

Product Information Ultramid®

C3U

03/2014

PA66/6-FR


The Chemical Company

Product description

An injection moulding grade with improved flame retardance (free from halogens), used e.g. for impact resistant electrical insulating parts such as contact bases and plug connector strips.

Physical form and storage

The product 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air the containers must be stored in dry rooms and always carefully sealed again after portions of material have been withdrawn. The product 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

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.

Product Information

Typical values for uncoloured product at 23 °C ¹⁾	Test method	Unit	Values ²⁾
Properties			
Polymer abbreviation	-	-	PA66/6-FR
Density	ISO 1183	kg/m ³	1160
Viscosity number (0.5% in 96 % H ₂ SO ₄)	ISO 307, 1157, 1628	cm ³ /g	145
Water absorption, saturation in water at 23°C	similar to ISO 62	%	8 - 9
Moisture absorption, equilibrium 23°C/50% r.h.	similar to ISO 62	%	2.60 - 3.20
Processing			
Melting temperature, DSC	ISO 11357-1/-3	°C	243
MVR 275 °C/5 kg	ISO 1133	cm ³ /10min	160
Melt temperature, injection moulding/extrusion	-	°C	250 - 270
Mould temperature, injection moulding	-	°C	60 - 80
Molding shrinkage, model-housing 1.5 mm	-	%	0.8
Molding shrinkage (parallel)	ISO 2577, 294-4	%	1.25
Molding shrinkage (normal)	ISO 2577, 294-4	%	1.27
Thermal properties			
Deflection temp. 1.8 (HDT A)	ISO 75-1/-2	°C	70
Deflection temp. under load 0.45 MPa (HDT B)	ISO 75-1/-2	°C	210
RTI electrical (thickness 1.5 mm)	UL-746B	°C	120
Temperature limit for high temperatures, 20000 h , related to 50% decrease of tensile strength	IEC 216	°C	107
Temperature limit for high temperatures, 5000 h, related to 50% decrease of tensile strength	IEC 216	°C	123
Flammability			
UL 94 rating (thickness)	UL-94, IEC 60695	class (mm)	V-0 (0.4)
UL 94 rating (thickness)	UL-94, IEC 60695	class (mm)	V-0 (3.18)
UL 94 rating (thickness)	UL-94, IEC 60695	class (mm)	V-0 (6)
Hot wire ignition HWI (thickness)	ASTM D 3874-88	class (mm)	2 (1.5)
High-current arc ignition HAI (thickness)	UL 746A (UL746A)	class (mm)	0 (0.4)
Fire/ignition performance (UL94+HAI+HWI), min. thickness ³⁾	UL746C	mm	1.5
GWFI (thickness)	IEC 60695-2-12	°C (mm)	960 (0.4)
French railway standard, fire and smoke classification ⁴⁾	NF F 16-101	class	I3 / F2
GWIT (thickness)	IEC 60695-2-13	°C (mm)	775 (1.5)
Limiting Oxygen Index (LOI)	ISO 4589-1/-2	%	34
Specific optical density of smoke D _s max. (20 min), 25kW/m ² , 2mm	EN ISO 5659-2	-	60
Toxicity of smoke CIT NLP acc. to CEN/TS 45545-2	NF X70-100-1/-2	-	0.41
Electrical properties			dry / cond.
Relative permittivity (1 MHz)	IEC 60250	-	3.6 / 6
Dissipation factor (1 MHz)	IEC 60250	E-4	200 / 3000
Volume resistivity	IEC 60093	Ohm*m	1E13 / 1E9
Surface resistivity	IEC 60093	Ohm	* / 1E10
CTI, solution A	IEC 60112	-	600
Mechanical properties			dry / cond.
Tensile modulus	ISO 527-1/-2	MPa	3500 / 1500
Yield stress	ISO 527-1/-2	MPa	75 / 45
Yield strain	ISO 527-1/-2	%	4 / 20
Strain at break	ISO 527-1/-2	%	6 / 250
Flexural modulus	ISO 178	MPa	3000 / -
Charpy unnotched impact strength, 23°C	ISO 179/1eU	kJ/m ²	80 / N
Charpy notched impact strength, 23°C	ISO 179/1eA	kJ/m ²	6 / 35
Charpy notched impact strength, -30°C	ISO 179/1eA	kJ/m ²	4 / -

Footnotes

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

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

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

4) Limited validity period

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