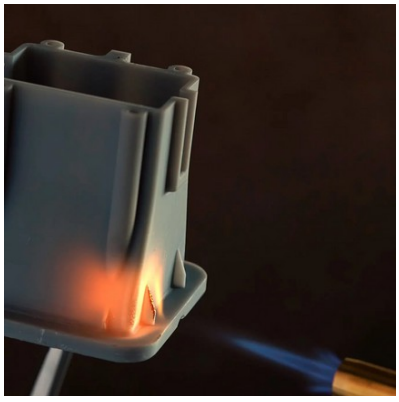
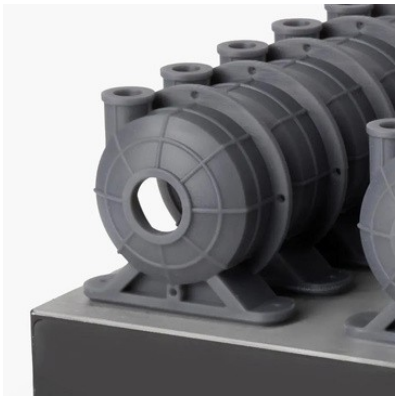
RAPLAS

Production Additive Manufacturing





SLA MATERIALS PACK

GENERATION 2

CONTENTS

General Purpose Resins

- **RR355-60-CR:** General Purpose Clear
- **RR355-60-WH**: General Purpose White
- **RR355-60-GR**: General Purpose Grey

Engineering Resins

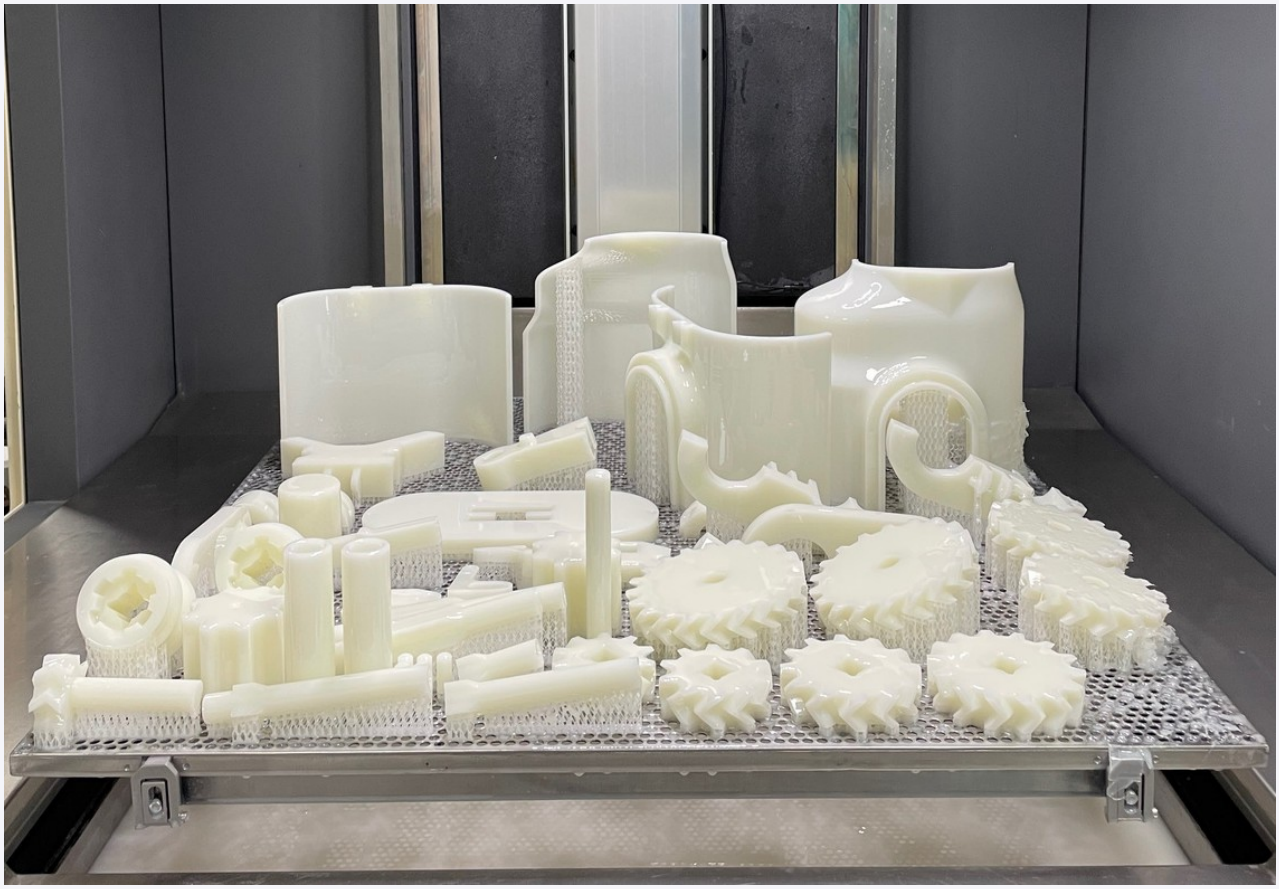
- **RR355-100-RIG**: Extremely Rigid material with high tensile modulus & good heat deflection
- **RR355-101-RIG**: Good rigidity with high heat deflection
- **RR355-100-TGH**: ABS like strength & stiffness
- **RR355-101-TGH:** Impact resistant resin perfect for low friction applications and squeezable prototypes
- **RR355-100-SPC:** Self-extinguishing halogen free material with favourable flame, smoke and toxicity ratings
- **RR355-101-SPC:** Suitable for ESD applications
- **RR355-100-CAS:** Resin for casting
- **RR355-101-CAS:** Resin for casting
- **RR355-102-CAS:** Resin for casting

General Purpose Resins

RR355-60-WH

Resin for General Purpose

- Strong & Durable
- Fast curing
- Cost effective Excellent
- surface finish



Ideal for general purpose and detail critical builds. Its low viscosity with excellent re-wetting provide fast build times increasing productivity.

