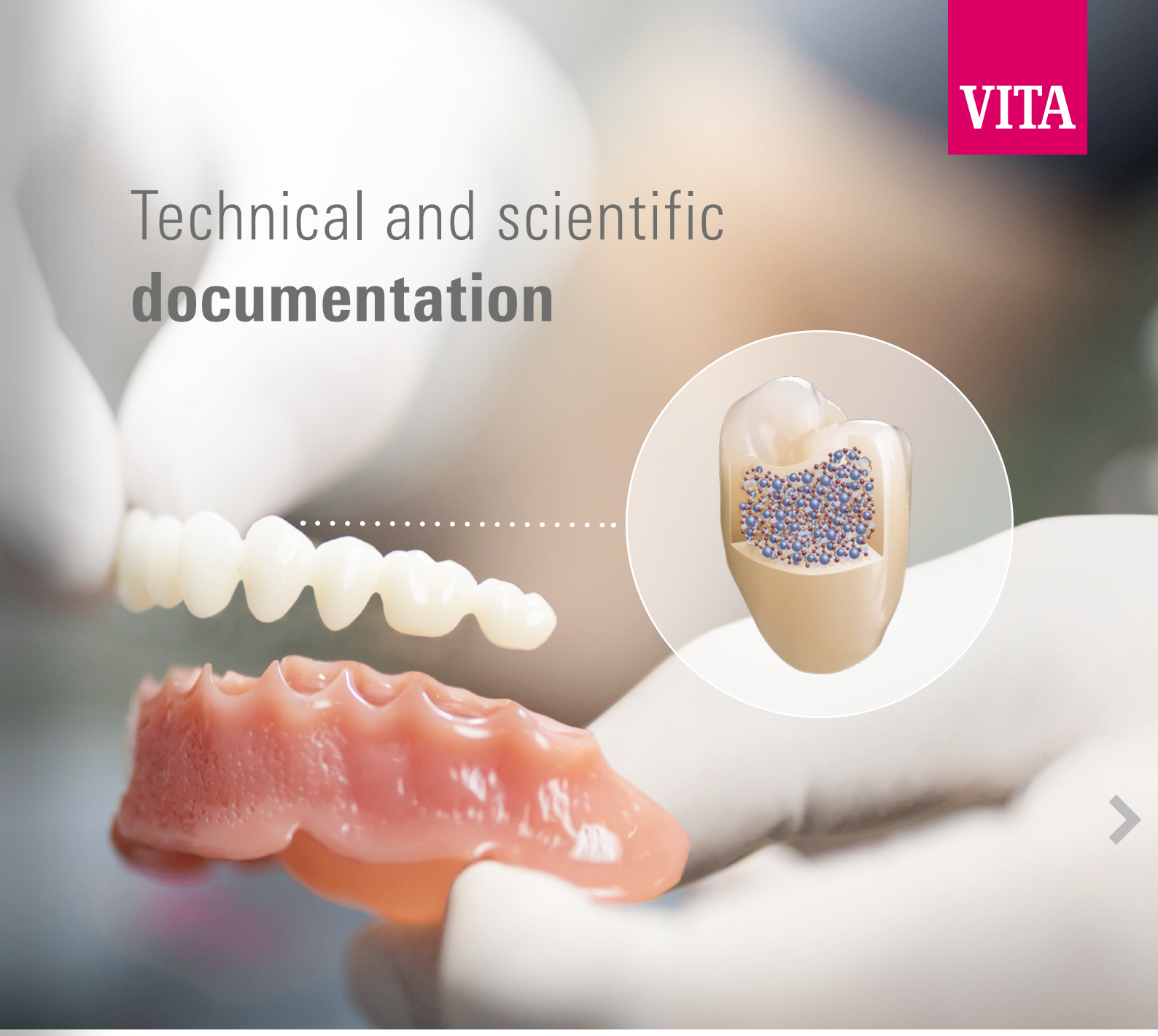
Technical and scientific **documentation**



VITA VIONIC® SOLUTIONS

Take the next step:
We are here to support your digital denture journey with outstanding quality, natural esthetics and enhanced efficiency and flexibility.

VITA VIONIC® SOLUTIONS

Digital fabrication of full and partial dentures offers process reliability and increases productivity.

We are here to support your digital denture journey with outstanding quality, natural esthetics and enhanced efficiency and flexibility. Whether you prefer milled, printed or pre-fabricated products, VITA VIONIC SOLUTIONS provides you with a coordinated material system that integrates seamlessly into your workflow. Take the next step with us.

