Cubic Ink® High Temperature 303 VP-ESD Black

Highly temperature resistant ESD material for final part production

Liquid Properties	Value[1]	Unit
Viscosity @25 °C (DIN EN ISO 3219)	1040	mPa·s
Critical Energy (E_c) @405 / 385 nm	4.2 / 5.9	mJ/cm²
Depth of Penetration (D_p) @405 / 385 nm	0.14 / 0.20	mm
Tensile Properties[2] (DIN EN ISO 527-5A)		
Ultimate Tensile Strength	48	MPa
Tensile Modulus	3700	MPa
Elongation at Break	1.7	%
Flexural Properties[2] (DIN EN ISO 178)		
Flexural Strength	72	MPa
Flexural Modulus	3600	MPa
Deflection at Fracture	2.0	%
Impact Properties		
Izod notched (DIN EN ISO 180)	14	J/m
Charpy notched (DIN EN ISO 179-1)	0.7	kJ/m²
Hardness (DIN EN ISO 7619)		
Shore Hardness	90	D
Thermal Properties		
T_g (TMA)[3]	257	°C
HDT A (DIN EN ISO 75)	216	°C

HDT B (DIN EN ISO 75)	221	°C
CTE (0 °C, 250 °C) (DIN EN ISO 11359-2)	98	x 10^{-6} K^{-1}
Specific Heat Capacity, 20 °C (DIN EN ISO 11357-4)	1.3	J/(g·K)

Electrical Properties

Dielectric strength (IEC60243-1)	2	kV/mm
Relative Permittivity (Dielectric Constant, 25 °C, 10000 Hz, IEC60250)	118	-
Dissipation Factor (25 °C, 10000 Hz, IEC60250)	0.22	-
Volume Resistivity (IEC60093)	6.6 x 10^7	Ω·cm
Volume Resistivity after 7 d/21 °C H_2O (IEC60093)	5.0 x 10^7	Ω·cm
Comparative Tracking Index (IEC60112)	>600	V

Flame (UL94)

Flammability, horizontal (at 3.2 mm)	HB (FH-3)	-

Chemical Resistance

Water Uptake, 168 h, 23 °C	1.2	%
Performance after Water Uptake, 168 h, 23 °C[4]	<1	%

Thermal Ageing[5]

250 °C for 168 hours	<1	%
150 °C for 1000 hours	<1	%

Print Appearance/ Color

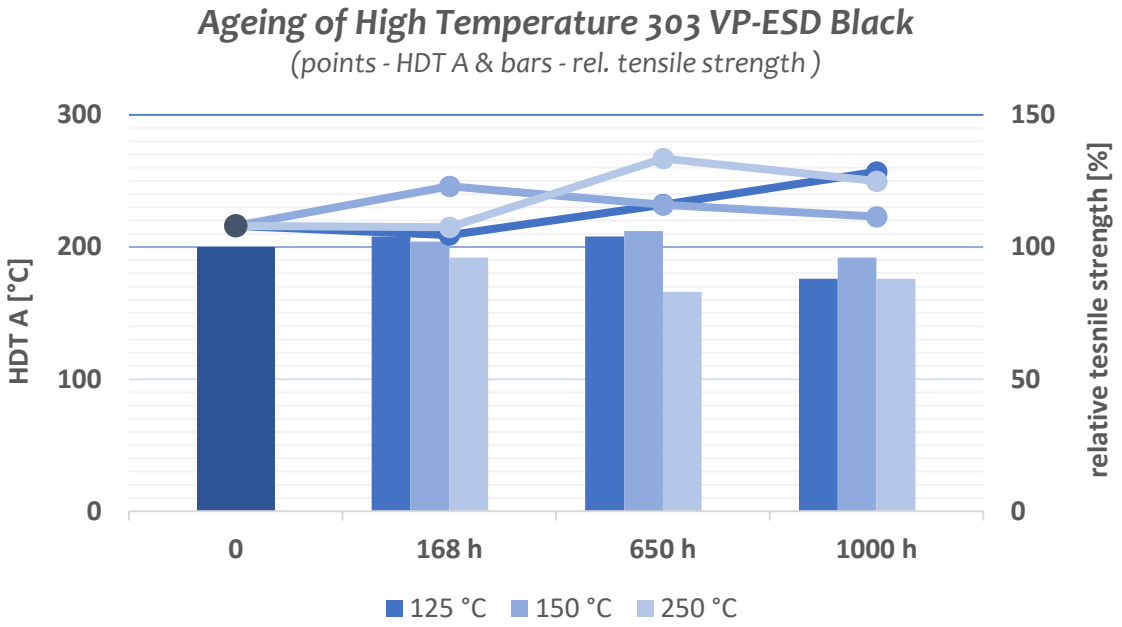
Available in black.

