

# Cubic Ink® High Performance 3-1700 VP

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

Liquid Properties	Value <sup>1</sup>	Unit
Viscosity @ 25 °C (DIN EN ISO 3219)	1030	mPa·s
Density (DIN EN ISO 15212-1)	1.05	g/mL
Critical Energy (E <sub>c</sub> ) @405 / 385 nm	7.7 / 7.1	mJ/cm <sup>2</sup>
Depth of Penetration (D <sub>p</sub> ) @405 / 385 nm	0.26 / 0.10	mm
<b>Tensile Properties<sup>2</sup> (DIN EN ISO 527-5A)</b>		
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) <sup>3</sup>	120	kN/m
<b>Impact Properties</b>		
Izod notched (DIN EN ISO 180)	210 (No break)	J/m
Charpy notched (DIN EN ISO 179-1)	24 (No break)	kJ/m <sup>2</sup>
<b>Compression Properties (DIN EN ISO 815-1)<sup>4</sup></b>		
Compression Set-B after 22h @70 °C	24	%
<b>Rebound Properties<sup>4</sup> (DIN 53512)</b>		
Schob-Pendulum @23 °C	30	%

### Hardness (DIN EN ISO 7619)

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

### Thermal Properties

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

### Chemical Resistance

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

### Thermal Ageing<sup>8</sup>

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

### Ageing at -40 °C<sup>8</sup>

for 1000 hours	<3	%
----------------	----	---

### UV Ageing<sup>9,10</sup>

for 1000 hours	<5	%
----------------	----	---

### Print Appearance/ Color

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

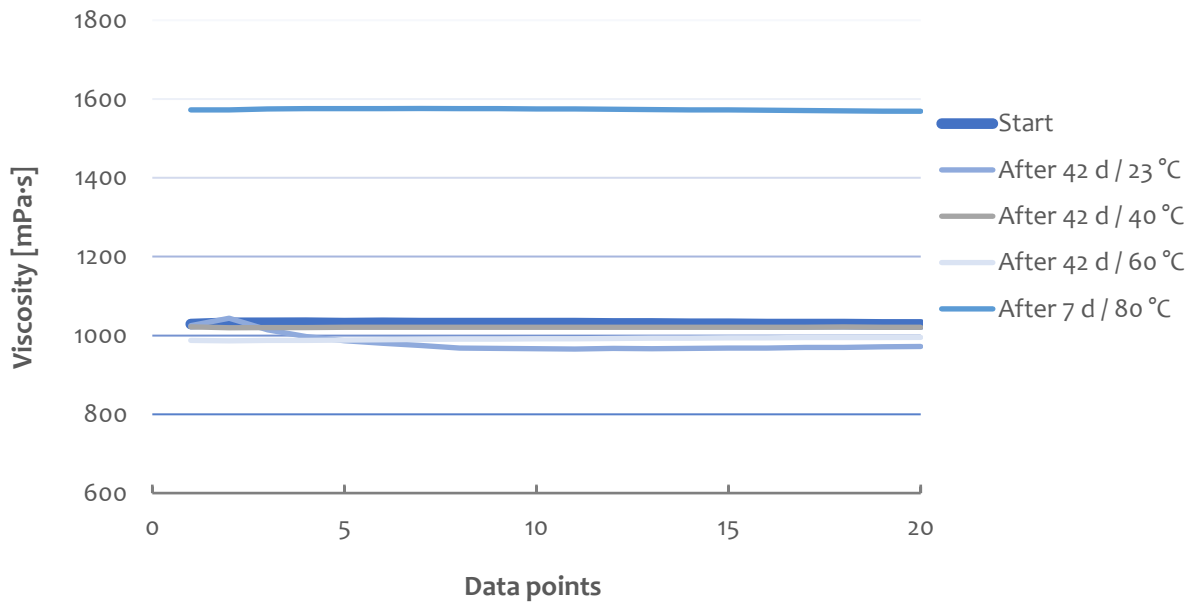
### Availability and Storage

Batch sizes starting from 1 kg.