This technical and scientific documentation provides information on the physical and mechanical properties of VITA VIONIC SOLUTIONS products. Extensive testing has been conducted to ensure optimal performance. Results demonstrate that with VIONIC products, users can achieve the same high quality and esthetics for digitally fabricated dentures that they are accustomed to achieving with analog workflows. See for yourself and find out more about shade stability, abrasion resistance and the bond between VIONIC products for digitally fabricated dentures.

Enjoy reading!

CAD processes	Try-in: printing	Fabricating final denture bases	Preparing denture teeth	Bonding teeth in the base	Individualizing
VITA VIONIC VIGO denture tooth library	VITA VIONIC TRY-IN RESIN	VITA VIONIC BASE DISC HI	VITA VIONIC DENT DISC multiColor	VITA VIONIC BOND	VITA VM LC *flow* – VITA AKZENT LC

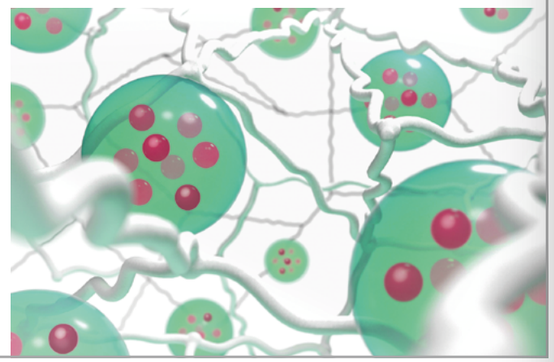
Or
VITA VIONIC VIGO

1. **VITA VIONIC**® denture teeth

Material description **VITA VIONIC** VIGO®

VITA VIONIC VIGO teeth are resin teeth that have been specially developed for digital dentures. Thanks to its short, undercut-free geometry, this VITA tooth is particularly well-suited for fabricating permanent and/or temporary dentures with milled or printed denture bases.

VITA VIONIC VIGO is produced with SE polymer (silica-endowed polymer matrix). The silica (SiO_2) fillers encapsulated in the polymer reinforce the polymer matrix and provide excellent wear resistance.[1] All of the production technology used is "made in Germany."



Fabrication process

The dental materials are placed or pressed into a negative mould sequentially according to the prescribed layering sequence. Beginning with the cutting compound, each layer is individually polymerized by heating under pressure before the next layer is applied. After pressing the last layer, final polymerization follows, during which the material is fully cured. The process parameters (e.g., pressure and temperature) are adjusted to ensure a stable composite. The teeth are then removed from the mould, sandblasted at the base and neck and carefully packaged in a wax-free blister pack. This means that the tooth is delivered ready for use, saving time by allowing the dentures to be completed through adhesive bonding without the need for additional surface conditioning. This prefabricated tooth, with its lifelike shade and shape, has been perfected for use in digital denture fabrication.

[1] University of Regensburg, Prof. Dr. M. Rosentritt (01/2022).

Technical data **VITA VIONIC** VIGO®

Chemical composition	**Wt%**
Polymethyl methacrylate (PMMA) CAS no. 9011-14-7	90-98
Silicon dioxide CAS no. 14808-60-7	2-9
Pigments	0-1

Physical properties	**The following standards are met**
Appearance	DIN EN ISO 22112 - Complies with standard
tooth shape	DIN EN ISO 22112 - Complies with standard
Shade and shade layering	DIN EN ISO 22112 - Complies with standard
Free of porosity and other defects	DIN EN ISO 22112 - Complies with standard
Surface treatment	DIN EN ISO 22112 - Complies with standard
Bond strength with denture base resins	DIN EN ISO 22112 - Complies with standard
Resistance to fading, Deformation and crack formation	DIN EN ISO 22112 - Complies with standard
Shade stability	DIN EN ISO 22112 - Complies with standard

Biocompatibility

The VITA VIONIC VIGO denture tooth has been tested in accordance with the DIN EN ISO 10993 standard.
The tests conducted show that the product is biocompatible without any restrictions.

1. **VITA VIONIC**® denture teeth

Material description VITA VIONIC® DENT DISC multiColor

VITA VIONIC DENT DISC multiColor are inorganic-filled composite blanks for fabricating denture teeth for removable full and partial dentures, as well as implant-supported dentures that require a supporting structure. The dental elements are versatile and can be used for full and partial dentures, and feature an integrated shade gradient.

The esthetics are immediately visible, thanks to the effective polishing characteristics. In addition, denture teeth milled from VITA VIONIC DENT DISC multiColor exhibit high abrasion resistance[2], making them as durable as traditional VITA prefabricated teeth.

Material composition

VITA VIONIC DENT DISC multiColor is an MRP composite disc comprised of inorganically filled PMMA material that matches the quality of VITA premium denture teeth.

