

## ATG technical approval with certification

## Approval and certification body



**ATG H672**

**Semi-finished products for window  
and door systems with aluminium  
profiles**

**Insulating strips for aluminium  
profiles with thermal break**

**TECHNOFORM**

Valid from 31/05/2022  
to 30/05/2027



**Belgian Construction Certification Association**  
Rue d'Arlon 53 – 1040 Brussels  
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### Approval holder:

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## 1 Objective and scope of the technical approval

This technical approval is a favourable evaluation of the product (as described above) by an independent approval operator designated by UBAtc, BCCA, for the intended use specified in this technical approval.

The technical approval specifies the results of the approval examination. This examination comprises: identification of relevant product properties taking into account its intended use and installation and execution, its design and reliability of production.

The technical approval provides a high level of reliability, due to the statistical interpretation of control results, recurrent monitoring, adjustments in order to keep abreast of the latest technical developments and quality control by the approval holder.

In order to retain the technical approval, the approval holder must continuously provide evidence that he is taking all necessary steps to demonstrate that the product is fit for the intended use. Monitoring the conformity of the product with the technical approval is essential. This monitoring is entrusted by the UBAtc to the independent certification operator, BCCA.

The approval holder [and distributor] is/are required to adhere to the examination results specified in the technical approval when making information available to third parties. The UBAtc or certification operator may take any appropriate steps if the approval holder [or the distributor] fails to do so (to a sufficient extent).

The technical approval and certification of conformity of the product with the technical approval are independent of individual construction works. The contractor and/or architect remain fully responsible for the conformity of the completed works with the provisions contained in works' specifications.

Apart from specifically introduced provisions, the technical approval does not cover site related safety provisions, health aspects and the sustainable use of raw materials. As a result, the UBAtc cannot be held responsible, under any circumstances, for any damage caused by the failure of the approval holder, contractor(s) and/or architect to respect provisions relating to site related safety, health aspects and the sustainable use of raw materials.

Note: in this technical approval, the term "contractor" will always be used when referring to the entity that completes the work. This word has the same meaning as other frequently used words, such as "installer" and "fitter".

## 2 Technical approval of insulating strips for aluminium profiles with thermal break

This technical approval describes the properties of TECHNOFORM insulating strips, made from polyamide reinforced with glass fibres (PA 66 GF 25, PA66 GF 40, Low Lambda PA 66 GF 25 and PA 410 (modified) GF 25), which are used as a thermal break in aluminium profiles, resulting in improved thermal performance for door and window systems. These strips are in compliance with NBN EN 14024, in terms of the suitability of the thermal break material (NBN EN 14024, § 5.2) and mechanical durability of the thermal break (NBN EN 14024, § 5.3, § 5.4 and § 5.5).

Approval with certification requires continuous monitoring of production by the manufacturer, in addition to regular monitoring of production by a certification body designated by the UBAtc.

The technical product approval with certification covers the actual strips, but not the systems and assembly process used to manufacture the window profiles, the manufacture or installation of windows or quality of execution.

## 3 Product specification

### 3.1 MATERIALS

#### 3.1.1 PA66 GF25

The strips are made from polyamide PA 66 reinforced with 25% glass fibre.

In order to meet the material requirements in terms of durability, the PA66 material used in the product can be replaced by recycled PA66. The recycled part is classified as post-industrial PA66.

**Table 1 – Properties of TECHNOFORM PA66 GF25 materials**

Properties	Units	Norm	Criteria for dry extrusion (*)
Density	g/cm <sup>3</sup>	NBN EN ISO 1183-1 or -3	1.30 ± 0.05
Maximum tensile strength	N/mm <sup>2</sup>	NBN EN ISO 527-2 / -4	≥ 80
Tensile strain at break	%	NBN EN ISO 527-2 / -4	≥ 3
Elasticity modulus	N/mm <sup>2</sup>	NBN EN ISO 527-2 / -4	≥ 4500
Hardness	ShD	NBN EN ISO 868	82 ± 4
Charpy impact strength	KJ/m <sup>2</sup>	NBN EN ISO 179-1 2fU	≥ 30 or without breakage
Ash content	%	NBN EN ISO 1172	25 ± 2.5
Melting temperature	°C	NBN EN ISO 11357-3	≥ 250
Heat conductivity coefficient	W/mK	NBN EN ISO 10456	0.3
Expansion coefficient (longitudinally)	K-1	ISO 11359-2	(35 ± 15).10 <sup>-6</sup>
Maximum water absorption	%	NBN EN ISO 62	6 ± 1.0
Equilibrium water content (in the air) 23 °C 50 % RH	%	NBN EN ISO 1110	1.9 ± 0.2
(*) water content ≤ 0.2 % of weight			

