Cubic Ink® High Performance 4-2100 VP

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

Liquid Properties	Value[1]	Unit
Viscosity @ 25 °C (DIN EN ISO 3219)	25	mPa·s
Density (DIN EN ISO 15212-1)	1.10	g/mL
Critical Energy (E_c) @405 / 385 nm	2.4 / 2.3	mJ/cm²
Depth of Penetration (D_p) @405 / 385 nm	0.28 / 0.20	mm
Tensile Properties[2] (DIN EN ISO 527-5A)		
Ultimate Tensile Strength	48	MPa
Yield Strength	48	MPa
Tensile Modulus	2200	MPa
Elongation at Break	37	%
Flexural Properties[3] (DIN EN ISO 178)		
Flexural Strength	64	MPa
Flexural Modulus	1600	MPa
Deflection at Fracture	>10	%
Impact Properties		
Izod notched (DIN EN ISO 180)	67	J/m
Charpy notched (DIN EN ISO 179-1)	9.9	kJ/m²
Izod unnotched (DIN EN ISO 180)	670	J/m
Charpy unnotched (DIN EN ISO 179-1)	110	kJ/m²

Hardness (DIN EN ISO 7619)

Shore Hardness (green)	40 - 45	D
Shore Hardness	77	D

Thermal Properties

T_g (TMA)[4]	90	°C
HDT A (DIN EN ISO 75)	49	°C
HDT B (DIN EN ISO 75)	76	°C
CTE (–50 °C, 70 °C) (DIN EN ISO 11359-2)	94	x 10^{-6} K^{-1}
CTE (120 °C, 200 °C) (DIN EN ISO 11359-2)	113	x 10^{-6} K^{-1}
Specific Heat Capacity, 20 °C (DIN EN ISO 11357-4)	1.7	J/(g·K)

Electrical Properties

Dielectric strength (IEC60243-1)	22	kV/mm
Relative Permittivity (Dielectric Constant, 21 °C, 10000 Hz, IEC60250)	8.9	-
Dissipation Factor (21 °C, 10000 Hz, IEC60250)	0.016	-
Volume Resistivity (IEC60093)	1.5 x 10^{14}	Ω·cm
Comparative Tracking Index (IEC60112)	>600	V

Flame (UL94)

Flammability, horizontal (at 3.2 mm)	HB	-

Chemical Resistance

Water Uptake, 168 h, 23 °C[5]	6.4	%
Performance after Water Uptake, 30 min, 90 °C[6]	28	%

Thermal Ageing[7]

125 °C for 168 hours	<1	%

Ageing at –40 °C[6]

for 168 hours	<1	%

Print Appearance/ Color

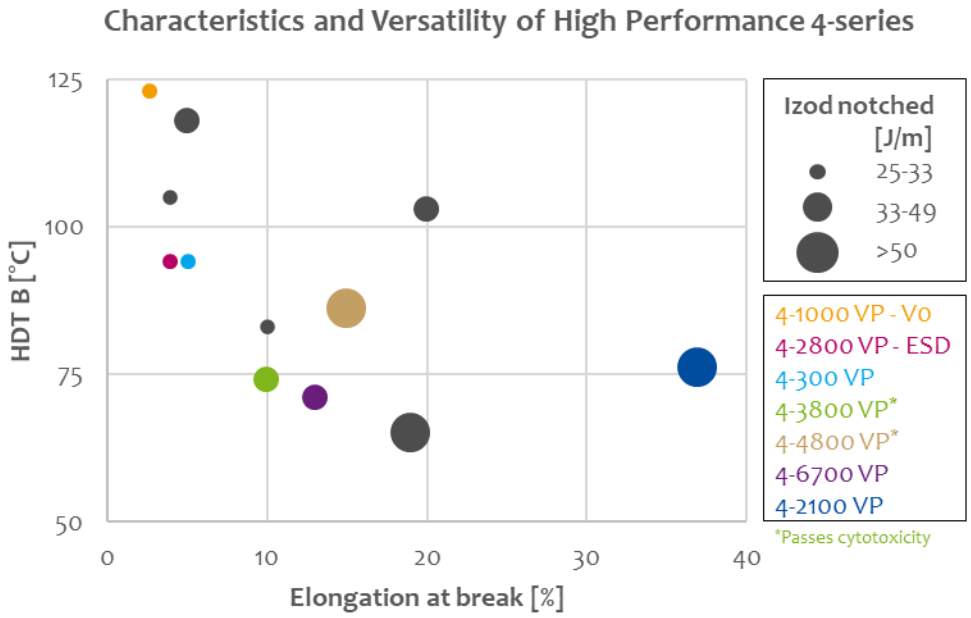
Natural color is translucent light yellow. Also available in cyan, magenta, yellow, black and grey. More colors on request.