- **PMMA pearls**
- **Silanized fillers**
- **Crosslinked matrix without MMA**

[2] University of Regensburg, Prof. Dr. M. Rosentritt (04/2023).

Technical data VITA VIONIC® DENT DISC multiColor

Chemical composition	**Wt%**
Polymethyl methacrylate copolymer	84-86
Silicon dioxide	14-15
Pigments	< 1

Physical properties	**Unit of measure**	**Value**
3-point flexural strength	MPa	approx. 90
Modulus of elasticity	MPa	approx. 4000

1. **VITA VIONIC**® denture teeth

Physical/mechanical properties in vitro: abrasion characteristics

Why this test is important

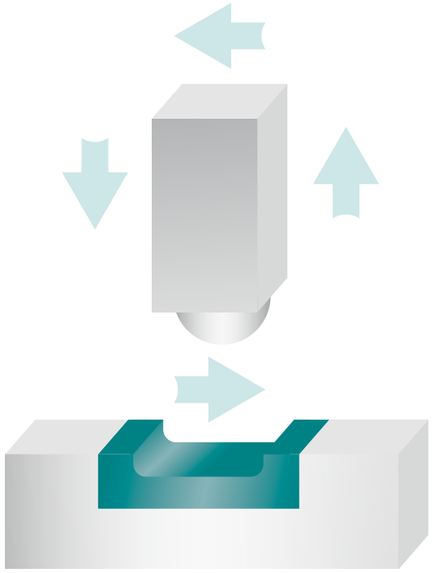
The purpose of dental prostheses is to restore normal chewing function. Excessive wear on artificial teeth can quickly lead to changes in the vertical relationship between the jaws, resulting in a lowered bite and temporomandibular joint problems. For this reason, abrasion resistance is a property that should be taken into account when selecting suitable denture teeth.

Material and methods

For determining the abrasion resistance of different tooth lines, a Pin-on-block wear test was performed in a mastication simulator, each with eight specimen per tooth line using the following parameters:

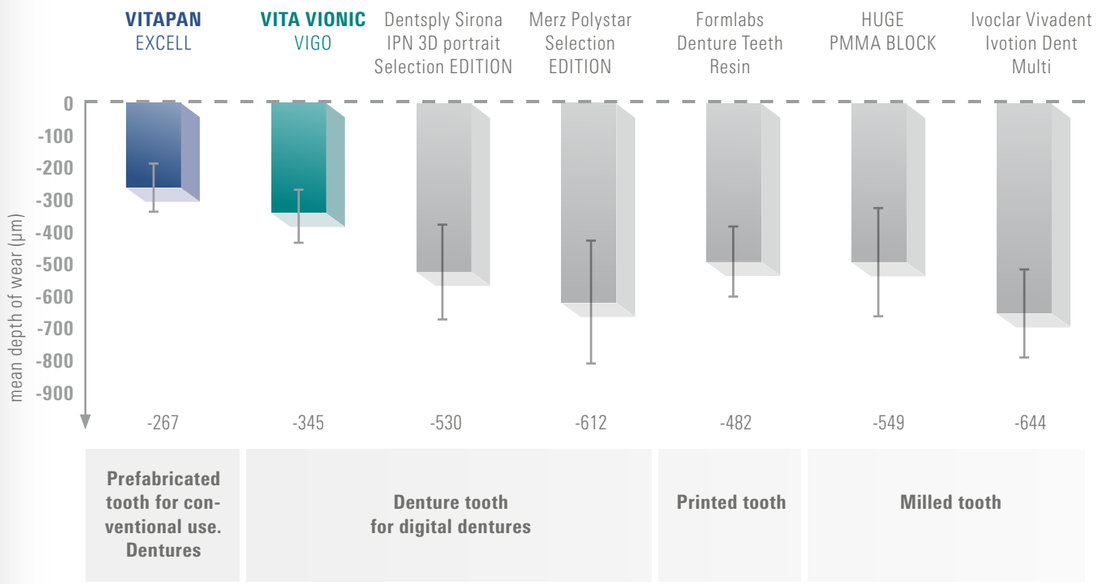
- Steatite bead as the antagonist
- 50 N load force
- 1.2 x 10^5 cycles
- 1.2 Hz at 25°C.

At the end of mastication simulation, the depth of the wear mark was measured. The result graph shows the mean depth of the wear mark for each tooth line.



Results

Wear of permanent dental materials



Summary

Significant differences in maximum and average wear depth were observed among the dental materials examined. In the test, the premium prefabricated teeth VITAPAN EXCELL and VITA VIONIC VIGO showed significantly less wear compared to the printed and milled dental materials. This also applies when comparing them to the prefabricated teeth examined for digital dentures.