Any additional insulation material applied to the profiles or in the hollow chambers will be polyurethane foam.

#### 3.1.2 PA66 GF40

The strips are made from polyamide PA 66 reinforced with 40% glass fibre.

**Table 2 – Properties of TECHNOFORM PA66 GF40 materials**

Properties	Units	Norm	Criteria for dry extrusion (*)
Density	g/cm <sup>3</sup>	NBN EN ISO 1183-1 or -3	1,45 ± 0,05
Maximum tensile strength	N/mm <sup>2</sup>	NBN EN ISO 527-2 / -4	≥ 100
Tensile strain at break	%	NBN EN ISO 527-2 / -4	≥ 3
Elasticity modulus	N/mm <sup>2</sup>	NBN EN ISO 527-2 / -4	≥ 5500
Hardness	ShD	NBN EN ISO 868	83 ± 4
Charpy impact strength	KJ/m <sup>2</sup>	NBN EN ISO 179-1 2fU	≥ 30 or without rupture
Ash content	%	NBN EN ISO 1172	40 ± 2,5
Melting temperature	°C	NBN EN ISO 11357-3	≥ 250
Heat conductivity coefficient	W/mK	NBN EN ISO 10456	0,35
Expansion coefficient (longitudinally)	K-1	ISO 11359-2	(22 ± 15).10 <sup>-6</sup>
Maximum water absorption	%	NBN EN ISO 62	6 ± 1,0
Equilibrium water content (in the air) 23 °C 50 % RH	%	NBN EN ISO 1110	1,2 ± 0,2
(*) water content ≤ 0.2 % of weight			

Any additional insulation material applied to the profiles or in the hollow chambers will be polyurethane foam.

### 3.1.3 Low Lambda PA66 GF25

The strips are made from polyamide PA 66 reinforced with 25% glass fibre.

In order to meet the material requirements in terms of durability, the PA66 material used in the product can be replaced by recycled PA66. The recycled part is classified as post-industrial PA66.

**Table 3 – Properties of TECHNOFORM Low Lambda PA66 GF25 materials**

Properties	Units	Norm	Criteria for dry extrusion (*)
Density	g/cm <sup>3</sup>	NBN EN ISO 1183-1 or -3	1.00 ± 0.1
Maximum tensile strength	N/mm <sup>2</sup>	NBN EN ISO 527-2 / -4	≥ 50
Tensile strain at break	%	NBN EN ISO 527-2 / -4	≥ 3
Elasticity modulus	N/mm <sup>2</sup>	NBN EN ISO 527-2 / -4	≥ 2900
Hardness	ShD	NBN EN ISO 868	77 ± 4
Charpy impact strength	KJ/m <sup>2</sup>	NBN EN ISO 179-1 2fU	≥ 20 or without rupture
Ash content	%	NBN EN ISO 1172	25 ± 2.5
Melting temperature	°C	NBN EN ISO 11357-3	≥ 250
Heat conductivity coefficient	W/mK	NBN EN ISO 10456	0.21
Expansion coefficient (longitudinally)	K-1	ISO 11359-2	(47 ± 15).10 <sup>-6</sup>
Maximum water absorption	%	NBN EN ISO 62	9.5 ± 1.0
Equilibrium water content (in the air) 23 °C 50 % RH	%	NBN EN ISO 1110	2.0 ± 0.2
(*): water content ≤ 0.2 % of weight			

### 3.1.4 Bio-based PA 410 (modified) GF25, BioBlend grey

The strips are made from polyamide PA 410 BIOBLEND reinforced with 25% glass fibre.

