SOME THINGS NEED TO BE SHAKEN …

… V-PRINT DOES NOT

V-Print®

SEDIMENTATION-FREE 3D PRINT RESINS FROM THE DENTAL MANUFACTURER YOU CAN TRUST
VOCO – The Dentalists

Manufacturing dental products is our passion

For over forty years, VOCO has been known around the world as an innovative manufacturer of dental products with particular expertise in the field of light-curing resins for direct and indirect restorative dentistry. VOCO applies this knowledge and experience to the field of digital dentistry and has successfully launched a wide variety of products for additive and subtractive fabrication techniques worldwide. Alongside materials for the subtractive workflow, such as Grandio blocs and Structur CAD, VOCO offers professional users V-Print, a tried and tested range of top-quality dental materials for 3D printing.

V-Print 3D resins are not only manufactured at VOCO headquarters in Cuxhaven, Germany, but their development has been overseen by an interdisciplinary research team comprised of dental technicians, dental engineers and chemists all along the digital process chain. This guarantees optimal user-friendliness and performance in the dental practice and laboratory.

How do we do it?!?

VOCO uses nothing but the best raw materials that fully comply with the strict quality standards it sets for itself. In combination with research expertise acquired over decades in the field of light-curing resins, VOCO is able to produce printing resins of the very highest quality. This is achieved by using special dental monomers that form extremely stable three-dimensional networks during the light-curing process.

Consequently, all V-Print products yield homogeneous printed objects with high stability. This homogeneity has multiple advantages. The products do not need to be shaken before printing starts, resin vats are easy to clean, and excellent physical properties of the final printed objects are achieved. Selected raw materials are employed to prevent discoloration of the splint materials, with the result that they are barely visible when worn.

This contributes considerably to successful treatment.
You can benefit from the expertise of a certified manufacturer of dental materials when fabricating your dental workpieces.
Advantages of all V-Print® materials!

**Ready for use immediately and without shaking – V-Prints are sedimentation-free**

All V-Print printing materials are sedimentation-free! This means that fillers and dyes do not settle over time, either in the bottle or, far more importantly, during the printing process. The V-Print bottle does not need to be shaken before use, so no air bubbles enter the material. This allows immediate filling of the vat and the ability to immediately start printing. Unsupervised printing overnight is possible. The printing process runs reliably from the first step to the last, and the final product properties are reproducible. You can decide when each print job is started and reduce your preparation time. No need to invest in homogenization equipment because V-Print printing materials do not require time-consuming preparation.

**Rapid and reliable printing, including easy cleaning of the vat – optimum flowability**

During the development of V-Print materials, the focus was on excellent final material properties along with good flow properties for an optimal printing process. The flowability of V-Print not only ensures an optimal printing process but also makes it easier to return the material to the bottle if necessary. The developed flow characteristics also make it easier for you to clean the vat with minimum waste.

**Safe removal from the build platform – high green strength**

The printed objects have yet to be post-cured when removed from the build platform, meaning they have not attained their final physical properties. The high green strength of all objects printed with V-Print is required for safe and deformation-free removal from the build platform.

**Fast and cost-effective – post-curing without protective gas**

Objects made from V-Print materials can be post-cured without protective gas. One of the aims when developing V-Print was to achieve a high surface quality without the use of protective gas. Fewer working steps means time savings for you. The handling is simpler and the streamlined process saves the expense of nitrogen or a more high-end light polymerization unit.

**Safe for users and patients alike – thanks to biocompatible dental products**

Always putting the safety and care of our practitioners and their patients at the forefront.

**You’ll love it! – odorless or low-odor**

All V-Print printing materials are very low-odor even in their liquid state, which makes their processing very pleasant for the user. You’ve surely already produced a denture base conventionally from PMMA? Then you’ll love digital fabrication with V-Print dentbase.

In their cured state, all objects made from V-Print printing material are completely odorless or very low-odor. This increases customer acceptance and thus treatment success, e.g., in the case of long-term splint therapy.
# Overview – V-Print® printing materials

