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TECHNICAL DATA SHEET

Dental Casting Ceramic Ingots

Model: PRS-P-p01 / PRS-P-p02

Brand: ZonMed PRS Ecosystem

Product: Lithium Disilicate / Leucite-Reinforced Heat-Pressed Ceramic System

Spec: 5 pieces per box (individual shade ingots)

Compatible Furnaces: Ivoclar Programat, Dekema, Zubler, VITA, and standard dental pressing furnaces

Compatible Investments: Phosphate-bonded press ceramic investments

1. Product Features

- **High Strength** — Lithium disilicate flexural strength 350–450 MPa, suitable for anterior and posterior restorations, including 3-unit bridges.
- **Excellent Aesthetics** — Natural opalescence, fluorescence, and translucency matching natural tooth structure. Full VITA shade range available.
- **Precision Fit** — Lost-wax heat-press technology ensures marginal accuracy and minimal adjustment after pressing.
- **Biocompatible** — ISO 10993 certified, non-cytotoxic, non-sensitizing, suitable for long-term intraoral use.
- **Efficient Workflow** — Compatible with standard pressing furnaces and phosphate-bonded investments; total burnout + press time ~4 hours.
- **PRS Open Ecosystem** — Works with all major pressing furnace brands; no equipment lock-in.

2. Technical Specifications

Property	PRS-P-p01 (Lithium Disilicate)	PRS-P-p02 (Leucite-Reinforced)
Flexural Strength (Biaxial)	350–450 MPa	120–180 MPa
Fracture Toughness (KIC)	2.0–3.0 MPa·m ^{1/2}	1.2–1.5 MPa·m ^{1/2}
Vickers Hardness	550–620 HV	500–580 HV
Elastic Modulus	95 ± 10 GPa	65 ± 10 GPa
CTE (25–500°C)	10.2 ± 0.5 ×10 ⁻⁶ /K	9.8 ± 0.5 ×10 ⁻⁶ /K
Density	2.5 ± 0.1 g/cm ³	2.45 ± 0.1 g/cm ³
Chemical Solubility	30–80 µg/cm ²	40–90 µg/cm ²
Pressing Temperature	920–950°C	850–880°C
Radioactivity (U-238)	< 1.0 Bq/g	< 1.0 Bq/g

3. Indications & Model Selection

PRS-P-p01 (Lithium Disilicate) — Indications:

- Anterior and posterior single-unit crowns
- Inlays, onlays, and veneers
- Three-unit anterior bridges
- Three-unit premolar bridges
- Implant-supported single crowns
- Hybrid abutment crowns

PRS-P-p02 (Leucite-Reinforced) — Indications:

- Anterior single-unit crowns

- Inlays and onlays
- Veneers (full and partial coverage)
- Implant-supported anterior crowns (cement-retained)

4. Recommended Processing (IFU Summary)

Step 1 — Wax-Up: Fabricate wax pattern per standard protocol. Minimum wall thickness: 1.5 mm (anterior), 1.5–2.0 mm (posterior). Bridge connector minimum: 16 mm² (anterior), 20 mm² (posterior). Sprue diameter: 2.5–3.5 mm, length: 5–8 mm.

Step 2 — Investing: Use phosphate-bonded investment specific for press ceramics. Mix under vacuum. Attach pattern to ring base at 45–60° angle. Allow complete setting (45–60 min at RT).

Step 3 — Burnout: RT → 250°C (5°C/min, hold 30 min) → 450°C (5°C/min, hold 30 min) → 850°C (8°C/min, hold 60 min). Total burnout: ~3–4 hours.

Step 4 — Pressing: Place ceramic ingot + Al₂O₃ plunger into preheated ring. Press at 850–950°C (model-dependent), 60°C/min ramp, 15–25 min hold, 4–5 bar pressure.

Step 5 — Divesting & Finishing: Cool ring slowly to RT. Divest with glass beads (50 µm) at 2–3 bar. Cut sprues with diamond disc (water-cooled). Remove reaction layer: Al₂O₃ sandblast (100 µm, 2 bar) or 5% HF etch (20s, then neutralize). Finish margins with diamond burs. Polish with ceramic polishing kit. Ultrasonic clean in distilled water or ethanol for 5 min.

Step 6 — Characterization & Cementation: Optional: Apply stain/glaze at 750–820°C. For cementation: etch intaglio with 5% HF (20s), apply silane coupling agent (60s), bond with adhesive resin cement. Do NOT use glass ionomer or zinc phosphate cements.

5. Quality Standards & Biocompatibility

- ISO 6872:2015 — Dentistry — Ceramic materials (Type II, Class 3 for lithium disilicate)
- ISO 9693:2019 — Compatibility testing for ceramic systems
- ISO 13485:2016 — Medical devices quality management
- Cytotoxicity: Non-cytotoxic (ISO 10993-5)
- Sensitization: No sensitization potential (ISO 10993-10)
- Irritation: Non-irritating (ISO 10993-23)
- Genotoxicity: Negative (ISO 10993-3)
- FDA 21 CFR Part 872 / EU MDR 2017/745 Class IIa/IIb compliant
- GB/T 30345-2013 compliant

6. Storage & Shelf Life

- Storage Temperature: 5–30°C (41–86°F); Relative Humidity: < 70% (non-condensing)
- Keep sealed in original packaging; protect from moisture and direct sunlight
- Shelf Life: 3 years from date of manufacture under recommended conditions
- No special storage requirements after opening; keep sealed to prevent contamination