

Product Information

P84®UHT HCM

HIGH TEMPERATURE RESISTANCE, UNFILLED POLYIMIDE

Polyimid P84®UHT - at a glance

- Excellent thermal-oxidative stability (use up to 300 ° C)
- Best dimensional stability even at very high temperatures
- Low water absorption and very good chemical resistance
- Easy machinability with standard tools for metals
- Excellent tribological properties, high wear resistance
- Processing by hot compression molding

Application examples

bushings, seals, bearings components, guides, gear wheels, and valve parts in the automotive and aerospace industries and in industrial equipment.

Key Features

Industrial Sector

Automotive and Mobility, Aircraft and Aerospace, Industry and Engineering

Processing

Hot compression moulding, Machining

Delivery form

Powder

Resistance to

Heat (thermal stability), Fire / burn, Wear / abrasion, Oil / fuels

Electrical

Insulating

Additives

Unfilled

Mechanical properties ISO

	dry	Unit	Test Standard
Tensile modulus	4930	MPa	ISO 527
Tensile strength	142	MPa	ISO 527
Stress at break	142	MPa	ISO 527
Strain at break, B	4.4	%	ISO 527

Charpy impact strength, +23°C	46	kJ/m ²	ISO 179/1eU
Type of failure	C	-	-
Charpy notched impact strength, +23°C	3	kJ/m ²	ISO 179/1eA
Type of failure	C	-	-
Compression modulus, 23°C	5350	MPa	ISO 604
Compressive strength, 23°C	466	MPa	ISO 604
Flexural modulus, 23°C	5140	MPa	ISO 178
Flexural strength, 23°C	220	MPa	ISO 178
Flexural strain at break, 23°C	5.4	%	ISO 178

Mechanical properties ASTM	dry	Unit	Test Standard
Tensile Modulus	4960	MPa	ASTM D 638
Tensile Strength	146	MPa	ASTM D 638
Stress at break	146	MPa	ASTM D 638
Strain at break	4.2	%	ASTM D 638
Flexural Modulus	5134	MPa	ASTM D 790
Flexural Strength	229	MPa	ASTM D 790
Flexural stress at break, 23°C	229	MPa	ASTM D 790
Flexural strain at break, 23°C	5.5	%	ASTM D 790

Thermal properties	dry	Unit	Test Standard
Glass transition temperature, DSC	276	°C	ISO 11357-1/-2
Thermal conductivity, LFA, solid state	0.36	W/(m K)	ISO 22007-4
Temp. of deflection under load A, 1.80 MPa	265	°C	ISO 75-1/-2
Temp. of deflection under load B, 0.45 MPa	304	°C	ISO 75-1/-2

Physical properties	dry	Unit	Test Standard
Density	1430	kg/m ³	ISO 1183
Water absorption, 24h	0.1	%	ISO 62, ASTM D 570

Water absorption, 48h	0.1	%	ISO 62, ASTM D 570
Shore D hardness	90	-	ISO 7619-1
Density	1430	kg/m ³	ASTM D 792

Burning Behav.	dry	Unit	Test Standard
Burning behav. at 1.5 mm nom. thickn.	V-0	class	IEC 60695-11-10
Oxygen index	52	%	ISO 4589-1/-2
Limiting Oxygen Index	52	%	ASTM D 2863
UL 94 Flame rating	V-0	-	UL 94
Thickness tested	0.762	mm	-

Electrical properties	dry	Unit	Test Standard
Volume resistivity, V	>1E13	Ohm*m	IEC 62631-3-1
Surface resistivity, C, circular electrodes	2E14	Ohm per square	IEC 62631-3-2
Relative permittivity, 50Hz	3.4	-	IEC 62631-2-1
Relative permittivity, 100Hz	3.4	-	IEC 62631-2-1
Relative permittivity, 1MHz	3.3	-	IEC 62631-2-1
Dissipation factor, 100Hz	70	E-4	IEC 62631-2-1
Dissipation factor, 1MHz	24	E-4	IEC 62631-2-1
Dielectric strength, AC, S20/S20, t. 1 mm	33	kV/mm	IEC 60243-1
CTI, test solution A, 50 drops value	175	-	IEC 60112
Assessment of the insulation group	III a	-	DIN EN 60664-1

Powder properties	dry	Unit	Test Standard
Bulk density, powder	400	g/l	EN ISO 60

Polyimid	dry	Unit	Test Standard
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Tensile test

Tensile modulus, 23°C	5590	MPa	ISO 527
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Tensile strength, 23°C	142	MPa	ISO 527
Strain at break, 23°C	4.4	%	ISO 527

Flexural test

Flexural modulus, 23°C	5230	MPa	ISO 178
Flexural strength, 23°C	220	MPa	ISO 178

Characteristics

Applications

Displays, Electrical and Electronical, General purpose, IT and telecommunication

Processing

Compression molding

Special Characteristics

Halogen-free, PTFE-free, Amorphous, High heat resistant, Non-dripping, Self-extinguishing

Features

Creep resistance, Low coefficient of friction, Lightweight

Color

Natural color, Beige

Chemical Resistance

Acid resistance, Solvent resistance, Grease resistance, Oil resistance, Oxidation resistance, Radiation resistance, Fuel resistance

Compression molding

Hot compression molding

Production of big semi-finished parts (plates, rods, tubes)

Molding at high pressure (300 to 500 kg/cm²) and temperature (385 and 415°C)

Cycle time = hours

Processing of precise parts by machining

Best mechanical properties