<table>
<thead>
<tr>
<th></th>
<th>Color</th>
<th>Indications</th>
<th>FDA Clearance/ Health Canada Clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-Print splint comfort</td>
<td>Clear</td>
<td>3D printing of: Therapeutic splints, Patient-matched night guards/splints, Auxiliary parts and functional parts for diagnostics</td>
<td>Yes/ Yes</td>
</tr>
<tr>
<td>V-Print splint</td>
<td>Clear</td>
<td>3D printing of: Therapeutic splints, Patient-matched night guards/splints, Auxiliary parts and functional parts for diagnostics</td>
<td>Yes/ Yes</td>
</tr>
<tr>
<td>V-Print SG</td>
<td>Clear</td>
<td>Dental drilling templates</td>
<td>Yes/ Yes</td>
</tr>
<tr>
<td>V-Print dentbase</td>
<td>Pink</td>
<td>Removable denture bases</td>
<td>Yes/ Yes</td>
</tr>
<tr>
<td>V-Print Try-In</td>
<td>Beige</td>
<td>Try-ins for full and partial dentures, Transfer and grinding templates, Correction and occlusal impressions</td>
<td>Yes/ Yes</td>
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<tr>
<td>Color</td>
<td>Indications</td>
<td>FDA Clearance/Health Canada Clearance</td>
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<td>------------------------------------------------------------------------------</td>
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</tbody>
</table>
| **V-Print c&amp;b temp** | A1, A2, A3  
Long-term temporaries like crowns, bridges and mock-ups | Yes/ Yes                              |
| **V-Print model 2.0** | Beige  
3D printing of crown and bridge models and ortho models | Yes/ Yes                              |
| **V-Print model fast** | Blue  
Dental models | Yes/ Yes                              |
| **V-Print tray** | Blue  
Individual impression and function trays  
Bases for bite templates and wax assemblies for full dentures  
Occlusal registrations | Yes/ Yes                              |
| **V-Print cast** | Blue  
Production of objects that can be burned out without leaving any residues for casting processes and press ceramics | Yes/ Yes                              |
**V-Print® splint comfort**

Light-cured resin for 3D printing of clear thermo-flexible therapeutic splints, aligners and night-guards

**Indications**

3D printing of:
- Therapeutic splints
- Patient-matched night guards/splints
- Auxiliary parts and functional parts for diagnostics

**Advantages**

- **High flexural strength and excellent wear resistance** allow for devices as thin as 1mm
- **Thermo-flexibility, biocompatibility, odorless and neutral flavor** increases patient acceptance
- **Extremely fracture resistant and durable**
- **Clear-transparent, easy to polish and color stable** for excellent esthetics
- **FDA 510k-clearance**

<table>
<thead>
<tr>
<th>Color</th>
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<tbody>
<tr>
<td>Viscosity</td>
<td>1,250 mPa⋅s Internal test</td>
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<td>Modulus of elasticity</td>
<td>670 MPa* Equivalent to DIN EN ISO 20795-2</td>
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<td>Water absorption</td>
<td>15 μg/mm²* Equivalent to DIN EN ISO 20795-2</td>
</tr>
<tr>
<td>Water solubility</td>
<td>2.5 μg/mm²* Equivalent to DIN EN ISO 20795-2</td>
</tr>
</tbody>
</table>

For Voco/W2P printers, only combinable with PowerVat  *See page 16

- **Approx. 125 x**
  Depending on object volume, support structures, etc.

Very flexible splint from 3D printer
View of bite elevation in anterior region
View of bite elevation in posterior region
**V-Print® splint**

*Light-cured resin for 3D printing of splints, night-guards and other diagnostic parts*

**Indications**

3D printing of:
- Therapeutic splints
- Patient-matched night guards/splints
- Auxiliary parts and functional parts for diagnostics

**Advantages**

- **FDA 510k-cleared**
- **Biocompatibility and neutral flavor** ensure high level of patient acceptance
- **Esthetically pleasing** clear-transparent results
- **Rigid with high flexural strength** for durable orthodontic objects
- **Easy to polish and stain resistant**

**Specifications**

<table>
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<tr>
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<th>Value</th>
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<tbody>
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<td>Flexural strength</td>
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<td>Modulus of elasticity</td>
<td>2,100 MPa* Equivalent to DIN EN ISO 20795-2</td>
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<tr>
<td>Water absorption</td>
<td>27.7 μg/mm³* Equivalent to DIN EN ISO 20795-2</td>
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<tr>
<td>Water solubility</td>
<td>&lt; 0.1 μg/mm²* Equivalent to DIN EN ISO 20795-2</td>
</tr>
</tbody>
</table>

*See page 16

**Splint with support structures**

**Splint-model combination from 3D printer**

**REF 6044** Bottle 1,000 g Clear

**Approx. 125 x**

Depending on object volume, support structures, etc.
**V-Print® SG**

**Light-cured resin for 3D printing of transparent surgical guides**

**Indications**
Dental drilling templates

**Advantages**
- **Autoclavable** at 250 °F/134 °C
- **Optimal flow properties**
- **High precision** for optimal fit
- **Excellent green-state stability**, so not subject to distortion
- **High flexural stability**
- **Biocompatible**
- **Neutral flavor**
- **FDA-cleared** class I medical device

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Viscosity</td>
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<td>Modulus of elasticity</td>
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<td>Water absorption</td>
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<td>Water solubility</td>
<td>1.9 μg/mm²</td>
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</tbody>
</table>

* (autoclaved 134°C, 5 mins) *see page 16

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*Approx. 90 x*

Depending on object volume, support structures, etc.

