

Product description

Unreinforced, higher viscosity injection moulding and extrusion grade, tougher and with improved chemical resistance. Abbreviated designation according to ISO 1043-1: PSU

Physical form and storage

Ultrason® pellets are supplied in bags and/or octabins. The bulk density ranges between 700 and 800 g/l. Provided the packaging remains undamaged, Ultrason® can be stored indefinitely. Ultrason® pellets absorb moisture very rapidly. Therefore, the pellets need to be dried at least 4h at 130 °C to 150 °C in a vacuum or dry air drier prior to processing.

Product safety

From our experience and information, proper treatment and reasonable use of the product will not have any health hazardous effects.
In view of the high temperatures involved in processing Ultrason®, great care must be exercised -even more than for other thermoplastics- in handling the machinery, molds, moldings and residual melts. If there are concerns or doubts on the thermal capacity and limits, the machinery manufacturer should be consulted.
Any product that has decomposed during injection molding must be removed from the barrel by injection into the atmosphere and simultaneous reduction of the barrel temperature. Noxious odors that could form during this procedure can be reduced by rapid cooling of the degraded material, e.g. in a water bath. If the degraded material is not pumped out of the barrel, gas pressure may build up, particularly if nozzle shutoff devices are used. The built-up pressure could then release violently around the nozzle or hopper areas, and explosions would therefore be expected in the course of pumping.
If the normal precautions are taken and the upper temperature limit, i.e. 390 °C, is not exceeded, no health hazardous vapors are formed while Ultrason® is being processed. In common with all other thermoplastics, Ultrason® decomposes on exposure to excessive heat, for instance if the melt temperature is too high and/or the residence time in the plasticizing unit is too long or if residues are burned off during cleaning of the machinery. The figures laid down for the maximum allowable dust concentrations (e.g. MAK value in Germany) must be met in further processing.
The work place must be well ventilated, preferably by means of an extraction system installed above the barrel unit. Irrespective of this, all precautions relating to accident prevention must strictly be taken. Under no circumstances may the plasticizing units be dismantled after a breakdown while they are still hot.

