

Product specifications

Material Data Sheet, Safety informations
and handling instructions

Contents

Material Data Sheet	pag. 4
PA 66 GF25, dry impact resistant	pag. 5
Low Lambda PA 66 GF25, dry impact resistant	pag. 6
RE30 PA 66 GF25, dry impact resistant	pag. 7
RE30 Low Lambda PA 66 GF25, dry impact resistant	pag. 8
Recycled PA 66 GF25, dry impact resistant	pag. 9
Recycled Low Lambda PA 66 GF25, dry impact resistant	pag. 10
PA 66 GF40, dry impact resistant	pag. 11
PBT GF 30	pag. 12
Safety information	pag. 13
REACH SVHC and product safety for PA 66 based profiles	pag. 14/15

Contents

REACH SVHC and product safety for PBT based profiles	pag. 16/17
Declaration Sheet - Absence of hazardous substances	pag. 18/19
Fire classification and calorific value	pag. 20
Handling Instructions	pag. 21
Storage of polyamide-based insulating strips	pag. 22
Coating of aluminum with polyamide-based thermal break profiles	pag. 23
Assembling of polyamide-based insulating strips	pag. 24
Blistering and foaming of polyamide based insulating strips	pag. 25

Material data sheet

Material data sheet

Insulating strips of PA 66 GF25,
dry impact resistant

Characteristic	Reference standard	Unit	Samples prepared from extruded insulating strips		Injection-moulded samples
			Dry ⁽¹⁾	Equilibrium moisture content ⁽²⁾	Dry ⁽¹⁾
melting temperature	EN ISO 11357-3	°C	min. 250 ⁽³⁾	min. 250 ⁽³⁾	min. 250 ⁽³⁾
density	EN ISO 1183-1 or -3	g/cm ³	1,3 +/- 0,05	1,3 +/- 0,05	1,3 +/- 0,05
annealing residue (glass fibre content)	EN ISO 1172	%	25 +/- 2,5	25 +/- 2,5	25 +/- 2,5
shore hardness D	EN ISO 868	-	82 +/- 4 ⁽⁴⁾	78 +/- 4 ⁽⁴⁾	84 +/- 2
impact strength	EN ISO 179-1	kJ/m ²	min. 30 or without break ⁽⁵⁾	min. 40 or without break ⁽⁵⁾	min. 35 ⁽⁶⁾
tensile strength	EN ISO 527-2 and -4	N/mm ²	min. 80 ⁽⁷⁾	min. 50 ⁽⁷⁾	min. 110 ⁽⁸⁾
Young's modulus	EN ISO 527-2 and -4	N/mm ²	min. 4500 ⁽⁷⁾	min. 2000 ⁽⁷⁾	min. 6000 ⁽⁸⁾
elongation at break	EN ISO 527-2 and -4	%	min. 3,0 ⁽⁷⁾	min. 7,0 ⁽⁷⁾	min. 3,0 ⁽⁸⁾

- ¹⁾ Sample water content less than 0,2 % by weight
²⁾ Fast conditioning acc. to EN ISO 1110 (23°C / 50%)
³⁾ Maximum temperature 300°C
⁴⁾ Specimen thickness 2mm, unstacked
⁵⁾ Specimen Typ 2fU (50 mm x 10 mm x 2mm)
⁶⁾ Specimen Typ 1fU (80 mm x 10 mm x 4mm)
⁷⁾ Specimen Typ 1BA
⁸⁾ Specimen Typ 1A

In case of specific questions we gladly offer you our individual support.

Insulation solutions for
windows, doors, and facades

Material data sheet

**Insulating strips of Low Lambda PA 66 GF25,
dry impact resistant**

Characteristic	Reference standard	Unit	Samples prepared from extruded insulating strips	
			Dry ⁽¹⁾	Equilibrium moisture content ⁽²⁾
melting temperature	EN ISO 11357-3	°C	min. 250 ⁽³⁾	min. 250 ⁽³⁾
density	EN ISO 1183-1 or -3	g/cm ³	1,0 +/- 0,1	1,0 +/- 0,1
annealing residue (glass fibre content)	EN ISO 1172	%	25 +/- 2,5	25 +/- 2,5
shore hardness D	EN ISO 868	-	77 +/- 4 ⁽⁴⁾	67 +/- 4 ⁽⁴⁾
impact strength	EN ISO 179-1	kJ/m ²	min. 20 ⁽⁵⁾	min. 30 ⁽⁵⁾
tensile strength	EN ISO 527-2 and -4	N/mm ²	min. 50 ⁽⁶⁾	min. 35 ⁽⁶⁾
Young's modulus	EN ISO 527-2 and -4	N/mm ²	min. 2900 ⁽⁶⁾	min. 1300 ⁽⁶⁾
elongation at break	EN ISO 527-2 and -4	%	min. 3 ⁽⁶⁾	min. 8 ⁽⁶⁾

- 1) Sample water content less than 0,2 % by weight
- 2) Fast conditioning acc. to EN ISO 1110 (23°C / 50 %)
- 3) Maximum temperature 300°C
- 4) Specimen thickness 2mm, unstacked
- 5) Specimen Typ 2fU (50 mm x 10 mm x 2mm)
- 6) Specimen Typ 1BA

In case of specific questions we gladly offer you our individual support.

