BUtgb vzw - UBAtc asbl

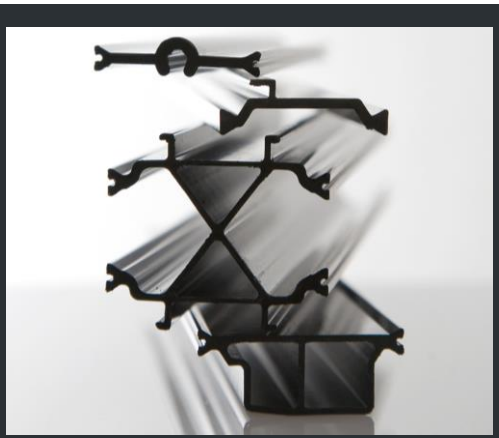
ATG H672

FACADES - PRODUCTS FOR FACADES AND GLASS

SEMI-FINISHED PRODUCTS FOR WINDOW AND DOOR SYSTEMS WITH ALUMINIUM PROFILES

INSULATING STRIPS FOR ALUMINIUM PROFILES WITH THERMAL BREAK TECHNOFORM

Valid from 23/04/2025 to 22/04/2030



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ATG H672

A technical approval is a favourable assessment of a construction product by a competent, independent and impartial approval operator appointed by the UBAtc, for a specified intended use.

The technical approval documents the results of the approval examination. This examination is organised as follows:

- identification of the relevant product properties taking into account its intended use and method of installation (or execution),
- product conception,
- production reliability.

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.

For technical approval to be maintained, 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. In this respect, monitoring the conformity of the product with the technical approval is essential. This monitoring is entrusted by the UBAtc to a competent, independent and impartial certification operator.

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.

Approval operators

Buildwise

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Certification operator

BCCA

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FOREWORD

This technical approval concerns a amendment of ATG H672 valid from 05/02/2024 to 04/02/2029. The modifications compared to the previous version are listed below:

Modifications compared to the previous version
– Addition of “mean value with minimum sample size of 5 specimens at room temperature - tension measured in extrusion direction” – Addition of aluminium foil, insulation, adhesive wire and aluminium wire. – Change of address Technoform Insulation Solutions Belgium

Technical approvals are updated regularly. It is recommended to always use the version published on the UBAtc website (www.butgb-ubatc.be).

The most recent version of the technical approval can be consulted by scanning the QR code on the front page.

NORMATIVE AND OTHER REFERENCES

AGCR-RGAC	2022-06-30	UBAtc General Regulations for Approval and Certification
NBN EN 14024	2023	Metal profiles with thermal barrier - Mechanical performance - Requirements, proof and tests for assessment

1 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.

2 Product specification

2.1 MATERIALS

2.1.1 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 GF25materials

Properties	Units	Norm	Criteria for dry extrusion (*)
Density	g/cm³	NBN EN ISO 1183-1 or -3	1.30 ± 0.05
Maximum tensile strength**	N/mm²	NBN EN ISO 527-2 / -4	≥ 80
Tensile strain at break**	%	NBN EN ISO 527-2 / -4	≥ 3
Elasticity modulus**	N/mm²	NBN EN ISO 527-2 / -4	≥ 4500
Hardness	ShD	NBN EN ISO 868	82 ± 4
Charpy impact strength**	KJ/m²	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).10-6
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

(“) mean value with minimum sample size of 5 specimens at room temperature - tension measured in extrusion direction

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

2.1.2 PA66 GF40

The strips are made from polyamide PA 66 reinforced with 40% 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 2 – Properties of TECHNOFORM PA66 GF40 materials

Properties	Units	Norm	Criteria for dry extrusion (*)
Density	g/cm³	NBN EN ISO 1183-1 or -3	1,45 ± 0,05
Maximum tensile strength**	N/mm²	NBN EN ISO 527-2 / -4	≥ 100
Tensile strain at break**	%	NBN EN ISO 527-2 / -4	≥ 3
Elasticity modulus**	N/mm²	NBN EN ISO 527-2 / -4	≥ 5500
Hardness	ShD	NBN EN ISO 868	83 ± 4
Charpy impact strength**	KJ/m²	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).10-6
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

(“) mean value with minimum sample size of 5 specimens at room temperature - tension measured in extrusion direction

