

Cubic Ink® High Performance 3-1700 VP

Tear resistant and elastic material for final part production with Shore A 84

Liquid Properties	Value ¹	Unit
Viscosity @ 25 °C (DIN EN ISO 3219)	1030	mPa·s
Density (DIN EN ISO 15212-1)	1.05	g/mL
Critical Energy (E _c) @405 / 385 nm	7.7 / 7.1	mJ/cm ²
Depth of Penetration (D _p) @405 / 385 nm	0.26 / 0.10	mm
Tensile Properties² (DIN EN ISO 527-5A)		
Ultimate Tensile Strength	19	MPa
Tensile Modulus	35	MPa
Elongation at Break	190	%
Tensile Strength at 50% elongation	6	MPa
Tensile Strength at 100% elongation	10	MPa
Tensile Strength at 150% elongation	15	MPa
Tear Strength (DIN EN ISO 34-1 B) ³	120	kN/m
Impact Properties		
Izod notched (DIN EN ISO 180)	210 (No break)	J/m
Charpy notched (DIN EN ISO 179-1)	24 (No break)	kJ/m ²
Compression Properties (DIN EN ISO 815-1)⁴		
Compression Set-B after 22h @70 °C	24	%

Rebound Properties⁴ (DIN 53512)

Schob-Pendulum @23 °C	30	%
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Hardness (DIN EN ISO 7619)

Shore Hardness (green)	40 - 50	A
Shore Hardness	84	A

Thermal Properties

T _g (DSC) ⁵	52	°C
T _g (DMA) ⁶	-5, 71	°C
CTE (-50 °C, 30 °C) (DIN EN ISO 11359-2)	124	x 10 ⁻⁶ K ⁻¹
CTE (70 °C, 160 °C) (DIN EN ISO 11359-2)	149	x 10 ⁻⁶ K ⁻¹
Specific Heat Capacity, 20 °C (DIN EN ISO 11357-4)	1.9	J/(g·K)

Chemical Resistance

Water Uptake, 24 h, 23 °C ⁷	<0.1	%
Performance after Water Uptake, 24 h, 23 °C ⁸	<1	%

Thermal Ageing⁸

80 °C for 168 hours	<1	%
125 °C for 1000 hours	<1	%

Ageing at -40 °C⁸

for 1000 hours	<3	%
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UV Ageing^{9,10}

for 1000 hours	<5	%
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Cytotoxicity¹¹ (DIN EN ISO 10993-5)

In-vitro cytotoxicity	Passed	
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Print Appearance/ Color