**Insulation solutions for
windows, doors, and facades**

Material data sheet



Insulating strips of PA 66 GF25 RE30,
dry impact resistant

Characteristic	Reference standard	Unit	Samples prepared from extruded insulating strips		Injection-moulded samples
			Dry ⁽¹⁾	Equilibrium moisture content ⁽²⁾	Dry ⁽¹⁾
melting temperature	EN ISO 11357-3	°C	min. 250 ⁽³⁾	min. 250 ⁽³⁾	min. 250 ⁽³⁾
density	EN ISO 1183-1 or -3	g/cm ³	1.3 +/- 0.05	1.3 +/- 0.05	1.3 +/- 0.05
annealing residue (glass fibre content)	EN ISO 1172	%	25 +/- 2.5	25 +/- 2.5	25 +/- 2.5
shore hardness D	EN ISO 868	-	82 +/- 4 ⁽⁴⁾	78 +/- 4 ⁽⁴⁾	84 +/- 2
impact strength	EN ISO 179-1	kJ/m ²	min. 30 or without break ⁽⁵⁾	min. 40 or without break ⁽⁵⁾	min. 35 ⁽⁶⁾
tensile strength	EN ISO 527-2 and -4	N/mm ²	min. 80 ⁽⁷⁾	min. 50 ⁽⁷⁾	min. 110 ⁽⁸⁾
Young's modulus	EN ISO 527-2 and -4	N/mm ²	min. 4500 ⁽⁷⁾	min. 2000 ⁽⁷⁾	min. 6000 ⁽⁸⁾
elongation at break	EN ISO 527-2 and -4	%	min. 3 ⁽⁷⁾	min. 7 ⁽⁷⁾	min. 3 ⁽⁸⁾

¹⁾ Sample water content less than 0.2 % by weight

²⁾ Fast conditioning acc. to EN ISO 1110 (23 °C / 50 %)

³⁾ Maximum temperature 300 °C

⁴⁾ Specimen thickness 2 mm, unstacked

⁵⁾ Specimen 2fU (50 mm x 10 mm x 2 mm)

⁶⁾ Specimen 1fU (80 mm x 10 mm x 4 mm)

⁷⁾ Specimen Type 1BA

⁸⁾ Specimen Type 1A

The product contains at least a 30% weight of pre-consumer recycled raw materials according to ISO 14021 standard

In case of specific questions we gladly offer you our individual support.

**Insulation solutions for
windows, doors, and facades**

Material data sheet



Insulating strips of Low Lambda PA 66 GF25 RE30,
dry impact resistant

Characteristic	Reference standard	Unit	Samples prepared from extruded insulating strips	
			Dry ⁽¹⁾	Equilibrium moisture content ⁽²⁾
melting temperature	EN ISO 11357-3	°C	min. 250 ⁽³⁾	min. 250 ⁽³⁾
density	EN ISO 1183-1 or -3	g/cm ³	1.0 +/- 0.1	1.0 +/- 0.1
annealing residue (glass fibre content)	EN ISO 1172	%	25 +/- 2.5	25 +/- 2.5
shore hardness D	EN ISO 868	-	77 +/- 4 ⁽⁴⁾	67 +/- 4 ⁽⁴⁾
impact strength	EN ISO 179-1	kJ/m ²	min. 20 ⁽⁵⁾	min. 30 ⁽⁵⁾
tensile strength	EN ISO 527-2 and -4	N/mm ²	min. 50 ⁽⁶⁾	min. 35 ⁽⁶⁾
Young's modulus	EN ISO 527-2 and -4	N/mm ²	min. 2900 ⁽⁶⁾	min. 1300 ⁽⁶⁾
elongation at break	EN ISO 527-2 and -4	%	min. 3 ⁽⁶⁾	min. 8 ⁽⁶⁾

¹⁾ Sample water content less than 0.2 % by weight

²⁾ Fast conditioning acc. to EN ISO 1110 (23 °C / 50 %)

³⁾ Maximum temperature 300 °C

⁴⁾ Specimen thickness 2 mm, unstacked

⁵⁾ Specimen 2fU (50 mm x 10 mm x 2 mm)

⁶⁾ Specimen Type 1BA

The product contains at least a 30% weight of pre-consumer recycled raw materials according to ISO 14021 standard

In case of specific questions we gladly offer you our individual support.

