optiprint® laviva

Germany's favorite 3D Resin

Colour: light-pink/ dark-pink / red-brown

Processing guide

1. Product description and indication

Optiprint laviva is a light curing 3D printing resin based on methacrylate. It is suitable for the production of denture bases 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 table in 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 laviva, 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

Region	Upper jaw	Lower jaw
Basal surface alveolus	≥ 2,5 mm	≥ 2,5 mm
Palatal / Lingual	≥ 2,0 mm	≥ 2,0 mm
Vestibular	≥ 2,0 mm	≥ 2,0 mm
Implant supported total prosthesis	≥ 2,5 mm	≥ 2,0 mm

* = Default values Exocad

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.

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.

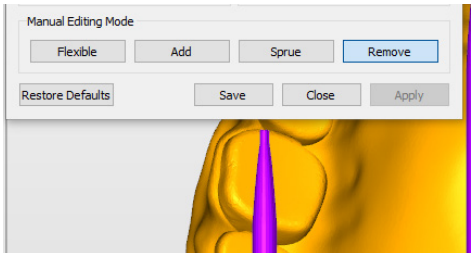
Positioning and supporting the objects to be printed with the auto support function

Position and support the objects with the automatic support function as shown in Figures 1-3 below

Fig. 1-3: Orientation of the objects with supports; recommendation for the support parameter settings

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 without hole pattern (thickness 0,5mm).

Correction of the auto support function (for Asiga users)



When placing the supports, it is important to consider the further processing of the denture base. If teeth are to be incorporated, it is unfavorable to place supports in the alveolus. Remove unwanted supports individually in the support menu (Fig. 4). Instead, add standard (Fig. 5) or flexible supports (Fig. 6).”

Fig. 4: Removal of unwanted supports

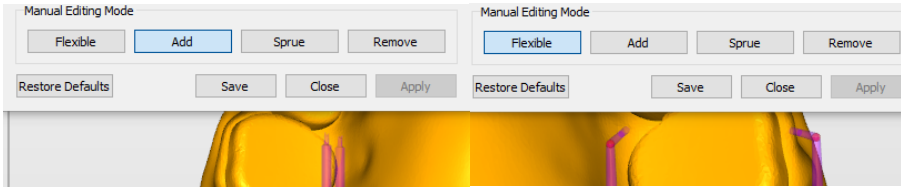


Fig. 5-6: Adding standard and flexible supports

For Asiga Max / Pro 4K users:

The „Fast Print Mode“ and the „Separation Detect“ must be activated. Then start the printing process by following the printer instructions.

4.3. Cleaning

Due to its high viscosity, optiprint laviva 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: Hold the printed part in a container filled with cleaning liquid and rub off the coarse resin residues with your fingers (max. 1 minute).

Main cleaning: In the ultrasonic bath; fill the cleaning liquid and the printed part into a lockable container (5 minutes). Subsequent drying of the printed part with compressed air and controlling of the cleaning result.

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-treatment 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, biocompatibility and color, the completely cleaned and dried print objects must be light cured.

> Recommendation: flash light curing unit Otoflash 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)).

Pre-polishing: Remove the support approaches with a PVC milling cutter. Sand the surface of the printed part thoroughly with the handpiece and fine sandpaper (220 grit) or silicone polishers to clean up the print layers and to prepare for the subsequent polishing.

On the polishing motor, use pumice stone powder and water together with a large-diameter buff (4 minutes, high contact pressure), followed by a goat hair brush (3 minutes) (both at 3000 rpm).

Material: sandpaper 220 grit, sandpaper holder for the handpiece, cotton buff, silicone polisher; pumice powder, water.

High-gloss polishing: Before high-gloss polishing, make sure to rinse off all residues from the previous step. Use a new large-diameter buff and high-gloss polishing paste (2 minutes at 3000 rpm).

Material: cotton buff, high-gloss polishing paste (Tiger Brilliant, Dentaurum).

If you notice after prepolishing that not all of the print layers have been processed, you can now clean these areas with a medium-hard silicone polisher. White filler residues on the surface can be removed from hard-to-reach areas, such as the palate, with a sand blaster and corundum blasting agent (max. 1.5 bar).

Due to the composition of optiprint laviva, a brilliant shine can only be achieved during the final polishing with a diamond-coated polishing paste. This is best applied with the handpiece and a polishing brush at high speed. There is no risk of resin burning during polishing.

Material: medium-hard silicone polishers, lens-shaped, bison or goat hair brushes for the handpiece, diamond-coated polishing paste (which is suitable e.g. for zirconium or hybrid materials).

After cleaning it is recommended to polish the surface with a fresh cotton buff at low speed without using a polishing agent (1500 rpm at light contact pressure).

5. Delivering

Use the optiprint prevente (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. Repairing

Optiprint laviva denture bases can be repaired or relined with conventional methacrylate-based hot and cold polymers. The surface of the printed part must then be sufficiently roughened and moistened with plastic liquid. The respective instructions for use of the plastic used 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 laviva can remain in the material tray after printing. Due to its high viscosity, optiprint laviva cannot be filtered.

8. Disposal

Disposal according to official regulations. Liquid resin 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 in case of desposit forming at the bottom of the container. 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. 2 bar).

Doesn't the color match?

· Check the light curing process.Have the specifications been observed?.

· Did you use the plexiglass tub with UVB filter (NK Optik 360N2)?

· Is the plexiglass tub in good condition?

How can you clean the print layers in hard-to-reach areas?

· In hard-to-reach areas, such as the palate folds, print layers can be removed with a sandblaster and corundum blasting agent (Al2O3, max. 2 bar).

Is there no high gloss when finishing?

· Have the print layers been cleaned up sufficiently?

· Try a finer sandpaper / silicone polisher for prepolishing.

· During the final polishing step, use a diamond-coated high-gloss polishing paste, which is suitable for zirconium or hybrid material, for example. 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 laviva, there is no risk of the printing resin being burnt during polishing.

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

· Once 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 once 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 laviva" to support@dentona.de

We will be pleased to help you!

CE 0044 MD www.dentona.de λ 385 – 405 nm 30 °C 86 °F 5 °C 41 °F

dentona AG | Feldbachacker 16 | 44149 Dortmund | Phone: +49 (0)231 5556-0 | mailbox@dentona.de | www.dentona.de