**Table 4 – Properties of TECHNOFORM Bio-based PA 410 (modified) GF25, BioBlend grey materials**

Properties	Units	Norm	Criteria for dry extrusion (*)
Density	g/cm <sup>3</sup>	NBN EN ISO 1183-1 or -3	1.28 ± 0.05
Maximum tensile strength	N/mm <sup>2</sup>	NBN EN ISO 527-2 / -4	≥ 60
Tensile strain at break	%	NBN EN ISO 527-2 / -4	≥ 2
Elasticity modulus	N/mm <sup>2</sup>	NBN EN ISO 527-2 / -4	≥ 3100
Hardness	ShD	NBN EN ISO 868	80 ± 4
Charpy impact strength	KJ/m <sup>2</sup>	NBN EN ISO 179-1 2fU	≥ 25 or without rupture
Ash content	%	NBN EN ISO 1172	25 ± 2.5
Melting temperature	°C	NBN EN ISO 11357-3	≥ 250
Heat conductivity coefficient	W/mK	NBN EN ISO 10456	0.34
Expansion coefficient (longitudinally)	K-1	ISO 11359-2	(35 ± 15).10 <sup>-6</sup>
Maximum water absorption	%	NBN EN ISO 62	5 ± 1.0
Equilibrium water content (in the air) 23 °C 50 % RH	%	NBN EN ISO 1110	1.6 ± 0.2
(*): water content ≤ 0.2 % of weight			

Any additional insulation material applied to the profiles or in the hollow chambers will be bio polyurethane foam.

## 4 Geometrical characteristics of the thermal break

The Technoform strips are available in different forms and dimensions. The crimping areas are shaped like a dovetail or a similar shape. The strips are available in different heights, thicknesses and forms.

- Strips with adhesive thread
- Strips with T
- Strips with additional functions
- Strips with additional insulation

Height tolerances:  $\pm 0.05$  mm -  $\pm 0.15$  mm, depending on the height, thickness tolerance:  $\pm 0.05$  mm.

Specially shaped strips can be prepared, such as strips with 1 cavity or more, hooks, bridge, asymmetric strips, ... (see examples in fig. 1).

## 5 Manufacture

### 5.1 PA66 GF25

The strips are extruded from PA 66 GF 25 polyamide.

They are produced by extrusion in the plants of:

- Technoform Bautech Kunststoffprodukte GmbH, Hannoversche Straße 2, 34134 Kassel Niederzwehren, Germany
- Technoform Insulation Solutions Kassel GmbH, Korbacher Straße 173, 34132 Kassel, Germany
- Technoform Bautech Ibérica s.l. Ctra. Madrid-La Coruna Km 181, 47100 Tordesillas (Valladolid), Spain
- Technoform Bautech Italia S.p.A Via Settembrini 80, 20020 Lainate (MI), Italy

### 5.2 PA66 GF40

The strips are extruded from PA 66 GF 40 polyamide.

They are produced by extrusion in the plants of:

- Technoform Insulation Solutions Kassel GmbH, Korbacher Straße 173, 34132 Kassel, Germany

### 5.3 Low Lambda PA66 GF25

The strips are extruded from PA 66 GF 25 polyamide.

They are produced by extrusion in the plants of:

- Technoform Bautech Kunststoffprodukte GmbH, Hannoversche Straße 2, 34134 Kassel Niederzwehren, Germany
- Technoform Bautech Ibérica s.l. Ctra. Madrid-La Coruna Km 181, 47100 Tordesillas (Valladolid), Spain
- Technoform Bautech Italia S.p.A Via Settembrini 80, 20020 Lainate (MI), Italy
- Technoform Insulation Solutions Kassel GmbH, Korbacher Straße 173, 34132 Kassel, Germany

### 5.4 Bio-based PA 410 (modified) GF25, BioBlend grey

The strips are extruded from bio-based PA 410 (modified) GF 25 polyamide, BioBlend grey.

They are produced by extrusion in the plants of:

- Technoform Insulation Solutions Kassel GmbH, Korbacher Straße 173, 34132 Kassel, Germany

Industrial self-monitoring includes, for example, keeping a control log and conducting tests, both in a laboratory at the factory and an independent external laboratory, on samples taken during the manufacturing process. These tests are conducted on test pieces taken by a representative of the UBAtc, during its approval inspection visits.