**Insulation solutions for
windows, doors, and facades**

Material data sheet

Insulating strips of recycled PA 66 GF25,
dry impact resistant ⁽⁹⁾

Characteristic	Reference standard	Unit	samples prepared from extruded insulating strips		injection-moulded samples
			dry ⁽¹⁾	Equilibrium moisture content ⁽²⁾	dry ⁽¹⁾
melting temperature	EN ISO 11357-3	°C	min. 250 ⁽³⁾	min. 250 ⁽³⁾	min. 250 ⁽³⁾
density	EN ISO 1183-1 or -3	g/cm ³	1.3 +/- 0.05	1.3 +/- 0.05	1.3 +/- 0.05
annealing residue (glass fibre content)	EN ISO 1172	%	25 +/- 2.5	25 +/- 2.5	25 +/- 2.5
shore hardness D	EN ISO 868	-	82 +/- 4 ⁽⁴⁾	78 +/- 4 ⁽⁴⁾	84 +/- 2
impact strength	EN ISO 179-1	kJ/m ²	min. 30 or without break ⁽⁵⁾	min. 40 or without break ⁽⁵⁾	min. 35 ⁽⁶⁾
tensile strength	EN ISO 527-2 and -4	N/mm ²	min. 80 ⁽⁷⁾	min. 50 ⁽⁷⁾	min. 110 ⁽⁸⁾
Young's modulus	EN ISO 527-2 and -4	N/mm ²	min. 4500 ⁽⁷⁾	min. 2000 ⁽⁷⁾	min. 6000 ⁽⁸⁾
elongation at break	EN ISO 527-2 and -4	%	min. 3 ⁽⁷⁾	min. 7 ⁽⁷⁾	min. 3 ⁽⁸⁾

¹⁾ Sample water content less than 0.2 % by weight

²⁾ Fast conditioning acc. to EN ISO 1110 (23°C / 50 %)

³⁾ Maximum temperature 300 °C

⁴⁾ Specimen thickness 2 mm, unstacked

⁵⁾ Specimen 2fU (50 mm x 10 mm x 2 mm)

⁶⁾ Specimen 1fU (80 mm x 10 mm x 4 mm)

⁷⁾ Specimen Type 1BA

⁸⁾ Specimen Type 1A

⁹⁾ The polyamide 66 used consists of 100 % post industrial recycled materials.

In case of specific questions we gladly offer you our individual support.

Insulation solutions for
windows, doors, and facades

Material data sheet

Insulating strips of recycled Low Lambda PA 66 GF25,
dry impact resistant ⁽⁷⁾

Characteristic	Reference standard	Unit	Samples prepared from extruded insulating strips	
			Dry ⁽¹⁾	Equilibrium moisture content ⁽²⁾
melting temperature	EN ISO 11357-3	°C	min. 250 ⁽³⁾	min. 250 ⁽³⁾
density	EN ISO 1183-1 or -3	g/cm ³	1.0 +/- 0.1	1.0 +/- 0.1
annealing residue (glass fibre content)	EN ISO 1172	%	25 +/- 2.5	25 +/- 2.5
shore hardness D	EN ISO 868	-	77 +/- 4 ⁽⁴⁾	67 +/- 4 ⁽⁴⁾
impact strength	EN ISO 179-1	kJ/m ²	min. 20 ⁽⁵⁾	min. 30 ⁽⁵⁾
tensile strength	EN ISO 527-2 and -4	N/mm ²	min. 50 ⁽⁶⁾	min. 35 ⁽⁶⁾
Young's modulus	EN ISO 527-2 and -4	N/mm ²	min. 2900 ⁽⁶⁾	min. 1300 ⁽⁶⁾
elongation at break	EN ISO 527-2 and -4	%	min. 3 ⁽⁶⁾	min. 8 ⁽⁶⁾

¹⁾ Sample water content less than 0.2 % by weight

²⁾ Fast conditioning acc. to EN ISO 1110 (23 °C / 50 %)

³⁾ Maximum temperature 300 °C

⁴⁾ Specimen thickness 2 mm, unstacked

⁵⁾ Specimen 2fU (50 mm x 10 mm x 2 mm)

⁶⁾ Specimen Type 1BA

⁷⁾ The polyamide 66 used consists of 100 % post industrial recycled materials.

In case of specific questions we gladly offer you our individual support.

Insulation solutions for
windows, doors, and facades

Material data sheet

Insulating strips of PA 66 GF40,
dry impact resistant

Characteristic	Reference standard	Unit	Samples prepared from extruded insulating strips	
			Dry ⁽¹⁾	Equilibrium moisture content ⁽²⁾
melting temperature	EN ISO 11357-3	°C	min. 250 ⁽³⁾	min. 250 ⁽³⁾
density	EN ISO 1183-1 or -3	g/cm ³	1,45 +/- 0,05	1,45 +/- 0,05
annealing residue (glass fibre content)	EN ISO 1172	%	40 +/- 2,5	40 +/- 2,5
shore hardness D	EN ISO 868	-	83 +/- 4 ⁽⁴⁾	78 +/- 4 ⁽⁴⁾
impact strength	EN ISO 179-1	kJ/m ²	min. 30 or without break ⁽⁵⁾	min. 40 or without break ⁽⁵⁾
tensile strength	EN ISO 527-2 and -4	N/mm ²	min. 100 ⁽⁶⁾	min. 60 ⁽⁶⁾
Young's modulus	EN ISO 527-2 and -4	N/mm ²	min. 5500 ⁽⁶⁾	min. 2500 ⁽⁶⁾
elongation at break	EN ISO 527-2 and -4	%	min. 3 ⁽⁶⁾	min. 7 ⁽⁶⁾

- ¹⁾ Sample water content less than 0,2 % by weight
- ²⁾ Fast conditioning acc. to EN ISO 1110 (23°C / 50 %)
- ³⁾ Maximum temperature 300°C
- ⁴⁾ Specimen thickness 2mm, unstacked
- ⁵⁾ Specimen Typ 2fU (50 mm x 10 mm x 2mm)
- ⁶⁾ Specimen Typ 1BA

In case of specific questions we gladly offer you our individual support.

