RG 3280

Ceramic-filled rigid composite resin, Forward AM Ultracur3D® RG 3280

Printer **Axtra3D Lumia X1**

Process **Hi-Speed SLA (HPS)**

Resin **Forward AM**

OVERVIEW

RG 3280 is a ceramic-filled composite resin and our stiffest, most heat-resistant SLA material. Its tensile modulus of 10,600 MPa is more than four times that of PRO-BLK 10, and it keeps its shape under light load above 280 °C.

That makes it a strong fit for molding and tooling inserts and wind tunnel models. The trade-off is toughness: at 1.3% elongation it is brittle, so it suits stiff, low-impact parts.

KEY BENEFITS

- Very high stiffness (10,600 MPa tensile modulus)
- Heat deflection of 284 °C (543 °F) at 0.455 MPa
- Fine detail and smooth surfaces for tools and models
- White, ceramic-like finish

MECHANICAL & THERMAL PROPERTIES

Property	Test method	Typical value
TENSILE & FLEXURAL		
Tensile strength, ultimate	ASTM D638	87 MPa 12,620 psi
Tensile modulus	ASTM D638	10,600 MPa 1,537 ksi
Elongation at break	ASTM D638	1.3 %
Flexural strength	ASTM D790	*Not reported*
Flexural modulus	ASTM D790	*Not reported*
IMPACT & HARDNESS		
Izod impact, notched	ASTM D256	24 J/m 0.45 ft-lb/in
Izod impact, unnotched	ASTM D256	*Not reported*
Hardness	ASTM D2240	Shore 96D
THERMAL & FLAMMABILITY		
Heat deflection temp., 0.455 MPa	ASTM D648	284 °C 543 °F
Heat deflection temp., 1.82 MPa	ASTM D648	132 °C 270 °F
Glass transition temp. (Tg)	DMA	*Not reported*
Flammability	UL 94	HB

Typical values, not guaranteed minimums. Values are for parts that are UV post-cured only, with no thermal post-cure. Resin parts are close to isotropic, but RG 3280 is brittle: design for stiffness, not impact, and avoid sharp notches in loaded areas.

GENERAL MATERIAL PROPERTIES

Material	Density	Color
Ceramic-filled photopolymer Photopolymer resin	**1.73 g/cm³** ASTM D792, printed part	**White** Ceramic-like look and feel

DIMENSIONAL TOLERANCES

Direction	First inch (25 mm)	Each additional inch (25 mm)
XY (horizontal)	± 0.002 in · ± 0.05 mm	+ 0.001 in · + 0.025 mm
Z (vertical)	± 0.003 in · ± 0.08 mm	+ 0.001 in · + 0.025 mm

Typical IA3D tolerances for Hi-Speed SLA on the Axtra3D Lumia X1. Support contact points leave small marks that are sanded smooth. Large, flat or thin sections can move slightly during UV post-cure, and flatness depends on geometry. For critical fits or tighter requirements, **talk to an engineer**.

TYPICAL APPLICATIONS

- Injection and compression molding inserts
- Thermoforming and casting tools
- Wind tunnel and aerodynamic test models
- Stiff jigs, fixtures and check gauges
- Heat-exposed and insulating components

GOOD TO KNOW

- **Brittle:** 1.3% elongation. Avoid snap-fits and press fits; for tough parts, see PRO-BLK 10
- **Compliance:** UL 94 HB; meets ISO 10993-5 cytotoxicity (per Forward AM)
- **As printed:** matte white, ceramic-like surface

TEST CONDITIONS & SOURCE

Source: Axtra3D Material Guide 2025 (Lumia X1) and Forward AM Ultracur3D® RG 3280 technical data sheet. Values are typical, UV post-cured with no thermal post-cure; test methods are per Forward AM. Notched Izod is from the Forward AM data sheet. Forward AM does not state specimen orientation. Unit conversions and tolerances are by IA3D.

Disclaimer: Material properties are provided as a general reference to help with material selection. Actual part properties depend on geometry, orientation, wall thickness, build position, cleaning, post-cure and service conditions, and may differ from the values shown. This sheet does not guarantee specific properties or suitability for a particular application. Validate critical parts under real operating conditions.

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