PSU 1000

QUADRANT
ENGINEERING PLASTIC PRODUCTS

PRODUCT DATA SHEET

PSU 1000 stock shapes are produced from non-UV-stabilised polysulphone resin.
It offers very good radiation stability, low ionic impurity levels and good chemical and hydrolysis resistance. Compared to PEI 1000, PSU 1000 has a lower property profile and often replaces polycarbonate when higher temperature resistance, improved chemical resistance or autoclavability are required.

Physical properties (indicative values•)

PROPERTIES	Test methods ISO/(IEC)	Units	VALUES
Colour	—	—	natural (yellow, translucent)
Density	1183	g/cm³	1.24
Water absorption:			
- after 24h/96h immersion in water of 23°C (1)	62	mg	23/44
	62	%	0.32/0.61
- at saturation in air of 23°C / 50% RH	—	%	0.40
- at saturation in water of 23°C	—	%	0.85
Thermal Properties			
Melting temperature	—	°C	NA
Glass transition temperature	—	°C	190
Thermal conductivity at 23°C	—	W/(K·m)	0.26
Coefficient of linear thermal expansion:			
- average value between 23 and 100°C	—	m/(m·K)	$60 \cdot 10^{-6}$
- average value between 23 and 150°C	—	m/(m·K)	$60 \cdot 10^{-6}$
Temperature of deflection under load:			
- method A: 1.8 MPa	75	°C	170
Max. allowable service temperature in air:			
- for short periods (2)	—	°C	180
- continuously: for min. 20,000h (3)	—	°C	150
Flammability (4):			
- "Oxygen index"	4589	%	30
- according to UL 94 (1.5/3 mm thickness)	—	—	HB/HB
Mechanical Properties at 23°C			
Tension test (5):			
- tensile stress at yield (6)	527	MPa	80
- tensile strain at break (6)	527	%	10
- tensile modulus of elasticity (7)	527	MPa	2,700
Compression test (8):			
- compressive stress at 1% nominal strain (7)	604	MPa	20
- compressive stress at 2% nominal strain (7)	604	MPa	39
Charpy impact strength - Unnotched (9)	179/1eU	kJ/m²	no break
Charpy impact strength - Notched	179/1eA	kJ/m²	4
Ball indentation hardness (10)	2039-1	N/mm²	155
Rockwell hardness (10)	2039-2	–	M 91
Electrical Properties at 23°C			
Electric strength (11)	(60243)	kV/mm	30
Volume resistivity	(60093)	Ω·cm	$> 10^{14}$
Surface resistivity	(60093)	Ω	$> 10^{13}$
Relative permittivity ε_r : - at 100 Hz	(60250)	—	3.0
- at 1 MHz	(60250)	—	3.0
Dielectric dissipation factor tan δ : - at 100 Hz	(60250)	—	0.001
- at 1 MHz	(60250)	—	0.003
Comparative tracking index (CTI)	(60112)	—	150

Note: 1 g/cm³ = 1,000 kg/m³; 1 MPa = 1 N/mm²; 1 kV/mm = 1 MV/m NA: not applicable

Legend

(1) According to method 1 of ISO 62 and done on discs Ø 50 x 3mm.
(2) Only for short time exposure (a few hours) in applications where no or only a very low load is applied to the material.
(3) Temperature resistance over a period of min. 20,000 hours. After this period of time, there is a decrease in tensile strength of about 50% as compared with the original value. The temperature value given here is thus based on the thermal-oxidative degradation which takes place and causes a reduction in properties. Note, however, that the maximum allowable service temperature depends in many cases essentially on the duration and the magnitude of the mechanical stresses to which the material is subjected.
(4) These mostly estimated ratings, derived from raw material supplier data, are not intended to reflect hazards presented by the materials under actual fire conditions. There is no UL yellow card available for PSU 1000 stock shapes.
(5) Test specimens: Type 1 B.
(6) Test speed: 5 mm/min.
(7) Test speed: 1 mm/min.
(8) Test specimens: cylinders Ø 12 x 30 mm.
(9) Pendulum used: 4 J.
(10) 10 mm thick test specimens.
(11) 1 mm thick test specimens.

• This table is a valuable help in the choice of a material. The data listed here fall within the normal range of product properties of dry material. **However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design.**

Availability

Round Rods: ∅ 5-150 mm - **Plates:** Thicknesses 10-50 mm

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