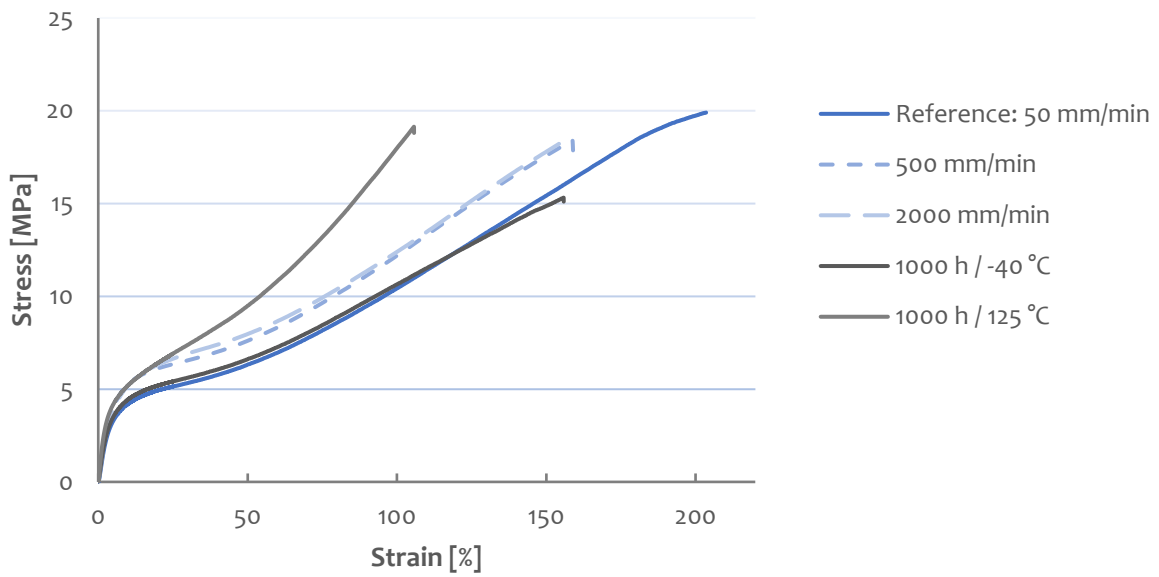
Store at room temperature between 21 and 28 °C and protect from light.

<sup>1</sup>Properties 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. <sup>2</sup>50 mm/min; <sup>3</sup>500 mm/min, notched specimen method B; <sup>4</sup>Specimen with 12.5 mm height; <sup>5</sup>-20 - 200 °C, 20 K/min; <sup>6</sup>-80 - 180 °C, 3 K/min, 1 Hz, single; <sup>7</sup>Specimen DIN EN ISO 527-5A weight difference; <sup>8</sup>Relative loss of tensile strength compared to reference, DIN EN ISO 527-5A, 50 mm/min; <sup>9</sup>Relative loss of rebound compared to reference, DIN 53512; <sup>10</sup>QUV weathering tester following ISO 4892-3.

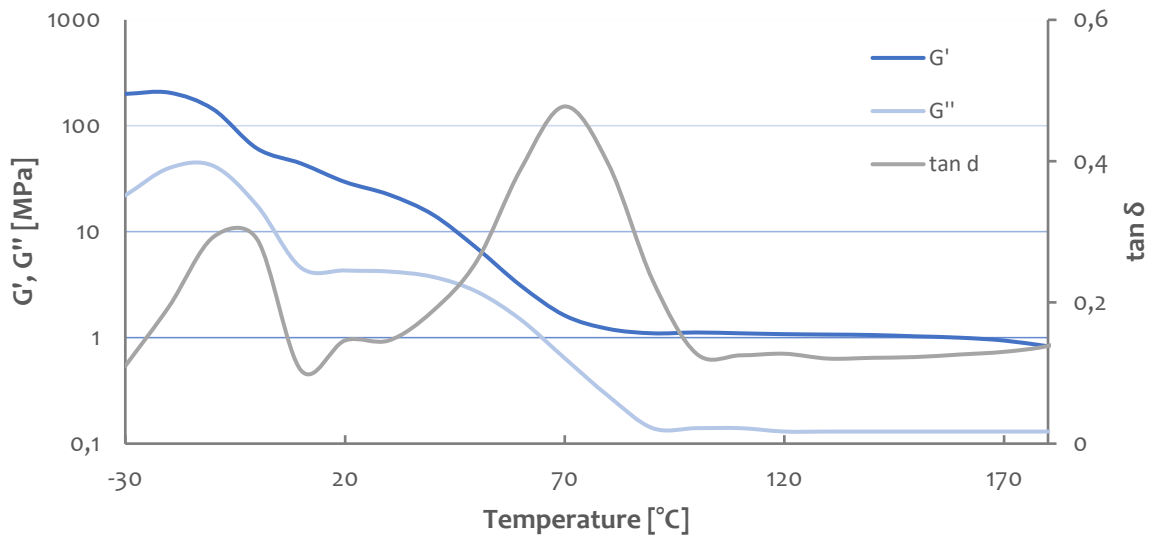
### Viscosity Profile (25 °C, 100 s<sup>-1</sup>) of High Performance 3-1700 VP