2.1.3 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^3	NBN EN ISO 1183-1 or -3	1.00 ± 0.1
Maximum tensile strength**	N/mm^2	NBN EN ISO 527-2 / -4	≥ 50
Tensile strain at break**	%	NBN EN ISO 527-2 / -4	≥ 3
Elasticity modulus**	N/mm^2	NBN EN ISO 527-2 / -4	≥ 2900
Hardness	ShD	NBN EN ISO 868	77 ± 4
Charpy impact strength**	KJ/m^2	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^{-6}
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

(“) mean value with minimum sample size of 5 specimens at room temperature - tension measured in extrusion direction

2.1.4 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^3	NBN EN ISO 1183-1 or -3	1.28 ± 0.05
Maximum tensile strength**	N/mm^2	NBN EN ISO 527-2 / -4	≥ 60
Tensile strain at break**	%	NBN EN ISO 527-2 / -4	≥ 2
Elasticity modulus**	N/mm^2	NBN EN ISO 527-2 / -4	≥ 3100
Hardness	ShD	NBN EN ISO 868	80 ± 4
Charpy impact strength**	KJ/m^2	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).10-6
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

(“) mean value with minimum sample size of 5 specimens at room temperature - tension measured in extrusion direction

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

3 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: ± 0.05 mm - ± 0.15 mm, depending on the height, thickness tolerance: ± 0.05 mm.

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

The strips can be provided with glue wire or aluminum wire.

Aluminum foil can be applied to parts of the strips. The epsilon value of the aluminum foil is 0.02.

The strips can be provided with PUR insulation.

Additional processing is possible.

4 Manufacture

4.1 PA66 GF25

The strips are extruded from PA 66 GF 25 polyamide.

They are produced by extrusion in the plants of:

- Technoform Bautec Kunststoffprodukte GmbH, Hannoversche Straße 2, 34134 Kassel Niederzwehren, Germany;
- Technoform Insulation Solutions Kassel GmbH, Korbacher Straβe 173, 34132 Kassel, Germany;
- Technoform Bautec Ibérica s.l. Ctra. Madrid-La Coruna Km 181, 47100 Tordesillas (Valladolid), Spain;
- Technoform Bautec Italia S.p.A Via Settembrini 80, 20020 Lainate (MI), Italy;
- Technoform Insulation Solutions Belgium Avenue des Artisans 12 BE – 7822 Ath, Belgium.

  rue de l'Arbrisseau 3 BE - 7522 Tournai, Belgium

4.2 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 Straβe 173, 34132 Kassel, Germany.

4.3 Low Lambda PA66 GF25

The strips are extruded from PA 66 GF 25 polyamide.

They are produced by extrusion in the plants of:

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

4.4 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 Straβe 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.

5 Performances

5.1 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.

5.2 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.

6 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.

