PRELIMINARY

Accura® AMX™ Durable Natural

Production Tough

Stereolithography

Production-grade stereolithography resin featuring long-term environmental stability, high toughness, and superior surface finish for large-scale plastic parts and mandrel tooling

PRODUCTION-GRADE RESIN FOR DURABLE, TOUGH PLASTIC PARTS AND MANDREL TOOLING

Accura AMX Durable Natural is a tough, production-grade resin with a unique combination of impact resistance, tear-strength, and elongation at break. Engineered to withstand repeated flexing, bending, and loading, AMX Durable Natural is ideal for cost-efficiently delivering durable parts with the high surface quality, accuracy, and repeatability advantages of stereolithography.

With comparable aesthetics to injection molded plastics, parts printed in Accura AMX Durable Natural offer long-term stability of mechanical properties, making it an excellent choice for repeatable mechanical loads and structural prototypes and parts for motorsports, aerospace, consumer durables, and manufacturing services. It is also ideal for mandrel tooling of composites, when the tool needs to be removed in a single piece from convoluted tubing.

HANDLING AND POST-PROCESSING GUIDELINES

Proper cleaning, drying, and curing are required for this material. More details can be found at https://infocenter.3dsystems.com/bestpractices/sla-best-practices/accura-amx-durable-natural

Note: All properties are based on using the documented post-processing method. Any deviation from this method could yield a different result.

APPLICATIONS

- Mandrel tooling for composites in automotive and aerospace applications
- Functional assemblies and prototypes
- Manufacturing aids, jigs, and fixtures
- Containers and enclosures
- Structural components such as brackets and couplings

BENEFITS

- High impact, high elongation
- Superior toughness and tear resistance
- Enables mandrels to be easily removed whole, even from convoluted tubing
- Withstands repeated flexing, bending, and loading
- Long-term environmental and mechanical stability (indoor to 8 years)
- High accuracy and fine detail resolution
- Aesthetics comparable to injection molded plastics

Note: Not all products and materials are available in all countries — please consult your local sales representative for availability.

3D SYSTEMS®

Accura AMX Durable Natural

MATERIAL PROPERTIES

The full suite of mechanical properties is given per ASTM and ISO standards where applicable. Properties like flammability, dielectric properties, and 24-hour water absorption are also provided for better understanding of material capabilities to help design decisions using the material. All parts are conditioned per ASTM recommended standards for a minimum of 40 hrs at 23°C, 50% RH.

Solid material properties reported were printed along the horizontal axis (ZX-orientation). Stereolithography material properties are relatively uniform across print orientations. Parts do not need to be oriented in a particular direction to exhibit these properties.

LIQUID MATERIAL			
MEASUREMENT	**CONDITION/METHOD**	**METRIC**	**ENGLISH**
Color		Natural	
Default Print Layer Thickness	Internal	102um	.004 in

SOLID MATERIAL			
METRIC	**ASTM METHOD**	**METRIC**	**ENGLISH**
MECHANICAL			
Tensile Strength Ultimate	ASTM D638 Type IV	32 MPa	4600 psi
Tensile Strength at Yield	ASTM D638 Type IV	25 MPa	3700 psi
Tensile Modulus	ASTM D638 Type IV	1000 MPa	150 ksi
Elongation at Break	ASTM D638 Type IV	80 %	80 %
Elongation at Yield	ASTM D638 Type IV	7.3 %	7.3 %
Flex Strength	ASTM D790	20 MPa	2900 psi
Flex Modulus	ASTM D790	590 MPa	90 ksi
Izod Notched Impact	ASTM D256	64 J/m	1.2 ft-lb/in
Izod Unnotched Impact	ASTM D4812	1230 J/m	23 ft-lb/in
Shore Hardness	ASTM D2240	64 D	64 D
THERMAL			
Tg (DMA, E")	ASTM E1640 (E"at 1C/min)	23 °C	74 °F
HDT @ 0.455 MPa/66 PSI	ASTM D648	42 °C	108 °F
HDT @ 1.82 MPa/264 PSI	ASTM D648	25 °C	77 °F
CTE below Tg	ASTM E831	108 ppm/°C	60 ppm/°F
CTE above Tg	ASTM E831	172 ppm/°C	96 ppm/°F
UL Flammability	UL94	HB	
ELECTRICAL			
Dielectric Strength (kV/mm) @ 3.0 mm thickness	ASTM D149	14	
Dielectric Constant @ 1 MHz	ASTM D150	3.7	
Dissipation Factor @ 1 MHz	ASTM D150	0.048	
Volume Resistivity (ohm-cm)	ASTM D257	1.46×10^{14}	