Jewelry Manufacturing Solutions

Maximize Creativity, Quality, and Reliability with Digital Design and Manufacturing Workflows, Including Leading Solutions in 100% Wax 3D Printing
With over 20 years of jewelry manufacturing experience and the number one solution in 100% wax 3D printing, 3D Systems offers a competitive advantage in high-throughput and mass-custom jewelry production. Our 3D printing solutions ensure perfect quality and reduce time to market and cost, allowing innovative jewelry design and streamlining manufacturing workflows.

Address Every Jewelry Design Challenge with 3D Printing

3D Systems manufacturing solutions provide quality, accuracy, and reliability for all jewelry styles and production challenges.

Middle Eastern / Arabic
Deliver high-resolution for sharp, fine details in ornate designs with our 3D printing solutions for prototyping, casting, and rubber molding.

Fusion
Direct casting from 3D printed castable plastic or 100% wax patterns enables the production of hollow, lightweight filigree and thin wire mesh shapes of complex designs.

Pavé and Stone Setting
Accuracy and smooth surface finish allow for prototyping and stone setting validation, patterns for direct casting and rubber molding of single, multiple, and pavé stone designs, including micro-prongs.

Western
Achieve a smooth surface finish to create prototypes and patterns for casting and rubber molding for large surface areas and heavier-weight designs.
Bring Digital Agility into Your Jewelry Manufacturing Workflows

Unlimited Design Freedom
Elevate design complexity with dissolvable and meltable supports enabling limitless geometries with no impact to surface finish for reliability and creativity.

Consistent Quality
Quality printed parts ensure fine details, accuracy, high fidelity, smooth surfaces, and repeatability for consistent results through your manufacturing workflow.

Superior Materials Performance
We offer 100% wax and castable plastics for lost wax casting, heat-resistant rigid plastic for master patterns, and high-contrast material for prototyping.

Increased Manufacturing Scalability
From fast turnaround prototypes and mass custom manufacturing, to high-throughput production, gain unprecedented levels of agility with ease-of-use and quality at any scale.

Proven System Reliability
Our reliable, industrial, end-to-end 3D printing solutions provide consistent uptime, low operating costs, and improved efficiency.
Patterns for Lost Wax Casting

Uncompromised Castability and Design Freedom at High Throughput

Achieve high productivity and quality, and unleash creativity with 3D Systems’ jewelry solutions. Our 3D printed casting patterns fit standard processes for reliable output while enabling maximum design freedom for high-volume and mass custom jewelry manufacturing.

ProJet MJP Wax 3D Printing

- 100% wax for uncompromised castability with standard casting processes
- Quick turnaround and high throughput at factory scale
- Dissolvable/melted supports allow reduced finishing labor and polishing of costly precious metals, and ultimate design freedom

9,000+ rings per month/printer

Figure 4 Jewelry 3D Printing

- Figure 4 JCAST-GRN 10 castable plastic was specifically developed for easy jewelry casting with minimal ash and residue after burnout
- Ultra-fast turnaround – 16 mm/hr vertical build speed
- MicroPoint™ ultra-fine tip supports enable smooth surface finish, reduced post-processing labor, and accelerated production by minimizing polishing

15 rings in 2 hr 03 min

Figure 4 Jewelry 3D Printing
Master Patterns for Mold Making

Reduce Labor, Increase Speed and Design Freedom

3D Systems provides compatibility with jewelry mold-making processes for high-volume manufacturing with ultra-high-detail, heat-resistant, high-quality, complex master patterns to create your rubber mold in a matter of hours.

Our Figure 4 3D printing technology, material, and software solution for jewelry is a fast alternative to labor-intensive, design-limiting, multi-step processes.

- Fast pattern production enables design-to-rubber-mold in hours
- Reduce labor with accurate master patterns and superior surface finish
- Increase design freedom with thin, delicate geometries, fine mesh, and more

Figure 4 Jewelry 3D Printing Solution for Master Patterns

30 master patterns in 2 hr 02 min

- Ultra-high detail resolution with our proprietary build style
- 15 mm/hr build speed at 30 µm layer thickness
- Easy to remove MicroPoint™ ultra-fine tip support structures limit contacts for a smooth surface finish with minimized post-processing
- High heat deflection temperature (over 300 °C) of Figure 4 JEWEL MASTER GRY material is compatible with various silicone types and vulcanization temperatures without inhibition
- High material rigidity for prevention of pattern distortion
Reveal your creativity with accurate, finely detailed, high-fidelity prototypes. 3D Systems’ Figure 4 Jewelry solution provides a quick turnaround from designs to 3D printed models, for design iteration, validation, stone settings, and try-ons.

Explore more creations by producing fast, high quality 3D-printed prototypes.

