Cubic Ink® High Performance 4-4800 VP

Highly impact resistant and flexible material with good toughness and scratch resistance for final part production

Liquid Properties	Method	Value[1]	Unit
Viscosity (25 °C)	DIN EN ISO 3219	540	mPa·s
Density	DIN EN ISO 15212-1	1.14	g/mL
Critical Energy (E_c)	405 nm / 385 nm	3.3 / 3.1	mJ/cm^2
Depth of Penetration (D_p)	405 nm / 385 nm	0.48 / 0.19	mm
Tensile Properties			
Ultimate Tensile Strength	DIN EN ISO 527-5A[2]	43	MPa
Yield Strength	DIN EN ISO 527-5A[2]	42	MPa
Tensile Modulus	DIN EN ISO 527-5A[2]	1700	MPa
Elongation at Break	DIN EN ISO 527-5A[2]	16	%
Flexural Properties			
Flexural Strength	DIN EN ISO 178[2]	55	MPa
Flexural Modulus	DIN EN ISO 178[2]	1300	MPa
Deflection at Fracture	DIN EN ISO 178[2]	>10	%
Impact Properties			
Izod notched	DIN EN ISO 180	44	J/m
Charpy notched	DIN EN ISO 179-1	4.1	kJ/m^2
Izod unnotched	DIN EN ISO 180	350	J/m
Charpy unnotched	DIN EN ISO 179-1	37	kJ/m^2
Hardness			
Shore Hardness (green)	DIN EN ISO 7619	40 – 50	D
Shore Hardness	DIN EN ISO 7619	78	D
Thermomechanical Properties			
T_g	TMA[3]	96	°C
HDT A	DIN EN ISO 75	62	°C
HDT B	DIN EN ISO 75	90	°C
CTE (−10 °C, 100 °C)	DIN EN ISO 11359-2	125	x 10^{-6} K^{-1}
CTE (125 °C, 200 °C)	DIN EN ISO 11359-2	126	x 10^{-6} K^{-1}

Specific Heat Capacity, 20 °C	DIN EN ISO 11357-4	1.3	J/(g·K)
Flammability, horizontal	UL 94, at 3.2 mm	HB (FH-3)	-

Electrical Properties

Dielectric strength	IEC60243-1	28	kV/mm
Relative Permittivity (Dielectric Constant, 23 °C, 10 000 Hz)	IEC60250	6.4	-
Dissipation Factor (23 °C, 10 000 Hz)	IEC60250	0.024	-
Volume Resistivity	IEC60093	3.4 x 10^{14}	Ω·cm
Comparative Tracking Index	IEC60112	>600	V

Other Properties

Water Uptake, 24 h, 23 °C	Internal	2.9	%
Water Uptake, 30 min, 90 °C	Internal	1.8	%
Ethanol Uptake, 30 min, 23 °C	Internal	0.7	%
Performance after Ethanol Uptake, 30 min, 23 °C[4]	Internal	<1	%
Thermal Ageing 125 °C for 1000 h[4]	Internal	<1	%
UV Ageing for 1000 h[4]	ISO 4892-3[5]	<1	%
In-vitro cytotoxicity[6]	DIN EN ISO 10993-5/-12[7]	Passed	-

Color, Storage, Compatibility

Natural color is translucent light yellow. Additional colors available on request.

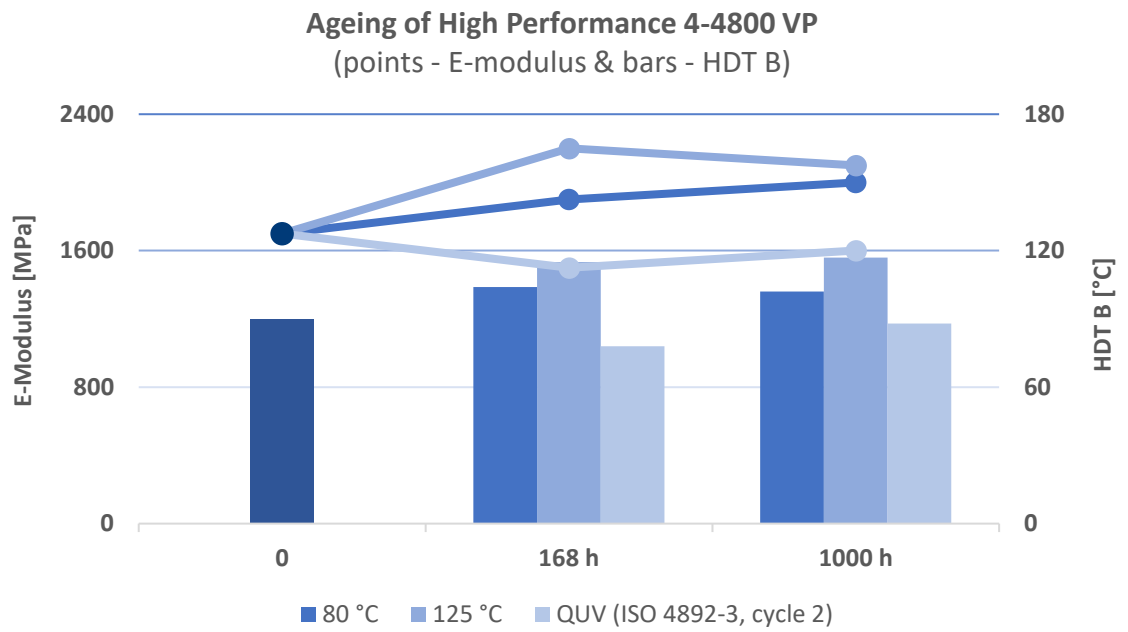
For best performance, use within 12 months of manufacturing date. Store at room temperature and protect from light. Stir prior to use.

Cubic Ink High Performance 4-4800 VP is compatible with Cubic Ink Cleaner 400.

[1]Properties may vary with post-processing – 2 x 30 min UV post-cure via *Formlabs Form Cure L* at 80 °C (LED, 375 and 405 nm). All material properties can vary with color, printer, print settings, object orientation, part geometry, post-processing and age of sample. Properties in TDS are measured on uncolored resin. [2]5 mm/min; [3]–50 - 200 °C, 5 K/min; [4]Relative loss of tensile modulus and tensile strength compared to reference, DIN EN ISO 527-5A, 5 mm/min; [5]QUV weathering tester; [6]Specimens post-cured via 2 x 30 min *atum3D post-cure* at 90 °C (Hg, 350 – 550 nm); [7]Testing at 22 °C, 61% rel. humidity, duration of extraction 24 h at 37 °C.

Chemical Resistance	Mass Gain [%][1]
Water	1.7
Acetic Acid (5%)	2.2
Hydrochloric Acid (1%)	1.8
Nitric Acid (5%)	3.7
Sodium Hypochlorite (10%)	0.8
Hydrogen Peroxide (3%)	2.2
Isopropyl Alcohol	0.8
Methanol	7.0
Butyl Glycol Acetate	0.6
Super Gasoline	1.4
Acetone	10.4
Methyl Ethyl Ketone	6.4

[1]Percental weight gained after 24 h submersion of printed and post-cured (2 x 30 min UV post-cure via *Formlabs Fomcure L* at 80 °C (LED, 375 and 405 nm)) 1 x 1 x 1 cm^3 cubes.



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