RR355-60-WH Specifications

Mechanical Properties

Tensile Strength	ASTM D638	54 Mpa
Tensile Modulus	ASTM D638	2920 Mpa
Elongation at break	ASTM D638	4-6%
Flexural Strength	ASTM D790	85 Mpa
Flexural Modulus	ASTM D790	2670 Mpa
Impact Strength	ASTM D256	18.6 J/m
Notched Izod	ASTM D256	0.35 ft-lb/in
Hardness	ASTM D2240	81 shore D
Water Absorbtion	ASTM D570-98	0.25%
Heat Deflection @ 66 psi	ASTM D648	54 deg C
Heat Deflection @ 264 psi	ASTM D648	50 deg C

General Purpose Resins

RR355-60-CR

Resin for General Purpose

- Strong & Durable
- Fast curing
- Cost effective Excellent
- surface finish

Ideal for high clarity and dimensionally challenging builds. Its low viscosity with excellent re-wetting provide fast stunning clear parts for industrial applications.

RR355-60-CR Specifications

Mechanical Properties

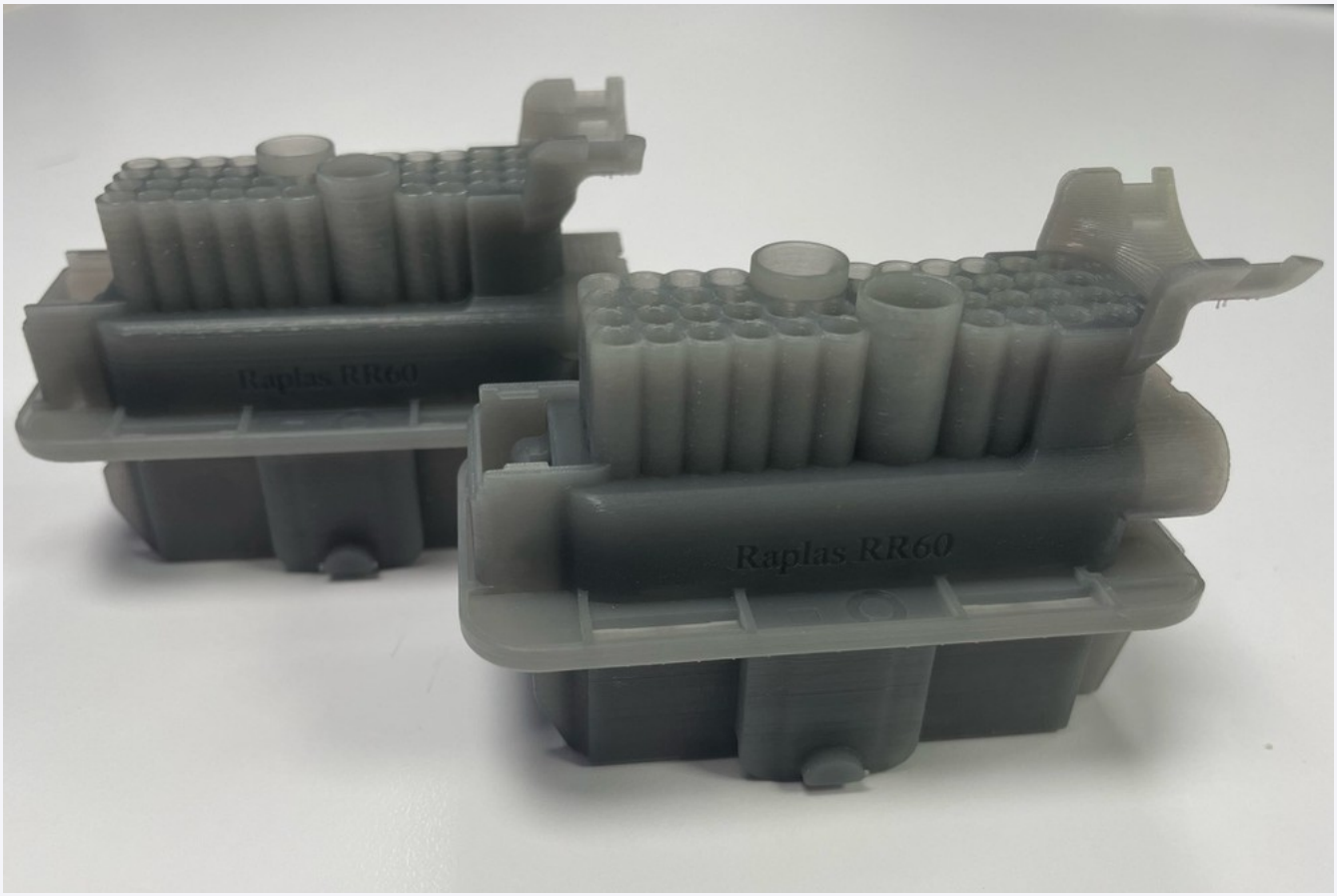
Tensile Strength	ASTM D638	52 Mpa
Tensile Modulus	ASTM D638	2500 Mpa
Elongation at break	ASTM D638	6-10%
Flexural Strength	ASTM D790	82 Mpa
Flexural Modulus	ASTM D790	2000 Mpa
Impact Strength	ASTM D256	21.4 J/m
Notched Izod	ASTM D256	0.4 ft-lb/in
Hardness	ASTM D2240	83 shore D
Water Absorbtion	ASTM D570-98	0.25%
Heat Deflection @ 66 psi	ASTM D648	55 deg C
Heat Deflection @ 264 psi	ASTM D648	50 deg C

General Purpose Resins

RR355-60-GR

Resin for General Purpose

- Strong & Durable
- Fast curing
- Cost effective Excellent
- surface finish



Ideal for general purpose and fine detail parts. Its low viscosity with excellent re-wetting provide fast build times increasing productivity.

