INEOS STYROLUTION

Novodur Ultra 4000PG

Acrylonitrile Butadiene Styrene (ABS)

TECHNICAL DATASHEET

DESCRIPTION

Novodur® Ultra 4000PG is an injection molding grade especially suitable for electroplating, providing enhanced heat resistance.

FEATURES

- Electroplating grade
- High heat resistance

APPLICATIONS

- Automotive exterior
- Radiator grills
- Rollover bar covers

Property, Test Condition	Standard	Unit	Values
Rheological Properties			
Melt Volume Rate 220 °C/10 kg	ISO 1133	cm³/10 min	7
Mechanical Properties			
Izod Notched Impact Strength, 23 °C	ISO 180/A	kJ/m²	23
Izod Notched Impact Strength, -30 °C	ISO 180/A	kJ/m²	10
Charpy Notched Impact Strength, 23° C	ISO 179/1eA	kJ/m²	23
Charpy Notched Impact Strength, -30 °C	ISO 179/1eA	kJ/m²	10
Tensile Stress at Yield, 23 °C	ISO 527	MPa	46
Tensile Strain at Yield, 23 °C	ISO 527	%	3.1
Tensile Modulus	ISO 527	MPa	2400
Flexural Strength, 23 °C	ISO 178	MPa	73
Flexural Modulus, 23 °C	ISO 178	MPa	2350
Hardness, Ball Indentation	ISO 2039-1	MPa	110
Tensile Strain at Break, 23 °C	ISO 527	%	> 15
Thermal Properties			
Vicat Softening Temperature, VST/A/120 (10N, 120 °C/h)	ISO 306	°C	111
Vicat Softening Temperature, VST/B/120 (50N, 120 °C/h)	ISO 306	°C	109
Vicat Softening Temperature VST/B/50 (50N, 50 °C/h)	ISO 306	°C	107
Vicat Softening Temperature, VST/A/50 (10N, 50 °C/h)	ISO 306	°C	115

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Property, Test Condition	Standard	Unit	Values
Heat Deflection Temperature B; (annealed 4 h/80 °C; 0.45 MPa)	ISO 75	°C	103
Heat Deflection Temperature A; (annealed 4 h/80 °C; 1.8 MPa)	ISO 75	°C	98
Coefficient of Linear Thermal Expansion	ISO 11359	10^{-6}/°C	90
Electrical Properties			
Dissipation Factor (100 Hz)	IEC 62631-2-1	10^{-4}	65
Dissipation Factor (1 MHz)	IEC 62631-2-1	10^{-4}	85
Dielectric Strength, Short Time, 1.0 mm	IEC 60243-1	kV/mm	38
Relative Permittivity (100 Hz)	IEC 62631-2-1	-	3
Relative Permittivity (1 MHz)	IEC 62631-2-1	-	2.9
Volume Resistivity	IEC 62631-3-1	Ohm*m	10^{14}
Surface Resistivity	IEC 62631-3-1	Ohm	10^{16}
Comparative Tracking Index	IEC 60112	V	600
Other Properties			
Density	ISO 1183	kg/m³	1050
UL94 rating at 1.5 mm thickness	IEC 60695-11-10	-	HB
Processing			
Linear Mold Shrinkage	ISO 294-4	%	0.5 - 0.8
Melt Temperature Range	ISO 294	°C	230 - 260
Mold Temperature Range	ISO 294	°C	60 - 80
Injection Velocity	ISO 294	mm/s	240
Drying Temperature	-	°C	80
Drying Time	-	h	2 - 4

Typical values for uncolored products

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SUPPLY FORM

Novodur® is delivered in the form of cylindrical or spherical pellets. The bulk density of the pellets is from 0.55 to 0.65 g/cm³. Values may differ for special grades. Standard Packaging unit: 25 kg PE-bag on palette, shrunk or wrapped with PE film. In addition, delivery in larger units of up to 1000 kg (IBC = Intermediate Bulk Container) or silo trucks can be arranged. In dry areas with normal temperature control, Novodur pellets can be stored for relatively long periods of time without any change in mechanical properties. With unstable colors, however, storage over a number of years can give rise to some change in color. Under poor storage conditions, Novodur absorbs moisture, but this can be removed by drying.

PRODUCT SAFETY

No adverse effects on the health of processing personnel have been observed where the products are correctly processed and the production areas are suitably ventilated. For styrene, alpha-methylstyrene, acrylonitrile, and butyl acrylate the maximum allowable workplace concentrations must be observed according to the pertaining national regulations. In Germany, the following limit values are valid TRGS 900 (Aug. 2004): styrene, MAK-value: 20 ml/m³; alpha-methylstyrene, MAK-value: 100 ml/m³; acrylonitrile, TRK-value: 3 ml/m³, and butyl acrylate, MAK-value: 2 ml/m³ (1.7.2004). According to EU directive 67/548/EEC, Annex I (2001), acrylonitrile is classified as carcinogenic, category 2 (´substances which should be regarded as if they are carcinogenic to man´). Experience has shown that when Novodur® is processed correctly with appropriate ventilation, the levels are far below the limits mentioned above. Inhalation of the vapors of degradation products which can arise on severe overheating of the materials or during purging out should be avoided. Further information can be found in the Novodur safety data sheets.

DISCLAIMER

The aforementioned data shall constitute the agreed contractual quality of the product sold by INEOS Styrolution at the time of passing of risk. INEOS Styrolution does not make any further warranty, representation or guarantee of any kind, express or implied, regarding the suitability of the product for any particular purpose or application and INEOS Styrolution disclaims all liability in connection therewith. The customer himself is required to verify whether or not the product is suitable for the further processing or application intended and whether or not the product complies with the relevant statutory requirements. Unless explicitly and individually otherwise agreed in writing, INEOS Styrolution's sole and exclusive liability with respect to its products is set forth in INEOS Styrolution's General Terms and Conditions for Sale.

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