Liqcreate Strong-X

An extremely strong and easy to print Stereolithography (SLA) and Digital Light Processing (DLP) resin which is perfect for industrial applications.

Product description

Liqcreate Strong-X is one of the strongest materials available in the market. Its flexural strength of 135 MPa is comparable to industry's leading dual-cure cyanate ester resins. Liqcreate Strong-X is easy to use on all open source SLA and DLP 3D-printers in the range of 385 – 405 nm and only requires UV post-curing. This material has excellent features like high strength, high stiffness and high temperature resistance which makes it ideal for injection molding and heavy duty applications.

Key benefits

- High strength
- High temperature resistance
- Low odor
- Low shrinkage

3D-Printer compatibility

- Moonray S & D
- Miicraft 125
- Formlabs Form 2
- Asiga Max and 4K
- Anycubic & Elegoo series
- Phrozen series
- All open 385 - 405nm SLA, DLP and monochrome MSLA 3D-printers

T > +31 (0)85 060 58 49
E > info@liqcreate.com
I > www.liqcreate.com

Liqcreate Strong-X Technical Data

Liquid properties			
Appearance	Opaque Grey Liquid	Ec	13.38 mJ/cm^2
Viscosity	300 cps at 25°C	Dp metric	0.22 mm
Density	1.12 g/cm^3	Dp imperial	8.48 mils

Polymer properties			
Mechanical properties		**High power LED curing 30 minutes at 60°C**	**High power LED curing 120 minutes at 60°C**
Description	ASTM Method	Metric	Metric
Tensile Strength	D638M	52 - 70 MPa	60 - 84 MPa
Tensile Modulus	D638M	2.9 - 3.2 GPa	3.1 - 3.4 GPa
Elongation at break	D638M	4 - 8 %	3 - 6 %
Flexural Strength	D790	121 - 130 MPa	134 - 140 MPa
Flexural Modulus	D790	3.1 - 3.3 GPa	3.3 - 3.5 GPa
IZOD Impact (notched)	D256A	20 J/m	17 J/m
Shore D Hardness	D2240	87	90
Water Sorption	D570-98	0.45 %	0.39 %
Tg	D7028	n/a	128°C

Parts were washed in Isopropyl alcohol and post-cured in a Wicked Engineering Curebox. Values may vary depending on individual machine processing and post-curing.

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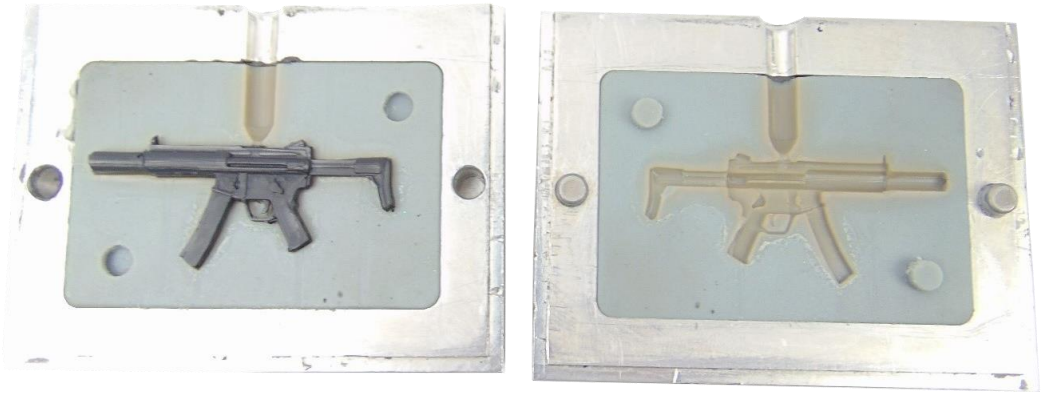
Liqcreate Strong-X for injection molding

Liqcreate Strong-X is the ideal material for low-volume injection molding. A wide range of thermoplastic polymers have been tested on compatibility with molds made from Liqcreate Strong-X. The focus of this study was on temperature resistance of the 3D-printed molds and on adhesion of the thermoplastic polymer to the mold.



The tested polymers are listed in the table below and include PP, PE, HDPE, ABS, PETG, PA6 and PA12 co-polymer, injected at temperatures between 230 and 280°C (446 - 536°F). All materials were injected without any mold release agents.

Thermal degradation of the 3D-printed mold has not been observed in any of the tests. Polymers like ABS, PA6 and PA12 show adhesion to the mold, while other polymers like PP, PE, HDPE and PETG release easily from the mold and are compatible with Strong-X 3D-printed molds. The test results were obtained with the use of two three-dimensional molds from Strong-X, and therefore a mirror plate is not used. Over 100 injections were successfully done with HDPE, PE and PP.

Injection molding results**		
Polymer	Injection temperature	Polymer adhesion to mold
PP*	230°C / 446°F	No adhesion
PE	240°C / 464°F	No adhesion
HDPE	240°C / 464°F	No adhesion
ABS	260°C / 500°F	Medium adhesion
PETG	260°C / 500°F	No adhesion
PA6	280°C / 536°F	Medium adhesion
PA12*	280°C / 536°F	Medium adhesion