The strips are labelled as follows on the profile and/or strip packages and the pallets: ATG H672, customer number, date, batch number, etc.

The standard packaging consists of wood or metal boxes.

## 6 Performances

### 6.1 Suitability of the thermal break material

Evaluation of the suitability of the strip material is based on the results taken from the measurement of characteristics after immersion in water, exposure to humidity, after tests have been conducted on tensile fissures and the fragility test described in NBN EN 14024:2005 in § 5.2, § 5.2.3, § 5.2.4 and § 5.2.5. The results were satisfying.

### 6.2 Mechanical durability of thermal break

The evaluation of the mechanical durability of strips is based on the results taken from the measurement of characteristics before (§ 5.3 and 5.4) and after accelerated artificial aging, as described in § 5.5 of NBN EN 14024. The results were satisfying.

## 7 Fitting

The strips are crimped into lacquered or anodised aluminium profiles before or after surface treatment (see Diagram 2).

After crimping, the aluminium penetrates the strip.

The actual crimping is not covered by the approval.

## 8 Conditions

- A. This technical approval exclusively covers the product mentioned on the cover page of the technical approval.
- B. Only the approval holder and, if applicable, the distributor may assert rights based on the technical approval.
- C. The approval holder and, if applicable, the distributor are not permitted, in any way, to use the name of the UBAtc, its logo, the ATG mark, the technical approval or the approval reference for product evaluations that fail to comply with the technical approval or products, kits or systems, including their properties or characteristics, which do not form the object of the technical approval.
- D. Information provided in any way by the approval holder, distributor or a recognized contractor or by their representatives to (potential) product users (e.g. for clients, contractors, architects, consultants, designers, etc.), which is specified in the technical approval may not be incomplete or contradict the content of the technical approval or information referred to in the technical approval.
- E. The approval holder is at all times obliged to provide UBAtc, the approval operator and the certification operator with prompt and prior notification of any adjustments made to raw materials and products, installation instructions and/or the manufacturing and installation processes and equipment. Depending on the information communicated, the UBAtc, the approval operator and the certification operator will judge whether it is necessary to adjust the technical approval.
- F. The technical approval is based on the available technical and scientific knowledge and information, complemented by information provided by the applicant and completed by an approval examination, which takes account of the specific nature of the product. Nevertheless, users remain responsible for selecting the product as specified in the technical approval, for specific uses intended by the user.
- G. The intellectual property rights associated with the technical approval, including the copyright, belong exclusively to the UBAtc.
- H. Any references to the technical approval shall be accompanied by an ATG reference (ATG H672) and the validity period.
- I. The UBAtc, the approval body and the certification body cannot be held responsible for any damage or adverse consequences suffered by third parties (e.g. the user) that result from the failure of the approval holder or distributor to respect the provisions of Article 8.