RR355-60-GR Specifications

Mechanical Properties

Tensile Strength	ASTM D638	54 Mpa
Tensile Modulus	ASTM D638	2920 Mpa
Elongation at break	ASTM D638	4-6%
Flexural Strength	ASTM D790	85 Mpa
Flexural Modulus	ASTM D790	2670 Mpa
Impact Strength	ASTM D256	18.6 J/m
Notched Izod	ASTM D256	0.35 ft-lb/in
Hardness	ASTM D2240	81 shore D
Water Absorbtion	ASTM D570-98	0.25%
Heat Deflection @ 66 psi	ASTM D648	54 deg C
Heat Deflection @ 264 psi	ASTM D648	50 deg C

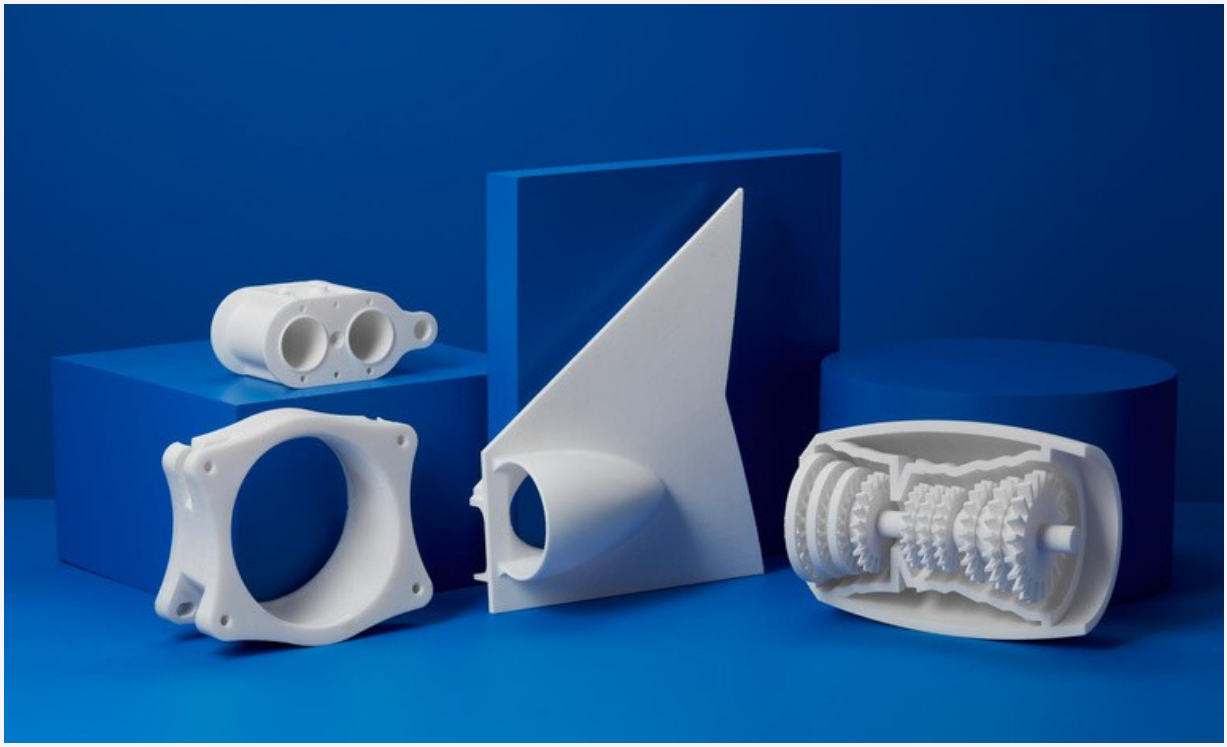
Engineering Resins

RR355-100-RIG

Manufactured by Spectre Photopolymers

Extremely Rigid material with high tensile modulus & good heat deflection

- Aerodynamic test models
- Short-run injection molds and inserts
- Heat resistant fluid exposed component, jigs, and fixtures
- Simulates stiffness of glass and fiber-filled thermoplastics



This highly glass-filled resin is the stiffest material in our engineering portfolio. Choose RR355-100-RIG Resin for precise industrial parts that need to withstand significant load without bending. RR355-100-RIG Resin has a smooth matte finish and is highly resistant to heat and chemicals.

RR355-100-RIG Specifications

MATERIAL PROPERTIES DATA: **RR355-100-RIG Resin**

	METRIC				METHOD
	Green	UV Cure [1]	UV + Thermal Cure [2]	UV Cure + Media Blast	
Tensile Properties					
Ultimate Tensile Strength	55 MPa	65 MPa	53 MPa	88 MPa	ASTM D638-14
Tensile Modulus	7.5 GPa	10 GPa	10 GPa	11 GPa	ASTM D638-14
Elongation at Break	2%	1%	1%	1.7%	ASTM D638-14
Flexural Properties					
Flexural Strength	84 MPa	126 MPa	103 MPa	158 MPa	ASTM D 790-15
Flexural Modulus	6 GPa	9 GPa	10 GPa	9.9 GPa	ASTM D 790-15
Impact Properties					
Notched Izod	16 J/m	16 J/m	18 J/m	20 J/m	ASTM D256-10
Unnotched Izod	41 J/m	47 J/m	41 J/m	130 J/m	ASTM D4812-11
Thermal Properties					
Heat Deflection Temp. @ 0.45 MPa	65 °C	163 °C	218 °C	238 °C	ASTM D 648-16
Heat Deflection Temp. @ 1.8 MPa	56 °C	82 °C	110 °C	92 °C	ASTM D 648-16
Thermal Expansion, 0-150 °C	48 µm/m/°C	47 µm/m/°C	46 µm/m/°C	41 µm/m/°C	ASTM E 831-13

	IMPERIAL				METHOD
	Green	UV Cure [1]	UV + Thermal Cure [2]	UV Cure + Media Blast	
Tensile Properties					
Ultimate Tensile Strength	7980 psi	9460 psi	7710 psi	12700 psi	ASTM D638-14
Tensile Modulus	1090 ksi	1480 ksi	1460 ksi	1600 ksi	ASTM D638-14
Elongation at Break	2%	1%	1%	1.70%	ASTM D638-14
Flexural Properties					
Flexural Strength	12200 psi	18200 psi	15000 psi	22900 psi	ASTM D 790-15
Flexural Modulus	905 ksi	1360 ksi	1500 ksi	1440 ksi	ASTM D 790-15
Impact Properties					
Notched Izod	0.3 ft-lbf/in	0.3 ft-lbf/in	0.3 ft-lbf/in	0.37 ft-lbf/in	ASTM D256-10
Unnotched Izod	0.8 ft-lbf/in	0.9 ft-lbf/in	0.7 ft-lbf/in	2.5 ft-lbf/in	ASTM D4812-11
Thermal Properties					
Heat Deflection Temp. @ 0.45 MPa	149 °F	325 °F	424 °F	460 °F	ASTM D 648-16
Heat Deflection Temp. @ 1.8 MPa	133 °F	180 °F	230 °F	198 °F	ASTM D 648-16
Thermal Expansion, 0-150 °C	27 µin/in/°F	26 µin/in/°F	26 µin/in/°F	23 µin/in/°F	ASTM E 831-13