Insulation solutions for
windows, doors, and facades

Material data sheet

High precision strips of PBT GF30

Characteristic	Reference standard	Unit	Samples prepared from extruded insulating strips ⁽¹⁾	Injection-moulded samples ⁽²⁾
melting temperature	EN ISO 11357-3	°C	min. 215	min. 215
density	EN ISO 1183-1 or -3	g/cm ³	1,53 +/- 0,05	1,53 +/- 0,05
annealing residue (glass fibre content)	EN ISO 1172	%	30 +/- 2,5	30 +/- 2,5
shore hardness D	EN ISO 868	-	82 +/- 4 ⁽³⁾	77 +/- 4
impact strength	EN ISO 179-1	kJ/m ²	min. 17 ⁽⁴⁾	min. 30 ⁽⁵⁾
tensile strength	EN ISO 527-2 and -4	MPa	min. 67 ⁽⁶⁾	min. 95 ⁽⁷⁾
Young's modulus	EN ISO 527-2 and -4	MPa	min. 3600 ⁽⁶⁾	min. 6800 ⁽⁷⁾
elongation at break	EN ISO 527-2 and -4	%	min. 1,9 ⁽⁶⁾	min. 2,2 ⁽⁷⁾

¹⁾ Water Content less than 0.2 % (EMC 0.2 % at 23°C/50 % RH)

²⁾ Dry as moulded

³⁾ Specimen thickness 2mm unstacked

⁴⁾ Specimen Type 2fU (50mm x 10mm x 2mm)

⁵⁾ Specimen Type 1fU (80mm x 10mm x 4 mm)

⁶⁾ Specimen Typ 1BA

⁷⁾ Specimen Type 1A

In case of specific questions we gladly offer you our individual support.

**Insulation solutions for
windows, doors, and facades**

Safety information

REACH, SVHC and product safety for PA 66 based profiles

Fulfilment of REACH regulation and absence of SVHC in Technoform products

We hereby confirm that within the production of Technoform articles, all ingredients used comply with the EU REACH regulation 1907/2006 (Registration, Evaluation and Authorisation of Chemicals).

Based on our knowledge of the manufacturing process and on the information available to us from our raw material suppliers, the products manufactured and sold by Technoform do not contain as intentional additives any of the substances identified as SVHC (Substances of Very High Concern). As our products do not contain SVHC substances, no declaration to the SCIP database is necessary.

The absence of hazardous substances was not determined by Technoform through specific testing, but it is based upon information provided by our raw material suppliers, who do not exclude that some of the substances mentioned above may possibly be present as trace impurities.

Our products are compliant with the limitations of REACH Annex XVII about restrictions on the use of dangerous substances.

Ongoing amendments concerning the REACH regulations are systematically analysed in our company and their implementation ensured.

This statement is valid for the following products (including confection features and packaging):

- PA 66 GF25, dry impact resistant
- PA 66 GF40, dry impact resistant
- Low Lambda PA 66 GF25, dry impact resistant
- Recycled PA 66 GF25, dry impact resistant
- Low Lambda Recycled PA 66 GF25, dry impact resistant

Link to SVHC List on ECHA-Homepage: <http://echa.europa.eu/candidate-list-table>

Link to substances restricted under REACH: <https://echa.europa.eu/substances-restricted-under-reach>

The document is provided electronically and it has to be considered valid even without signature.

In case of specific questions we gladly offer you our support

REACH, SVHC and product safety for PA 66 based profiles

Product safety information

Please note that classification and labelling (CLP) regulation (Regulation 1272/2008), and the duty to provide Safety Data Sheet, apply only to substances and mixtures. The safety information about Technoform articles below is provided voluntarily, out of any obligation, only as meaning of care towards the user.

1. Product

1.1 Product data

Description: insulating profiles.

Product Type: extruded profiles PA 66 based.

1.2 Relevant identified uses

Insulation solutions for window, doors and facades.

1.3 Emergency contact

Please refer to your local emergency number.

2. Hazards identification

No specific dangers known if the regulations/notes for storage and handling are considered.

3. Composition / Data on constituents

Chemical composition: preparation based on polyamide PA 66. In addition to PA 66, also contains pigments, fillers, additives, stabilizers and glass fibres.

Hazardous constituents: none.