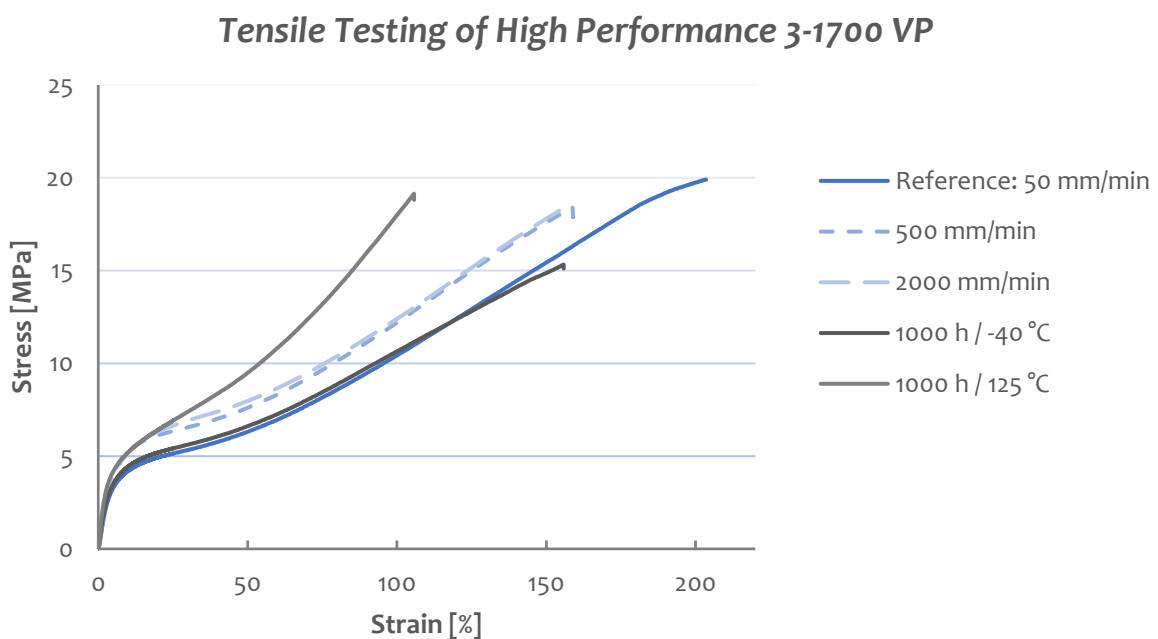
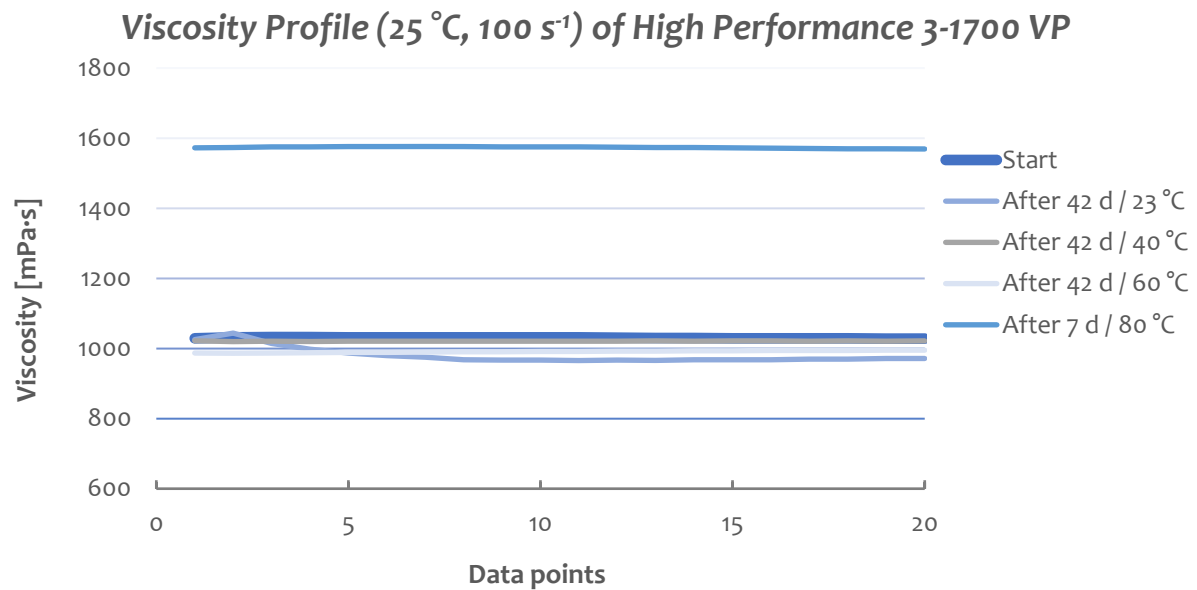
Natural color is brown-opaque. Also available in green, black and dark grey. More colors on request.

Availability and Storage

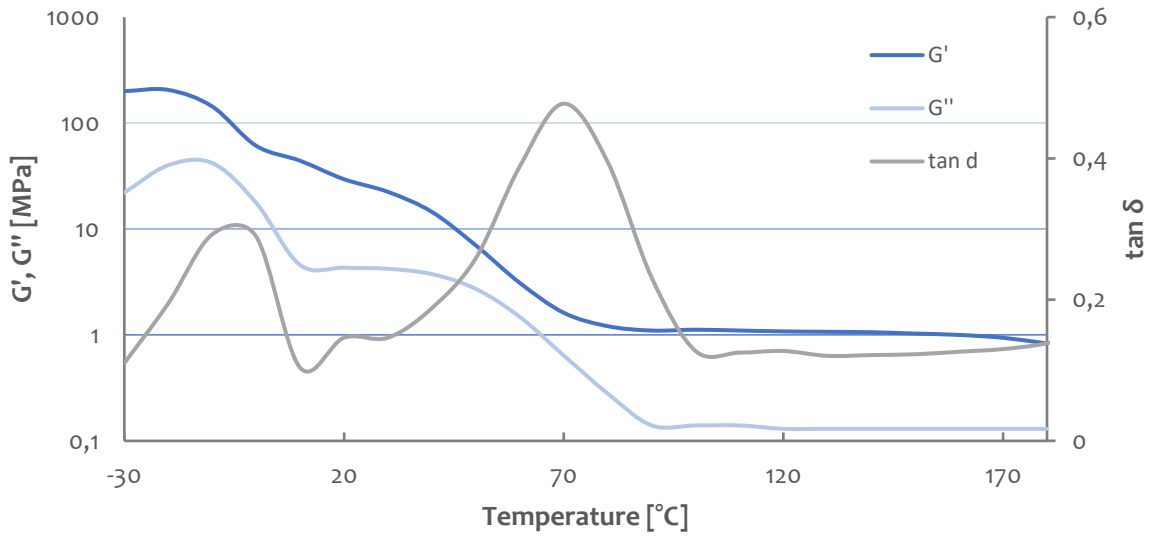
Batch sizes starting from 1 kg.

