

Product Information

Glass fibre reinforced and heat aging resistance injection moulding grade for industrial articles having very high rigidity.

Physical form and storage

The product is supplied in the form of granules with a bulk density of approx. 0.7 g/cm³. Standard packs are bag and bulk container (octagonal IBC=intermediate bulk container made from corrugated board with a liner bag). Other packaging materials and shipping in road or rail silo wagons are possible by agreement. The containers should only be opened immediately before processing or drying. To ensure that the delivered product absorbs as little moisture as possible, the containers should be stored in dry rooms and always carefully closed again after partial quantities have been withdrawn. In principle, the product can be stored for a long period of time. Containers stored in cold rooms should be equalized to ambient temperature before opening in order to avoid condensation on the granules. Regardless of the storage conditions, the product should be pre-dried according to our recommendations and the machine should preferably be loaded using a closed conveyor system.

Product safety

In case processing is done under conditions as recommended (cf. processing data sheet) melts are thermally stable and do not generate hazards by molecular degradation or the evolution of gases and vapors. Like all thermoplastic polymers the product decomposes on exposure to excessive thermal load, e.g. when it is overheated or as a result of cleaning by burning off. Further information is available from the safety data sheet.

Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed. In order to check the availability of products please contact us or our sales agency.

Typical values for uncoloured product at 23 °C ¹⁾	Test method	Unit	Values ²⁾
Properties			
Polymer abbreviation	-	-	PA66-GF50
Density	ISO 1183	kg/m ³	1560
Viscosity number (0.5% in 96% H ₂ SO ₄)	ISO 307, 1157, 1628	cm ³ /g	130
Moisture absorption, equilibrium 23°C/50% r.h.	similar to ISO 62	%	1 - 1.4
Water absorption, saturation in water at 23°C	similar to ISO 62	%	3.7 - 4.3
Processing			
Melting temperature, DSC	ISO 11357-1/-3	°C	260
MVR 275 °C/5 kg	ISO 1133	cm ³ /10min	10
Melt temperature, injection moulding/extrusion	-	°C	290 - 310
Mould temperature, injection moulding	-	°C	80 - 100
Moulding shrinkage, constrained ³⁾	-	%	0.42
Molding shrinkage (parallel)	ISO 294-4	%	0.35
Molding shrinkage (normal)	ISO 294-4	%	0.95
injection molding, Melt temperature, recommended	-	°C	300
injection molding, Mold temperature, recommended	-	°C	100
Pre/Post-processing, Pre-drying, Temperature	-	°C	80
Pre/Post-processing, Pre-drying, Time	-	h	4
Flammability			
UL94 flammability rating at nominal 1.5 mm (thickness tested)	IEC 60695-11-10	class (mm)	HB (1.54)
Yellow Card available	-	-	yes
UL94 flammability rating (thickness tested)	IEC 60695-11-10	class (mm)	HB (0.8)
Yellow Card available	-	-	yes
Automotive materials (Thickness 1 mm) ⁴⁾	ISO 3795, FMVSS 302	-	+
Oxygen index	ISO 4589-1/-2	%	24
UL 94 rating at 3.12 mm thickness	UL-94, IEC 60695	class	HB
Mechanical properties			dry / cond.
Tensile modulus	ISO 527-1/-2	MPa	16800 / 12500
Stress at break	ISO 527-1/-2	MPa	240 / 180
Strain at break	ISO 527-1/-2	%	2.5 / 3.5
Tensile creep modulus, 1000 h, strain 0.5%, 23°C	ISO 899-1	MPa	* / 7800
Flexural modulus	ISO 178	MPa	15000 / 13500
Flexural strength	ISO 178	MPa	360 / 300
Charpy unnotched impact strength (23°C)	ISO 179/1eU	kJ/m ²	95 / 100
Charpy unnotched impact strength (-30°C)	ISO 179/1eU	kJ/m ²	90 / 103
Charpy notched impact strength (23°C)	ISO 179/1eA	kJ/m ²	18 / 25
Charpy notched impact strength (-30°C)	ISO 179/1eA	kJ/m ²	13 / 12.6
Izod notched impact strength (23°C)	ISO 180/A	kJ/m ²	13 / 14.5
Thermal properties			
Deflection temp. under load 1.8 MPa (HDT A)	ISO 75-1/-2	°C	250
Deflection temp. under load 0.45 MPa (HDT B)	ISO 75-1/-2	°C	250
Max. service temperature (short cycle operation) ⁵⁾	-	°C	240
Temperature index at 50% loss of tensile strength after 5000 h	IEC 60216	°C	175
Temperature index at 50% loss of tensile strength after 20000 h	IEC 60216	°C	145
Coefficient of linear thermal expansion, longitudinal (23-55)°C	ISO 11359-1/-2	E-6/K	16
Coefficient of linear thermal expansion, transverse (23-55)°C	ISO 11359-1/-2	E-6/K	80
Thermal conductivity	DIN 52612-1	W/(m K)	0.37
Specific heat capacity	-	J/(kg*K)	1300

Footnotes

1) If product name or properties don't state otherwise.

2) The asterisk symbol "*" signifies inapplicable properties.

3) Test box with central gating, dimensions of base (107*47*1.5) mm, processing conditions: TM = 290°C, TW = 80°C

4) + = passed

5) Empirical values determined on articles repeatedly subjected to the temperature concerned for several hours at a time over a period of several years. Provision Proper design and processing according to our recommendations.

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Typical values for uncoloured product at 23 °C ¹⁾	Test method	Unit	Values ²⁾
Electrical properties			dry / cond.
Relative permittivity (1 MHz)	IEC 62631-2-1	-	3.8 / 6.6
Dissipation factor (1 MHz)	IEC 62631-2-1	E-4	150 / 3000
Dissipation factor (100 Hz)	IEC 62631-2-1	E-4	150 / 1700
Volume resistivity	IEC 62631-3-1	Ohm*m	1E13 / 1E10
Surface resistivity	IEC 62631-3-2	Ohm	1E12 / 1E10
Comparative tracking index, CTI, test liquid A	IEC 60112	-	- / 550
Comparative tracking index, CTI M, test liquid B	IEC 60112	-	- / 375
Electric strength K20/P50, d = 0.6 - 0.8 mm	IEC 60243-1	kV/mm	90 / 75
Electric strength K20/K20, (60*60*1 mm ³)	IEC 60243-1	kV/mm	40 / 34

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