

optiprint[®] lumina

Germany's favorite 3D Resin



Colour:

Vita A1; A2; A3; A3,5; A4

Vita B1; B2; B3; B4

Vita C1; C2; C3; C4

Vita D2; D3; D4

Hollywood white

Processing guide

1. Product description and indication

Optiprint lumina is a light curing 3D printing resin based on methacrylate. It is suitable for the production of temporary crowns, bridges and the use in 3D printers with light sources in the range from 385 nm to 405 nm. The patient target group of this class IIa medical device is defined as adults and adolescents. Composition: methacrylate mixture, inorganic fillers, photoinitiator, dye.

2. Contraindication

The material should not be used for any purposes other than the additive manufacturing of the specified indications. Do not use the polymerized material if you are allergic to any of the ingredients (contains methacrylate monomers and oligomers).

3. Risk minimization and safety instructions

- Improper use and deviations from the described processing will lead to an impairment of quality and biocompatibility as well as undesirable mechanical properties of the final part.
- Biocompatibility is only guaranteed if used properly (light curing in a protective atmosphere). All printed parts should only be processed once fully polymerized.
- The light curing of the printed parts takes place in a suitable light curing unit (e.g. otoflash G171), see point 4.4. Finishing.
- After completion of the construction process, the printed part should be cleaned with a suitable cleaning solution (e.g. isopropanol 99%, optiprint clean) in an ultrasonic bath.
- The LOT No. must be specified for each process that requires identification of the material.
- For additively manufactured medical products made of optiprint lumina, storage in water for 24 hours is recommended.
- Observe all recommended settings for the printer and the light curing device.
- Read and observe the safety data sheet (SDS) before use.
- The correct personal protective equipment (nitrile gloves, protective goggles, protective clothing) must be worn when handling optiprint products and non-cured printed parts.
- Avoid any contact with skin and eyes before light curing. The optiprint product can irritate eyes and skin.
- In rare cases, allergic reactions to components of optiprint products can occur. In the event of accidental contact, follow the "First Aid Measures" (rinse thoroughly with water and consult a doctor if necessary). See SDS.
- Use by qualified personnel only. Keep out of the reach of children.

4. Processing steps

4.1 Designing

A chamfer or step preparation is recommended. It is important to ensure that there are no sharp angles or edges in order to avoid stress peaks in the material.

Region	Design parameters
Minimum edge wall thickness	$\geq 0,6$ mm
Minimum wall thickness	$\geq 1,5$ mm
Connector area	≥ 16 mm ²
Connector cross-section	oval
Number of pontics	1

The minimum wall thickness should not be undershot, even by post-processing. In the case of temporary bridges, the connector area must always be designed as large as possible (in this case height is more important than width).

4.2 Printing

Observe the instructions for use of the printer and the software. Pay attention to clean work. Contamination on the 3D printer can cause defects in the printed part and damage the material tray. Check whether you can download the relevant material parameters for optiprint resins from your printer manufacturer's database.

Important: commercially available artificial teeth may be subject to copyright. When using the print files of such teeth, copyrights must be taken into account.

If you are using a printer without integrated heating, it is recommended that both the printer and the optiprint product are heated to an operating temperature of 30 ° C / 86 ° F. A cold start should be avoided (you can find information on heating the product in the FAQ). Shake the optiprint bottle before use and sufficiently fill the printer material tray.

Positioning and supporting the objects to be printed with the auto support function

Position and support the objects as shown in Figures 1-2 below.

Add a base plate (thickness 0.5 mm) to the supported objects. In the case of a fully nested build platform, it is advisable to select a continuous base plate with a hole pattern.

Then start the printing process by following the printer instructions.

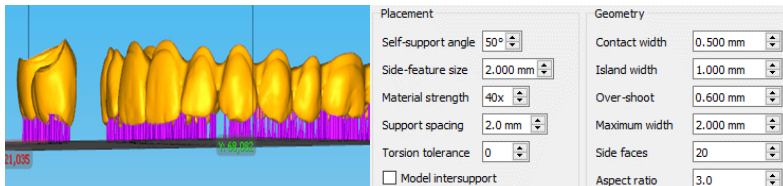


Fig. 1-2: Orientation of the objects (yellow) with supports (pink), recommendation for setting the support parameters

For Asiga Max / Pro 4K users: The „Fast Print Mode“ and the „Separation Detect“ must be activated

4.3. Cleaning

Due to its high viscosity, optiprint lumina does not drip completely off the build platform after the printing process. Wipe off any resin residues with a clean, disposable spatula. Then take the build platform out of the printer and remove the printed parts from the build platform with a suitable instrument (cutter knife). The supports are separated with the fingers before cleaning.

Pre-cleaning: Moisten a bristle brush with the cleaning liquid and remove coarse residues of the resin from the inside and the fissures of the printed parts (max. 1 minute).

Main cleaning: In the unheated ultrasonic bath; add the cleaning liquid and the printed part to a lockable container (5 minutes). Subsequent drying of the printed part with compressed air and controlling of the cleaning result. Pay special attention to critical places like the crown lid and the fissures.

You can recognize sufficient cleaning by a matt surface. Shiny areas require spot cleaning with cleaning liquid and a brush. Keep cleaning until no more shiny areas occur.

