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# VarseoWax SURGICAL GUIDE

INSTRUCTIONS FOR USE

Partners in Progress



## VarseoWax Surgical Guide

Resin for the 3D printing of drilling templates.

### 1. Intended use/Indication

VarseoWax Surgical Guide is a monomer based on acrylic esters for manufacturing of 3D-printed surgical guides. Suitable for printing all types of surgical guides.

### 2. Contraindications

VarseoWax Surgical Guide should not be used for any other purpose than dental surgical guides only. Any deviation from this instruction for use may have negative effect on the chemical and physical quality of VarseoWax Surgical Guide. In case of an allergic reaction, please contact a medical physician.

### 3. Safety instructions

VarseoWax Surgical Guide is produced and tested according to the most stringent quality standards.

In order to ensure optimum further processing, please read the information contained in the instructions for use carefully. Improper use and failure to observe the information can have a detrimental effect on the quality. Nitrile gloves, goggles and a coat must be worn as a means of protection when handling the resin.

### Instructions on how to handle plastic parts made of VarseoWax Surgical Guide

The safety instructions and precautions set down in the VarseoWax Surgical Guide instructions for use and safety data sheet shall apply to the handling of liquid resin and objects that have not been post-cured (objects in the “green condition”). A dust mask must be worn too due to potential dust formation while the printed objects are being processed. It is prohibited to use plastic parts made of VarseoWax Surgical Guide as auxiliary equipment for food and drinks applications.



#### 4. Side effects and precautions

##### **Inhalation**

Irritates the respiratory organs. High concentrations can lead to irritation of the respiratory passages, dizziness, headaches and loss of consciousness.

##### **Skin contact**

Sensitisation or irritation are possible from contact with the skin. Repeated and/or extended skin contact can cause inflammations.

##### **Eye contact**

High air concentrations can lead to eye irritations.

##### **Swallowing**

Low oral toxicity; ingestion can, however, lead to irritation of the gastrointestinal tract.

##### **Precautions/Protection**

It is recommended that protective clothing be worn when handling the VarseoWax Surgical Guide. Goggles and nitrile gloves are recommended. Information on handling the product can be found in the safety data sheet and also downloaded from the BEGO Download Centre at [www.bego.com](http://www.bego.com). However, we cannot completely exclude the possibility of personal reactions to individual components in isolated cases. In such cases, the respective user should discontinue use of the VarseoWax Surgical Guide. If intolerances or allergies occur when it comes into contact with the patient, the material should not be used further for the patient.

## VarseoWax Surgical Guide



### WARNING

#### Contains:

Poly(oxy-1,2-ethanediyl), alpha, alpha'-[(1-methylethylidene)di-4-1-phenylene]bis[omega-[(2-methyl-1-oxo-2-propenyl)oxy], phenyl-bis(2,4,6-trimethylbenzoyl)-phosphine oxide

Information on hazards as per MSDS

- Causes skin irritation
- May cause an allergic skin reaction
- Causes serious eye irritation
- May cause respiratory irritation
- May cause long lasting harmful effects to aquatic life

Safety instructions as per MSDS

- Avoid inhaling aerosol
- Wear protective gloves/eye protection
- Call a POISON CENTRE or doctor/physician if you feel unwell
- If skin irritation/rash occurs: get medical advice/attention
- If eye irritation persists: get medical advice/attention
- Dispose of contents/container as per local and national regulations

## 5. General information on handling

### Delivery

VarseoWax Surgical Guide is supplied in light-tight, sealed bottles.

Filling quantity:

- VarseoWax Surgical Guide  
REF 41012 = 1 kg

Please check the following points on receipt of the goods:

- Integrity of the bottle/pack
- Quantity
- Shipping documents and designation

### Storage

VarseoWax Surgical Guide must be stored in the original sealed bottle at room temperature (approx. 22 °C) in a dark, dry place. It must be ensured that the temperature does not drop below +5 °C and does not exceed +35 °C! The minimum shelf life date printed on the product must be observed. Perfect processing cannot be guaranteed if materials which have exceeded their minimum shelf life date are used.

## 6. Processing

VarseoWax Surgical Guide is one of the system components in the BEGO Varseo 3D print system and has been optimised for use in the Varseo 3D printer. The printing settings can be found in the instructions for use for the equipment.

**Note:** Ensure a minimum wall thickness of 3 mm when designing!

**Note:** The drilling templates should only be printed horizontally with the fitting surface facing upwards!

For further information on waxing up and processing, please refer to the guidelines on the production of drilling templates using the 3D printing method. You can find guideline in our download center:

<https://www.bego.com/media-library/download-center/conventional-solutions/>

Please wear protective gloves (nitrile gloves), protective clothing, goggles and/or face protection during processing!

The ideal working temperature range for VarseoWax Surgical Guide is between 20 and 30 °C. When decanting, make sure that the printing resin is exposed to daylight for as short a period of time as possible.

For further processing – selecting the resin, setting up the print job – as part of the printing process, follow the Varseo printer instructions for use.

