

# Digital & Conventional Denture Material Comparison

All materials shown meet ISO 20795-1 requirements for denture base polymers and are clinically appropriate for removable denture fabrication.

Property	ISO 20795-1 Standard	TrueDent™ (Stratasys) fully monolithic 3D printed denture (base and teeth integrated in a single structure)	Lucitone Digital Print™ Denture System (Dentsply Sirona) 3D printed denture base with bonded tooth system	Lucitone 199® Denture Base Resin (Dentsply Sirona) conventional heat-cured PMMA denture base with bonded acrylic denture teeth	Competitor Brand milled denture base from pre-polymerized PMMA puck with bonded denture teeth
Flexural Strength (MPa)	≥65 MPa	≥94 (dry) / ≥85 (wet) ✓	~65–82 (dry) / ~45–70 (wet) ✓	~70–95 (varies) ✓	~90–120+ ✓
Fracture Toughness (MPa·m <sup>½</sup> )	≥1.9* (high-impact classification)	~1.1–1.3 ✓	~2.1–2.8 ✓	~1.8–2.1 ✓	~1.8–2.2 ✓
Flexural Modulus (MPa)	≥2000 MPa	~2200–2500 ✓	~2000–2300 ✓	~2400–3000+ ✓	~2500–3200+ ✓
Water Sorption (µg/mm <sup>3</sup> )	≤32 µg/mm <sup>3</sup>	≤32 ✓	≤32 ✓	~20–30 ✓	≤32 ✓
Water Solubility (µg/mm <sup>3</sup> )	≤1.6 µg/mm <sup>3</sup>	≤1.1 ✓	≤1.6 ✓	~0.5–1.0 ✓	Low ✓

## Why These Properties Matter

- **Flexural Strength** Resistance to bending forces
- **Fracture Toughness** Resistance to crack propagation once a flaw exists
- **Flexural Modulus** Stiffness (higher = more rigid, lower = more flexible)
- **Water Sorption/Solubility** Dimensional stability and long-term material integrity
- All materials listed meet **ISO 20795-1** requirements for denture base polymers.