RR355-100-RIG Specifications

MATERIAL PROPERTIES DATA: **RR355-100-RIG Resin**

Toxic Gas Generation

Testing Standard BSS 7239 (comparable to NFPA No. 258)	Maximum allowed concentration per BSS 7239 (ppm)	Flaming Mode (ppm)	Non-Flaming Mode (ppm)
Hydrogen Cyanide (HCN)	150	1	0.5
Carbon Monoxide (CO)	3500	50	10
Nitrous Oxides (NOx)	100	< 2	< 2
Sulfur Dioxide (SO2)	100	< 1	< 1
Hydrogen Fluoride (HF)	200	< 1.5	< 1.5
Hydrogen Chloride (HCl)	500	1	< 1

Smoke Density — Specific Optical Density

Testing Standard	@ 90 sec	@ 4 min	Maximum
ASTM E662 Flaming Mode	2	95	132
ASTM E662 Non-Flaming Mode	0	1	63

Flammability

Testing Standard	Rating
UL 94 Section 7 (3 mm)	HB

SOLVENT COMPATIBILITY

Percent weight gain over 24 hours for a printed and post-cured 1 x 1 x 1 cm cube immersed in respective solvent:

Solvent	24 hr weight gain, %	Solvent	24 hr weight gain, %
Acetic Acid 5%	< 0.1	Isooctane (aka gasoline)	0
Acetone	< 0.1	Mineral oil (light)	0.2
Isopropyl Alcohol	< 0.1	Mineral oil (Heavy)	< 0.1
Bleach ~5% NaOCl	0.1	Salt Water (3.5% NaCl)	0.1
Butyl Acetate	0.1	Sodium Hydroxide solution (0.025% PH 10)	0.1
Diesel Fuel	0.1	Water	< 0.1
Diethyl glycol Monomethyl Ether	0.4	Xylene	< 0.1
Hydraulic Oil	0.2	Strong Acid (HCl conc)	0.2
Skydrol 5	0.6	Tripropylene glycol monomethyl ether	0.4
Hydrogen peroxide (3%)	< 0.1		

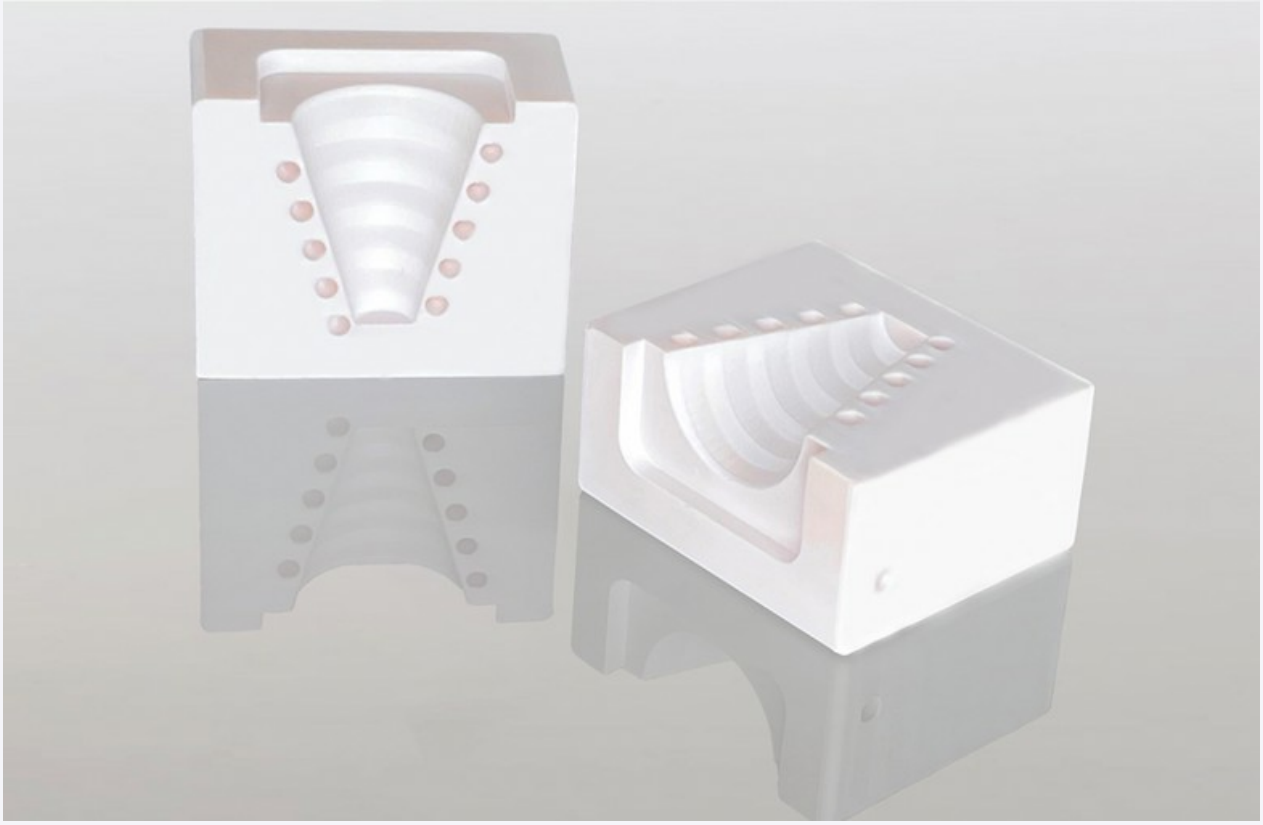
Engineering Resins

RR355-101-RIG

Manufactured by BASF

Good rigidity with high heat deflection

- High temperature performance
- Superior part stiffness
- Fast printing capabilities



RR355-101-RIG is a ceramic-filled resin providing exceptional rigidity and robustness for a variety of applications due to it's exceptional strength and stiffness properties. RR355-101-RIG can also withstand elevated temperatures whilst maintaining it's structural integrity and performance showing no signs of deformation as a result of the high heat deflection properties the material possesses. This resin finds common application in industries and sectors where the simultaneous requirements for mechanical robustness and heat resistance are pivotal, including aerospace, automotive, engineering, and various others.