*Dimensionally stable, steam-sterilized drilling template with accurate fit of drill sleeves*

*Guided implantation: Medical device class II – approved for wound contact*
V-Print® dentbase
Light-cured resin for 3D printing of denture bases for removable dentures

Indications
Removable denture bases

Advantages
• **Chameleon effect** to match the gingiva with only one shade
• **Sedimentation free** – perfect for overnight printing
• **Biocompatible** with FDA 510k clearance
• **Compatible** with all leading reline materials
• **High green strength** for safe removal from building platform

<table>
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<tr>
<td>Modulus of elasticity</td>
<td>2,450 MPa*</td>
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<tr>
<td>Water absorption</td>
<td>24 μg/mm³*</td>
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<tr>
<td>Water solubility</td>
<td>&lt; 0.1 μg/mm²*</td>
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</tbody>
</table>

*See page 16
V-Print® Try-In

Light-cured resin for the 3D printing of try-ins for prosthetics

Indications
Try-ins for full and partial dentures
Transfer and grinding templates
Correction and occlusal impressions

Advantages
- Verification and possibility to assess the fit, occlusion, functionality, phonation and esthetics before the production of prosthetics
- Biocompatible
- FDA-cleared class I medical device

<table>
<thead>
<tr>
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<td>Modulus of elasticity</td>
<td>2,500 MPa*</td>
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<td>Water absorption</td>
<td>17.5 μg/mm³*</td>
</tr>
<tr>
<td>Water solubility</td>
<td>&lt; 0.1 μg/mm³*</td>
</tr>
</tbody>
</table>

*See page 16

Approx. 50 × (upper jaw or lower jaw)
Depending on object volume, support structures, etc.

Printed monolithic try-in
Try-ins made from V-Print Try-In after polishing – ready for insertion!
Corrective impression-taking with V-Posil Mono Fast is possible
V-Print® c&b temp
Light-cured resin for 3D printing of highly esthetic long-term temporaries

**Indications**
Long-term temporaries like crowns, bridges and mock-ups

**Advantages**
- **Highly-filled printing material** – especially for long-term application
- **Excellent physical properties**
  - high flexural strength and modulus of elasticity for stable temporaries
  - high wear resistance for extended life-span
  - low water absorption and solubility for color stability and mechanical strength
- **Natural fluorescence** – for high esthetic demands
- **Easy to process and polish**
- **Composite printing material** – quick to characterize or adapt

<table>
<thead>
<tr>
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<th>A1, A2, A3</th>
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<tbody>
<tr>
<td>Viscosity</td>
<td>2,800 mPa-s Internal test (10 s-1 at 23 °C)</td>
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<td>Flexural strength</td>
<td>132 MPa* Equivalent to DIN EN ISO 10477</td>
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<tr>
<td>Modulus of elasticity</td>
<td>4,417 MPa* Equivalent to DIN EN ISO 10477</td>
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<td>Water absorption</td>
<td>17.63 μg/mm³* Equivalent to DIN EN ISO 10477</td>
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<td>Water solubility</td>
<td>0.68 μg/mm²* Equivalent to DIN EN ISO 10477</td>
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<tr>
<td>Vickers hardness (HV1)</td>
<td>24.1 Internal test</td>
</tr>
</tbody>
</table>

*/*See page 16

Depending on object volume, support structures, etc.
V-Print® model 2.0
Light-cured resin for 3D printing of dental models

Ideal for:
3D printing of crown and bridge models and ortho models

Advantages
• **Speed and accuracy in one material** – optimal fit even with 100μm layer thickness
• **Easily trimable without undesirable changes** (e.g., caused by heat caused by instruments)
• **Scratch-resistant hard surface** for trial fitting without deforming
• **Heat resistant** – suitable for vacuum thermo-forming of retainers and aligners
• **No sedimentation** – perfect for overnight printing

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>Viscosity</td>
<td>1,270 mPa-s</td>
<td>Internal test</td>
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<tr>
<td>Flexural strength</td>
<td>96 MPa*</td>
<td>Equivalent to DIN EN ISO 178**</td>
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<tr>
<td>Modulus of elasticity</td>
<td>2,600 MPa*</td>
<td>Equivalent to DIN EN ISO 178**</td>
</tr>
<tr>
<td>Surface hardness</td>
<td>19 HV1*</td>
<td>Internal test</td>
</tr>
</tbody>
</table>

*//**See page 16

Approx. 70 x
Depending on object volume, support structures, etc.