## 9 Figures

Diagram 1 – Example of strips

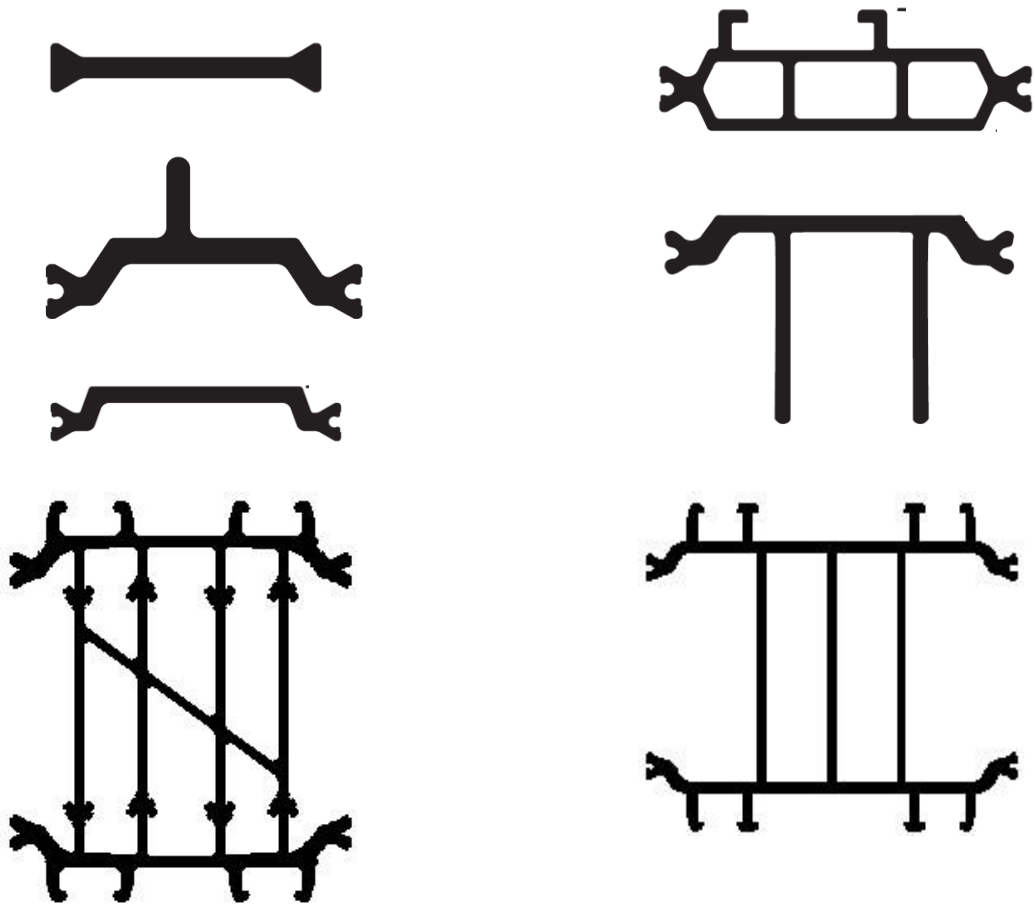
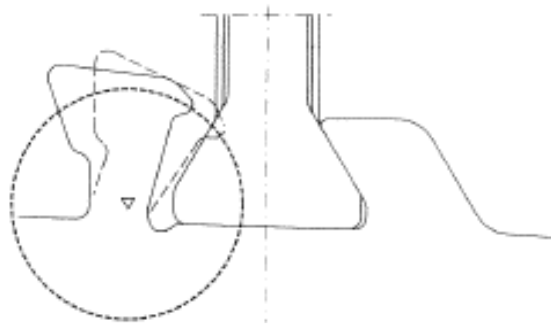


Diagram 2 – Example of strip installation



This technical approval has been published by UBAtc, under the responsibility of the approval operator BCCA, and based on a favourable opinion by specialist group "FACADES", expressed on 11 October 2013.

In addition, the certification operator, BCCA, confirmed that the production process meets the conditions for certification and that a certification agreement has been signed by the ATG holder.


Date of issue: 31 May 2022.


This ATG supersedes ATG H672 valid from 21/04/2022 to 20/04/2027. Changes from previous version are listed below:

Changes from previous version
Addition of additional production site Technoform Insulation Solutions Kassel GmbH for low lambda PA66 GF25

For UBAtc, declaration of the validity of the approval process

For the approval and certification operator

  
Eric Winnepeninckx,  
Secretary general

  
Benny De Blaere,  
Director

  
Olivier Delbrouck,  
Director general

This technical approval shall remain valid, provided that the product, its manufacture and all related processes:

- are maintained, in order to achieve, as a minimum, the examination results specified in this technical approval;
- are continuously monitored by the certification operator, which confirms that the certification continues to be valid;

If these conditions are no longer met, the technical approval shall be suspended or withdrawn and the technical approval shall be removed from the UBAtc website. Technical approvals are regularly updated. It is recommended to always use the version published on the UBAtc website ([www.butgb-ubatc.be](http://www.butgb-ubatc.be)).

The most recent version of the technical approval may be consulted using the adjacent QR code.



UBAtc asbl is notified by the FPS Economy within the framework of Regulation (EU) 305/2011. Certification Operators designated by UBAtc asbl operate in compliance with a system that is set to be accredited by BELAC ([www.belac.be](http://www.belac.be)).

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