RR355-101-RIG Specifications

General Properties	Norm	Typical Values
Appearance	-	White
Ceramic content	-	≈ 65 wt% silica
Viscosity, 25°C	Cone/Plate Rheometer[1)]	300 mPas
Viscosity, 30°C	Cone/Plate Rheometer[1)]	230 mPas
Density (Printed Part)	ASTM D792	1.73 g/cm³
Density (Liquid Resin)	ASTM D4052-18a	1.65 g/cm³

Tensile Properties	Norm	Typical Values (UV)	Typical Values (UV+ Thermal
E Modulus	ASTM D638	10600 MPa	10500 MPa
Ultimate Tensile Strength	ASTM D638	87 MPa	85 MPa
Elongation at Break	ASTM D638	1.3%	1%
Poisson's Ratio	ISO 527-2	0.31	-

Flexural Properties	Norm	Typical Values (UV)
Flexural Modulus	ASTM D790	8780 MPa
Flexural Strength	ASTM D790	73 MPa

Impact Properties	Norm	Typical Values (UV)
Notched Izod (Machined), 23°C	ASTM D256	24 J/m
Notched Charpy (Machined), 23°C	ISO 179-1	0.98 kJ/m²

RR355-101-RIG Specifications

Thermal Properties	Norm	Typical Values (UV)	Typical Values (UV+ Thermal)
HDT at 0.45 MPa	ASTM D648	284°C	284°C
HDT at 1.82 MPa	ASTM D648	132°C	162°C
Flammability	UL 94 (1.8 mm)	HB	-
Glass transition temperature (DMA, tan(d))	ASTM D4065	168°C	171°C

Advanced Thermal Properties	Norm	Typical Values (UV)
C.T.E. (-45°C to 0°C)	ASTM E831	23.2 µm/(m·K)
C.T.E. (0°C to 50°C)	ASTM E831	30.2 µm/(m·K)
C.T.E. (50°C to 100°C)	ASTM E831	61.4 µm/(m·K)
C.T.E. (100°C to 150°C)	ASTM E831	56.8 µm/(m·K)
Thermal conductivity, 23°C[4)]	MTPS	0.47 W/(m·K)
Thermal conductivity, 200°C[4)]	MTPS	0.69 W/(m·K)
Specific heat capacity, 23°C[5)]	MTPS	1.01 J/(g·K)
Specific heat capacity, 200°C[5)]	MTPS	1.81 J/(g·K)

Dielectric/Electric Properties	Norm	Typical Values (UV)
Electrical Strength	DIN EN 60243-1	29 kV / mm
Volume resistivity	DIN EN 62631-3-1	2.80E+16 Ωcm
Surface resistivity	DIN EN 62631-3-2	3.40E+16 Ω

RR355-101-RIG Specifications

Biocompatibility	Norm	Typical Values (UV)
Cytotoxicity – Neutral Red	ISO 10993-5 (2009)	PASS[6)]

Other	Norm	Typical Values (UV)
Hardness Shore D	ASTM D2240	96
Water Absorption, Short-Term (24 hours)	ASTM D570	0.29%
Water Absorption, Long-Term (>3000 hours)	ASTM D570	2.60%

Engineering Resins

RR355-101-TGH

Manufactured by Spectre Photopolymers

Impact resistant resin perfect for low friction applications and squeezable prototypes

- Squeezable prototypes
- Low friction and non-degrading surfaces
- Impact resistant jigs
- Polyethylene-like strength and stiffness

RR355-101-TGH Resin is a versatile material renowned for its outstanding impact resistance and lubricating properties. It represents the optimal selection for manufacturing sturdy, flexible components, exceptionally well-suited for applications in assemblies where reducing friction is essential.

RR355-101-TGH Specifications

MATERIAL PROPERTIES DATA — RR355-101-TGH Resin

	METRIC 1		IMPERIAL 1		METHOD
	Green	Post-Cured	Green	Post-Cured	
Tensile Properties					
Ultimate Tensile Strength	13 MPa	28 MPa	1900 psi	3980 psi	ASTM D638-14
Tensile Modulus	0.24 GPa	1.0 GPa	34 ksi	149 ksi	ASTM D638-14
Elongation at Break	75%	55%	75%	55%	ASTM D638-14
Flexural Properties					
Flexural Strength	1.0 MPa	24 MPa	149 psi	3420 psi	ASTM D 790-15
Flexural Modulus	0.04 GPa	0.66 GPa	5.58 ksi	94.1 ksi	ASTM D 790-15
Impact Properties					
Notched IZOD	127 J/m	114 J/m	2.37 ft-lbf/in	2.13 ft-lbf/in	ASTM D 256-10
Unnotched IZOD	972 J/m	710 J/m	18.2 ft-lbf/in	13.3 ft-lbf/in	ASTM D4812-11
Thermal Properties					
Heat Deflection Temp. @ 0.45 MPa	< 30 °C	41 °C	< 86 °F	105 °F	ASTM D 648-16
Thermal Expansion (0-150°C)	124 µm/m/°C	106 µm/m/°C	69.1 µin/in/°F	59 µin/in/°F	ASTM E 831-13

[1] Material properties can vary with part geometry, print orientation, print settings, and temperature.

[2] Data was obtained from green parts, printed using Form 2, 100 µm, Durable settings, without additional treatments.

[3] Data was obtained from parts printed using Form 2, 100 µm, Durable settings and post-cured with a Form Cure for 120 minutes at 60 °C.