### Subsequent processing

On completion of printing, the print objects are detached from the build platform by actuating the ejector\*\* and/or using the spatula supplied. The print object should be cleaned in two steps with ethanol (96 %) using an ultrasonic bath.

**Note:** Never fill ethanol directly into the ultrasonic bath; place it in the recommended container (REF 19621) in the ultrasonic bath filled with water. Use an explosion-proof ultrasonic bath.

\*\* Varseo and Varseo L cartridges

## Cleaning

1. Clean the print object for 3 min in a reusable ethanol solution (96 %) in an **unheated** ultrasonic bath.
2. The precleaned print object must be cleaned thoroughly for 2 min using a fresh ethanol solution (96 %) by using an **unheated** ultrasonic bath.. The print object is then removed from the ethanol bath and sprayed with additional ethanol (96 %) in order to rinse off any remaining resin residue fully.

**Tip:** Resin residues can also be removed using a brush soaked in ethanol (96 %).

Do not exceed the total duration of the cleaning procedure of 5 minutes, because this could lead to a impairment of the printed objects.

After cleaning, the print object is dried using compressed air, if possible under suction. If there is liquid resin still adhering to the print object, this can be completely removed by spraying again with ethanol (96 %) and re-drying.

## Finishing

The support structures are then removed To this end, either a cutting wheel or side cutters can be used. It must be ensured that the printed object is not deformed!

The completely cleaned print objects must be post-cured to attain the required material properties and biocompatibility.

**Note:** In order to guarantee the required precision and avoid deformation, do **not** store printed objects for extended periods of time without post-curing!

The final properties of the print object depend on the post-curing process. The final material properties are achieved using light polymerisation units with the following performance data: **two xenon stroboscopic lamps, flash frequency 10 Hz, light spectrum 300–700 nm (e.g., BEGO Otofash) or one xenon stroboscopic lamp, flash frequency 20 Hz, light spectrum 390–540 nm (e.g., HiLite Power).**

### VarseoWax Surgical Guide

<b>Post-curer</b>	BEGO Otofash (with protective gas)	HiLite Power
<b>Flash</b>	1 x 1,000 + 2 x 2,000	–
<b>Time [seconds]</b>	–	1 x 90 + 2 x 180

**Note:** The use of the BEGO Otoflash (REF 26465) results in a further reduction of the already low remaining monomer content due to the use of the protective gas function. In doing so, the protective gas function should be set to switch position 1. Details can be found in the instruction manual for the post-curing device.

#### **Recommended post-curing process step by step:**

1. 1 x 1,000 flashes or 1 x 90 seconds post-curing without model.
2. Finish the object and check the accuracy of fit on the model, if available.
3. Insert the drill sleeves. Apply a thin layer of liquid VarseoWax Surgical Guide material to the exterior of the drill sleeves with a brush to secure them in place. When doing so, ensure that no material reaches the inside of the sleeves. If necessary, these should be checked again for patency once hardened.
4. 2 x 2,000 flashes or 2 x 180 seconds post-curing (without model). Turn the object between curing procedures and allow to cool as necessary.

**Note:** The times given only apply to regularly maintained equipment that guarantees a corresponding light intensity.

#### **7. Storage and transportation of printed objects**

The fully cured print objects are ideally stored at room temperature away from light and transported in a suitable, light-tight transport box!

#### **8. Cleaning**

Fully cured drilling templates made from VarseoWax Surgical Guide can be easily cleaned and disinfected, for example 10 minutes in ethanol 96%. Follow manufacturer's instructions.

The post-curing objects are autoclavable by steam sterilisation only once (3 minutes, 134 °C, 2 bar).

#### **9. Disposal**

The cured, separated material (base plate, support structure) can no longer be used. Cured material can be disposed of as domestic waste. Unused resin or ethanol used for cleaning with resin residues must be disposed of via the local waste disposal authority or a hazardous waste collection point stating the safety data sheet.

10. Material parameters and scope of delivery

Physical data

VarseoWax Surgical Guide

Colour	blue-transparent	Flexural modulus	≥ 1,500 MPa
Density	approx. 1.12 g/cm <sup>3</sup>	Layer thickness	100 µm
Viscosity	approx. 1,100 mPa*s	Wavelength	405 nm
Flexural strength	≥ 50 MPa		

Delivery form

	Contents	Presentation	Qty	REF
VarseoWax Surgical Guide	1 kg	bottle	1	41012

11. Equipment

VarseoWax Surgical Guide has been designed for use in the Varseo printers from BEGO Bremer Goldschlägerei Wilhelm-Herbst GmbH & Co KG.

12. Label symbols



Manufacturer



Batch code



Catalogue number



Protect from sunlight



CE mark



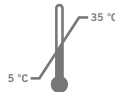
Consult instructions for use



Use by



Warning



Storage and transport temperature



For specialist personnel only



[www.bego.com](http://www.bego.com)



Manufacturer

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