- Faster design iteration and validation
- Increased customer confidence with quality models for try-ons
- Accurate reproductions with unlimited design freedom

Figure 4 Jewelry 3D Printing Solution for Models and Prototypes

30 prototypes in 39 minutes

- Detailed, accurate, high-fidelity representations of digital creations with our proprietary build style, which can be painted or plated
- 3D print prototypes in minutes with 45 mm/hr build speed at 50 µm layer thickness
- Easy to remove MicroPoint™ ultra-fine tip support structures limit contacts for a smooth surface finish with minimized post-processing
- Snap-fit capability enables stone settings testing, including micro-pavé
- Safe for extended try-on testing and user fittings with biocompatibility for cytotoxicity
## Key Solution Specifications

### Wax Multijet Printing for Jewelry Casting

<table>
<thead>
<tr>
<th>Model</th>
<th>Build volume</th>
<th>Resolution</th>
<th>Layer thickness</th>
<th>Typical accuracy</th>
<th>Supports type</th>
<th>Printer weight/size</th>
<th>Supports type</th>
<th>Printer weight/size</th>
</tr>
</thead>
<tbody>
<tr>
<td>MJP 2500W</td>
<td>294 x 211 x 144 mm</td>
<td>1200 x 1200 x 1600 DPI</td>
<td>16 μm</td>
<td>±0.0508 mm/25.4 mm of part dimension</td>
<td>Dissolvable/Meltable</td>
<td>211 kg, 1120 x 740 x 1070 mm</td>
<td>Dissolvable/Meltable</td>
<td>211 kg, 1120 x 740 x 1070 mm</td>
</tr>
<tr>
<td>MJP 3600W</td>
<td>Up to 298 x 185 x 203 mm</td>
<td>Up to 750 x 750 x 1600 DPI</td>
<td>16 to 32 μm</td>
<td>±0.025-0.05 mm per 25.4 mm of part dimension</td>
<td>Dissolvable/Meltable</td>
<td>299 kg, 749 x 1194 x 1511 mm</td>
<td>Dissolvable/Meltable</td>
<td>299 kg, 749 x 1194 x 1511 mm</td>
</tr>
</tbody>
</table>

### Visijet®

<table>
<thead>
<tr>
<th>Description</th>
<th>Color</th>
<th>Melting point</th>
<th>Softening point</th>
<th>Volumetric shrinkage</th>
<th>Linear shrinkage</th>
<th>Needle penetration hardness</th>
<th>Ash content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wax/Jewel Red</td>
<td>Brilliant red</td>
<td>62-63°C</td>
<td>43-47°C</td>
<td>1.7% (from 40°C to 23°C)</td>
<td>0.58% (from 40°C to 23°C)</td>
<td>14 (ASTM D1321)</td>
<td>0.00% (ASTM D5630-13A)</td>
</tr>
<tr>
<td>M2/M3 CAST</td>
<td>Deep purple</td>
<td>61-66°C</td>
<td>40-48°C</td>
<td>1.6% (from 40°C to 23°C)</td>
<td>0.52% (from 40°C to 23°C)</td>
<td>12 (ASTM D1321)</td>
<td>0.05% (ASTM D5630-13A)</td>
</tr>
</tbody>
</table>

### Figure 4 for Jewelry Casting Patterns, Master Patterns for Mold Making, and Prototyping

<table>
<thead>
<tr>
<th>Build volume</th>
<th>Resolution</th>
<th>Pixel pitch</th>
<th>Layer thickness</th>
<th>Supports type</th>
<th>Printer weight/size</th>
<th>Elongation at break</th>
<th>Coefficient of thermal expansion</th>
<th>Water absorption</th>
</tr>
</thead>
<tbody>
<tr>
<td>124.8 x 70.2 x 196 mm</td>
<td>1920 x 1080 pixel</td>
<td>65 microns (390.8 effective PPI)</td>
<td>10 μm - 50 μm</td>
<td>Fine tips MicroPoint™ support structures</td>
<td>34.5 kg (76 lbs), 426 x 489 x 971 mm</td>
<td>12% (ASTM D638)</td>
<td>143 ppm/°C (&gt; Tg)</td>
<td>1.3% (ASTM D570)</td>
</tr>
</tbody>
</table>

### JCAST-GRN 10

<table>
<thead>
<tr>
<th>Description</th>
<th>Vertical print speed</th>
<th>Tensile strength</th>
<th>Tensile modulus</th>
<th>Elongation at break</th>
<th>Coefficient of thermal expansion</th>
<th>Heat deflection temperature</th>
<th>Coefficient of thermal expansion</th>
<th>Biocompatible capable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castable plastic</td>
<td>16 mm/hr at 30 μm</td>
<td>13.7 MPa (ASTM D638)</td>
<td>262 MPa (ASTM D638)</td>
<td>12% (ASTM D638)</td>
<td>143 ppm/°C (&gt; Tg)</td>
<td>&gt;300°C at 0.455 MPa (ASTM D648)</td>
<td>80 ppm/°C (0-30°C); 146 ppm/°C (45-130°C)</td>
<td>Biocompatible capable</td>
</tr>
<tr>
<td>Resin for prototypes and master patterns</td>
<td>15 mm/hr (Master Pattern Mode); 45 mm/hr (Prototype Mode)</td>
<td>67 MPa (ASTM D638)</td>
<td>3500 MPa (ASTM D638)</td>
<td>2.5% (ASTM D638)</td>
<td>Heat deflection temperature: &gt;300°C at 0.455 MPa (ASTM D648)</td>
<td>Coefficient of thermal expansion: 80 ppm/°C (0-30°C); 146 ppm/°C (45-130°C)</td>
<td>Biocompatible capable</td>
<td></td>
</tr>
</tbody>
</table>

Note: Not all products and materials are available in all countries – please consult your local sales representative for availability.
Bring Digital Agility into Your Standard Jewelry Manufacturing Workflows

For questions/contact:

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