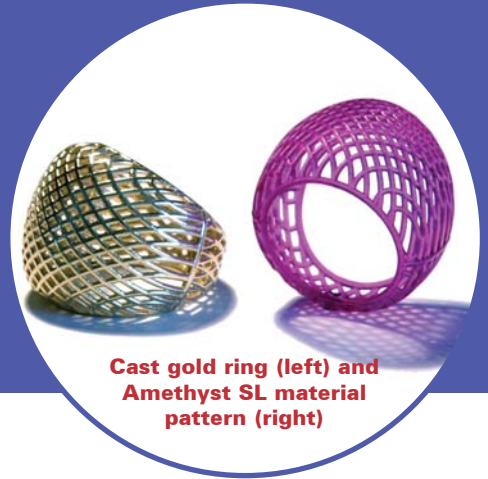


# ACCURA®

# AMETHYST™ SL MATERIAL

for the Viper si2™ SLA® system

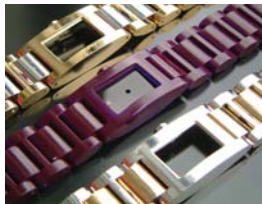


Cast gold ring (left) and Amethyst SL material pattern (right)

**Automated, unattended production of high quality, accurate jewelry patterns and master models.**

## The Opportunity - Fast, Automated and Unattended Jewelry Production

Eliminate manual, tedious and labor-intensive fabrication or machining to produce models or patterns. Transition from 3-D CAD or digital data to high quality models and patterns in a few hours with this automated,

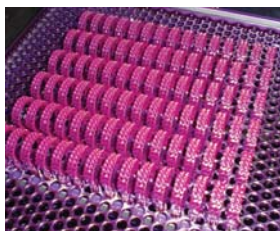


Produce prototypes of your design in hours instead of days with Accura Amethyst SL material and the Viper SLA system. Amethyst models (center) can be plated (top and bottom).

advanced digital manufacturing (ADM<sup>SM</sup>) technology from 3D Systems. Present, test, and sell your jewelry — before its ever produced — with outstanding quality design models. Create highly repeatable duplicates, symmetric matched-pair ear-rings, and size variations - in little time. Save precious metal through producing exact wall thicknesses, maximum scooped models and identical looking designs of different weights and sizes. Guarantee an equal look of ensemble components and save labor cost by reproducing precise dimensions for stone settings. Capitalize on the unique processing capabilities of Amethyst SL material and gain a clear and compelling competitive advantage by accelerating production processes, thus reducing the cost of delivering your jewelry to market.

## The Solution

3D Systems' Viper SLA system with the new Amethyst SL material is used by leading jewelry manufacturers worldwide for the advanced digital manufacturing of

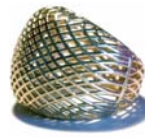


Produce models, pattern masters, design alternatives, or size variations in a single build. This platform of 90 rings was built in 16.2 hours — automatically.

high quality patterns and master models with fine detail resolution. Amethyst SL material has been developed especially to meet the needs of today's jewelry industry for fast pattern and master model production with best surface finish and finely detailed structures.

## Attributes that Innovative Jewelry Manufacturers Appreciate

Ultra-precise part building hardware and jewelry-specific software to deliver a superior part production system for jewelry manufacturers. Ultra-fine adjustable layer building capabilities of just 0.025mm (0.001 in) produces parts with unequaled surface finish,



Use rubber molding to create multiple wax patterns for casting.



Viper SLA system

feature resolution and quality. Superior quality translates to accurate representations of your jewelry designs to be used in casting, molding, plating, painting or other applications. Contrast-rich amethyst color eases visual inspection and simplifies demolding.

## Gain a Tremendous Competitive Advantage

- Eliminate wax models for small series production
- Speed up mass production with Amethyst SL material master models for manufacturing of rubber molds
- Direct casting to produce customized jewelry and one-of-a-kind jewelry

## Applications:

- Patterns for room temperature (RTV) molding
- Patterns for high temperature (HTV) molding
- Design evaluation models
- Marketing models for metal plating
- Patterns for direct casting

## Benefits:

- Color offers excellent feature definition and contrast for visual inspection
- Outstanding part quality
- Superior feature detail
- Highly accurate



**3D Systems - Changing the way people design, develop and manufacture products**

# Accura Amethyst SL Material

for the Viper si2 SLA system

## Typical Properties



the solid imaging company<sup>SM</sup>

### Liquid Material

MEASUREMENT	CONDITION	SOLID STATE Nd:YVO <sub>4</sub>
Appearance		Purple
Density	@ 25°C (77°F)	1.1 g/cm <sup>3</sup>
Viscosity	@ 30°C (86°F)	350 cps
Penetration depth (Dp) <sup>1</sup>		3.7 mils
Critical exposure (Ec) <sup>1</sup>		14.4 mJ/cm <sup>2</sup>
Tested build styles		EXACT™ (0.002 in / 0.0500 mm) EXACTHR (0.002 in / 0.0500 mm) ThinLayer™ (0.001 in / 0.0250 mm)

### Post-Cured Material <sup>2</sup>

MEASUREMENT	CONDITION	90-MINUTE UV VIPER si2 SLA SYSTEM
Tensile Strength	ASTM D 638	22 - 38 MPa (3130 - 5,450 PSI)
Elongation at Break	ASTM D 638	0.56 - 1.04%
Tensile Modulus	ASTM D 638	3,514 - 3,996 MPa (510 - 580 KSI)
Flexural Strength	ASTM D 790	87 - 125 MPa (12,700 - 18,100 PSI)
Flexural Modulus	ASTM D 790	3,652 - 3,721 MPa (530 - 540 KSI)
Impact Strength - Notched Izod	ASTM D 256	9 - 12 J/m (0.16 - 0.23 ft - lbs/in)
Heat Deflection Temperature	ASTM D 648 @ 66 PSI @ 264 PSI	77°C (170.6°F) 62°C (143.6°F)
Glass Transition, Tg	DMA,(E'')	103°C (217.4°F)
Coefficient of thermal expansion	ASTM E 831-93 TMA (T<Tg) TMA (T>Tg)	57 x 10 <sup>-6</sup> m/m°C 133 x 10 <sup>-6</sup> m/m°C
Hardness, Shore D	ASTM D 2240	87

<sup>1</sup> Dp and Ec values are not reliable indicators on throughput as throughput is affected by overhead time, layer thickness and part geometry.

<sup>2</sup> Mechanical properties reported are determined after conditioning of the parts at 50%RH and 23°C for a period greater than 72 hours as specified by ASTM standards. Mechanical properties of parts without this conditioning may be different from values reported.

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