Product Information **Ultramid®**

A3WG7

08/2018 **PA66-GF35**

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Product description

Glass fibre reinforced and heat aging resistance injection moulding grade for industrial items such as gear wheels, solenoid valve housings, cable attachments, automotive fuel distributors and components for automotive gearshift.

Physical form and storage

The product is supplied dry and ready to use in moisture-proof packaging. The material is in the form of cylindrical or flat pellets. Its bulk density is about 0,7 g/cm³. Standard packs are the special 25 kg bag and the 1000 kg bulk container (octagonal IBC=intermediate bulk container made from corrugated board with a liner bag). Subject to agreement other forms of packaging and shipment in tankers by road or rail are also possible. All containers are tightly sealed and should be opened only immediately prior to processing. To ensure that the perfectly dry material delivered cannot absorb moisture from the air the containers must be stored in dry rooms and always carefully sealed again after some of the material has been withdrawn. Ultramid® can be stored for a longer period of time in dry, well vented rooms without any change to properties. After longer storage times (> 3 months for IBC or > 2 years for bags) or if material from previously opened containers is used, drying is recommended to remove absorbed moisture. Containers stored in cold rooms should be allowed to equalise to normal temperature so that no condensation forms on the pellets.

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.

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Product Information

Typical values for uncoloured product at 23 °C[1)]	Test method	Unit	Values[2)]
Properties			
Polymer abbreviation	-	-	**PA66-GF35**
Density	ISO 1183	kg/m³	**1410**
Viscosity number (0.5% in 96 % H_2SO_4)	ISO 307, 1157, 1628	cm³/g	**145**
Moisture absorption, equilibrium 23°C/50% r.h.	similar to ISO 62	%	**1.40 - 1.80**
Water absorption, saturation in water at 23°C	similar to ISO 62	%	**4.7 - 5.3**
Processing			
Melting temperature, DSC	ISO 11357-1/-3	°C	**260**
MVR 275 °C/5 kg	ISO 1133	cm³/10min	**20**
Melt temperature, injection moulding/extrusion	-	°C	**280 - 300**
Mould temperature, injection moulding	-	°C	**80 - 90**
Moulding shrinkage, constrained [3)]	-	%	**0.5**
Molding shrinkage (parallel)	ISO 294-4	%	**0.37**
Molding shrinkage (normal)	ISO 294-4	%	**1.04**
Flammability			
UL 94 rating at 1,6 mm thickness	IEC 60695-11-10	class	**HB**
Automotive materials (Thickness >= 1mm) [4)]	FMVSS 302	-	**+**
Mechanical properties			**dry / cond.**
Tensile modulus	ISO 527-1/-2	MPa	**11500 / 8500**
Stress at break	ISO 527-1/-2	MPa	**210 / 150**
Strain at break	ISO 527-1/-2	%	**3 / 5**
Tensile creep modulus, 1000 h, strain <= 0.5%, 23°C	ISO 899-1	MPa	*** / 6600**
Flexural modulus	ISO 178	MPa	**10000 / 8000**
Flexural strength	ISO 178	MPa	**300 / 240**
Charpy unnotched impact strength (23°C)	ISO 179/1eU	kJ/m²	**95 / 105**
Charpy unnotched impact strength (-30°C)	ISO 179/1eU	kJ/m²	**75 / -**
Charpy notched impact strength (23°C)	ISO 179/1eA	kJ/m²	**14 / 22**
Charpy notched impact strength (-30°C)	ISO 179/1eA	kJ/m²	**12 / -**
Izod notched impact strength (23°C)	ISO 180/A	kJ/m²	**14 / 18**
Thermal properties			
HDT A (1.80 MPa)	ISO 75-1/-2	°C	**250**
HDT B (0.45 MPa)	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 (23-80)°C	ISO 11359-1/-2	E-6/K	**15 - 20**
Coefficient of linear thermal expansion, transverse (23-80)°C	ISO 11359-1/-2	E-6/K	**60 - 70**
Thermal conductivity	DIN 52612-1	W/(m K)	**0.35**
Specific heat capacity	-	J/(kg*K)	**1500**
Electrical properties			**dry / cond.**
Relative permittivity (1 MHz)	IEC 62631-2-1	-	**3.5 / 5.7**
Dissipation factor (1 MHz)	IEC 62631-2-1	E-4	**200 / 3000**
Volume resistivity	IEC 62631-3-1	Ohm*m	**1E13 / 1E10**
Surface resistivity	IEC 62631-3-2	Ohm	*** / 1E10**
Comparative tracking index, CTI, test liquid A	IEC 60112	-	**450**

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. Provisio Proper design and processing according to our recommendations.

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