESSMENT DOCUMENT

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POLYCARBONATE SNOW STOPPER FOR ROOF

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This European Assessment Document (EAD) has been developed taking into account up-to-date technical and scientific knowledge at the time of issue and is published in accordance with the relevant provisions of Regulation (EU) No 305/2011 as a basis for the preparation and issuing of European Technical Assessments (ETA).

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1 SCOPE OF THE EAD

1.1 Description of the construction product

The product is an individual, small scale, snow stopper made of UV-stabilized polycarbonate. The dimensions and design of the snow stopper may vary to suit different roofing material profiles. Examples of the products covered by this EAD are shown in Figure 1. Products, fixing methods and fastenings are specified in ETA.

The product is not covered by a harmonised European standard (hEN).

Concerning product packaging, transport, storage, maintenance, replacement and repair it is the responsibility of the manufacturer to undertake the appropriate measures and to advise his clients on the transport, storage, maintenance, replacement and repair of the product as he considers necessary.

It is assumed that the product will be installed according to the manufacturer's instructions.

Relevant manufacturer's stipulations having influence on the performance of the product covered by this European Assessment Document shall be considered for the determination of the performance and detailed in the ETA.



Figure 1. Examples of individual, small scale snow stoppers.

1.2 Information on the intended use(s) of the construction product

1.2.1 Intended use(s)

A snow stopper is used to retain snow and ice falling off the roof. Snow stoppers are installed on the pitch of the roof with a specific quantity and pattern depending on the roof pitch, product shape and size. Installation shall be made according to the manufacturer's instructions. The snow stoppers are installed mechanically with screws or glue.

1.2.2 Working life/Durability

The assessment methods included or referred to in this EAD have been written based on the manufacturer's request to take into account a working life of the polycarbonate snow stopper for the intended use of 10 years when installed in the works. These provisions are based upon the current state of the art and the available knowledge and experience.

When assessing the product the intended use as foreseen by the manufacturer shall be taken into account. The real working life may be, in normal use conditions, considerably longer without major degradation affecting the basic requirements for works¹.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by EOTA when drafting this EAD nor by the Technical Assessment Body issuing an ETA based on this EAD, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

2 ESSENTIAL CHARACTERISTICS AND RELEVANT ASSESSMENT METHODS AND CRITERIA

2.1 Essential characteristics of the product

Table 1 shows how the performance of polycarbonate snow stopper is assessed in relation to the essential characteristics.

Table 1 Essential characteristics of the product and methods and criteria for assessing the performance of the product in relation to those essential characteristics

No	Essential characteristic	Assessment method	Type of expression of product performance (level, class, description)
Basic Works Requirement 2: Safety in case of fire			
1	Reaction to fire	2.2.1	Class
Basic Works Requirement 4: Safety and accessibility in use			
3	Static load capacity	2.2.2	Level
4	Freeze-thaw behaviour	2.2.3	Level
6	Static load capacity after artificial ageing	2.2.4	Level
5	Resistance to low temperature	2.2.5	Level

¹ The real working life of a product incorporated in a specific works depends on the environmental conditions to which that works is subject, as well as on the particular conditions of the design, execution, use and maintenance of that works. Therefore, it cannot be excluded that in certain cases the real working life of the product may also be shorter than referred to above .

2.2 Methods and criteria for assessing the performance of the product in relation to essential characteristics of the product

2.2.1 Reaction to fire

Reaction to fire shall be assessed when subject to regulatory requirement.

The product shall be tested, using the test method(s) relevant for the corresponding reaction to fire class, in order to be classified according to EN 13501-1. The tests according to EN ISO 11925-2 shall be performed with surface exposure as well as with edge exposure (each with a set of at least six tests) on specimens fixed onto an appropriate standard substrate according to EN 13238. The following parameters should be taken into account provided wider ranges of these parameters are relevant:

- highest and lowest thickness of the snow stopper
- highest and lowest polycarbonate density
- any surface coatings (e.g. for UV-protection) with their highest weight (coverage) per unit area
- any adhesive with the highest weight (coverage) per unit area used for fixing the snow stopper onto the substrate

In case of specimens glued onto the substrate an additional set of at least six tests shall be done for specimens turned 90 degrees on their vertical axis with edge exposure of the adhesive layer.

2.2.2 Static load capacity

Static load capacity of the snow stopper is defined as the load under which the snow stopper maintains its functionality, appearance and fixing to the substrate intact.

In addition to the static load capacity also the load at failure shall be determined.

Static load capacity and load at failure are given in ETA.

The test specimen is prepared by fixing the snow stopper on the substrate according to the manufacturer's installation instructions.

The static load capacity is determined by loading the test specimen with incrementally increasing load. For loading the snow stopper dead weights or a universal testing machine can be used. When using a testing machine it shall be operated with 2 - 5 mm/min between the checking points. The force is directed to the whole blade area of the snow stopper. The static load capacity is determined as the highest load the snow stopper withstands without any changes in its appearance or fixing to the substrate.