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 ensure supply ability, our products are produced in several production lines on different sites of the BASF Group. All production lines produce according to identical specifications. 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	-	-	PSU
Density	ISO 1183	kg/m ³	1230
Viscosity number	ISO 307, 1157, 1628	cm ³ /g	72
Water absorption, equilibrium in water at 23°C	similar to ISO 62	%	0.8
Moisture absorption, equilibrium 23°C/50% r.h.	similar to ISO 62	%	0.3
Glass transition temperature, DSC (10°C/min)	ISO 11357-1/-2	°C	187
Processing			
Processing: Injection moulding (M), Extrusion (E), Film-Extrusion (F), Blow moulding (B)	-	-	M,E,B
Melt volume-flow rate MVR 360 °C/10 kg	ISO 1133	cm ³ /10min	55
Melt temperature, injection moulding/extrusion	-	°C	330 - 390
Mould temperature, injection moulding	-	°C	120 - 160
Molding shrinkage, parallel	ISO 294-4	%	0.70
Molding shrinkage, normal	ISO 294-4	%	0.74
Flammability			
UL94 rating at 1.5 mm thickness	IEC 60695-11-10	class	HB
UL94 rating at thickness d = 3 mm	IEC 60695-11-10	class	HB
Mechanical properties			
Tensile modulus	ISO 527-1/-2	MPa	2550
Yield stress, 50 mm/min	ISO 527-1/-2	MPa	75
Yield strain, 50 mm/min	ISO 527-1/-2	%	5.5
Charpy unnotched impact strength (23°C)	ISO 179/1eU	kJ/m ²	N
Charpy unnotched impact strength (-30°C)	ISO 179/1eU	kJ/m ²	N
Charpy notched impact strength (23°C)	ISO 179/1eA	kJ/m ²	5.5
Charpy notched impact strength (-30°C)	ISO 179/1eA	kJ/m ²	6
Izod notched impact strength (23°C)	ISO 180/A	kJ/m ²	6
Izod notched impact strength (-30°C)	ISO 180/A	kJ/m ²	6.5
Ball indentation hardness at 358 N/30 s	ISO 2039-1	MPa	135
Thermal properties			
HDT A (1.80 MPa)	ISO 75-1/-2	°C	176
Max. service temperature, short cycle operation	-	°C	180
Temperature index at 50% loss of tensile strength after 20000 h	IEC 60216	°C	160
Coefficient of linear thermal expansion, longitudinal (23-80°C)	ISO 11359-1/-2	E-6/K	53
Coefficient of linear thermal expansion, longitudinal (140°C)	DIN 53752	E-6/K	60
Electrical properties			
Relative permittivity (100 Hz)	IEC 62631-2-1	-	3.1
Relative permittivity (1 MHz)	IEC 62631-2-1	-	3.1
Dissipation factor (100 Hz)	IEC 62631-2-1	E-4	8
Dissipation factor (1 MHz)	IEC 62631-2-1	E-4	64
Volume resistivity	IEC 62631-3-1	Ohm*m	>1E13
Surface resistivity	IEC 62631-3-2	Ohm	>1E15
Comparative tracking index, CTI, test liquid A	IEC 60112	-	125
Comparative tracking index, CTI, test liquid B	IEC 60112	-	125
Electric strength K20/K20	IEC 60243-1	kV/mm	37
Optical properties			
Refractive index (d = 1mm)	ISO 489	-	1.630
Degree of light transmission (d = 2 mm)	DIN 5036-3	%	89
Molecular weights			
Molecular weight Mw (GPC in THF, PS standard)	-	g/mol	52000
Mw/Mn (GPC in THF)	-	-	3.5

Footnotes

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

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

BASF SE

67056 Ludwigshafen, Germany

UL - Yellow Card

Component - Plastics

E41871

BASF SE

Performance Materials Europe, PMD/EX - H201, Ludwigshafen 67056 DE

S3010

Polysulfone (PSU) "Ultrason", furnished as pellets

Color	Min. Thk (mm)	Flame Class	HWI	HAI	RTI Elec (°C)	RTI Imp (°C)	RTI Str (°C)
ALL	0.75	HB	4	4	155	130	-
	1.5	HB	3	4	155	130	155
	3.0	HB	2	0	155	130	155

Comparative Tracking Index (CTI): 3

Inclined Plane Tracking (IPT) kV: -

Dielectric Strength (kV/mm): 32

Volume Resistivity (10⁹ohm-cm): 12

High-Voltage Arc Tracking Rate (HVTR): 3

Surface Resistivity (10⁹ohms/square): -

Dimensional Change (%): 0

High Volt, Low Current Arc Resis (D495): 5

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

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IEC and ISO Test Methods

Test Name	Test Method	Units	Thk (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	0.75	HB, HB75 (ALL)
			1.5	HB, HB75 (ALL)
			3.0	HB, HB40 (ALL)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	°C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	°C	-	-
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC AC Dielectric Strength (AC DS)	IEC 60243-1	kV/mm	-	-
IEC DC Dielectric Strength (DC DS)	IEC 60243-2	kV/mm	-	-
IEC Volume Resistivity (VR)	IEC 62631-3-1	10x ohm-m	-	-
IEC Surface Resistivity (SR)	IEC 62631-3-2	10x ohms	-	-
IEC Inclined Plane Tracking (IPT)	IEC 60587	kV	-	-
IEC Ball Pressure	IEC 60695-10-2	°C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	°C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m2	-	-

BASF SE

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Ultrason® S 3010 NAT

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We create chemistry

ISO Izod Impact	ISO 180	kJ/m2	-	-
ISO Charpy Impact	ISO 179-1	kJ/m2	-	-