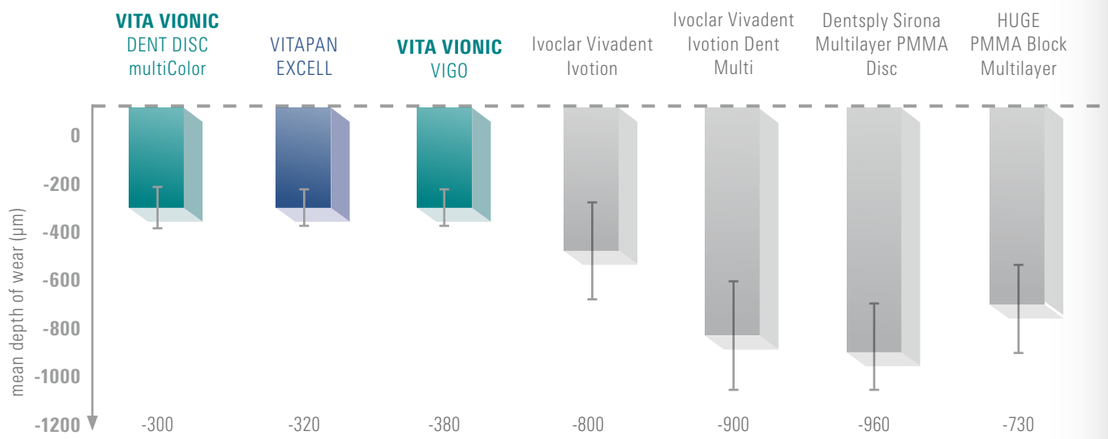
The low standard deviations of the measurements for VITAPAN EXCELL (+/- 47 µm) and VITA VIONIC VIGO (+/- 48 µm) indicate a very high degree of material homogeneity and reflect the high production standards used. This confirms the consistent high quality of VITA products.

[1] University of Regensburg, Prof. Dr. M. Rosentritt (01/2022).

1. **VITA VIONIC**® denture teeth

Results for **VITA VIONIC**® DENT DISC multiColor

Wear of permanent dental materials



Summary

Significant differences in maximum and average wear depth were observed among the dental materials examined. The milled tooth elements made of VITA VIONIC DENT DISC multiColor show minimal wear, similar to the premium prefabricated teeth VITAPAN EXCELL and VITA VIONIC VIGO. This suggests that VITA denture teeth have a longer service life compared to other materials tested.

[2] University of Regensburg, Prof. Dr. M. Rosentritt (04/2023).

Adhesive bond to the substrate

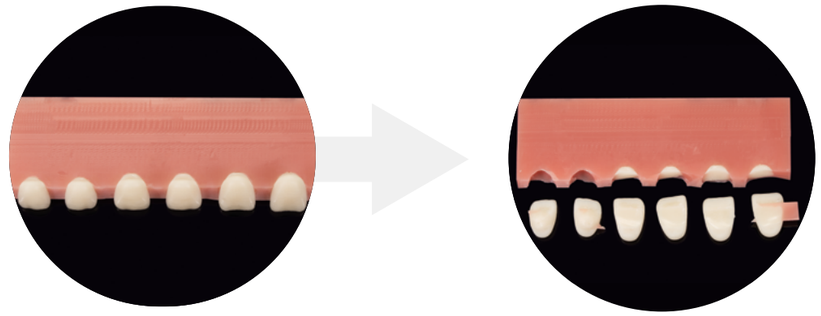
Why this test is important

Denture bases support artificial teeth and need to optimally distribute the forces generated during chewing. A reliable bond between the teeth and the denture base material is essential for this function to work properly. During the test, tensile forces are applied to the teeth bonded to the denture base until fracture occurs. Subsequently, the test then determines the point where the test specimen first fails due to the applied force. For example, an adhesive fracture, which is a fracture along the junction between the tooth and the denture base, indicates that the quality of the adhesive bond is insufficient. In contrast, a good bond is present when the fracture is cohesive in five out of six teeth, i.e., it extends into the tooth and/or the denture resin.

Materials and methods

To test the bond strength, a test specimen was milled from VITA VIONIC BASE DISC HI, and two anterior teeth of each of three different VITA VIONIC VIGO shapes were bonded into the milled cavities of the test specimen using VITA VIONIC BOND. The specimens were loaded until failure and the fracture surfaces assessed visually in accordance with ISO 20795-1 and ISO 22112.

