GENERAL INFORMATION

1. Author Information

A. Principal Investigator Contact Information

Name: Joanna Giełzak

ORCID: 0000-0001-6334-3404

Institution: Medical Univeristy of Lodz (Uniwerystet Medyczny w Łodzi); Department of Prosthodontics, Medical University of Lodz

Address: Country: Poland; City: Lodz (Łódź); Street: Pomorska 251; Zipcode: 92-213;

Email: [agata.szczesio@umed.lodz.pl](mailto:agata.szczesio@umed.lodz.pl)

Name: Agata Szczesio-Wlodarczyk (Szczesio-Włodarczyk)

ORCID: 0000-0002-9633-5096

Institution: Medical Univeristy of Lodz (Uniwerystet Medyczny w Łodzi); University Laboratory of Materials Research,

Address: Country: Poland; City: Lodz (Łódź); Street: Pomorska 251; Zipcode: 92-213;

Email: [agata.szczesio@umed.lodz.pl](mailto:agata.szczesio@umed.lodz.pl)

DATA & FILE OVERVIEW

1. Data

The dataset contains files named by tested materials (Table).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Files name** | **Cement** | **Polymer Matrix** | **Fillers** | **Filler Content** |
| Multilink | Multilink Automix  (Ivoclare Vivadent) | Dimethacylate, 2-hydroxyethylomethacrylate (HEMA) | Inorganic fillers, barium glass, ytterbium trifluoride, sferoid mixed oxide. | The total inorganic filler is approximately 40% by volume/69% by weight. |
| Set PP | seT PP  (SDI) | Urethane dimethacrylate > 20% (UDMA), camphorouinone > 1%, acid monomer > 20%, | Fluoroaluminosilicate glass (60%). | The total inorganic filler is approximately 65% by weight. |
| Maxcem | MaxCem  (Kerr) | 1,6—heksanediyl bismethcrylete, 2-hydroxy—1,3—propanediyl bismethacrylate, 7,7,9 (or7,9,9)—trimethyl—4,13—dioxo—3,14—dioxa—5, 12—diazeheksadecane—1,16—diylbismethacrylate, 3—trimethoxysilylpropyl methacrylates (Bis-GMA) | Barium aluminoborosilicate glass, ytterbium fluoride, fumed silica. | The total inorganic filler is approximately 46% by volume/65% by weight. |
| Bifix | Bifix Hybrid Abutment  (Voco) | Urethane dimetacrylate (UDMA), glycerin dimethacrylaate, catalyst, Initiator, alkohol silan methacrylates, phosphoric acid methacrylates and sulphide methacrylates | Fumed silica. | Inorganic filler is approximately 71% by weight. |

Files

Specific files have the results for a particular material. The files contain sheets containing results for individual research methods. Test method Diametral Tensile Strength (DTS), Flexural Strength (FS), Vickers Hardness (HV).

METHODOLOGICAL INFORMATION

1. Description of methods used for collection/generation of data:

Diametral Tensile Strength (DTS)

The diametral tensile strength (DTS) test is a method used to evaluate the tensile strength of dental composite materials. The cylindrical samples (diameter of 6 mm and a thickness of 3 mm) were tested with a universal testing machine (Z020, Zwick / Roell, Germany). The traverse speed was 2 mm / min. The numerical value is calculated according to the following formula:

Where: DTS - diametrical tensile strength [MPa], F - maximum force measured by testing machine [N], S - surface of the half of the sample side surface [mm2], d - sample diameter [mm], h - sample thickness [mm].

The test was carried out at the University Material Research Laboratory of the Medical University of Lodz.

Flexural Strength (FS)

The flexural strength were determined by three-point bending test. The samples were made using a silicone mold with dimensions of 25 × 2 × 2 mm. The tests were carried out in accordance with ISO 4049 using a universal testing machine (Z020, Zwick / Roell, Germany). The traverse speed during the measurement was 1 mm / min.

The test was carried out at the University Material Research Laboratory of the Medical University of Lodz.

Vickers Hardness (HV)

The hardness of tested materials were measured based on the Vickers method using a Zwick ZHVμm hardness tester (Zwick–Roell, Ulm, Germany). The applied load was 1000 g and the penetration time 10 s. Nine measurements were performed on three out of the nine DTS samples for each study group.