SOLVENT COMPATIBILITY

Percent weight gain over 24 hours for a printed and post-cured 1x 1x 1cm cube immersed in respective solvent:

Solvent	24 hr weight gain, %	Solvent	24 hr weight gain, %
Acetic Acid 5%	1.3	Isooctane (aka gasoline)	< 1
Acetone	Sample cracked	Mineral oil (light)	< 1
Isopropyl Alcohol	5.1	Mineral oil (Heavy)	< 1
Bleach ~5% NaOCl	< 1	Salt Water (3.5% NaCl)	< 1
Butyl Acetate	7.9	Sodium Hydroxide solution (0.025% PH 10)	< 1
Diesel Fuel	< 1	Water	< 1
Diethyl glycol monomethyl ether	7.8	Xylene	6.5
Hydraulic Oil	< 1	Strong Acid (HCl conc)	Distorted
Skydrol 5	1.3	Xylene	6.5
Hydrogen peroxide (3%)	1		

Engineering Resins

mechnano

RR355-101-SPC

Manufactured by Mechnano

Suitable for ESD applications

- Isotropic ESD properties
- Excellent surface finish & fine details
- Absence of carbon sloughing

RR355-101-SPC is a photopolymer resin with a rigid, static-dissipative nature. It utilizes a urethane methacrylate foundation featuring a well-dispersed presence of functionalized carbon nanotubes (D'Func), ensuring a dependable surface resistance while elevating critical mechanical attributes, including Tensile Strength, Flexural Strength, and Impact Resistance.

RR355-101-SPC Specifications

PROPERTIES

Mechanical Properties	Green	Post-Cured	Units	Method
Ultimate Tensile Strength	99	99	MPa	ASTM D 638-14
Tensile Modulus	2700	3300	MPa	ASTM D 638-14
Elongation at Break	5.5	3.3	%	ASTM D 638-14
Flexural Strength	104	128	MPa	ASTM D 790-15
Flexural Modulus	2700	3500	MPa	ASTM D 790-15
Flexural Strain at Break	7.5	6.0	%	ASTM D 790-15
IZOD Impact Strength (Notched)	23	23	J/m	ASTM D 256-10
Hardness Shore "D"	81	88		ASTM D 2240
Other Properties				
Surface Resistance	10^7	10^7	Ω	ANSI ESD S11.11
Liquid Properties				
Viscosity (25°C)[1]	1200-1300		cps	ASTM D7867
Density	1.1 – 1.2		g/cm^3	ASTM D1475

Engineering Resins

RR355-100-TGH Resin

Manufactured by Spectre photopolymers

Resin for Rugged Prototyping

- ABS-like strength and stiffness
- Sturdy jigs and fixtures
- Strong and stiff prototypes

RR355-100-TGH Resin stands as the most robust and rigid member within our range of engineering resins. Opt for RR355-100-TGH Resin when creating prototypes for robust and unyielding components that require minimal flexing. - Elevate your projects with the unmatched strength.

RR355-100-TGH Specifications

Material Properties Data - **RR355-100-TGH Resin**

	METRIC1		IMPERIAL1		METHOD
	Green	Post-Cured	Green	Post-Cured	
Mechanical Properties					
Ultimate Tensile Strength	29 MPa	46 MPa	4206 psi	6671 psi	ASTM D 638-14
Tensile Modulus	1.2 GPa	2.2 GPa	174 ksi	329 ksi	ASTM D 638-14
Elongation at Break	74 %	48 %	74 %	48 %	ASTM D 638-14
Flexural Properties					
Flexural Strength	17 MPa	65 MPa	2465 psi	9427 psi	ASTM D 790-15
Flexural Modulus	0.45 GPa	1.9 GPa	65 ksi	275 ksi	ASTM D 790-15
Impact Properties					
Notched IZOD	79 J/m	40 J/m	1.5 ft-	0.75 ft-	ASTM D256-10
Unnotched IZOD	208 J/m	715	lbf/in 3.9	lbf/in 13 ft-	ASTM D4812-11
Thermal Properties		J/m	ft-lbf/in	lbf/in	
Heat Deflection Temp. @ 1.8 MPa	42 °C	53 °C	108 °F	127 °F	ASTM D 648-16
Heat Deflection Temp. @ 0.45 MPa	48 °C	63 °C	118 °F	145 °F	ASTM D 648-16
Coefficient of Thermal Expansion	107 µm/m/°C	91 µm/m/°C	59 µin/in/°F	50 µin/in/°F	ASTM E 831-13

Solvent Compatibility

Percent weight gain over 24 hours for a printed and post-cured 1 x 1 x 1 cm cube immersed in respective solvent:

Solvent	24 Hour Weight Gain (%)	Solvent	24 Hour Weight Gain (%)
Acetic Acid, 5 %	0.71	Hydrogen Peroxide (3	0.63
Acetone	18.82	%) Isooctane	0.03
Isopropyl Alcohol	3.7	Mineral Oil, light	0.13
Bleach, ~5 % NaOCl	0.56	Mineral Oil, heavy	0.17
Butyl Acetate	6.19	Salt Water (3.5 % NaCl)	0.56
Diesel	0.06	Sodium hydroxide (0.025 %, pH = 10)	0.61
Diethyl glycol monomethyl ether	5.32	Water	0.61
Hydrolic Oil	0.08	Xylene	4.1
Skydrol 5	0.87	Strong Acid (HCl Conc)	3.01

Engineering Resins

RR355-100-SPC

Manufactured by Spectre photopolymers

Self-extinguishing halogen free material with favourable flame, smoke and toxicity ratings

- Custom jigs, fixtures, and replacement parts for industrial environments with high temperatures or ignition sources
- Interior parts in airplanes, automobiles, and railways with excellent surface finish
- Protective and internal consumer or medical electronics components

Effortlessly and rapidly produce robust, creep-resistant plastic components designed for long-term performance in indoor and industrial settings. RR355-100-SPC Resin is self-extinguishing and free of halogens, offering favourable flame, smoke, and toxicity (FST) ratings.