Simple separating cuts without clogging
Scratch-proof for safe trial fitting
Printed model casting for fit check on the dental model
V-Print® model fast

Light-cured resin for the 3D printing of fast printable models, especially for the dental thermoforming technique (e.g. for aligner or retainer splints)

Ideal for:
Generative production of dental models, especially for the dental deep-drawing process (e.g. aligner or retainers)

Advantages
- **Time-saving** – for fast printing in high layer thickness without loss of quality
- **Suitable for vacuum forming** – temperature resistant as a basis for e.g. aligner or retainer splints
- **High strength and material saving** – the high strength allows material-efficient hollowing of the models

<table>
<thead>
<tr>
<th>Color</th>
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</thead>
<tbody>
<tr>
<td>Viscosity</td>
<td>1,500 mPa-s</td>
</tr>
<tr>
<td>Flexural strength</td>
<td>95 MPa*</td>
</tr>
<tr>
<td>Modulus of elasticity</td>
<td>3,300 MPa*</td>
</tr>
</tbody>
</table>

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REF 6125  Bottle 1,000 g Blue

Approx. 70 x

Depending on object volume, support structures, etc.

Multiple models can be printed quickly in thick layers

Optimal for the thermoforming technique

No clogging when using the cutting wheel
**V-Print® tray**

Light-curing resin for the 3D printing of individual trays, base plates and occlusal registrations using CAD / CAM technology

**Indications**

- Individual impression and function trays
- Bases for bite templates and wax assemblies for full dentures
- Occlusal registrations

**Advantages**

- **Timesaving** – printable in high layer thicknesses (up to 200 μm)
- **Distortion-free impressions** – thanks to the great strength
- **Universal** - suitable for all types of impression material
- **Rapid and efficient** – object printing including the forming of functional peripheries, retention elements and gaps for implant impressions.
- **Biocompatible**
- **FDA-cleared** class I medical device

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**Color** | **Blue**
---|---
**Viscosity** | 1,500 mPa-s Internal test
**Flexural strength** | 100 MPa* Equivalent to DIN EN ISO 178**
**Modulus of elasticity** | 2,720 MPa* Equivalent to DIN EN ISO 178**
**Water absorption** | 30 μg/mm²* Equivalent to DIN EN ISO 20795-2
**Water solubility** | 3 μg/mm²* Equivalent to DIN EN ISO 20795-2

* / **See page 16

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**Partial tray printed in thick layers**

**3D-printed partial tray on printed model**

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**Approx. 60 x (upper jaw) or 85 x (lower jaw)**

Depending on object volume, support structures, etc.
V-Print® cast

Light-cured resin for the 3D printing of burn-out objects for casting and pressing processes

Indications
Production of objects that can be burned out without leaving any residues for casting processes and press ceramics

Advantages
• Reliable printing process – non-sedimenting over the entire printing duration
• Reproducible – simple duplication prior to casting
• Quick finishing process – precisely printed objects allow for high quality of reproduction
• High form and edge stability – reliable checking of occlusion and lateral movements
• Finishing at an early stage – instrument-friendly finishing of objects in light-cured state
• High compatibility – can be used with commercially available phosphate bonded investment materials
• Restorations free of impurities – V-Print cast burns without residue
• FDA-cleared class I medical device

<table>
<thead>
<tr>
<th></th>
<th>V-Print cast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Blue</td>
</tr>
<tr>
<td>Viscosity</td>
<td>1,550 mPa-s</td>
</tr>
<tr>
<td>3-point flexural strength</td>
<td>78 MPa*</td>
</tr>
<tr>
<td>Modulus of elasticity</td>
<td>2,470 MPa*</td>
</tr>
</tbody>
</table>

*/* See page 16

> 1,000 x

Dependent on object volume, support structures, etc.

Digitally simple duplication of objects

Easily trimable without formation of smear film
Printer and material compatibilities for optimum flexibility

Perfect solutions for the digital world of modern dentistry – that’s the goal of the Dentalists at VOCO, achieved in cooperation with numerous renowned 3D printer manufacturers. A comprehensive and growing list of printer and material compatibilities can be found at www.voco.dental/3dprintingpartners.

General information: The measured values do not represent target values within the scope of the product’s continuous quality control.

*Manufacturing note: SolFlex 3D printer / OtoFlash G171. Other approved printers/post-curing units may differ slightly.

**Test specimen dimensions 80.0 × 4.0 × 10.0 mm

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