Technical data sheet

CAD/CAM Restoratives
VITA ENAMIC®

Manufacturer

VITA Zahnfabrik H. Rauter GmbH & Co.KG
P.O. Box 1338
79704 Bad Säckingen
Germany

VITA Zahnfabrik is certified according to:

- **DIN EN ISO 13485**
- **RL 93/42/ECC (CE 0124)**
- **ISO 9001**

Description

CAD/CAM restoration material ***VITA ENAMIC®***
Hybrid ceramic blocks

Description

VITA ENAMIC® is a hybrid ceramic with a dual network structure that combines the best characteristics of ceramic and composite. In this dental material, the dominant fine-structure ceramic network (~ 86% by weight) is reinforced by an acrylate polymer network (~14% by weight), with both networks penetrating completely. This innovative hybrid ceramic guarantees a unique balance between high load-bearing capacity and elasticity with a high absorption potential of the chewing forces.

Indications

- Single tooth restorations (Inlays, onlays, veneers and crowns)
- Crown restorations in areas with high chewing force (molar range)
- Least invasive restorations
- Cosmetic veneer restorations

Contraindications

- Para function (bruxism)
- Bridges

Product properties and benefits

- Significantly lower brittleness than pure ceramics and better abrasion behaviour than composite.
- Compared to silicate ceramics, restorations require thinner wall thicknesses.
- Enamel-like antagonist-friendly abrasion properties due to the fine-structure ceramic network.
- Significantly higher elasticity than traditional dental ceramic due to the flexibility provided by the acrylate polymer network. ■ Compared to silicate ceramics, the tool life of the grinding tools is increased approx. 4-5 times.

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Options

VITA ENAMIC® is offered by the manufacturer in the translucency classes HT (high translucent) and T (translucent) and offered in each case with 5 *VITA SYSTEM 3D-MASTER®* shades. In addition, the following table provides information about the available *VITA classical* shades.

0M1 = Bleach	1M1 = B1	1M2 = A1	2M2 = A2	3M2 = A3
0M1-HT	1M1-HT	1M2-HT	2M2-HT	3M2-HT
0M1-T	1M1-T	1M2-T	2M2-T	3M2-T

Preparation/strength of ceramic layers

- **Inlays and onlays** strength of ceramic layers:
  Inlays: Fissure root = at least 1.0 mm/isthmus range = at least 1.5 mmOnlays: Fissure root = at least 1.0 mm/tubercle range of the tooth= at least 1.5 mm
- **Veneers** ceramic veneer thicknesses: labial: at least 0.3 mm on average/incisal third: at least 0.3 mm thicknesses of ceramic layer: average third: at least 0.3 mm/cervical third: at least 0.2 mm
- **Crowns** Strength of ceramic layers:
  Anterior crowns: incisal: at least 1.5 mm/circular: at least 0.8 mmPosterior crowns: tubercle range of the tooth: at least 1.5 mm/fissure root: at least 1.0 mm
  circular: 0.8-1.5 mm

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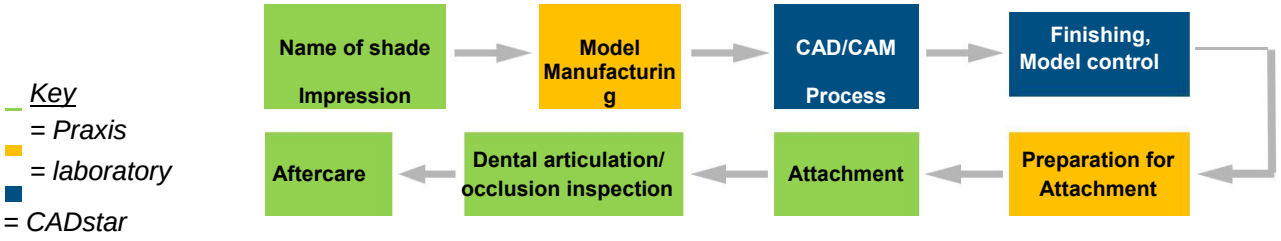
Step-by-step manufacturing process



Finalising/fitting of the restoration

CADstar will provide the finished and sanded restoration, already cemented; however, on request, you may do this procedure in-house.

Adhesive Attaching the restoration

- Restorations made from VITA ENAMIC® must be bonded using light-curing or dual-curing fine-hybrid composites.
- The self-adhesive composite Re-lyX Unicem (3M ESPE) is only suitable for the attachment of crowns (dentine adhesion). The restoration is then treated with VITA CERAMICS ETCH for 60 seconds and subsequently silanised.
- Preferably, crowns should be bonded with a more fluid composite with dual curing character (depending on the layer thickness).
- When using more solid composite materials, the ultrasonic insertion method or a pre-heated composite can be used.
- If using thin veneers, the use of dual-curing composites should be omitted, since these can cause a slight change in colour (yellow shade) after the curing process. Therefore, a pure light-curing composite is preferable.

Cements: Fine hybrid composite with a bonding system, e.g., VITA DUO CEMENT with VITA A.R.T. BOND or PANAVIA F2.0 with ED Primer II

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Material composition of the ceramic content (86% by weight or 75% by volume)

SiO_2 (in %)	Al_2O_3 (in %)	Na_2O (in %)	K_2O (in %)	B_2O_3 (in %)	ZrO_2 (in %)	KaO (in %)
58 - 63	**20 - 23**	**9 - 11**	**4 - 6**	**0.5 - 2**	**< 1**	**< 1**

Material composition of the polymer content (14% by weight or 25% by volume)

UDMA (Urethane dimethacrylate)	TEGDMA (Triethylene glycol dimethacrylate)

Physical properties (guidelines)

Density **ρ** (at 20°C)	**2.1**	[g/cm³]
Flex resistance **β** (according to Schwickerath / ISO 6872)	**150 - 160**	[MPa] or [N/mm²]
Elasticity modulus	**30,000**	[MPa] or [N/mm²]
Abrasion	**28 - 46**	[µm]
Elongation at break **A**	**0.5**	[%]
Weibull modulus	**20**	
Vickers hardness (HV 30)	**2,500**	[MPa] or [N/mm²]
Fracture toughness K_{IC}	**1.5**	[MPa √ m]

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