Tables

|  |  |  |
| --- | --- | --- |
| 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 SLAVat-polymerization DLPVat-polymerization CLIPVat-polymerization LCDMaterial JettingPowder-based Fusion SLSMaterial 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 SLSPowder-based Fusion SLMPowder-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 SLAVat-polymerization DLPMaterial JettingMaterial Extrusion FDMPowder-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.