Results for **VITA VIONIC** VIGO®



Test specimen

Fracture pattern following testing

The fracture surface shows very good bond strength to the denture base material for all six teeth in the test specimen. This can be identified by the fact that the fracture occurred within the tooth itself and/or the base material (cohesive fracture) and not at the junction with the denture material.

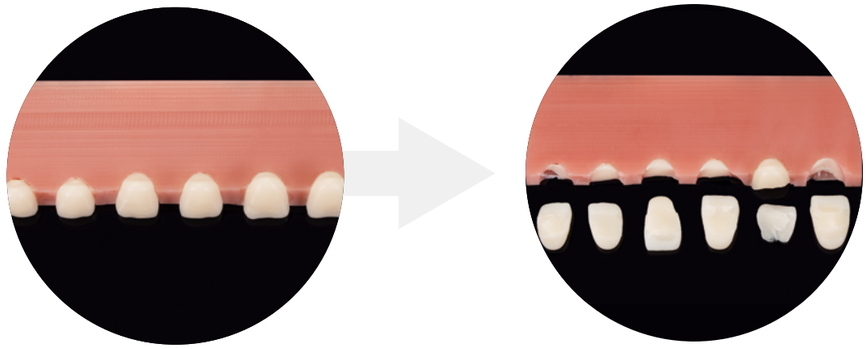
Summary

Based on these results, VITA VIONIC VIGO meets the standard requirement for the bond strength of denture teeth with denture resins. The teeth show excellent adhesion to the base material. [3]

[3] VITA Zahnfabrik H. Rauter GmbH & Co. KG (09/2023).

1. **VITA VIONIC**® denture teeth

Results for VITA VIONIC® DENT DISC multiColor



Test specimen

Fracture pattern following testing

The fracture surface shows very good bond strength to the denture base material for six teeth in the test specimen. This can be identified by the fact that the fracture occurred within the tooth itself and/or the base material (cohesive fracture) and not at the junction with the denture material.

Summary

This means that milled denture teeth made from VITA VIONIC DENT DISC multiColor meet the standard requirement for the bond strength of denture teeth with denture resins. The teeth show excellent adhesion to the base material. [3]

[3] VITA Zahnfabrik H. Rauter GmbH & Co. KG (09/2023).

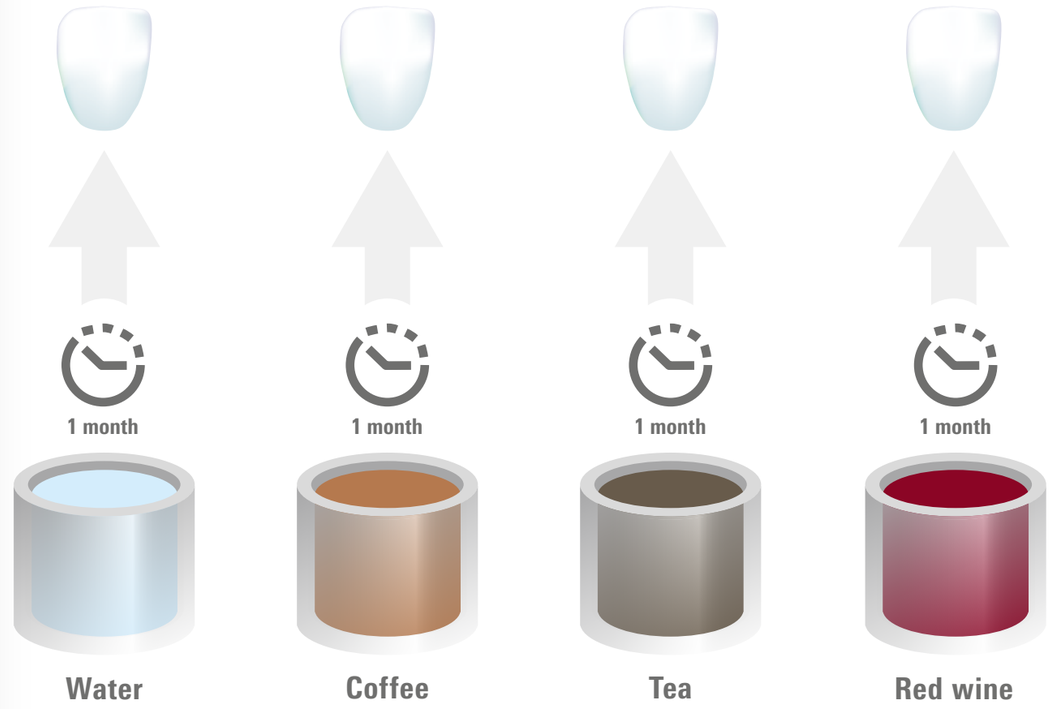
Shade stability

Why this test is important

The shade of denture teeth is a key factor in assessing the natural appearance and esthetics of dentures. However, the shade can be affected by external factors such as smoking and drinking coffee and tea. That is why it is important for denture teeth to be shade-stable. In this test, the VITA VIONIC VIGO denture tooth has been immersed in liquids that can cause discoloration. This allows the shade stability to be tested.