4. First-aid measures

If difficulties occur after inhaling dust, provide fresh air and seek medical care. If difficulties occur in case of cuts or injuries, seek medical advice.

5. Fire-fighting measures

5.1 Special hazards arising from the mixture

Hazards arising from the mixture: no specific fire or explosion hazards.

Hazardous thermal decomposition products: at temperatures of > 270 °C can be emitted: ammonia, carbon monoxide, carbon dioxide, nitrogen oxides. Under special fire conditions traces of other toxic substances are possible. Formation of further decomposition and oxidation products depends upon the fire conditions.

5.2 Extinguishing media

Suitable extinguishing agents: use extinguishing media suitable for the surrounding fire. E.g. water spray, foam, dry powder.

Unsuitable extinguishing agents for reasons of safety: none.

5.3 Advice for fire-fighters

Special protective equipment: wear a self-contained breathing apparatus.

Further information: dispose of fire debris and contaminated extinguishing water in accordance with official directives.

6. Accidental release measures

Not applicable.

7. Handling and storage

Notes on safe handling: no special measures required.

Store in the original container protected from direct sunlight in a dry, cool and well-ventilated area, away from other incompatible materials (see Section 10) and from food and drink.

8. Personal protection

Always wear protective goggles, strong work gloves, protective clothing and sturdy footwear during handling.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form: solid profiles.

Colour: black or others.

Odour: odourless.

Melting point: 250 – 265 °C

Solubility in water: insoluble.

Density PA66 products: 1.25 – 1.35 g/ccm

Density Low Lambda PA66 products: 0.90 – 1.10 g/ccm

10. Stability and reactivity

No hazardous reactions if stored and handled as prescribed.

The product is stable if stored and handled as prescribed.

Avoid contact to strong acids.

11. Toxicological information

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

12. Ecotoxicological information

Based on our experience and the information available, no adverse environmental effects are expected if handled as recommended with suitable precautions for designated uses.

13. Notes on disposal

Disposal of this product must always be carried out in accordance with the law provisions on environmental protection and waste disposal and fulfilling the requirements of any relevant local authority.

The material in the product can be recycled.

14. Transportation information

Not classified as dangerous goods under transport regulations.

15. Regulations

Water hazard class (WHC): 0 (water-insoluble, non-toxic solid).

Chemical Safety Assessment not required.

16. Other data

The cited data are based on our current knowledge and must not be taken as a warranty of properties.

The data do not free the buyer from own examinations and tests, to determine the concrete suitability of the products for the intended use.

The recipient of our product assumes responsibility to observe existing laws and provisions.

REACH, SVHC and product safety for PBT based profiles

Fulfilment of REACH regulation and absence of SVHC in Technoform PBT products

We hereby confirm that within the production of Technoform articles, all ingredients used comply with the EU REACH regulation 1907/2006 (Registration, Evaluation and Authorisation of Chemicals).

Based on our knowledge of the manufacturing process and on the information available to us from our raw material suppliers, the products manufactured and sold by Technoform do not contain as intentional additives any of the substances identified as SVHC (Substances of Very High Concern). As our products do not contain SVHC substances, no declaration to the SCIP database is necessary.

The absence of hazardous substances was not determined by Technoform through specific testing, but it is based upon information provided by our raw material suppliers, who do not exclude that some of the substances mentioned above may possibly be present as trace impurities.

Our products are compliant with the limitations of REACH Annex XVII about restrictions on the use of dangerous substances.

Ongoing amendments concerning the REACH regulations are systematically analysed in our company and their implementation ensured.

This statement is valid for the following products (including confection features and packaging):

- PBT GF30

Link to SVHC List on ECHA-Homepage: <http://echa.europa.eu/candidate-list-table>

Link to substances restricted under REACH: <https://echa.europa.eu/substances-restricted-under-reach>

The document is provided electronically and it has to be considered valid even without signature.

In case of specific questions we gladly offer you our support

REACH, SVHC and product safety for PBT based profiles

Product safety information

Please note that classification and labelling (CLP) regulation (Regulation 1272/2008), and the duty to provide Safety Data Sheet, apply only to substances and mixtures. The safety information about Technoform articles below is provided voluntarily, out of any obligation, only as meaning of care towards the user.

1. Product

1.1 Product data

Description: insulating profiles.

Product Type: extruded profiles PBT based.

1.2 Relevant identified uses

Insulation solutions for window, doors and facades.

1.3 Emergency contact

Please refer to your local emergency number.

2. Hazards identification

No specific dangers known if the regulations/notes for storage and handling are considered.

3. Composition / Data on constituents

Chemical composition: preparation based on PBT (Polybutylene terephthalate). In addition to PBT, also contains pigments, fillers, additives, stabilizers and glass fibres.

Hazardous constituents: none.

4. First-aid measures

If difficulties occur after inhaling dust, provide fresh air and seek medical care. If difficulties occur in case of cuts or injuries, seek medical advice.

5. Fire-fighting measures

5.1 Special hazards arising from the mixture

Hazards arising from the mixture: no specific fire or explosion hazards.

