



# Accura<sup>®</sup> SbF<sup>™</sup>

## Casting Class

Manufacture high yield investment casting patterns with ultra-low viscosity, antimony-free stereolithography (SLA) resin.

Stereolithography

### INVESTMENT CASTING PATTERNS WITH STABILITY AND CLEAN BURNOUT

Accura SbF has no detectable Antimony, making it the perfect SLA resin for printing QuickCast patterns suitable for casting a variety of ferrous and non-ferrous high performance metals, such as Nickel-based superalloys and Titanium.

QuickCast<sup>®</sup> investment casting patterns printed with Accura SbF lead to an efficient investment casting workflow with fast print speed, high dimensional stability of the pattern and a high burnout success rate with low residual ash. Accura SbF patterns also have high modulus giving them the ideal rigidity during post processing, pattern assembly and shelling. The stability of both the liquid resin and cured patterns is a significant benefit to a cost effective, predictable workflow and casting results.

Combined with cutting edge hardware and software, Accura SbF quickly creates large, light weight, and easy to handle casting patterns through our industry leading and fully documented QuickCast process.

### APPLICATIONS

- Medium to large size patterns without tooling
- One-off investment castings
- Low production run investment castings
- All casting materials

### BENEFITS

- Accurate QuickCast patterns
- Clean burnout with ultra-low ash content (<0.005%)
- Patterns with dimensional stability
- Fast and effective patterns pattern draining
- Designed to eliminate bubble formation
- High modulus patterns give excellent stability

### FEATURES

- Antimony-free material
- Trace Phosphorus
- Low coefficient of thermal expansion
- Excellent humidity/moisture resistance

## MATERIAL PROPERTIES

The full suite of mechanical properties is given per ASTM and ISO standards where applicable. Properties like CTE, ash content 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 vertical axis (ZX-orientation). Stereolithography material properties are relatively uniform across print orientations and therefore parts do not need to be oriented in a particular direction to exhibit these properties.

LIQUID MATERIAL			
METRIC	METHOD	METRIC	US
Viscosity (@ 25C)	Brookfield Viscometer	120 cPs	290 lb/ft-h
Penetration Depth (Dp)		5.0 mils	
Critical Exposure (Ec)		17.4 mJ/cm²	
Color		Clear	
Liquid Density (@ 25C)	Kruss K11 Force Tensiometer	1.08 g/cm³	0.036 lb/in³

SOLID MATERIAL						
METRIC	ASTM METHOD	METRIC	US	ISO METHOD	METRIC	US
PHYSICAL				PHYSICAL		
Solid Density	ASTM D792	1.14 g/cm³	0.041 lb/in³	ISO 1183	1.14 g/cm³	0.041 lb/in³
24 Hour Water Absorption	ASTM D570	0.36 %	0.36 %	ISO 62	0.36 %	0.36 %
MECHANICAL				MECHANICAL		
Tensile Strength Ultimate	ASTM D638 Type IV	58 MPa	8400 psi	ISO 527 -1/2	56 MPa	8200 psi
Tensile Strength at Yield	ASTM D638 Type IV	58 MPa	8400 psi	ISO 527 -1/2		
Tensile Modulus	ASTM D638 Type IV	3200 MPa	460 ksi	ISO 527 -1/2	2800 MPa	410 ksi
Elongation at Break	ASTM D638 Type IV	5.6 %	5.6 %	ISO 527 -1/2	5.2 %	5.2 %
Elongation at Yield	ASTM D638 Type IV	3.5 %	3.5 %	ISO 527 -1/2	3.5 %	3.5 %
Flex Strength	ASTM D790	91 MPa	13200 psi	ISO 178	86 MPa	12400 psi
Flex Modulus	ASTM D790	2700 MPa	380 ksi	ISO 178	1200 MPa	173 ksi
Izod Notched Impact	ASTM D256	27 J/m	0.5 ft-lb/in	ISO 180-A		
Shore Hardness	ASTM D2240	81 D	81 D	ISO 7619	81 D	81 D
THERMAL				THERMAL		
Tg (DMA E")	ASTM E1640 (E" Peak)	53 °C	128 °F	ISO 6721-1/11 (E" Peak)	53 °C	128 °F
HDT 0.455MPa/66PSI	ASTM D648	53 °C	127 °F	ISO 75- 1/2 B	53 °C	127 °F
HDT 1.82MPa/264 PSI	ASTM D648	49 °C	120 °F	ISO 75-1/2 A	49 °C	120 °F
CTE -20 TO 50C	ASTM E831	75 ppm/°C	42 ppm/°F	ISO 11359-2	75 ppm/°C	42 ppm/°F
CTE 75 TO 180C	ASTM E831	178 ppm/°C	99 ppm/°F	ISO 11359-2	178 ppm/°C	99 ppm/°F
Ash Content	TGA	<0.005 %				