Materials and methods

To test shade stability, five lower first molars (FDI tooth number: tooth 36) of the VITA VIONIC VIGO denture tooth in shade A2 and five milled and polished teeth from the VITA VIONIC DENT DISC multiColor in shade A2 were stored at room temperature in various liquid media (tea, coffee and red wine). As a control group, five VITA VIONIC VIGO and five VITA VIONIC DENT DISC multiColor molars with an identical shade and shape were placed in distilled water. At specified intervals, the test specimens were removed from the various media and cleaned, and the surface discoloration was visually assessed. The surfaces were cleaned to ensure that any discoloration observed was due solely to intrinsic discoloration of the tooth structure, rather than to deposits. Shade accuracy was documented through photographs.



1. **VITA VIONIC**® denture teeth

Results for **VITA VIONIC** VIGO® after two and four weeks of storage

Storage medium	Initial situation	After two weeks	After four weeks
Distilled water			
Tea			
Coffee			
Red wine			

Photographic documentation of the VITA VIONIC VIGO stored teeth.

Summary

Visual evaluation of the VITA VIONIC VIGO denture tooth shows excellent shade stability after four weeks of continuous storage in water, tea, coffee and red wine.[4] These results suggest that patients who frequently drink coffee, tea or red wine are unlikely to experience discoloration of their VITA VIONIC VIGO denture teeth.

[4] VITA Zahnfabrik H. Rauter GmbH & Co. KG (11/2023).

Results for VIONIC® DENT DISC after two and four weeks of storage

Storage medium	Initial situation	After two weeks	After four weeks
Distilled water			
Tea			
Coffee			
Red wine			

Summary

After being immersed in water, tea, coffee and red wine for four weeks, the VITA VIONIC DENT DISC multiColor denture teeth show good visual resistance to discoloration.[4] These results suggest that patients who frequently drink coffee, tea or red wine are unlikely to experience noticeable discoloration of their VITA VIONIC DENT DISC denture teeth.

[4] VITA Zahnfabrik H. Rauter GmbH & Co. KG (11/2023).

2. System Components

Material description VITA VIONIC® TRY-IN RESIN

VITA VIONIC TRY-IN RESIN is a printing material for the fabrication of custom functional try-ins for complete dentures. The product is available in a tooth shade (≈ A2).

Printing allows for fast, material-saving and cost-effective fabrication of functional try-ins. Fit, function, occlusion and phonetics can be easily checked. Individualization for esthetic try-ins is also possible. The resin is odorless and stands out from its competitors due to its shelf life of three years.

VITA VIONIC® TRY-IN RESIN

Chemical composition	Wt%
Polyfunctional acrylates	46-65
Urethane bismethacrylate polymer	30-35
Methacrylate monomers	2-10
Initiators, pigments, stabilizers	2-6
MMA, TPO and phthalate free	0

Physical properties	Unit of measure	Value	Standard requirement
Bending strength	MPa	> 100	DIN EN ISO 178*
Modulus of elasticity	MPa	> 2200	DIN EN ISO 178*
Water absorption	µg/mm³	< 40	DIN EN ISO 10477*
Water solubility	µg/mm³	< 7.5	DIN EN ISO 10477*
Hardness	ShoreD	≥ 75	-
Viscosity**	mPas	850-1750	-

*Applies to cured objects | based on the standard at room temperature
**Applies to liquid resin

Material description VITA VIONIC® BASE DISC HI

VITA VIONIC BASE DISC HI is a millable blank made of outstanding impact resistant PMMA for the fabrication of denture bases for removable dentures. The blanks can be processed using standard 5-axis dental milling systems.

The digital, and therefore reproducible, fabrication of denture bases does not require manual investment and pressing. The excellent fit to the alveolar ridge (no polymerization shrinkage!) and the material's impact resistance, which contribute to its superior quality and durability, are two of the many product advantages of these denture bases. The product is available in four shades: classic pink, classic pink translucent, soft pink and dark pink.

