

Somos® WaterShed® AF

Stereolithography

Somos® WaterShed AF is a multi-purpose stereolithography resin that meets the requirements for investment casting patterns. With processing and properties similar to Somos® WaterShed XC 11122, this resin can also be used for general purpose prototyping and other applications.

- Stereolithography resin suitable for all types of alloys
- Compatible with many types of high performance metals such as nickel-based super alloys and titanium as it does not contain any detectable levels of antimony as per ICP-AES test methodology
- Greater degree of dimensional stability of patterns as a result of low moisture absorption

Foundries, service bureaus and other producers of investment casting tooling are looking for affordable, timesaving alternatives to traditional production. From printing to finishing, additive manufacturing offers overall efficiency including cost savings and faster lead times without degrading part properties.

Waiting weeks for metal tooling is no longer needed with 3D printing. Specialized equipment and tooling costs for wax pattern production are also eliminated. Complex and intricate patterns are possible so engineers can optimize the cast for the part rather than for the mold-making process. And the ability to quickly print and test multiple design variations is easier to accomplish compared with traditional manufacturing.

By printing on demand, storage of metal tools is avoided. Production on demand also means decreasing transport, shipping costs and time. Less material is needed as only the material to produce patterns and other applications is used.

The use of 3D printing materials developed specifically for investment casting, with no detectable levels of antimony, significantly lowers the ash residue after pattern burnout, reducing clean-up and speeding up mold production. This reduces the chance of imperfections appearing on the cast part, requiring less rework to finish the part. And it enables investment casting for all types of (high performance) alloys, including aluminum and titanium.

Somos® WaterShed AF is a stereolithography resin that meets the specific requirements for investment casting. Patterns created with **Somos® WaterShed AF** leave minimal amounts of easily removable ash residue after burnout. This material creates accurate, complex patterns, is easy to process and offers high dimensional stability (high humidity resistance) and excellent surface finish.

Somos® WaterShed AF also fits the needs for general purpose prototyping and other applications. Part of the **Somos®** family, this material offers easy processing and characteristics similar to **Somos® WaterShed XC 11122**.



Key Benefits

- No detectable levels of antimony as per ICP-AES test methodology
- Trace amounts of ash that are easily removed
- Low viscosity
- Dimensionally stable
- Rapid draining
- Produces accurate, repeatable parts regardless of size

Applications

- Investment casting patterns
- Aerospace and aviation applications
- Transportation applications
- Energy and utilities applications
- Jigs and fixtures/operational aids
- General purpose prototyping

LIQUID PROPERTIES		OPTICAL PROPERTIES		
Appearance	Optically clear, near colorless	E_c	9.12 mJ/cm ²	[critical exposure]
Viscosity	240 cps @ 30°C	D_p	7.57 mils	[slope of cue-depth vs. ln (E) curve]
Density	1.119 g/cm ³	E_{10}	51.9 mJ/cm ²	[exposure that gives 0.254 mm (0.10 inch) thickness]

MECHANICAL PROPERTIES		UV POSTCURE	
ASTM Method	Property Description	Metric	Imperial
D638M	Tensile Strength	46 MPa	6.7 ksi
D638M	Tensile elongation at break	10%	
D638M	Tensile modulus	2,460 MPa	357 ksi
D790M	Flexural modulus	2,030 MPa	294 ksi
D256	IZOD Impact, Notched	34 J/m	0.64 ft-lb/in
D570-98	Water Absorption	0.31 %	

THERMAL/ELECTRICAL PROPERTIES		UV POSTCURE	
ASTM Method	Property Description	Metric	Imperial
D648	HDT @ 0.46 MPa (66 psi)	50°C	122°F

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