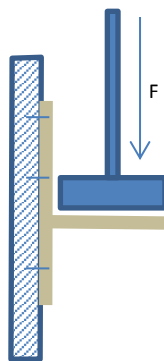


Figure 2. Example of static loading of the snow stopper

At least three test specimens shall be tested.

The test result is only valid for the tested fixing type and used substrate.

Information regarding the magnification and reduction factors to be used for the design of works is given in EN 16153:2013 Annex A.

2.2.3 Freeze-thaw behaviour

Freeze-thaw behaviour of the snow stopper and its fixing to the substrate is determined by measuring the static load capacity after freeze-thaw cycles. The test specimens are prepared by fixing the snow stopper on the substrate according to the manufacturer's installation instructions. The test specimens are exposed to freeze-thaw cycles according to EN 491:2011 clause 5.8. Static load capacity and load at failure after freeze-thaw cycles shall be measured using the test method described in clause 2.2.2 of this EAD.

Static load capacity after freeze-thaw cycling is given in ETA.

2.2.4 Static load capacity after artificial ageing

Test specimens prepared by fixing the snow stopper on the substrate according to the manufacturer's installation instructions shall be exposed to artificial ageing according to EN ISO 4892-2:2013 using exposure cycle No. B1 in Annex B Table B.1. Static load capacity and load at failure after ageing shall be measured using the test method described in clause 2.2.2 of this EAD.

Static load capacity after artificial ageing is given in ETA.

2.2.5 Resistance to low temperature

Brittleness of polycarbonate is determined by Charpy impact strength test. The test is performed according to standard EN ISO 179-1:2010 using method designation ISO 179-1/1eA in Table 2 and machined test specimens. Impact strength is determined at -20 °C and at standard atmosphere 23/50 as specified in EN ISO 291:2008.

Impact strength is given in ETA.

3 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE

3.1 System(s) of assessment and verification of constancy of performance to be applied

For the products covered by this EAD the applicable legal act is: Decision 98/436/EC, amended by 2001/596/EC.

The system is: 3

In addition, with regard to reaction to fire for products covered by this EAD the applicable European legal act is: Decision 98/436/EC, amended by 2001/596/EC.

The systems to be applied are: 1-3-4

3.2 Tasks of the manufacturer

The cornerstones of the actions to be undertaken by the manufacturer of the product in the procedure of assessment and verification of constancy of performance are laid down in Table 2.

Table 2 Control plan for the manufacturer; cornerstones

No	Subject/type of control (product, raw/constituent material, component - indicating characteristic concerned)	Test or control method (refer to 2.2 or 3.4)	Criteria, if any	Minimum number of samples	Minimum frequency of control
Factory production control (FPC) including testing of samples taken at the factory in accordance with a prescribed test plan					
1	Control of the raw materials	Conformity of supplier's declaration with manufacturer's requirement.	Within manufacturer's specifications		Each batch
2	Visual inspection of the final product	Visual	Identical with the reference body	1	Once per hour per shift
3	Reaction to fire	Raw material and process control	Within manufacturer's specifications		Raw material control: each batch. Process control: continuous
4	Mechanical properties of the final product	Manufacturer's method		1	Once per shift

3.3 Tasks of the notified body

The intervention of the notified body under system 1 is only necessary if a limitation of organic substance or the addition of fire-retardant takes place in the production process. The cornerstones of the actions to be undertaken by the notified body in the procedure of assessment and verification of constancy of performance for polycarbonate snow stopper are laid down in Table 3.

Table 3 Control plan for the notified body; cornerstones

No	Subject/type of control <i>(product, raw/constituent material, component - indicating characteristic concerned)</i>	Test or control method <i>(refer to 2.2 or 3.4)</i>	Criteria, if any	Minimum number of samples	Minimum frequency of control
Type testing					
1	Reaction to fire	2.2.1		As specified in 2.2.1	
Initial inspection of the manufacturing plant and of factory production control					
2	Inspection of the factory and factory production control	Control of devices, results, and documentation of FPC			

4 REFERENCE DOCUMENTS

As far as no edition date is given in the list of standards thereafter, the standard in its current version at the time of issuing the European Technical Assessment, is of relevance.

EN 13501-1 Fire classification of construction products and building elements - Part 1:
Classification using data from reaction to fire tests

EN 491 Concrete roofing tiles and fittings for roof covering and wall cladding. Test methods

EN ISO 179-1 Plastics - Determination of Charpy impact properties - Part 1: Non-instrumented impact test

EN ISO 291 Plastics. Standard atmospheres for conditioning and testing

EN ISO 4892-2 Plastics - Methods of exposure to laboratory light sources – Part 2: Xenon-arc lamps