! Complete the post-processing of the printed parts quickly and adhere to the time specifications. Above all, avoid an unnecessarily long bath in the cleaning liquid and long waiting times between the steps. Isopropanol (99%) and optiprint clean can be used as cleaning liquids (if optiprint clean is used, a 2-minute subsequent cleaning with isopropanol is always required. optiprint clean is not suitable for cleaning surfaces and devices).

4.4 Finishing

To achieve the desired material properties and biocompatibility, the completely cleaned and dried print objects must be light cured.

Recommendation: flash light curing device Otofash G171 (NK Optik) with nitrogen flooding, 2x 2000 light flashes. Turn the parts in between. Make sure to use the plexiglass tub with UVB filter. You can recognize this by the inscription: NK Optik 360N2.

! The final properties as well as the final color depend on the light curing process. When light curing in other light curing devices, a comparably high energy input must be ensured (200 W). This depends on the light source used and the exposure time (UVA radiation source (315-400 nm), 7 minutes)).

You can see our recommendation of the materials to be used in Figures 3 and 4. To achieve a brilliant shine, the use of a diamond-coated polishing paste is necessary. There is no risk of resin burning during polishing. White filler residues on the surface can be removed from hard-to-reach areas such as fissures with a polisher, max. 2 bar.

Finishing with the handpiece: Remove the support attachments with emery paper (220 grit). Removal of the print layers and cleaning of the surface with a lens-shaped, medium-hard silicone polisher. A flame-shaped variant of the silicone polisher is suitable for cleaning the chewing area. High-gloss polish with a bison or goat hair brush at high speed (diamond-coated polishing paste (Zirkopol; Fegupol alternatively Dialux No. 40; Polidenta)). After cleaning, it is recommended to polish over again with a cotton buff.

Finishing on the polishing motor: Removal of the support approaches by the help of emery paper (220 grit). Pre-polish with pumice stone powder and water and a hard polishing and goat hair brush. High-gloss polish with a bison or goat hair brush, followed by a cotton buff (diamond-coated polishing paste (Zirkopol; Fegupol, alternatively Dialux No. 40; Polidenta)). After cleaning, it is recommended to repolish with a cotton buff.



Fig. 3 and 4: Material recommendation for finishing

5. Delivering

Use the optiprint preventive (dentona AG) disinfectant bath, which is especially suitable for 3D printed parts, to ensure hygiene when handing over the medical device to your customer. Spectrum of activity: bactericidal including TBC, yeasticidal, limited virucidal (HIV, HBV, HCV, SARS-CoV-2).

6. Inserting

The temporary fixation can be done with commercially available, eugenol-free, temporary fixation materials. The instructions for use of the fastening material must be observed.

7. Storage

Protect this product from strong light and heat sources. The recommended storage temperature is between 5 ° C and 30 ° C. Close the packaging after each use. If storage protected from light and dust is ensured, optiprint lumina can remain in the material tray after printing. Due to its high viscosity, optiprint lumina cannot be filtered.

8. Disposal

Disposal according to official regulations. Must not be disposed of together with household waste. Do not empty into drains.

FAQ

How can I heat the optiprint product to operating temperature?

By heating to operating temperature, you increase the security of your printing and produce printed parts of consistent quality. In addition, the optiprint product is less viscous when heated, which makes it easier to shake in the bottle.

- Pre-heat the optiprint product in its bottle in a water bath. The label should not come off the bottle during this process.
- Alternatively, fill the optiprint product into the material tray and leave it protected from light and dust until it has reached room temperature.

Are there any coarse white residues on the surface of the printed part after cleaning?

- Change your cleaning liquid. You can use your cleaning liquid longer if you remove the coarse resin residues during the pre-cleaning (see 4.3.).
- The residues are harmless for processing the printed part. In hard-to-reach areas, such as fissures, they can be removed by the help of a polisher (max. 1.5 bar).

Doesn't the colour match?

- Check the light curing process.
- Did you use the plexiglass tub with UVB filter (NK Optik 360N2)?
- Is the plexiglass tub in good condition?

Is there no high gloss when finishing?

- Have the print layers been cleaned up sufficiently?
- Try a finer sandpaper / silicone polisher for prepolishing.
- In the final polishing step, use a diamond-coated high-gloss polishing paste, which is suitable for e.g. zirconium or hybrid material. It is best to apply this with the handpiece and a suitable polishing brush at high speed (soft bison or goat hair brush). Due to the composition of optiprint lumina, there is no risk of the printing resin being burnt during polishing.

The crown margin does not close?

- Has the inside of the crown been cleaned properly? When cleaning, brush out the inside to make sure no liquid resin is left on the inside.
- Check your cleaning results. You can recognize sufficient cleaning by a matt surface. Shiny areas require spot cleaning with cleaning liquid and a brush. Keep cleaning until no more shiny areas occur.

How do I deal with the viscosity of the optiprint product?

- When heated, the optiprint product is less viscous (please see our information on heating).
- If you warm the product in the bottle, it can be shaken better.

How do I keep the material loss during printing as low as possible?

- You can wipe off resin residues on the build platform with a disposable spatula after printing is complete.
- Place the opened and eventually heated optiprint bottle in the printer upside down on the build platform in order to allow the printing resin to run completely into the material tray.

Didn't this guide answer your question or did we forget something?

Send us your question or suggestion by email with the subject „IFU - optiprint lumina“ to support@dentona.de

We will be pleased to help you!



λ 385 –
405 nm

