Cubic Ink® High Performance 4-6700 VP Grey

Material with a good balance between toughness and impact resistance with good surface finish for final part production

Liquid Properties	Value[1]	Unit
Viscosity @ 25 °C (DIN EN ISO 3219)	73	mPa·s
Density (DIN EN ISO 15212-1)	1.12	g/mL
Critical Energy (E_c) @405 / 385 nm	2.7 / 3.8	mJ/cm²
Depth of Penetration (D_p) @405 / 385 nm	0.10 / 0.06	mm
Tensile Properties[2] (DIN EN ISO 527-5A)		
Ultimate Tensile Strength	49	MPa
Yield Strength	49	MPa
Tensile Modulus	2200	MPa
Elongation at Break	11	%
Flexural Properties[2] (DIN EN ISO 178)		
Flexural Strength	81	MPa
Flexural Modulus	2000	MPa
Deflection at Fracture	>10	%
Impact Properties		
Izod notched (DIN EN ISO 180)	43	J/m
Charpy notched (DIN EN ISO 179-1)	4.9	kJ/m²
Izod unnotched (DIN EN ISO 180)	380	J/m
Charpy unnotched (DIN EN ISO 179-1)	36	kJ/m²
Hardness (DIN EN ISO 7619)		
Shore Hardness	83	D

Thermal Properties

T_g (DSC)[3]	73	°C
HDT A (DIN EN ISO 75)	54	°C
HDT B (DIN EN ISO 75)	70	°C
CTE (–50 °C, 60 °C) (DIN EN ISO 11359-2)	92	x 10^{-6} K^{-1}
CTE (90 °C, 200 °C) (DIN EN ISO 11359-2)	154	x 10^{-6} K^{-1}
Specific Heat Capacity, 20 °C (DIN EN ISO 11357-4)	1.31	J/(g·K)

Electrical Properties

Dielectric Strength (IEC60243-1)	27	kV/mm
Relative Permittivity (Dielectric Constant, 24 °C, 10000 Hz, IEC60250)	6.3	-
Dissipation Factor (24 °C, 1 MHz, IEC60250)	0.009	-
Volume Resistivity (IEC60093)	3.4 x 10^{14}	Ω·cm
Comparative Tracking Index (IEC60112)	>600	V

Thermal Ageing[4]

125 °C for 28 days	<1	%

UV Ageing[4,5]

for 670 hours	<1	%

Print Appearance/ Color

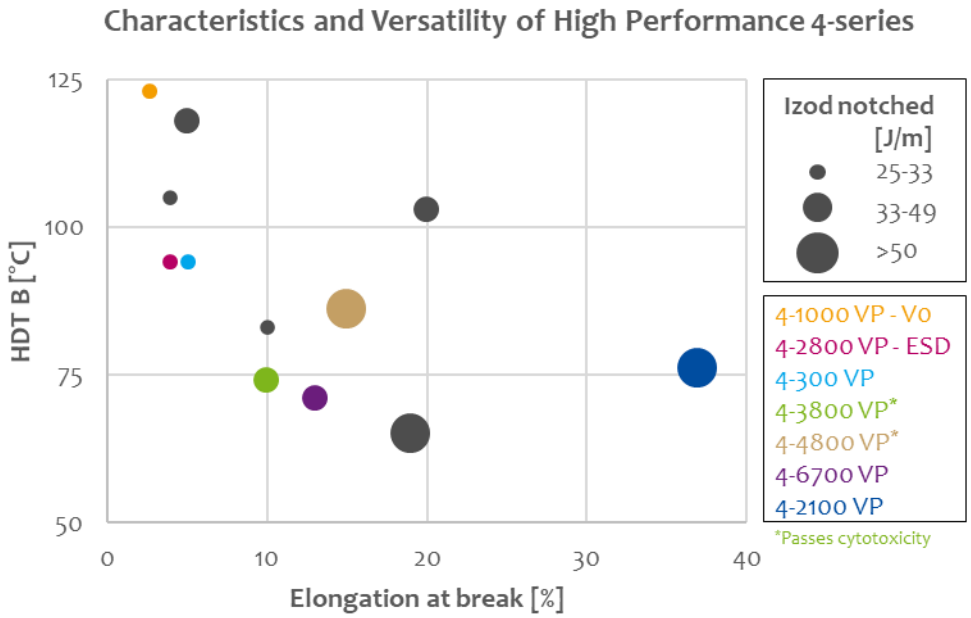
Color is grey. More colors on request.