7 Figures

Diagram 1 – Example of strips

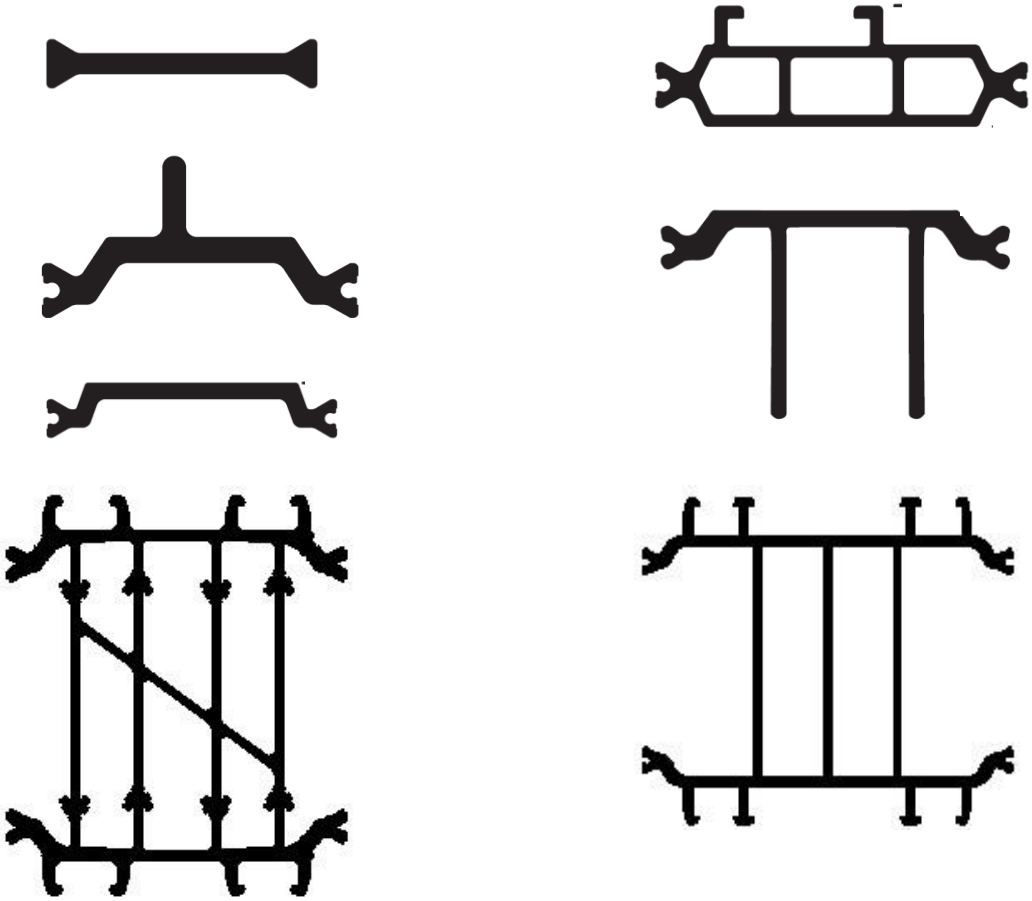
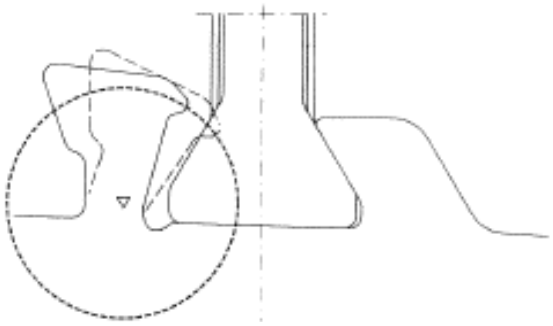


Diagram 2 – Example of strip installation



CONDITIONS FOR THE USE AND MAINTENANCE OF THE ATG

A. This technical approval applies exclusively to the construction products referred to on the cover page of this document.

B. The approval holder and, if applicable, the distributor are not permitted to make any use of the name of the UBAtc, its logo, the ATG mark, the technical approval or the approval reference to claim assessments of products which do not comply with the technical approval or for a product (and its properties or characteristics) which is not the subject of the technical approval.

C. The technical approval is based on the available technical and scientific knowledge and information, together with the information provided by the applicant and completed by an approval examination taking into account the specific nature of the product. Nevertheless, users remain responsible for selecting the product as described in the technical approval, for specific uses intended by the user.

D. Only the approval holder and, if applicable, the distributor may assert rights based on the technical approval.

E. Any references to the technical approval shall be accompanied by the ATG reference H672 and the validity period.

F. The approval holder and, if applicable, the distributor obliged to comply with the examination results specified in the technical approval when making information available to third parties. The UBAtc or the certification operator may take any appropriate action if the approval holder [or the distributor] fails to do so (sufficiently) on its own initiative.

G. Information made available in any way by the approval holder, distributor or a recognized contractor or by their representatives to (potential) users of the product covered by the technical approval (e.g. for clients, contractors, architects, consultants, designers, etc.), may not be incomplete or contradict the content of the technical approval or information referred to in the technical approval.

H. The UBAtc, the approval operator and the certification operator cannot be held responsible for any damage or adverse consequences caused to third parties as a result of the failure of the approval holder or distributor to comply with the provisions of this document.

I. 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.

J. The approval holder is at all times obliged to inform in advance the UBAtc, the approval operator and the certification operator of any possible adjustments made to raw materials and products, installation instructions and/or the manufacturing and installation processes and equipment. Depending on the information provided, the UBAtc, the approval operator and the certification operator will assess whether or not it is necessary to adapt the technical approval.

This technical approval has been published by UBAtc, under the responsibility of the approval operator, SECO/Buildwise, and based on a favourable opinion by specialised group "FACADES", expressed on 10 November 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: 23 April 2025.

For the UBAtc, as validating the approval process

Eric Winnepenninckx
Director

Frederic De Meyer
Director

For the operators

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