Hazardous thermal decomposition products: at temperatures of > 290 °C can be emitted: carbon monoxide, tetrahydrofuran.

Under special fire conditions traces of other toxic substances are possible. Formation of further decomposition and oxidation products depends upon the fire condition

5.2 Extinguishing media

Suitable extinguishing agents: use extinguishing media suitable for the surrounding fire. E.g. water spray, foam, dry powder.

Unsuitable extinguishing agents for reasons of safety: none.

5.3 Advice for fire-fighters

Special protective equipment: wear a self-contained breathing apparatus.

Further information: dispose of fire debris and contaminated extinguishing water in accordance with official directives.

6. Accidental release measures

Not applicable.

7. Handling and storage

Notes on safe handling: no special measures required.

Store in the original container protected from direct sunlight in a dry, cool and well-ventilated area, away from other incompatible materials (see Section 10) and from food and drink.

8. Personal protection

Always wear protective goggles, strong work gloves, protective clothing and sturdy footwear during handling.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form: solid profiles.

Colour: black or others.

Odour: odourless.

Melting point: approx. 220°C

Solubility in water: insoluble.

Density PBT products: 1.48 – 1.58 g/ccm

10. Stability and reactivity

No hazardous reactions if stored and handled as prescribed.

The product is stable if stored and handled as prescribed.

Avoid contact to strong acids.

11. Toxicological information

Based on our experience and the information available, no adverse health effects are expected if handled as recommended with suitable precautions for designated uses.

12. Ecotoxicological information

Based on our experience and the information available, no adverse environmental effects are expected if handled as recommended with suitable precautions for designated uses.

13. Notes on disposal

Disposal of this product must always be carried out in accordance with the law provisions on environmental protection and waste disposal and fulfilling the requirements of any relevant local authority.

The material in the product can be recycled.

14. Transportation information

Not classified as dangerous goods under transport regulations.

15. Regulations

Water hazard class (WHC): 0 (water-insoluble, non-toxic solid).

Chemical Safety Assessment not required.

16. Other data

The cited data are based on our current knowledge and must not be taken as a warranty of properties.

The data do not free the buyer from own examinations and tests, to determine the concrete suitability of the products for the intended use.

The recipient of our product assumes responsibility to observe existing laws and provisions.

Declaration sheet

Absence of hazardous substances in Technoform materials

We hereby confirm, that Technoform Bautech materials does not intentionally contain any of the additives listed below. This applies to our products in PA 66 GF25, dry impact resistant; PA 66 GF40, dry impact resistant; Recycled PA 66 GF25, dry impact resistant and Low Lambda PA 66 GF25, dry impact resistant.

Living Building Challenge Red List

Asbestos
Cadmium
Chlorinated Polyethylene and Chlorosulfonated Polyethylene
Chlorofluorocarbons (CFCs)
Chloroprene (Neoprene)
Formaldehyde (added)
Halogenated Flame Retardants (PBDE, TBBPA, HBCD, Deca-BDE, TCPP, TCEP and other retardants with bromine or chlorine)"
Hydrochlorofluorocarbons (HCFCs)
Lead (added)
Mercury
Petrochemical Fertilizers and Pesticides
Phthalates
Polyvinyl Chloride (PVC or CPVC)
Wood treatments containing Creosote, Arsenic or Pentachlorophenol

Google's Materials of Concern

Anti-microbial chemicals
Coal ash
Nanomaterials

U.S. EPA Chemicals of Concern

Benzidine Dyes
Bisphenol A (BPA)
Methylene Diphenyl Diisocyanate (MDI)
Nonylphenol and Nonylphenol Ethoxylates
Perfluorinated chemicals (PFCs, including PFOA and Teflon)
Short chain chlorinated paraffins
Toluene Diisocyanate (TDI)

The absence of hazardous substances was not determined by Technoform Bautech through specific testing but it is based upon information provided by our raw material suppliers, who do not exclude that some of the substances mentioned above may possible be present as trace impurities.

This statement is only valid for the material mentioned above. We cannot guarantee that your final product does not contain any additives as these may be result of additional processing at your plant, which is not under our control.

The product information presented above is correct to the best of our knowledge today.

Declaration sheet

Absence of hazardous substances in Technoform materials

We hereby confirm, that Technoform Bautech materials does not intentionally contain any of the additives listed below. This applies to our products in PA 66 GF25, dry impact resistant; PA 66 GF40, dry impact resistant; Recycled PA 66 GF25, dry impact resistant and Low Lambda PA 66 GF25, dry impact resistant.