Store at room temperature between 21 and 28 °C and protect from light.

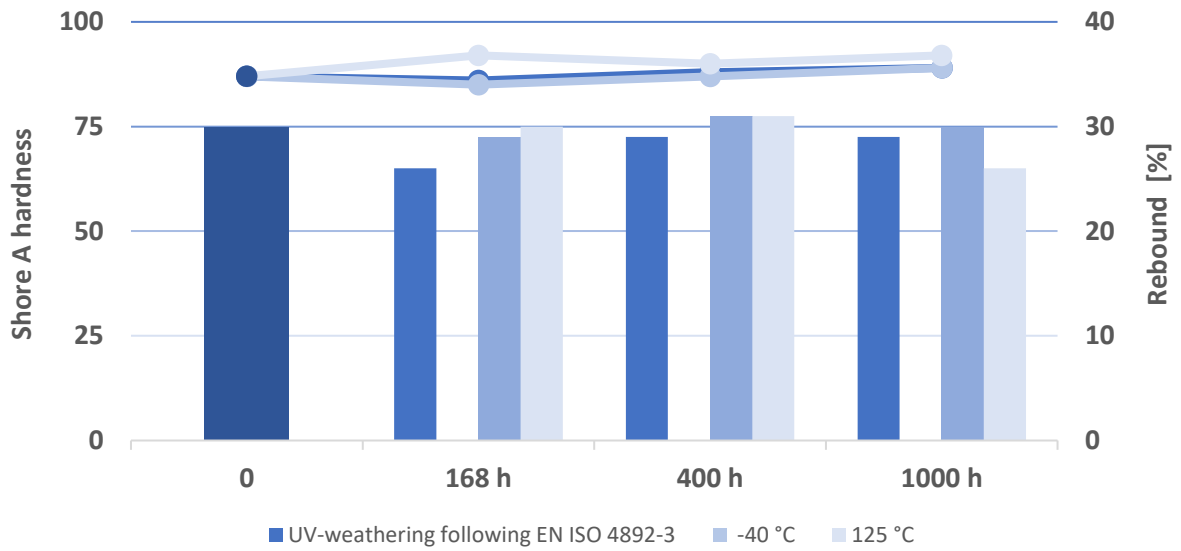
¹Properties with post-processing – washed with DPM, thermal treatment up to 130 °C. All material properties can vary with printer, print settings, object orientation, part geometry, post-processing and age of sample. ²50 mm/min; ³500 mm/min, notched specimen method B; ⁴Specimen with 12.5 mm height; ⁵-20 - 200 °C, 20 K/min; ⁶-80 - 180 °C, 3 K/min, 1 Hz, single; ⁷Specimen DIN EN ISO 527-5A weight difference; ⁸Relative loss of tensile strength compared to reference, DIN EN ISO 527-5A, 50 mm/min; ⁹Relative loss of rebound compared to reference, DIN 53512; ¹⁰QUV weathering tester following ISO 4892-3; ¹¹Testing at 22 °C, 61% rel. humidity, duration of extraction 24 h at 37 °C following DIN EN ISO 10993-5 and -12; Specimens of High Performance 3-1700 VP Black post-cured with a thermal treatment up to 170 °C.



DMA (Shear, 1 Hz, 3 K/min) of High Performance 3-1700 VP



Ageing of High Performance 3-1700 VP (points - Shore A hardness & bars - Rebound)



Chemical Resistance	Mass Gain [%] ¹
Water	0.5
Acetic Acid (5%)	0.5
Hydrochloric Acid (1%)	0.4
Nitric Acid (5%)	0.8
Sodium Hypochlorite (10%)	0.8
Hydrogen Peroxide (3%)	0.5
Sodium Hydroxide (1%)	0.5
Isopropyl Alcohol	3.0
Methanol	5.6
Butyl Glycol Acetate	27.5
Super Gasoline	12.9
Acetone	6.5
Methyl Ethyl Ketone	-9.5

¹Percental weight gained after 24 h submersion of printed and post-cured (washed with DPM, thermal treatment up to 130 °C) 1 x 1 x 1 cm cubes.

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