

Product description

Without halogenes and red phosphorus flame retarded glass fiber reinforced injection moulding grade; light colorable; outstanding mechanical and electrical properties.

Physical form and storage

Ultramid® is supplied dry and ready to use in moisture-proof packaging in the form of cylindrical or flat pellets. Its bulk density is about 0,7g/cm³. Standard packs are the special 25kg bag and the 1000kg 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air the containers must be stored in dry rooms and always carefully sealed again after portions of material have been withdrawn. Ultramid® can be kept indefinitely in the undamaged bags. Experience has shown that product supplied in IBCs can be stored for about 3 months without any adverse effects on processing properties due to moisture absorption. Containers stored in cold rooms should be allowed to equilibrate to normal temperature so that no condensation forms on the pellets.

Product safety

Ultramid® melts are thermally stable at the usual temperature for PA66, PA6 and PA66/6 up to 310°C and 350°C for PA6/6T and do not give rise to hazards due to molecular degradation or the evolution of gases and vapors. Like all thermoplastic polymers Ultramid® decomposes on exposure to excessive thermal load, e.g. when it is overheated or as a result of cleaning by burning off. In such cases gaseous decomposition products are formed. Decomposition accelerates above 310°C (PA6/6T >350°C) approximately, the initial products formed being mainly carbon monoxide and ammonia, and caprolactam too in the case of Ultramid® PA6. At temperatures above about 350°C (PA6/6T >400°C) small quantities of pungent smelling vapors of aldehydes, amines and other nitrogenous decomposition products are also formed. Further safety information see safety data sheet of the individual product.

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 ²⁾	Unit	Values ³⁾
Properties			
Polymer abbreviation	-	-	PA66-GF25 FR
Density	ISO 1183	kg/m ³	1390
Moisture absorption, equilibrium 23°C/50% r.h.	similar to ISO 62	%	1.1 - 1.5
Processing			
Melting temperature, DSC	ISO 11357-1/-3	°C	260
MVR 275 °C/5 kg	ISO 1133	cm ³ /10min	25
Melt temperature, injection moulding/extrusion	-	°C	280 - 300
Mould temperature, injection moulding	-	°C	60 - 90
Molding shrinkage, model-housing 1.5 mm	-	%	0.4
Thermal properties			
Deflection temp. 1.8 (HDT A)	ISO 75-1/-2	°C	245
Deflection temp. under load 0.45 MPa (HDT B)	ISO 75-1/-2	°C	260
RTI electrical (thickness 1.5 mm)	UL-746B	°C	120
Flammability			
Test according to UL Standard (thickness)	UL-94	class (mm)	V-0 (≥ 0.75)
Hot wire ignition HWI (thickness)	ASTM D 3874-88	class (mm)	0 (≥ 0.75)
High-current arc ignition HAI (thickness)	UL 746A (UL746A)	class (mm)	0 (≥ 0.75)
Fire/ignition performance (UL94+HAI+HWI), min. thickness ⁴⁾	UL746C	mm	0.75
GWFI (thickness)	IEC 60695-2-12	°C (mm)	960 (1)
GWIT (thickness)	IEC 60695-2-13	°C (mm)	775 (≥ 2)
French railway standard, fire and smoke classification ⁵⁾	NF F 16-101	class	I3/F2
Limiting Oxygen Index (LOI)	ISO 4589-1/-2	%	32
Specific optical density of smoke Ds (max. 20 min), 25kW/m ²	EN ISO 5659-2	-	250
Conventional index of toxicity CIT (8 min), 25 kW/m ²	EN ISO 5659-2	-	0.1
Electrical properties			
			dry / cond.
Relative permittivity (1 MHz)	IEC 60250	-	3.8 / 4.6
Dissipation factor (1 MHz)	IEC 60250	E-4	170 / 1000
Volume resistivity	IEC 60093	Ohm*m	1E13 / 1E10
Surface resistivity	IEC 60093	Ohm	* / 1E14
CTI, solution A	IEC 60112	-	600
Mechanical properties			
			dry / cond.
Tensile modulus	ISO 527-1/-2	MPa	9500 / 6100
Stress at break	ISO 527-1/-2	MPa	145 / 90
Strain at break	ISO 527-1/-2	%	3 / 5
Flexural modulus	ISO 178	MPa	9500 / 6100
Flexural strength	ISO 178	MPa	230 / 160
Charpy unnotched impact strength, 23°C	ISO 179/1eU	kJ/m ²	65 / 65
Charpy unnotched impact strength, -30°C	ISO 179/1eU	kJ/m ²	63 / -
Charpy notched impact strength, 23°C	ISO 179/1eA	kJ/m ²	7.5 / 9

Footnotes

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

2) Specimens according to CAMPUS.

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

4) For Electrical Insulation/Barrier with close proximity (<0.8 mm) to uninsulated live parts according to UL 746C

5) Limited validity period

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