Tables

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| --- | --- | --- |
| Material | 3D-printing Technology | Dental Applications |
| Polymer-based:  - Castable Resins  - Hard Polymer  - Clear Hard Polymers  - Resin Composite Tooth Shade  - Resin Composite Gingiva Elastic Shade  - Waxes  - Polyethylene  - Polylactic Acid  - Polycarbonate  - Polysulfide  - Polycaprolactone  - ABS  - PEEK\*  - PEKK\* | Vat-polymerization SLA  Vat-polymerization DLP  Vat-polymerization CLIP  Vat-polymerization LCD  Material Jetting  Powder-based Fusion SLS  Material Extrusion FDM | Casts, casted metal frameworks, pressed lithium disilicate wax restorations, surgical diagnosis, surgical guides, occlusal devices, deprogrammers, silicone indices, custom trays, interim restorations, denture teeth, mock-up restorations, denture bases, bone analogs, orthodontic aligners. |
| Metal-based  - Co-Cr Alloys  - Titanium  - Gold | Powder-based Fusion SLS  Powder-based Fusion SLM  Powder-based Fusion EBM | Surgical guides, splinting frameworks for complete arch impression techniques, frameworks for removable partial dentures, frameworks for tooth- and implant-supported prostheses, crowns, dental implants, and maxillofacial prosthetic parts. |
| Ceramic-based  - Zirconia\*  - Lithium Disilicate\*  - Hybrid Ceramics\* | Vat-polymerization SLA  Vat-polymerization DLP  Material Jetting  Material Extrusion FDM  Powder-based Fusion SLS | Tooth-supported Restorations |

**Table 1:** Summary of the main applications and materials of 3D-printing in dentistry [1-10].

*SLA= Stereolithography; DLP= Direct Light Processing; CLIP= Continuous Liquid Interface; LCD= Liquid Crystal Display; SLS= Selective Laser Sintering; FDM= Fused Deposition Molding; EBM= Electron Beam Melting; ABS*= Poly(acrylonitrile/butadiene/styrene); *PEEK*= Polyether Ether Ketone; *PEKK=* Polyetherketoneketone; *Co/Cr*= Chrome Cobalt, \*= Experimental Phase

|  |  |  |  |
| --- | --- | --- | --- |
| **Trueness** | | | |
| **Volumetric Changes** | **P-Value** | **Formlabs**  (Castable) | **Shera**  **(Provisional)** |
| **Veneers** | 0.854 | 88 ± 26 µm | 85 ± 41 µm |
| **Incisors Labial** | 0.001 | -97 ± 84 µm | -77 ± 98 µm |
| **Incisors Palatal** | 22 ± 83 µm | 64 ± 91 µm |
| **Molars** | 0.002 | 53 ± 19 µm | 77 ± 42 µm |
| **FPDs** | 0.004 | 181 ± 91 µm | 214 ± 89 µm |
| **Copings** | **p-Value** | **Formlabs**  **(castable)** | **Shera**  **(provisional)** |
| **Veneers** | 0.909 | 18 ±7 µm | 17 ± 2 µm |
| **Incisors** | 0.012 | 31 ± 4 µm | 52 ± 20 µm |
| **Molars** | 0.001 | 23 ± 2 µm | 31 ± 4 µm |
| **FPDs # 14** | 0.001 | 47 ± 9 µm | 52 ± 6 µm |
| **FPDs # 17** | 25 ± 2 µm | 44 ± 6 µm |

**Table 2:** Overall trueness values of the 3D-printed restorations.

|  |  |  |  |
| --- | --- | --- | --- |
| **Precision** | | | |
| **External dimensional changes** | **p-Value** | **Formlabs (LCL–UCL)\***  **(castable)** | **Shera (LCL-UCL)\***  **(provisional)** |
| **Veneers** | 0.054 | -3- 179 µm | -26- 198 µm |
| **Incisors labial** | 0.892 | 59- 139 µm | 69- 160 µm |
| **Incisors palatal** | 59- 137 µm | 64- 149 µm |
| **Molars** | ≦ 0.001 | 2- 103 µm | -32- 188 µm |
| **FPDs** | 0.101 | 169 – 270 µm | 206 – 328 µm |
| **Internal dimensional changes** | **p-Value** | **Formlabs (LCL–UCL)\***  **(castable)** | **Shera (LCL-UCL)\***  **(provisional)** |
| **Veneers** | 0.002 | 0.5 – 36 µm | 7 – 28 µm |
| **Incisors** | ≦ 0.001 | 2 – 4 µm | 1 – 11 µm |
| **Molars** | 0.305 | 1 -5 µm | 2- 8 µm |
| **FDPs # 14** | 0.012 | 6 – 12 µm | 3 – 13 µm |
| **FDPs # 17** | 1 – 6 µm | 4 – 14 µm |

\* LCL= Lower control limit; UCL: Upper control limit.

Table 3. Overall precision values of the 3D-printed restorations.