**Product Information** **Ultrason® S**

2010 NAT

09/2026 **PSU**

We create chemistry

## Product description

Unreinforced, medium viscosity standard injection moulding grade.
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.

BASF SE
67056 Ludwigshafen, Germany

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## Product Information

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| Typical values for uncoloured product at 23 °C[1)] | Test method | Unit | Values[2)] |
|---|---|---|---|
| **Properties** | | | |
| Polymer abbreviation | - | - | **PSU** |
| Density | ISO 1183 | kg/m³ | **1230** |
| Viscosity number | ISO 307, 1157, 1628 | cm³/g | **63** |
| 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-Extrsuion (F), Blow moulding (B) | - | - | **M,E,B** |
| Melt volume-flow rate MVR 360 °C/10 kg | ISO 1133 | cm³/10min | **95** |
| Melt temperature, injection moulding/extrusion | - | °C | **330 - 390** |
| Mould temperature, injection moulding | - | °C | **120 - 160** |
| Molding shrinkage, parallel | ISO 294-4 | % | **0.68** |
| Molding shrinkage, normal | ISO 294-4 | % | **0.72** |
| **Flammability** | | | |
| UL94 rating at 1.5 mm thickness | IEC 60695-11-10 | class | **HB** |
| UL94 rating at thickness d = 3.2 mm | IEC 60695-11-10 | class | **V-2** |
| **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/m² | **N** |
| Charpy unnotched impact strength (-30°C) | ISO 179/1eU | kJ/m² | **N** |
| Charpy notched impact strength (23°C`) | ISO 179/1eA | kJ/m² | **5.5** |
| Charpy notched impact strength (-30°C) | ISO 179/1eA | kJ/m² | **6** |
| Izod notched impact strength (23°C) | ISO 180/A | kJ/m² | **5.5** |
| Izod notched impact strength (-30°C) | ISO 180/A | kJ/m² | **6** |
| 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 | **175** |
| 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 | **40** |
| **Optical properties** | | | |
| Refractive index (d = 1mm) | ISO 489 | - | **1.630** |
| Degree of light transmission (d = 2 mm) | DIN 5036-3 | % | **89** |

Footnotes
1) If product name or properties don't state otherwise.
2) The asterisk symbol '*' signifies inapplicable properties.

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## UL - Yellow Card

Component - Plastics E41871

BASF SE

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

S2010

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 | 3 | 1 | 155 | 130 | - |
| | 1.5 | HB | 3 | 0 | 155 | 130 | 155 |
| | 3.0 | V-2 | 2 | 0 | 155 | 130 | 155 |

| | | | |
|---|---|---|---|
| Comparative Tracking Index (CTI): | 3 | Inclined Plane Tracking (IPT) kV: | - |
| Dielectric Strength (kV/mm): | - | Volume Resistivity ($10^X$ohm-cm): | 2 |
| High-Voltage Arc Tracking Rate (HVTR): | 50 | Surface Resistivity ($10^X$ohms/square): | - |
| Dimensional Change (%): | - | High Volt, Low Current Arc Resis (D495): | 15 |

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 | V-2 (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 | - | - |
| ISO Izod Impact | ISO 180 | kJ/m2 | - | - |

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| | | | | |
|---|---|---|---|---|
| ISO Charpy Impact | ISO 179-1 | kJ/m2 | - | - |

BASF SE
67056 Ludwigshafen, Germany