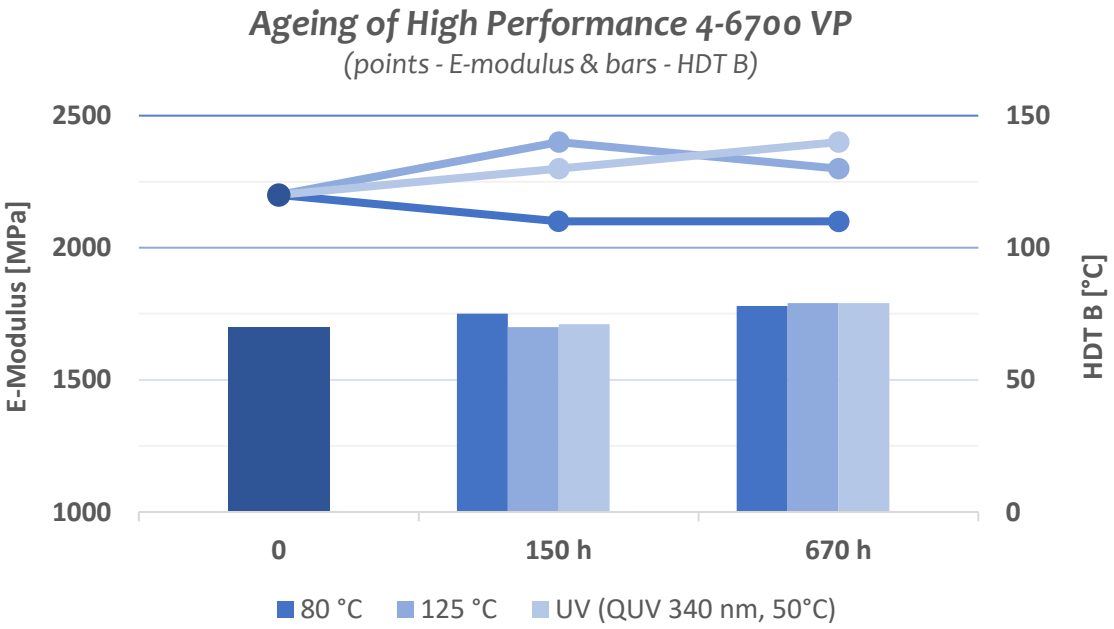
Availability and Storage

Batch size starting from 1 kg.

Store at room temperature between 21 and 28 °C and protect from light. Stir thoroughly prior to use.