State of the Environment Norway :

List of Priority Substances

Arsenic
Bisphenol A
Brominated flame retardants
Diethylhexylphthalat
Certain surfactants (DTDMAC, DSDMAC, DHTDMAC)
1,2-Dichloroethane (EDC)
Dioxins and furans
Cadmium
Chlorinated alkyl benzenes (CABs)
Chromium
Hexachlorobenzene
Lead
Medium-chain chlorinated paraffins
Mercury
Musk xylenes
Nonylphenol and its ethoxylates

Octylphenol and its ethoxylates
Polycyclic Aromatic Hydrocarbons (PAH)
Pentachlorophenol (PCP)
Polychlorinated biphenyls (PCBs)
PFOA
Short-chain chlorinated paraffins
Siloxane-D4
Siloxane-D5
TCEP (tris (2-chloroethyl) phosphate)
Tetrachloroethene (PER)

State of the Environment Norway: List of Priority Substances (Part 2)

Tributyl tin compounds
Trichlorobenzene
Trichloroethene (TRI)
Triclosan
2,4,6 Tri-tert-butylphenol

The absence of hazardous substances was not determined by Technoform Bautech through specific testing but it is based upon information provided by our raw material suppliers, who do not exclude that some of the substances mentioned above may possible be present as trace impurities.

This statement is only valid for the material mentioned above. We cannot guarantee that your final product does not contain any additives as these may be result of additional processing at your plant, which is not under our control.

The product information presented above is correct to the best of our knowledge today.

Confirmation sheet

Fire classification and calorific value of PA 66 GF25, dry impact resistant

Reaction to fire classification

according to EN 13501-1

We confirm that, unmanufactured material used by Technoform Bautech to produce insulating strips PA 66 GF25, dry impact resistant conforms to the requirements of "reaction to fire class E" according to EN 13501-1.

The test has been carried out with insulating strips with a wall-thickness of 2,1 mm and 1,6 mm in accordance to EN ISO 11925-2.

Confirmation of calorific value

We hereby confirm the calorific value of the raw material PA 66 GF25, dry impact resistant processed by Technoform Bautech:

Hi = 23 MJ/kg

Reference standard DIN 51900

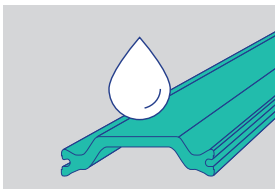
Handling instructions

Handling instructions

Storage of polyamide-based insulating strips

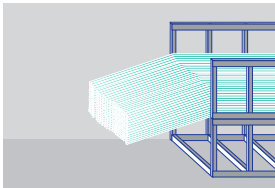
Insulating strips made of polyamide are initially dry but absorb moisture from the environment in the course of time after manufacture. The rate and level of moisture absorption depend on the following factors:

- Ambient humidity
- Ambient temperature
- Storage period

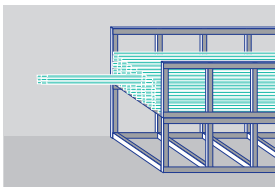


The problem

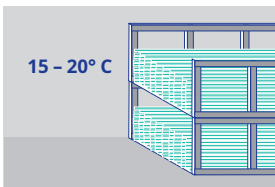
In summer, when the temperature and relative humidity in warehouses are higher than usual, the insulating strips absorb more moisture than in the remaining seasons, even when stored properly for brief periods. During storage under dry conditions, the equilibrium moisture content is lower, approx. 2%. During extended storage periods, the strips change shape according to storage conditions.



The longer the storage period, the greater the possibility of the sag becoming permanent. If the strips are stacked on pallets which are shorter than the strip length (e.g. 6.500 mm strips on 6.000 mm pallets), they sag at the ends. This applies to strips stored in pallets where there is no floor. The strips shouldn't overlap the end of the supports.



A twisting of the strips, which can occur, for example, when individual bundles are removed from a pallet, can also become permanent if the strips are not straightened.



The correct storage

In order to avoid bending or twisting of the strips, take note of the following factors:

- Store the strips so that the degree of sag is minimized
- Make sure to support protruding sections
- Brief storage periods
- Store covered with an ideal room temperature range of 15 – 20 °C

Handling instructions

Coating of aluminum with polyamide-based thermal break profiles

Aluminum with polyamide-based thermal break profiles are generally coated as follows:

1. Conventional cleaning and/or pre-treatment baths

2. Drying of profiles

(e.g. blowing-out or drainage using compressed air)

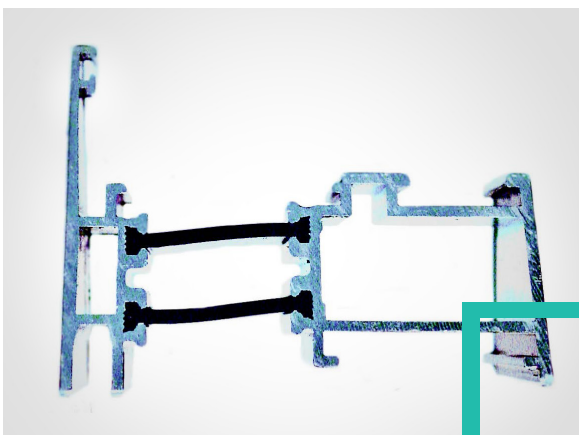
It must be ensured that no residues from the bath are present on the profiles, in the cavities or gaps. Such moisture can lead to the following problems: Formation of blisters or even rupture of insulating strips as a result of oven temperature.

