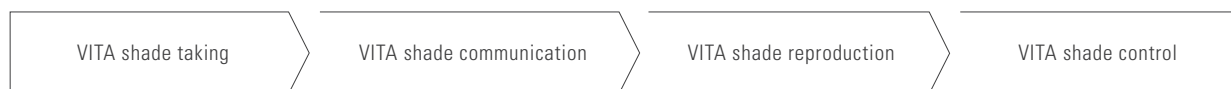
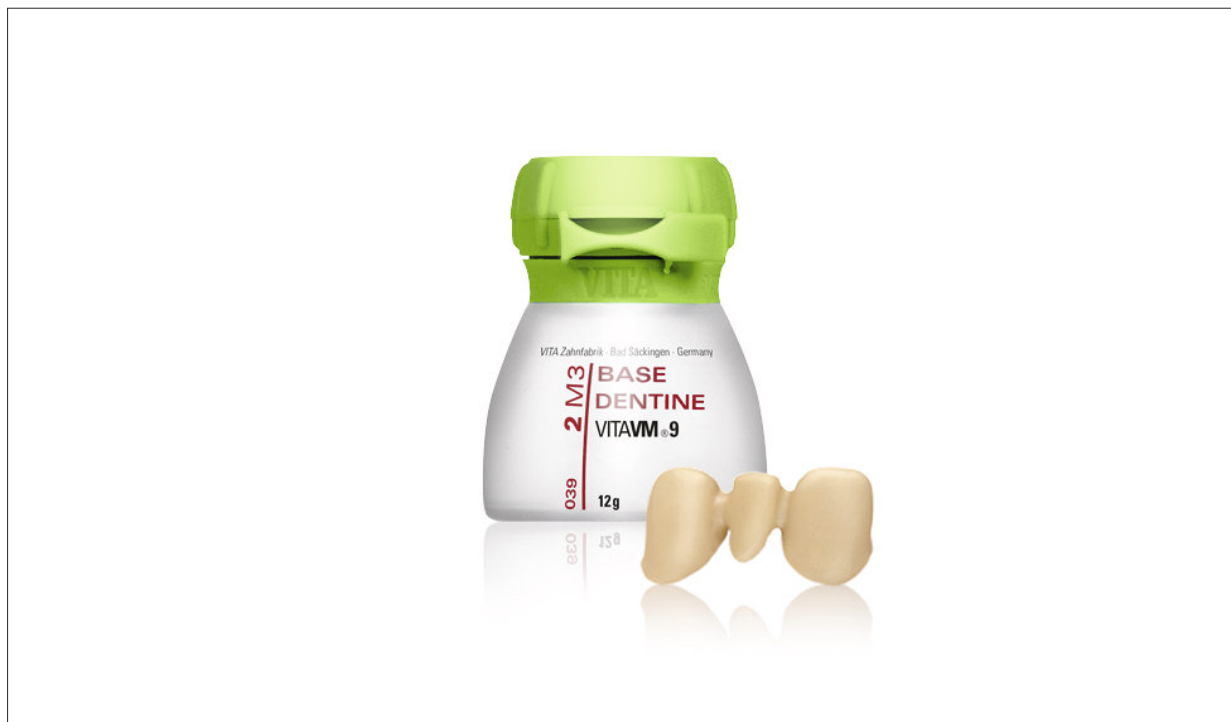
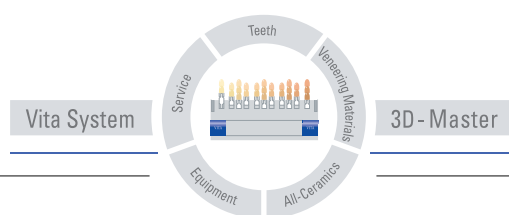


Expansion-free cooling when veneering zirconium dioxide substructures



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VITA

Scientific studies and ongoing market observation have formed the basis of VITA Zahnfabrik's recommendations for decades in order to offer customers the best possible solution for dental restorations. New results confirm that great care is required particularly when veneering and handling zirconium dioxide substructures. On the basis of this, the following procedures are recommended in order to offer even greater safety:

On account of the poor thermal conductivity of both materials (Y-TZP and veneering ceramic), more severe residual tension can occur in this compound system than is known to occur in the case of metal ceramics. This residual thermal tension in the veneering ceramic, particularly in the case of large restorations, can be counteracted by means of slow cooling to below the transformation temperature of the veneering ceramic during the last firing cycle (approx. 600 °C in the case of VITA VM9). Such a firing procedure with expansion cooling is well known as a metal ceramic technique to dental technicians; a step

of this nature is necessary to reduce tension in the case of some gold alloys.

It is also necessary to adhere to the known guidelines for all-ceramic dental restorations as follows:

- Dentists must carry out the preparation correctly according to the recommended procedure for all-ceramic restorations; for instance, a circumferential chamfer (not a tangential preparation) is required in the case of all-ceramic restorations.
- Anatomical framework structures must be designed to support the veneering ceramic.
- The veneering ceramic should be applied in an even layer to the substructure of the restoration.
- The optimum layer thickness for the veneering ceramic is between 0.7 and 1.2 mm
- After grinding in situ by the dentist in order to adjust the occlusion, either polish once more or carry out a glaze firing

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Extended firing program for VITA VM 9

	Predr. °C	→ min.	↗ min.	↗ °C/min.	Temp. Approx. °C	→ min.	↘ °C	→ min.	Vac. min.
EFFECT BONDER firing	500	6.00	6.00	80	980	1.00	–	–	6.00
EFFECT BONDER PASTE firing	500	6.00	6.00	80	980	2.00	–	–	6.00
BASE DENTINE Wash opaque firing	500	2.00	8.11	55	950	1.00	–	–	8.11
MARGIN firing	500	6.00	8.21	55	960	1.00	–	–	8.21
EFFECT LINER firing	500	6.00	7.49	55	930	1.00	–	–	7.49
1st dentine firing	500	6.00	7.27	55	910	1.00	600*	–	7.27
2nd dentine firing	500	6.00	7.16	55	900	1.00	600*	–	7.16
Glaze firing	500	0.00	5.00	80	900	1.00	600*	–	–
Glaze firing VITA AKZENT	500	4.00	5.00	80	900	1.00	600*	–	–
Correction firing with COR	500	4.00	4.20	60	760	1.00	500*	–	4.20

* Slow cooling to the corresponding temperature is a recommendation **for the last veneering ceramic firing cycle;** the lift position of VITA VACUMAT furnaces should be > 75%.

Additional all-ceramic information:

K.H. Kunzelmann, M. Kern, P. Pospiech, A. Mehl, R. Frankenberger, B. Reiss und K. Wiedhahn: Vollkeramik auf einen Blick – 3. Edition
 Publisher AG Keramik, ISBN-Nr. 3-00-017195-0.

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