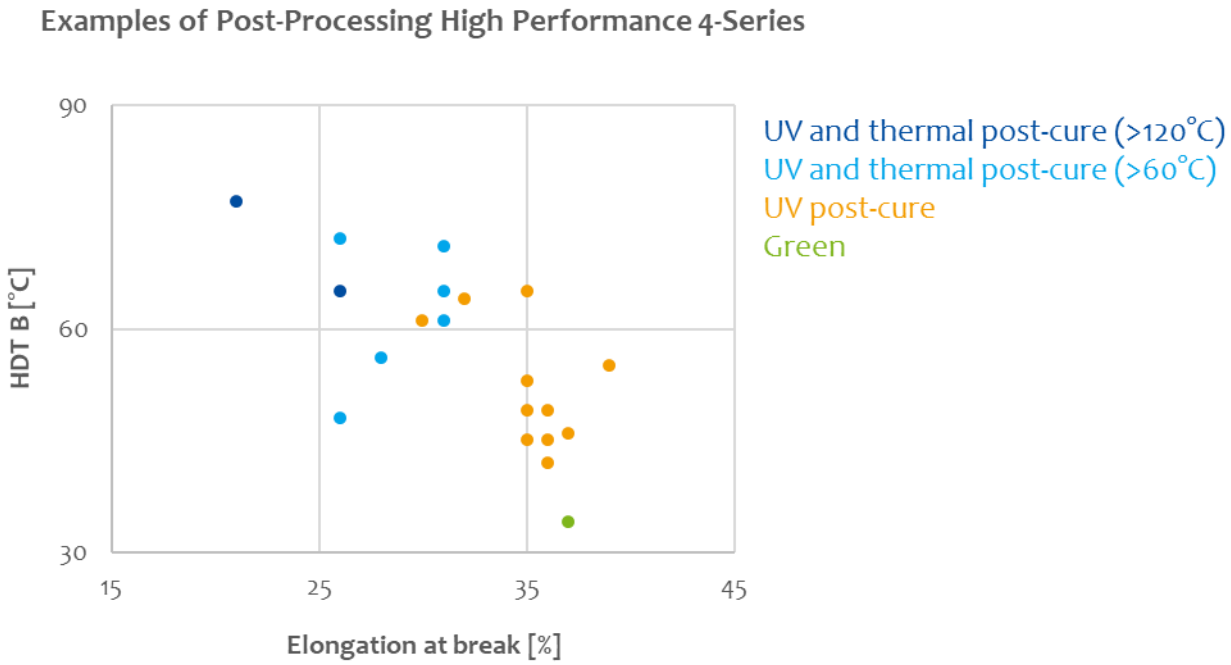
[1]Properties may vary with post-processing – 2x 2000 flashes of Otoflash® G171-6 under N_2 atmosphere followed by 2 h at 100 °C heating. All material properties can vary with printer, print settings, object orientation, part geometry, post-processing and age of sample. [2]5 mm/min; [3]–55 - 200 °C, 5 K/min; [4]Relative loss of tensile strength and HDT B compared to reference, DIN EN ISO 527-5A, 5 mm/min, DIN EN ISO 75; [5]QUV (Xenon-lamps 300 – 400 nm, narrowband 340 nm with 0.76 W/m²/nm, 50 °C, from Q-Lab).


Characteristics and Versatility of High Performance 4-series
HDT B [°C]
125
100
75
50
0
10
20
30
40
Elongation at break [%]
Izod notched [J/m]
25-33
33-49
>50
4-1000 VP - V0
4-2800 VP - ESD
4-300 VP
4-3800 VP*
4-4800 VP*
4-6700 VP
4-2100 VP
*Passes cytotoxicity


Ageing of High Performance 4-6700 VP
(points - E-modulus & bars - HDT B)
E-Modulus [MPa]
2500
2000
1500
1000
150
100
50
0
HDT B [°C]
0
150 h
670 h
80 °C
125 °C
UV (QUV 340 nm, 50°C)

Chemical Resistance	Mass Gain [%][1]
Water	3.8
Acetic Acid (5%)	4.2
Hydrochloric Acid (1%)	3.5
Nitric Acid (5%)	5.1
Sodium Hypochlorite (10%)	1.0
Sodium Hydroxide (1%)	3.1
Isopropyl Alcohol	1.0
Methanol	7.9
Butyl Glycol Acetate	0.7
Super Gasoline	2.2
Acetone	8.8
Methyl Ethyl Ketone	6.1

[1]Percental weight gained after 24 h submersion of printed and post-cured (2x 2000 flashes of Otoflash® G171-6 under N_2 atmosphere followed by 2 h at 100 °C heating) 1 x 1 x 1 cm^3 cubes.



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