

Clear V5

CLEAR ENGINEERING RESIN FOR TRANSPARENT FUNCTIONAL PARTS

Clear V5 is a color-neutral general-purpose resin for transparent prototypes and functional parts. It provides a useful balance of strength, stiffness, dimensional accuracy, smooth surface finish, and optical clarity. Proper finishing and polishing can produce near-optically transparent components; final optical and mechanical performance should be verified for the intended geometry and service environment.

Design Advantages

- Published polished visible-light transmission of 85% at 2 mm thickness
- Post-cured tensile strength up to 60 MPa and flexural strength up to 103 MPa
- Transparent, color-neutral appearance for parts that showcase internal features
- Suitable for transparent enclosures, lighting prototypes, fluidic devices, molds, and masters

Material Specifications

ITEM	PUBLISHED VALUE
Material family	Clear general-purpose photopolymer
Tensile strength	60 MPa, 60 C post-cure
Tensile modulus	2,750 MPa, 60 C post-cure
Elongation at break	8%, 60 C post-cure
HDT at 0.45 MPa	69 C, 60 C post-cure
Polished transmission	85% at 2 mm; 59% at 10 mm

Application Fit

- Transparent housings, enclosures, covers, and display components
- Lighting prototypes and components requiring visible internal features
- Fluidic devices and flow-observation prototypes
- Molds, masters, and other rapid-tooling applications

Mechanical Properties

PROPERTY	GREEN	AMBIENT CURE	60 C CURE	METHOD
Ultimate tensile strength	46 MPa	51 MPa	60 MPa	ASTM D638-14
Tensile modulus	2,200 MPa	2,575 MPa	2,750 MPa	ASTM D638-14
Elongation at break	13%	10%	8%	ASTM D638-14
Flexural strength	82 MPa	91 MPa	103 MPa	ASTM D790-15
Flexural modulus	2,000 MPa	2,450 MPa	2,750 MPa	ASTM D790-15
Notched Izod	31 J/m	29 J/m	29 J/m	ASTM D4812-11

Thermal Properties

PROPERTY	GREEN	AMBIENT CURE	60 C CURE	METHOD
HDT at 1.8 MPa	Not reported	54 C	57 C	ASTM D648-16
HDT at 0.45 MPa	Not reported	61 C	69 C	ASTM D648-16

Polished Optical Properties

PROPERTY	AMBIENT CURE	60 C CURE	METHOD
Visible-light transmission at 2 mm	85%	85%	ASTM D1003-21
CIELAB a* at 2 mm	-4.02	-4.31	ASTM E1348-15
CIELAB b* at 2 mm	7.52	5.58	ASTM E1348-15
Visible-light transmission at 10 mm	59%	59%	ASTM D1003-21
CIELAB a* at 10 mm	-4.25	-3.98	ASTM E1348-15
CIELAB b* at 10 mm	5.98	5.94	ASTM E1348-15

Interpreting Optical Data

Transmission is the percentage of visible light passing through the polished specimen. CIELAB a* describes the green-to-red axis, where negative values indicate green. CIELAB b* describes the blue-to-yellow axis, where positive values indicate yellow. Thickness, surface roughness, polish quality, geometry, and internal features can materially affect appearance.

Solvent Compatibility

FLUID	24 H WEIGHT GAIN
Acetic acid, 5%	0.9%
Acetone	5.1%
Bleach, about 5% NaOCl	0.7%
Butyl acetate	0.3%
Diesel fuel	0.1%
Diethylene glycol monomethyl ether	1.1%
Hydraulic oil	0.1%
Hydrogen peroxide, 3%	0.9%
Isooctane, gasoline analogue	<0.1%
Isopropyl alcohol	0.3%
Mineral oil, heavy	0.2%
Mineral oil, light	0.2%
Salt water, 3.5% NaCl	0.8%
Skydrol 5	0.7%
Sodium hydroxide, 0.025% pH 10	0.8%
Concentrated hydrochloric acid	0.5%
Tripropylene glycol monomethyl ether	0.5%
Water	0.9%
Xylene	<0.1%

Published Processing Basis

The published ambient-cure condition used a 5-minute cure at room temperature. The elevated-temperature condition used a 15-minute cure at 60 C. Source specimens were produced at 100 micrometre layers and washed for 5 minutes in at least 99% isopropyl alcohol. These conditions describe the source data and are not universal processing requirements.

Design and Qualification Notes

Transparent appearance depends strongly on wall thickness, surface orientation, support placement, polishing, coating, internal geometry, and viewing conditions. Avoid assuming polished coupon transmission will directly predict a complex finished part. Solvent data report short-term mass gain only and do not establish long-term retention of strength, clarity, dimensional stability, or leak performance.

Published Data and Qualification

The values in this sheet are based on published specimen data and are provided for design reference and material comparison. Lucent Additive has not independently generated every published value. Properties can vary with geometry, orientation, process settings, post-curing, finishing, temperature, and disinfection or sterilization methods. Validate the finished component under its intended mechanical, optical, chemical, and thermal conditions.

Start an Application Review

Send Lucent Additive your CAD model, quantity, transparency target, wall thickness, load conditions, fluid exposure, finish requirements, inspection needs, and target schedule. Our team can review material fit, production strategy, finishing, and validation needs before quoting.

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