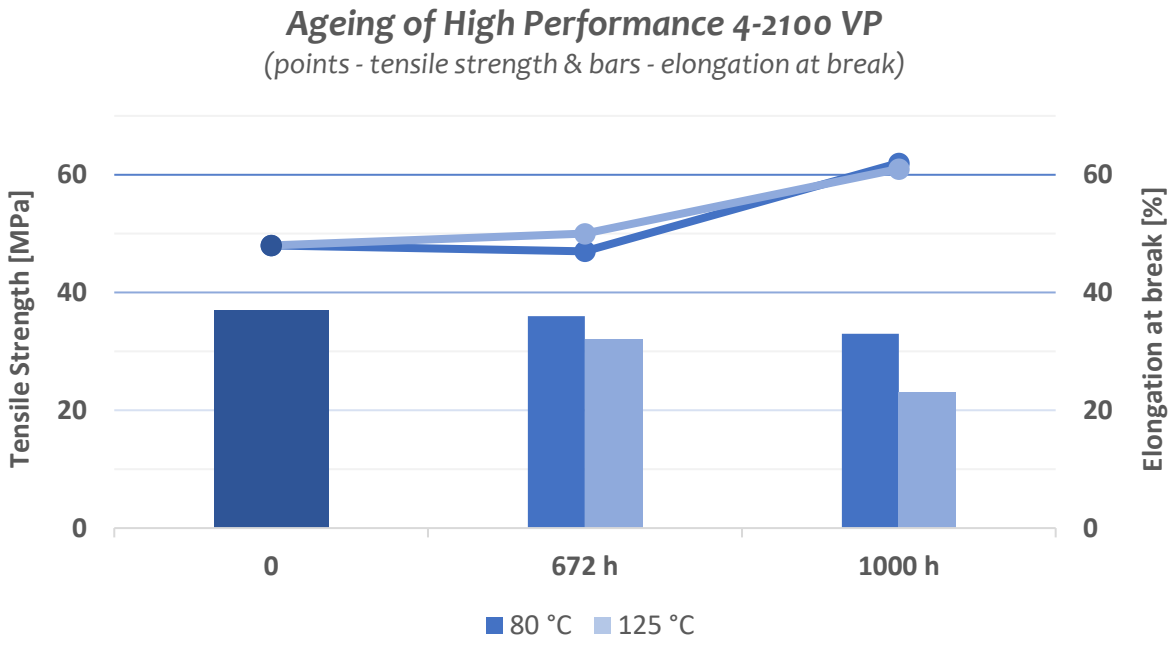
Availability and Storage

Batch sizes starting from 1 kg.

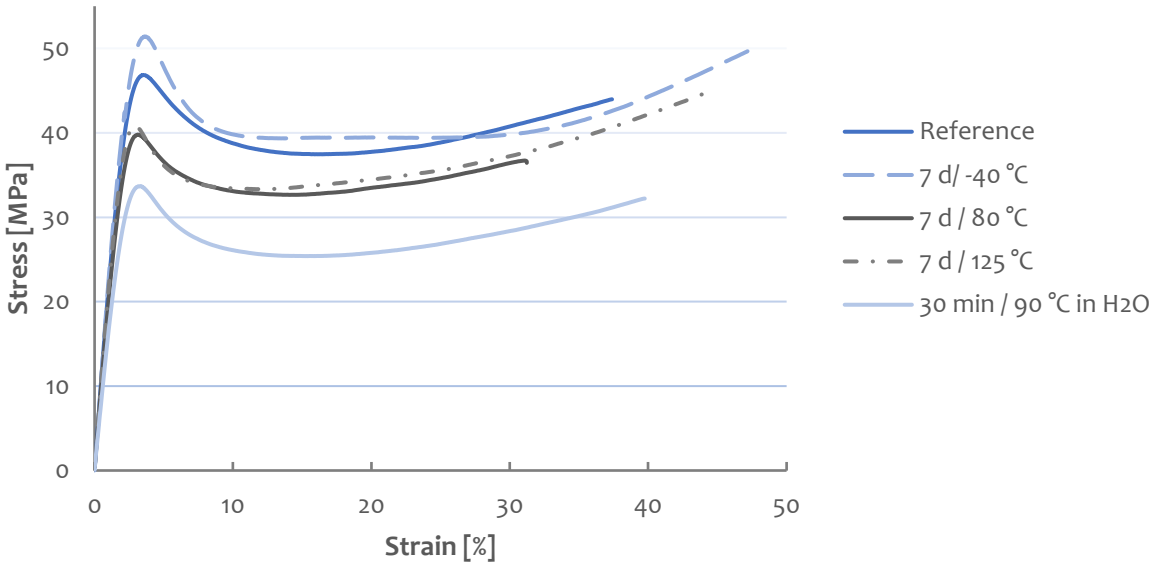
Store between 21 and 28 °C and protect from light. Stir prior to use.

