

DRM Research Laboratories Inc.

Dental Restorative Materials
Research, Development & Manufacturing

DIAMONDCROWN™ LAB TECHNICAL DATA SHEET

Clinical Indications	Prosthodontic System: Metal-Free Crown & Bridge, Inlay/Onlay & Laminate-Veneer Integrated Abutment Crown Implant-Superstructure, Long-Span Alloy Base Bridge
Mode of Application	Stratification Technique: Metal-Free: Op. Dentin-Dentin-Enamel-Incisal, Metal-Base: Metal Coupler/Opaque
Mode of Cure	DiamondCrown FotoKur F/X (VLC), DiamondCrown ThermoKur F/X (Heat/Pressure)
Composition	PolyCrystalline NanoCeram
Delivery System	5g. Syringe, 3cc Vial, 7cc Vial, 7.5g Jar

PROPERTY -----	STD. SPEC. #	DIAMOND CROWN	ADA/ISO... Criteria	Tooth Enamel/Dentin	Gold	Porcelain
Diametral Tensile Strength (MPa)	4049(I) / 27(A)	79	34	70	N/A	35
Biaxial Flexural Strength (MPa)	4049(I) / F394-78(T)	231	52	145	186	68
Compressive Strength (MPa)	4049(I) / 27(A)	552	N/A	393/290	166	379
Fracture Toughness (Kicsr) (MPa m ^{-1/2})	1304(T)	2.2	N/A	1.7	2.2	0.5
Cyclic Fatigue Resistance: 5Hz, 5 M cycles, 800 N (D)		Y	-----	-----	Y	N
Catastrophic Strength (N-Newtons)		> 4,000	-----	*200/800, < 1,500	< 2,000	< 1,000
OCA - Occlusal Contact Area (MPa)	(D)	> 500		*9 /31-41A/P<145	< 200	< 70
Bond Strength (MPa) / (Alloy-substrate)	(D)	35	-----	-----	-----	12-17 PFM
Wear Resistance (µm/year)	4049(I)/(C) / (D)	3	50	3-5	3-5	" wears tooth "
Water Sorption (%wt.) (µg/cm ³)	4049(I) / 27(A)	0.25	0.70	N/A	N/A	N/A
Polymerization Shrinkage (% linear)	4049(I)	0.20	N/A	-----	1.56	17
Linear Coefficient Thermal Expansion LCTE - (ppm) (mm/mm ^o C x 10 ⁻⁶)	(D)	15	N/A	11.4	14.2	14
Ra Profilometry: Average Surface Roughness (nm)	(D)	3	N/A	5	15	15
VHN Surface Hardness @ 3mm	4049(I) / 27(A)	110	60	210/80	80	475
Depth of Cure (mm)	4049(I) / 27(A)	5.5	2.0	N/A	N/A	N/A
Biocompatibility	10993(I) / 41(A)	Excellent	Moderate	-----	Excellent	Moderate
Cytotoxicity (%)	10993(I) / 41(A)	0	40	-----	0	25
Polishability	(D)	Very Good	N/A	Very Good	Very Good	" N/A-Glazed "
Shades (Vita)	(V)	92 Vita	N/A	-----	1	Vita
Particle Size Microns (µm), Nano (nm)	(D)	0.25-0.60 µm (+) 7 nm	N/A	-----	N/A	N/A
Filler Weight (%), F _w	(D)	80.0	50.0	-----	-----	-----
Filler Volume (%), V _f	(D)	74.0	30.0	-----	-----	-----
Resin / Matrix [Radiopaque, (X-Ray detectable) & Fluorescent]	(D)	Crystalline - PEX	N/A	Crystalline - HA	-----	-----

DiamondCrown™ Lab Features & Benefits

STANDARDS – SPECIFICATION

ISO-4049 ~ 4049(I)

ISO-10993 ~ 10993(I)

ADA-27 ~ 27(A)

ADA 41~ 41(A)

ASTM 1304 ~ 1304(T)

ASTM-ANSI F394-78 ~ F394-78(T)

VITA SHADE ~ (V)

CDA ~ (C)

DRM ~ (D)

*A/P - Anterior/ Posterior Human Masticatory Force

- ◆ Cyclic Fatigue Resistant, High Fracture Toughness, Shock Absorbing
- ◆ Exceptional Fracture Resistance: Tensile, Shear, Compressive & Flexural.
- ◆ Wear Resistance Similar to Natural Tooth
- ◆ Easy to Augment Intraorally due to Bond-Strength, 27 MPa
- ◆ Ideal for Occlusal Rehabilitation Gnathology (TMJ Syndrome, Bruxers)
- ◆ Allows for Immediate Loading of Integrated Implant Permanent Crown Superstructures and Accelerated Osseo-integration due to Tough, Ductile, Shock-Absorbing Characteristics which Dissipates Masticatory Energy.
- ◆ Ultimate Reinforcement and Handling Characteristics
- ◆ Thixotropic(Shape-Memory, Anti-Slumping Properties) Easy to Model, Carve, Shape and Anatomically Contour
- ◆ Modeling Liquid, Ceramo Coupler & Metal Coupler Facilitates/Diversifies Application Modalities
- ◆ Superb Color Stability and Accurate Shade Match
- ◆ Wide Spectrum of Colors(92): Vita A1-D4 Metal Opaques(17), Op. Dentin(16), Dentin(16), Enamel(16), Incisal(6), Dentin Chroma Modifiers(4), Dentin Color Intensifiers(10), Neutral SuperWhite (5) - XXL, XL,L,M,OP, Glaze(1), SuperClear-Coat(1)
- ◆ Refractive-Index: Chameleon-Like Effect, Specular Reflectance, Gloss & Luster Value
- ◆ Ultimate Longevity; Negligible Sorption, Absence of Solubility
- ◆ Excellent Marginal Integrity, Low Shrinkage
- ◆ Breakthrough Metal Coupling Chemistry Produces Stable Bond to Nickel, Chrome, Gold, Palladium, Zirconium & Titanium
- ◆ Biocompatible & Non-Cytotoxic

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