RR355-100-SPC Specifications

MATERIAL PROPERTIES DATA — RR355-100-SPC Resin

Flammability 1, 2	Result	Method
UL 94	V-0 (3mm) V-1(2.5mm) HB (1.5mm)	
FAR 25.853 Appendix F, Part I (a) (1) (ii)12 seconds Vertical Burn	Pass (2.5mm)	

Smoke Toxicity 3, 4	Result		Method
	Ds @ 1.5 min	Ds @ 4 min	
Smoke Generation: Flaming at 3mm thickness	19.5	285	ASTM E662
Smoke Generation: Flaming at 5mm thickness	5	114	ASTM E662

Gas Toxicity 3, 4	Result				Method
Gas Toxicity at 3mm thickness	Pass	CO: 56 PPM HCl: <1 PPM	HCN: 7 PPM HF: <1 PPM	SO2: <1 PPM (NO + NO2) NOx: <1 PPM	BSS 7239

	METRIC 3, 5			IMPERIAL METHOD 3, 5			
		Post-Cured 70 °C 60m	Post-Cured 80 °C 120m	Green	Post-Cured 70 °C 60m	Post-Cured 80 °C 120m	
Mechanical Properties 5, 6							
Ultimate Tensile Strength	24 MPa	38 MPa	41 MPa	3560	5590 psi	5990 psi	ASTM D638-14
Tensile Modulus.	1.8 GPa	2.9 GPa	3.1	psi 263	430 ksi	446 ksi	ASTM D638 14
Elongation at Break	20%	9.4%	GPa	ksi	9.40%	7.10%	ASTM D638-14
Flexural Properties			7.1%	20%			
Flexural Strength	36 MPa	72 MPa	75 MPa	5280 psi	10500 psi	10900 psi	ASTM D790- 15
Flexural Modulus	1.3 GPa	2.7	2.7	188 ksi	392 ksi	401 ksi	ASTM D790-15
Impact Properties		GPa	GPa				
Notched Izod19	J/m	22 J/m	22 J/m	0.36 ft-	0.41 ft-	0.42 ft-	ASTM D256- 10
Unnotched Izod227	J/m	241 J/m	257 J/m	lbs/in 4.26	lbs/in 4.51	lbs/in 4.82	ASTM D4812-11
Maximum Stress Intensity Factor (Kmax)		1.05 MPa · m1/2	1.11 MPa · m1/2		956 psi · $in^{0.5}$	1009 psi · $in^{0.5}$	ISO 20795 1:2013(E Section 8.6
Work of Fracture (Wf)		311 J/m2	277 J/m2		21 ft-lbs/ft2	19 ft-lbs/ft2	ISO 20795- 1:2013(E),
Heat Deflection Temp. @ 1.8 MPa	45 °C	71 °C	83 °C	113 °F	160 °F	181 °F	ASTM D648-16
Heat Deflection Temp. @ 0.45 MPa	55 °C	94 °C	111 °C	131 °F	201 °F	232 °F	ASTM D648-16
Coefficient of Thermal Expansion, 20°- 80°C		98.6 µm/m/°C	68.1 µm/m/°C		54.8 µin/in/°F	37.8 µin/in/°F	ASTM E813-13
Glass Transition Temperature (Tg)	101 °C	130 °C	144 °C	214 °F	266 °F	291 °F	Peak of tan delta, Heating Rate: 3°Cpm

RR355-100-SPC Specifications

MATERIAL PROPERTIES DATA

RR355-100-SPC Resin

General Properties	Result		Method
Hardness	Green: 74D	Post Cured: 80D	ASTM D2240
Bulk Density	1.25 g/cm3		ASTM D792-20
Viscosity (25 °C)	4500 - 5000 cP		
Color	Light grey		

Electrical Properties [-]	Result	Method
Dielectric Strength	15.1 kV/mm	ASTM D149
Dielectric Constant	3.83	ASTM D150, 0.5 MHz
Dielectric Constant	3.82	ASTM D150, 1.0 MHz
Dissipation Factor	0.024	ASTM D150, 0.5 MHz
Dissipation Factor	0.025	ASTM D150, 1 MHz
Volume Resistivity	2.1 x 1015 ohm-cm	ASTM D257

Outgassing [3, 5]	Result	Method
Total Mass Loss and Collected Volatile Condensable Materials from Outgassing in a Vacuum Environment	Pass Total Mass Loss (TML): 0.87% Collected Volatile Condensable Material (CVCM): <0.01% Water Vapor Recovered (WVR): 0.2%	ASTM E595

RR355-100-SPC Specifications

SOLVENT COMPATIBILITY 3

RR355-100-SPC Resin

Percent weight gain over 24 hours for a printed and post-cured 1 x 1 x 1 cm cube immersed in respective solvent:

Cleaning Chemicals	24 hr weight gain, %
Acetone	2.1
Bleach ~5% NaOCl	0.3
Windex Powerized Formula	0.3
Hydrogen Peroxide (30%)	1
Soapy water	0.2
TPM	0.1
Distilled Water	0.2

Strong Acid/Base/Alcohol	
Hydrochloric Acid (10%)	< 0.1
Sodium Hypochlorite Solution	< 0.1
Sodium hydroxide solution (0.025% pH = 10) Salt	0.3
Water (3.5% NaCl)	0.2
Isopropyl Alcohol	0.2
Hydrogen peroxide (3%)	0.2
Butyl Acetate	0.4
Sulfuric Acid (30%)	Disintegrated