3. Suspending profiles for coating

In order to avoid excessive bending in the horizontal coating process the profile might have to be supported if either the weight of the assembled profile is too high or if the geometry-dependent expansions are too different. In order to eliminate lob-sidedness in the vertical coating process it is important to hang the assembled profile from the aluminum part / parts (heavier part) so that it will hang as vertically as possible.

4. Coating the profiles in the oven

The object temperature of 180 °C – 200 °C and the dwell time of approx. 20 min. must not be exceeded. If this temperature or time is exceeded, the stability of the insulating strips may suffer. There is the risk of the profiles dis-aligning and moving out of parallel as well as a considerable loss of strength in the connection between the two aluminium sections.



Possible dis-aligning of an aluminum with polyamide-based thermal break profile

Handling instructions

Assembling of polyamide-based insulating strips in aluminum profiles

The insulating strips are usually assembled as follows:

1. Room temperature

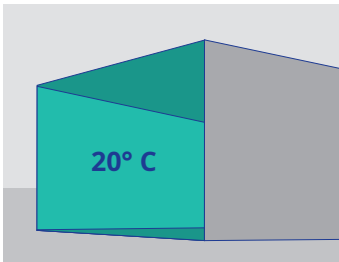
Assembly should be performed in a production hall at room temperature under standard climatic conditions. Before assembly, ensure that the insulating strips have also attained room temperature (refer also to handling instructions on "Storage").

2. Knurling

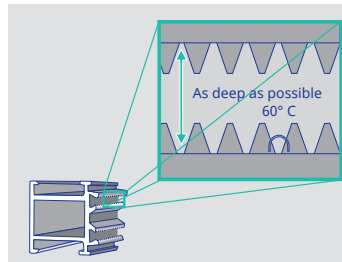
As the degree of knurling of aluminum profiles subsequently influences the shearing strength of the assembled profile, the knurling edges should be as pronounced and sharp as possible. It is essential to ensure that the insulating strips can still be inserted into the groove after knurling (also in the case of painted aluminum profiles). When knurling painted aluminum profiles, take into consideration that the paint layer may cause the opening of the groove to be smaller.

3. Assembling

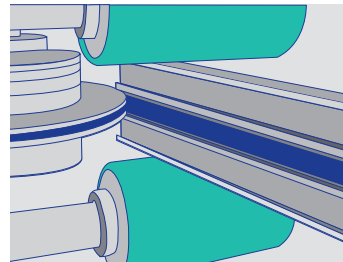
The rolling-in machine must be adjusted for the geometry involved. Parallel guidance of the aluminum profiles should be ensured, if necessary by using supporting rollers. The hammer must penetrate the head of the insulating strip.



1. Ideal room temperature



2. Close-up view of a knurling



3. Assembling process

Handling instructions

Blistering and foaming of polyamide-based insulating strips

Problem statement:

Polyamide is a hydrophilic thermoplastic which absorbs moisture from the environment in the course of time. The rate and degree of moisture-absorption is dependent on the ambient temperature and ambient humidity.

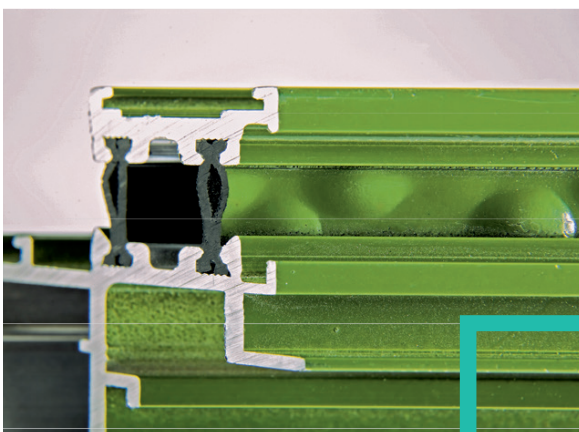
If a polyamide-based insulating strip is subjected to extreme temperatures after having absorbed moisture, this moisture is converted into the vapour phase. This change of state is accompanied by an increase in volume, which can result in blistering or foaming of the insulating strip.

This is dependent on the combined action of two parameters (temperature and moisture content):

Our experience has shown that "conventional" moisture contents resulting from absorption from air during storage of strips/assembled profiles allow object temperatures of 180 °C to 200 °C and dwell times of approx. 20 minutes during the baking of powder coatings.

To prevent blistering and foaming of polyamide-based insulating strips, please ensure the following:

- dry storage of insulating strips and of untreated assembled profiles (rainwater, condensation etc. which has been collected on the insulating strips will be absorbed by the strips thereby increasing the normal storage moisture level.)
- thorough drainage of assembled profiles following pre-treatment and anodization (residual water is absorbed more rapidly by the insulating strip during baking as a result of the oven temperatures and thus increases the normal storage moisture level.)
- uniform temperature in drying and baking ovens (depending on oven type and location of temperature sensor, the temperature of the injected air can significantly exceed the selected oven temperature. Please observe the appropriate object temperature for the various shell weights.)



Blistering/Foaming
on the insulating
strips