

Cubic Ink High Performance 4-1000 VP

Flame retardant material with a good balance between temperature form-stability and toughness for final part production

Liquid Properties	Value¹	Unit
Viscosity @ 25 °C (DIN EN ISO 3219)	460	mPa·s
Tensile Properties² (DIN EN ISO 527-5A)		
Ultimate Tensile Strength	97	MPa
Tensile Modulus	4500	MPa
Elongation at Break	2.7	%
Flexural Properties (DIN EN ISO 14125)		
Flexural Strength	130	MPa
Flexural Modulus	4000	MPa
Impact Properties		
IZOD notched (DIN EN ISO 180)	14	J/m
Charpy notched (DIN EN ISO 179-1)	1	kJ/m ²
Hardness (DIN EN ISO 7619)		
Shore Hardness	88	D
Thermal Properties		
T _g (TMA) ³	80	°C
HDT A (DIN EN ISO 75)	98	°C
HDT B (DIN EN ISO 75)	123	°C
CTE (-50 °C, 30 °C) (DIN EN ISO 11359-2)	53	x 10 ⁻⁶ K ⁻¹
CTE (70 °C, 200 °C) (DIN EN ISO 11359-2)	141	x 10 ⁻⁶ K ⁻¹

Electrical Properties

Dielectric strength (IEC60243-1)	23	kV/mm
Relative Permittivity (Dielectric Constant, 20 °C, 1 MHz, IEC60250)	7.3	-
Dissipation Factor (20 °C, 1 MHz, IEC60250)	0.058	-
Volume Resistivity (IEC60093)	3.3×10^{11}	$\Omega \cdot \text{cm}$
Comparative Tracking Index (IEC60112)	175 - 200	V

Flame (UL94)

Flammability, vertical (at 3.2 mm)	V-0	-
Flammability, horizontal (at 0.4 mm)	FH-1	-

Chemical Resistance

Water Uptake, 24 h, 23 °C	2.1	%
Performance after Water Uptake, 24 h, 23 °C ⁴	46	%

Print Appearance/ Color

Available in black and grey. More colors on request.

Availability and Storage

Batch sizes starting from 1 kg.

Store at room temperature and protect from light.

¹Properties with post-processing – UV and thermal post-cure. All material properties can vary with printer, print settings, object orientation, part geometry, post-processing and age of sample. ²5 mm/min; ³3-Point-Bending, 10 K/min; ⁴Relative loss HDT B DIN EN ISO 75.

Chemical Resistance	Mass Gain [%]¹
Water	2.1
Acetic Acid (5%)	2.0
Hydrochloric Acid (1%)	1.4
Nitric Acid (5%)	2.1
Sodium Hypochlorite (10%)	0.9
Hydrogen Peroxide (3%)	2.3
Sodium Hydroxide (1%)	1.0
Isopropyl Alcohol	0.2
Methanol	0.9
Butyl Glycol Acetate	0.2
Super Gasoline	0.2
Acetone	0.2
Methyl Ethyl Ketone	0.2

¹Percent weight gained after 24 h submersion of printed and post-cured (UV and thermal post-cure) 1 x 1 x 1 cm cubes.