Availability and Storage

Batch size starting from 1 kg.

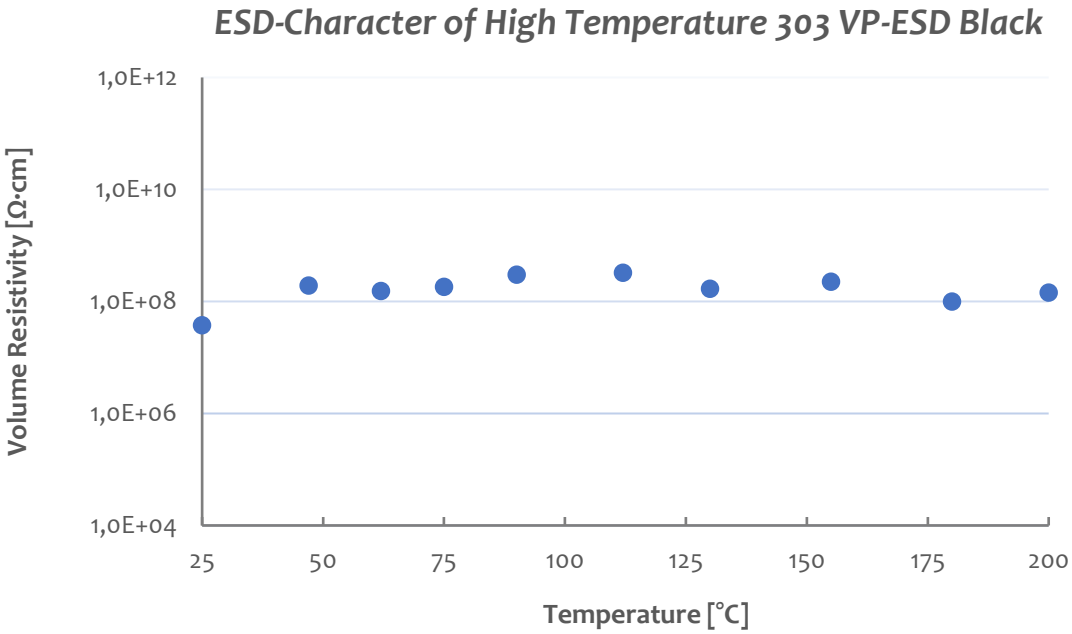
Store at room temperature and protect from light. Stir thoroughly prior to use and after each building job.

[1]Properties may vary with post-processing – 30 min UV-post-cure followed by 3 h at 190 °C heating. All material properties can vary with printer, print settings, object orientation, part geometry, post-processing and age of sample. [2]5 mm/min; [3]25 – 300 °C, 5 K/min, TMA alternating load with 3 mm ball; [4]Relative loss of tensile strength and elongation at break compared to reference, DIN EN ISO 527-5A, 5 mm/min; [5]Relative loss of tensile strength and HDT A compared to reference, DIN EN IS 527-5A, DIN EN ISO 75.



Chemical Resistance	Mass Gain [%][1]
Water	0.5
Acetic Acid (5%)	0.6
Hydrochloric Acid (1%)	0.5
Nitric Acid (5%)	0.4
Sodium Hypochlorite (10%)	0.7
Hydrogen Peroxide (3%)	0.6
Sodium Hydroxide (1%)	0.4
Isopropyl Alcohol	0.2
Ethanol	0.2
Methanol	0.5
Butyl Glycol Acetate	0.2
Super Gasoline	0.2
Acetone	0.3
Methyl Ethyl Ketone	0.1

[1]Percental weight gained after 24 h submersion of printed and post-cured (30 min UV-post-cure followed by 3 h at 190 °C heating) 1 x 1 x 1 cm^3 cubes.



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