### Tensile Testing of High Performance 3-1700 VP

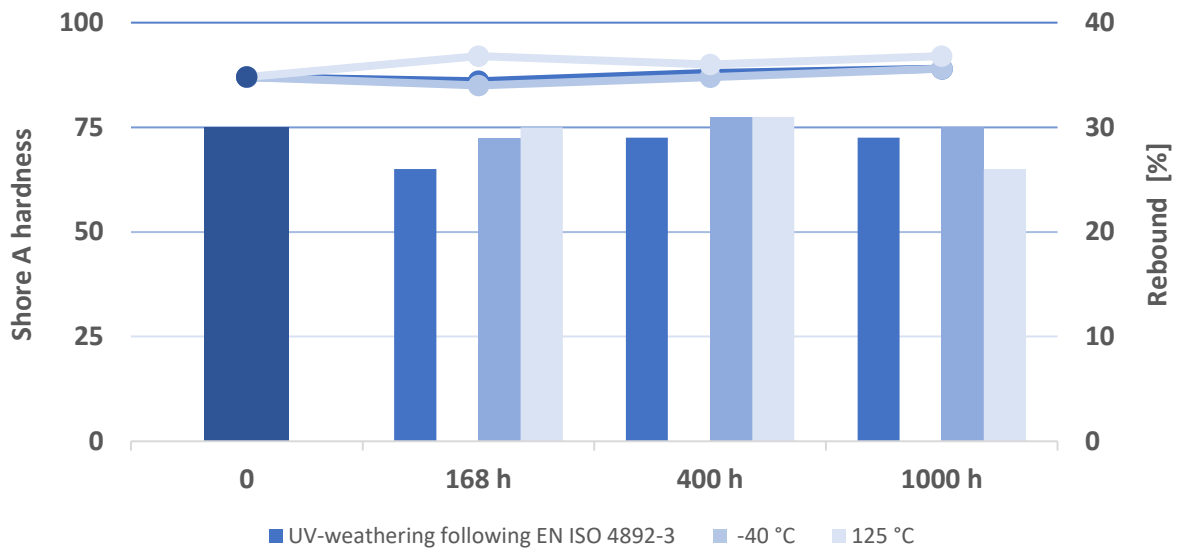


### DMA ( Shear, 1 Hz, 3 K/min) of High Performance 3-1700 VP



### Ageing of High Performance 3-1700 VP

(points - Shore A hardness & bars - Rebound)



Chemical Resistance	Mass Gain [%] <sup>1</sup>
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

<sup>1</sup>Percental 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.

**Cubic Ink®**  
**ALTANA New Technologies GmbH**

located at

ACTEGA Terra GmbH  
Mielestraße 13  
31275 Lehrte  
GERMANY

Tel +49 (0)5132 5009-600

[cubic.ink@altana.com](mailto:cubic.ink@altana.com)  
[www.altana.com](http://www.altana.com)

**Learn more about Cubic Ink® materials**

[www.altana.com/cubic-ink](http://www.altana.com/cubic-ink)  
[www.altana.de/cubic-ink](http://www.altana.de/cubic-ink)

#### Disclaimer

The information contained herein is based on our current knowledge and experience. No warranties, guarantees and/or assurances of any kind, either express or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding any products mentioned herein and data or information set forth, or that such products, data or information may be used without infringing intellectual property rights of third parties. Any information about suitability, use or application of the products is non-binding and does not constitute a commitment regarding the products' properties, use or application. Contractual terms and conditions, in particular agreed product specifications, always take precedence. We recommend that you test our products in preliminary trials to determine their suitability for your intended purpose prior to use. We reserve the right to make any changes and to update the information herein without notice.

Follow us – ALTANA New Technologies GmbH – Cubic Ink®