[1]Properties with post-processing – washed with water, UV post-cure. All material properties can vary with printer, print settings, object orientation, part geometry, post-processing and age of sample. [2]5 mm/min; [3]5 mm/min; [4]–20 - 200 °C, 5 K/min, TMA; [5]Weight loss of 5A-specimen DIN EN ISO 527; [6]Relative loss of tensile strength compared to reference, DIN EN ISO 527-5A, 5 mm/min; [7]Relative loss of elongation at break compared to reference, DIN EN ISO 527-5A, 5 mm/min.



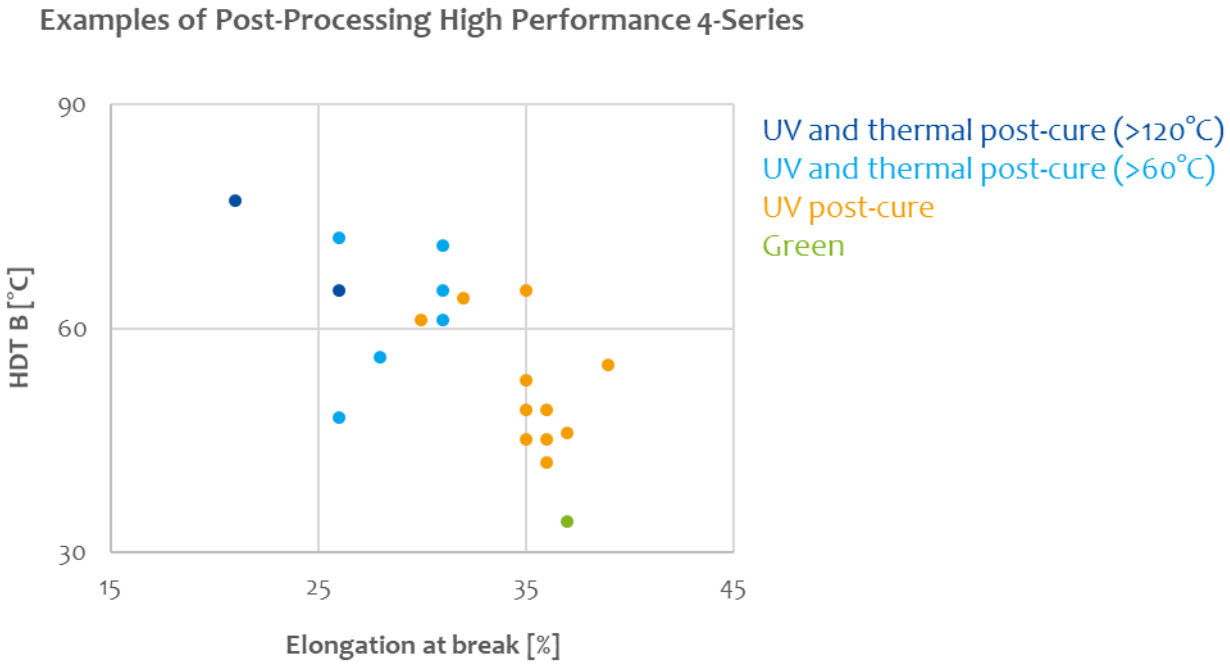


Tensile Testing of High Performance 4-2100 VP



Chemical Resistance	Mass Gain [%][1]
Water	4.9
Acetic Acid (5%)	5.8
Hydrochloric Acid (1%)	11.2
Nitric Acid (5%)	8.4
Sodium Hypochlorite (10%)	0.4
Hydrogen Peroxide (3%)	5.8
Sodium Hydroxide (1%)	4.1
Isopropyl Alcohol	0.3
Methanol	10.9
Butyl Glycol Acetate	−0.2
Super Gasoline	1.6
Acetone	12.4
Methyl Ethyl Ketone	8.4

[1]Percental weight gained after 24 h submersion of printed and post-cured (washed with water, UV post-cure) 1 x 1 x 1 cm^3 cubes.



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