STEREOLITHOGRAPHY

USP Class VI Biocompatible ClearVue

Medical-Grade Transparent Material with Enhanced Biocompatibility



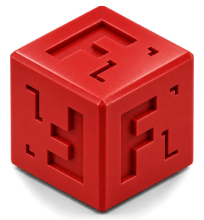
USP Class VI Biocompatible ClearVue offers the same exceptional clarity and glass-like appearance as standard ClearVue, but with specialized handling, cleaning, and material traceability protocols to meet strict medical device manufacturing standards. This material undergoes rigorous biocompatibility testing and specialized post-processing for medical applications.

SURFACE FINISHES



Standard Finish Natural

Parts are washed, post-cured and have their supports removed, leaving the smooth, finely detailed surface SLA is known for. Sharp edges, small text and fine features hold their shape, and the surface is ready for fit checks, assembly, presentation or paint.



Performance Paint Premium Finish

A highly durable, automotive-grade coating, hand-finished for smooth surfaces and applied with professional-grade equipment for exceptional adhesion. It comes in matte to semi-gloss, with custom colour matching for parts that need specific branding or visual impact.

BUILD VOLUME	LEAD TIME	LAYER HEIGHT	TOLERANCE
650 × 750 × 550 mm	**4-8 business days**	**0.05-0.1 mm**	**±0.25% (min ±0.25 mm); parts over 254 mm (10 in) ±0.4% (min ±0.5 mm)**

MECHANICAL PROPERTIES

USP Class VI Biocompatible ClearVue is rigid and strong, and 3D Systems describes it as simulating the properties of polycarbonate and ABS. That gives clear medical prototypes and fluid-path parts dependable strength for assembly, tubing connection and handling.

Read elongation and notched impact together: the material is stiff rather than ductile, so generous radii at port roots, clip roots and bosses spread the load when tubing or mating parts are fitted. Design critical features with margin and confirm them on printed samples.

PROPERTY	VALUE	TEST STANDARD
Tensile Strength	**46–53 MPa**	ASTM D638
Tensile Modulus	**2270–2640 MPa**	ASTM D638
Elongation at Break	**3–15 %**	ASTM D638

Flexural Strength	**72–84 MPa**	ASTM D790
Flexural Modulus	**1980–2310 MPa**	ASTM D790
Impact Strength, Notched Izod	**40–58 J/m**	ASTM D256

THERMAL PROPERTIES

Heat deflection and glass transition values show where ClearVue begins to soften, so it suits room-temperature use, fluid visualization and device evaluation rather than heated environments. An autoclave cycle would far exceed its softening point; choose BioMed Clear or ULTEM 1010 for steam-sterilized parts.

Thermal expansion is given for two temperature ranges. Keep warm fluids and cleaning cycles well below the deflection temperature, and fit-check assemblies at their working temperature.

PROPERTY	VALUE	TEST STANDARD
HDT @ 0.45 MPa	**51 °C**	ASTM D648
HDT @ 1.82 MPa	**50 °C**	ASTM D648
Glass Transition Temperature	**62 °C**	DMA, E″
Coefficient of Thermal Expansion (25–50 °C)	**122 ×10^{-6}/K**	ASTM E831-93
Coefficient of Thermal Expansion (50–100 °C)	**155 ×10^{-6}/K**	ASTM E831-93

PHYSICAL PROPERTIES

The optical values describe how clear the material is. Luminous transmittance is the share of visible light that passes through, haze and diffuse transmittance show how much of that light scatters, and the refractive index matters when designing windows and light guides. As-built surfaces carry layer texture, so plan viewing areas and orientation with us before printing.

Low water absorption gives excellent humidity and moisture resistance, so clear parts hold their shape and appearance in humid labs and clinics. 3D Systems' USP Class VI procedure cleans with fresh isopropanol only, so test disinfectants and process fluids on printed samples before use.

PROPERTY	VALUE	TEST STANDARD
Luminous Transmittance	**87.2 %**	ASTM D1003-13
Haze	**4.3 %**	ASTM D1003-13
Diffuse Transmittance	**3.8 %**	ASTM D1003-13
Index of Refraction	**1.508**	ASTM D542-14
Solid Density (25 °C)	**1.17 g/cm^3**	—
Water Absorption	**0.3 %**	ASTM D570-98
Shore Hardness D	**80**	—
Colour	**Clear (CIE L* 95.45, a* −0.54, b* 1.36)**	—

BIOCOMPATIBILITY AND COMPLIANCE

3D Systems tested Accura ClearVue sample parts to USP Class VI after cleaning them to its CIB00262 procedure and rates the resin USP Class VI capable, which gives regulatory reviews a supplier test basis to start from.

USP Class VI covers systemic injection, intracutaneous and implantation tests on material extracts. 3D Systems publishes no ISO 10993 or sterilization data for ClearVue, so confirm the regulatory pathway with your quality team and document any secondary finishing or coatings. It is not intended for long-term implants.

STANDARD	STATUS

USP Class VI Capable of meeting USP Class VI; 3D Systems tested sample parts cleaned, dried, post-cured and bagged to its CIB00262 procedure, the route this material follows	3D Systems tested

MANUFACTURING

Cleaning	**Five soaks in fresh 99%+ isopropanol and full drying, with supports removed before the final UV cure to protect the finished surface**

SUPPORTING DOCUMENTS

Biocompatibility certificate