VITA VIONIC® BASE DISC HI

Chemical composition	Wt%
PMMA CAS no. 9011-14-7	> 99
Color pigments	< 1

Physical properties	Unit of measure	Value	Standard requirement DIN EN ISO 20795-1
Bending strength	MPa	65	≥ 65
Modulus of elasticity	MPa	2030	≥ 2000
Impact strength	$MPam^{1/2}$	2.4	-
Total fracture work	J/m²	> 2200	≥ 900 indicates outstanding impact resistance
Residual monomer	%	< 0.5	≤ 2.2
Water absorption	µg/mm³	< 24	≤ 32
Water solubility	µg/mm³	< 0.3	≤ 1.6
Service life	years	10	None

The technical data are averages and may fluctuate slightly between delivered batches.

Adhesion test: See pages 11 and 12 [3]

[3] VITA Zahnfabrik H. Rauter GmbH & Co. KG (09/2023).

2. System Components

Material description VITA VIONIC® BOND

VITA VIONIC BOND is a self-curing, two-component bonding system (BOND I and II) for permanent bonding of VITA denture teeth from the VITA VIONIC product series in the corresponding cavities of denture bases made of compatible materials. The bonding system is used on cured dental denture resins.

Its thin consistency allows for precise application to the bonding surface, ensuring that teeth can be fixed in the cavities with a tight, gap-free fit. VITA VONIC BOND is quick and easy to apply in just a few steps and ensures a secure adhesive bond between the teeth and the denture base. This is ensured by a bonding solution specifically tailored to the material.

Technical data VITA VIONIC® BOND I

Chemical composition	Wt%
Methyl methacrylate CAS no. 80-62-6	70-80
Acrylic polymer based on methyl methacrylate CAS no. 9011-14-7	15-25
Triethylene glycol dimethacrylate CAS no. 109-16-0	< 4
Dibenzoyl peroxide CAS no. 94-36-0	< 2
Other	< 1

Technical data VITA VIONIC® BOND II

Chemical composition	Wt%
Methyl methacrylate CAS no. 80-62-6	> 95
N,N-dimethyl-p-toluidine CAS no. 99-97-8	< 5

Recommended bonding gap settings:
When using VITA VIONIC BASE DISC HI and VITA VIONIC VIGO: 40 µm (0.04 mm)
When using VITA VIONIC BASE DISC HI and VITA VIONIC DENT DISC multiColor: 80 µm (0.08 mm)
Adhesion test: See pages 11 and 12

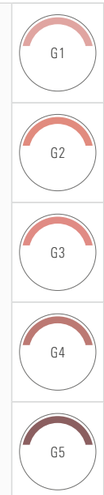
Material description VITA**VM®LC** *flow*

VITA VM LC *flow* is a low-viscosity, light-curing veneering composite for permanent and removable restorations and is used extraorally. The flowable consistency and high stability enable precise modelling of the composite. The special material composition ensures simple polishing and produces homogeneous surfaces with brilliant high gloss.

In the field of digital dentures, VITA VM LC *flow* is primarily used for the reconstruction of gingival tissue. The material can be applied and shaped directly from the syringe or using a brush or probe. VITA VM LC *flow* GINGIVA materials were specifically developed to restore the original gingival condition. The shade spectrum for the materials makes it possible to easily and reliably reproduce the patient's individual gum color. The transparent WINDOW material can then be used to mix the VITA VM LC *flow* materials.

VITA**VM®LC**
flow GINGIVA

5x GINGVA SHADES



Technical data VITA**VM®LC** *flow*

Chemical composition	Wt%
Mixed oxide from silicone dioxide and zirconia	55-68
Urethane dimethacrylate CAS no. 72869-86-4	16-20
Triethylene glycol dimethacrylate CAS no. 109-16-0	16-19
Multifunctional acrylates CAS no. 94108-97-1	< 2
Dimethylaminoethyl methacrylate CAS no. 2867-47-2	< 1
Champferchinone CAS no. 10373-78-1	< 1
2,4,6-Trimethylbenzoyl-diphenylphosphine oxide CAS no. 75980-60-8	< 1
Pigments	< 1

Product	Flexural strength MPa*	E-modulus MPa
VITA VM LC *flow*	approx. 130	approx. 7000

*measured according to DIN EN ISO 10477

2. System Components

Material description for VITA AKZENT® LC

VITA AKZENT LC products are unfilled resin sealant and coating materials for dental treatments. This light-curing staining and glazing system for the extraoral surface characterization of dental restorations can be used on items such as denture base resins (e.g., VITA VIONIC BASE DISC HI) and 3D-printed acrylic polymers.

Composite stains can be used to reliably reproduce all the shade nuances of the gums. VITA AKZENT LC enables highly detailed effects that are characterized by shade[5] and gloss stability[6], giving the dentures a natural appearance. Thanks to its ideal balanced viscosity and stability, the material can be applied with precision and accuracy. [7, 8]

For customizing denture bases, we recommend the shades white, cream, pink, dark red, purple and glaze.