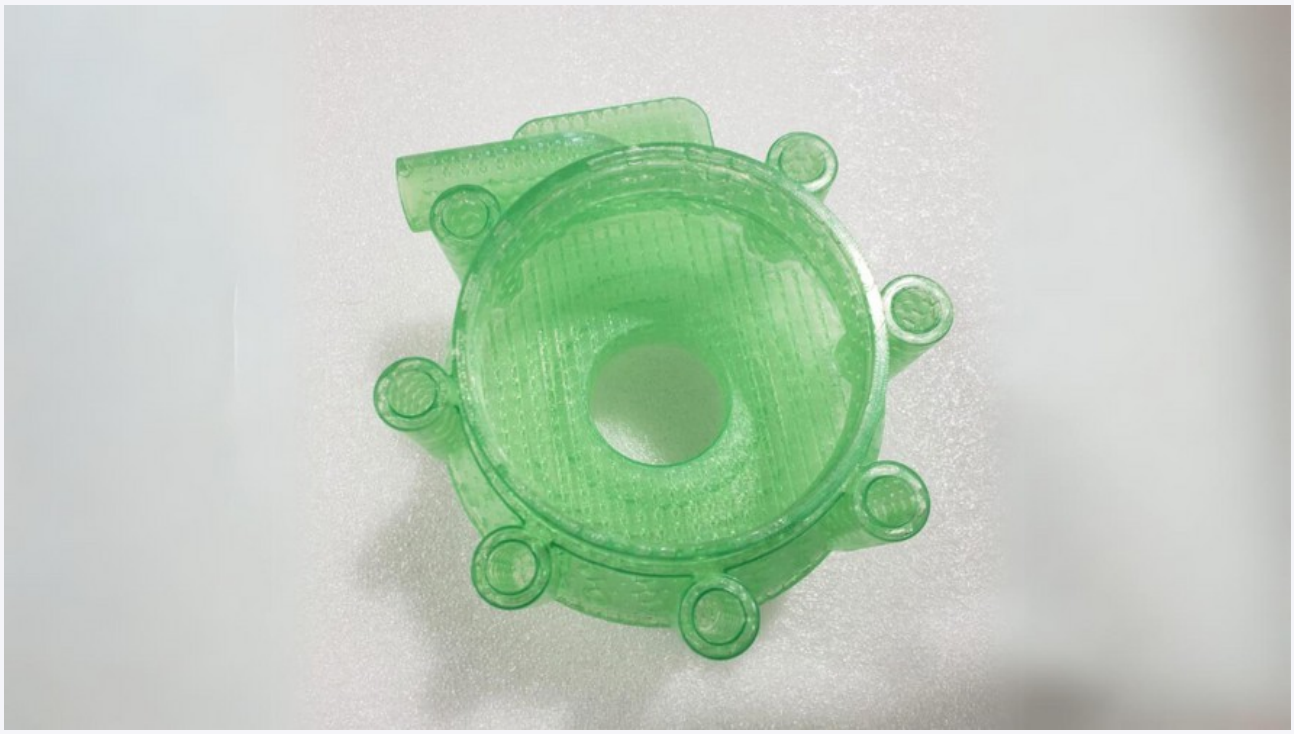
Industrial Fluids	
Gasoline ISO 1817, liquid C	< 0.1
Transmission Fluid (Havoline Synthetic ATF)	< 0.1
Engine Oil (Havoline SAE 5W-30	< 0.1
Brake Fluid (Castrol DOT-4)	< 0.1
Diesel (Chevron #2)	< 0.1
Power Steering Fluid	< 0.1
Skydrol 5	< 0.1
Hydraulic Oil	< 0.1
Diethyl glycol monomethyl ether	0.3
Mineral oil, heavy	< 0.1
Mineral oil, light	< 0.1

Casting Resins

RR355-100-CAS

Excellent for casting patterns

- Aerodynamic test models
- Short-run injection molds and inserts
- Heat resistant fluid exposed component, jigs, and fixtures
- Simulates stiffness of glass and fiber-filled thermoplastics



Ideal for high detail investment patterns with good surface finish capable of detailed parts. R100DC has a low melt temperature and produces a clean burning pattern with good natural strength. Cured resin is stable and resists attack from investment and shell materials before burnout.

Casting Resins

RR355-101-CAS

Manufactured by Spectre Photopolymers

Excellent for casting patterns

- Aerodynamic test models
- Short-run injection molds and inserts
- Heat resistant fluid exposed component, jigs, and fixtures
- Simulates stiffness of glass and fiber-filled thermoplastics

RR355-101-CAS is a Direct casting material that was formulated for our Raplas production equipment. RR355-101-CAS offers the best performance characteristics as follows: low deformation due to shrink, strength, durability, water resistance. The RR355-101-CAS is transparent in colour.

RR355-101-CAS Specifications

TYPICAL PHYSICAL PROPERIES

MECHANICAL PROPERTIES	TEST METHOD	ENGLISH	METRIC
Color/Appearance	Visual	Transparent Yellow/Green	Transparent Yellow/Green
Density (as cured)	Measured	0.042 lb/in3	1.16 g/cm3
Shore D Hardness	ASTM D2240	83 D	83 D
Deformation Due to Shrink	SDM	0.30%	0.30%
Tensile Strength	ASTM D638	7,758 psi	53 MPa
Tensile Modulus	ASTM D638	387,000 psi	2,668 MPa
Elongation at Break	ASTM D638	4 - 8%	4 - 8%
Elongation at Yield (%)	ASTM D638	-	-
Flexural Strength	ASTM D638	12,010 psi	83 MPa
Flexural Modulus	ASTM D790	280,000 psi	1,930 MPa
Impact Strength (Notched Izod)	ASTM D256	0.35 ft-lb/in	18.69 J/m
Heat Deflection Temperature @ 264 psi	ASTM D648	122°F	50°C
Heat Deflection Temperature @ 66 psi	ASTM D648	127°F	53°C
Coefficient of Thermal Expansion, 0 - 30°C	ASTM E831-93	57.1 µin/in-°F	102.7 µm/m-°C
Coefficient of Thermal Expansion, 90 - 150°C	ASTM E831-93	96.9 µin/in-°F	174.5 µm/m-°C

Casting Resins

RR355-102-CAS

Manufactured by Arkema Sartomer

Resin for Casting

- Strong & Durable
- Fast curing
- Cost effective Excellent
- surface finish

RR102-DC is finely tuned to unlock the full potential of 335nm large-format SLA printers. With its remarkable attributes, including ultra-low viscosity, minimal ash content, and the absence of Anatomy or Phosphorous, this resin delivers exceptional green strength.

RR355-102-CAS Specifications

	Green	Post-cured	Method
Tensile Modulus (MPa)	2800	3300	ASTM D638
Tensile Strength (MPa)	29	38	ASTM D638
Elongation (%)	3.2	4.0	ASTM D638
Water absorption (mass gain)	-	0.19%	ASTM D570
Flexural Modulus (MPa)	3300	3500	ASTM D790
Flexural Strength (MPa)	75	91	ASTM D790
Shore Hardness	86 D	88 D	ASTM D2240
HDT @ 0.455 MPa	64 oc	72 oc	ASTM D648
HDT @ 1.82 MPa		53 oc	ASTM D648
CTE um/m.C T>Tg T<Tg	-	186 55.7	ASTME831-93

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