Technical data VITA AKZENT® LC

Chemical composition	Wt%
Methyl methacrylate and multifunctional methacrylates	30-40
Urethane(meth-)acrylates	40-60
Silicon dioxide	8-11
Ethyl-phenyl(2,4,6-trimethylbenzoyl)phosphinate	2-6
Other	< 1
Pigments	< 2

[5] VITA Zahnfabrik H. Rauter GmbH & Co. KG, Dr. M. Gmehing (2020).
[6] VITA Zahnfabrik H. Rauter GmbH & Co. KG, Dr. S. Aechtner (2021).
[7] VITA Zahnfabrik H. Rauter GmbH & Co. KG, H. Kimmich (2021).
[8] Zahntechnik Magazin, M. Rosenbusch (2018).

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2. University Hospital of Regensburg, Polyclinic for Dental Prosthetics, Prof. Dr. M. Rosentritt (2023). Test report no. 2302_02, 4/2023.
3. VITA Zahnfabrik H. Rauter GmbH & Co. KG (2023). Internal study of VITA F&E, Report 0392-23, 09/2023.
4. VITA Zahnfabrik H. Rauter GmbH & Co. KG (2023). Internal study of VITA F&E, Report 11/2021.
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6. VITA Zahnfabrik H. Rauter GmbH & Co. KG, Dr. S. Aechtner (2021). Internal study, VITA F&E, Report 0083-21, 07/2021.
7. VITA Zahnfabrik H. Rauter GmbH & Co. KG, H. Kimmich (2021). Internal study, VITA PM, Report 0478-21, 10/2021.
8. Zahntechnik Magazin, Martina Rosenbusch (2018). Reproduction of the gingiva: essential steps for customization, Edition 04 pp. 286-287, 05/2018.

Digital solutions. VITA quality.

VITA VIONIC® TRY-IN RESIN

For the fabrication of try-ins
Shade: ≈ A2
1 kg bottle

VITA VIONIC® BASE DISC HI

For the fabrication of denture bases
Shades: classic pink / classic pink translucent / soft pink / dark pink
Geometries: Ø 98.5 mm / H 30 mm

VITA VIONIC VIGO®

Prefabricated denture teeth
Shades: VITA classical A1–D4®: A1, A2, A3, A3.5, B3, D3
Bleach shade: 0M1
Geometries: 8 x upper anterior and 4 x lower anterior tooth moulds, 4 x upper and lower posterior tooth moulds

VITA VIONIC® DENT DISC multiColor

For the fabrication of denture teeth
Shades: VITA classical A1–D4®:
A1, A2, A3, A3.5, A4, B1, B2, B3, B4, C1, C2, C3, C4, D2, D3, D4
Bleach shade: 0M1, 0M3 | Geometries: Ø 98.4 mm/H 20 mm

VITA VIONIC® BOND

Luting
Packaging: VITA VIONIC BOND I (2ml jar or 20 ml bottle)
VITA VIONIC BOND II (1ml or 10ml bottle)

VITA VM®LC *flow*

For sealing interdental spaces and for individualizing
Shades: Available shades include 5 Gingiva shades

VITA AKZENT® LC

Characterization
Recommended variants: white, cream, pink, dark-red, purple, Glaze

We are happy to help.

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Please note:

Our products must be used according to the instructions for use. We accept no liability for any damage resulting from incorrect handling or usage. The user is also obliged to check the product before use with regard to its suitability for the intended area of application. We cannot accept any liability if the product is used in conjunction with materials and equipment from other manufacturers that are not compatible or not authorized for use with our product and this results in damage. Date of issue of this product information: June 2026

After the publication of this information for use, any previous versions become obsolete. The current version in each case is available at www.vita-zahnfabrik.com

VITA Zahnfabrik has been certified, and the following products bear the CE mark
CE 0124
VITA VIONIC VIGO®, **VITA VIONIC®** DENT DISC multiColor, **VITA VIONIC®** BOND, VITA**VM®LC *flow*, VITA AKZENT®** LC

detax GmbH has been certified in accordance with the Medical Device Directive, and the following products bear the CE mark
CE 0483
VITA VIONIC® TRY-IN RESIN

Dental Direkt GmbH has been certified in accordance with the Medical Devices Directive, and the following product bears the CE mark
CE 0482
VITA VIONIC® BASE DISC HI

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More information about
VITA VIONIC SOLUTIONS
www.vita-zahnfabrik.com/vionic

VITA VIONIC® SOLUTIONS

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