



## Processing guide

### 1. Product description and indication

Optiprint clara is a light curing 3D printing resin based on methacrylate. It is suitable for the production of flexible, dental bite splints, plates and mouth guards 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 clara, 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

Minimum thickness 0.9 mm (can be partially reduced for bitings).

### 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. Remove eventually occurring bubbles with a clean tool/spatula.

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

Position and support the objects as shown in the following.

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.

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

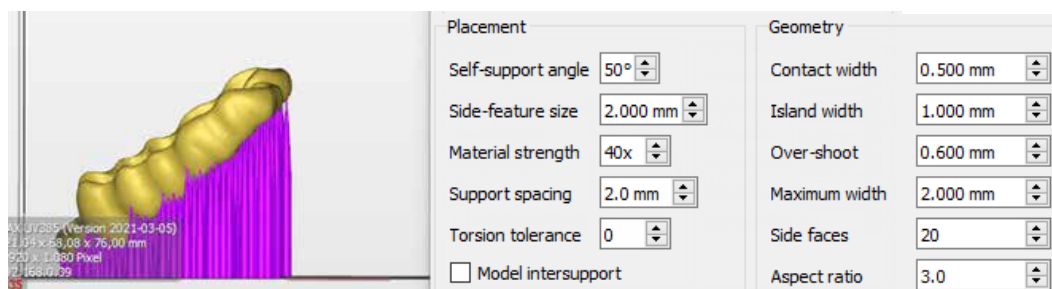


Fig. 1: Orientation of the printed parts (yellow) with supports (pink) and recommendation for setting the support parameters.

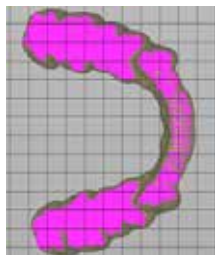


Fig. 2: Support setting of the upper part of the splint

#### **! Important:**

Orient the splint at a 45 ° - 50 ° angle. Observe that all areas of the upper side of the splint carry supports (see Fig. 2)

### 4.3. Cleaning after printing

Due to its high viscosity, optiprint clara 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.

Clean (5 minutes) in the unheated ultrasonic bath; add the cleaning liquid and the printed part to a lockable container. 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 and biocompatibility, the completely cleaned and dried print objects must be light cured.

**Light curing:** flash light curing device Otofash G171 (NK Optik) with nitrogen flooding, 2x 3000 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), 10 minutes)).

**Pre-polishing:** Remove the support approaches with the handpiece using a fine plastic cutter. It is not necessary to sand the surface of the printed parts made from optiprint clara. Use pumice stone powder and water on the polishing motor together with a cotton buff (4 minutes at 3000 rpm, high contact pressure). Then use a goat hair brush (2 minutes at 3000 rpm). Material: PVC milling cutter, large diameter cotton buff, goat hair brush, 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, light contact pressure).

#### 4.5 Final cleaning

A final cleaning is done with detergent and water in a cold ultrasonic bath (5 minutes) until no polishing agent residues can be seen and felt on the printed part. Then rinse the printed part in clear water for 30 seconds until no more foam formation is visible due to the detergent.

### 5. Notes for the laboratory / for the dentist to hand out the device to the patient

Before the printed parts will be incorporated, a storage in water for 24 hours is recommended. Disinfection as standard is not necessary for oral, non-surgically invasive products.

Use the optiprint prevente (NW-Chemie GmbH) 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).

Medical devices made from optiprint clara are thermoflexible. Before placing / removing the printed part on/from the model or inserting it into the patient, please immerse it in warm water at approx. 40 ° C for 2 minutes so that the material adapts even better to the shape of the teeth. The user must ensure not to re-infect printed parts with the water bath. Provide the patient with information on how to use his new splint made from optiprint clara.

#### ! Instructions for the patient Comfort

Flexible due to body temperature, not to be worn while eating

Cleaning: Use a toothbrush for cleaning under running water after wearing. Then keep it dry until the next time you wear it. Please do not use toothpaste or denture cleaner to clean the splint.

### 6. Adding

With dentona flexisplint (dentona AG), button anchors can be incorporated into printed parts made of optiprint clara, or bites, teeth guides or similar can be added. To do this, the surface of the printed part must be roughened and moistened with flexisplint liquid. The processing instructions for flexisplint are to be observed.

### 7. Storage

Close the container carefully after each use and store at room temperature between 5° C and 30° C in a dry place protected from light. If storage protected from light and dust is ensured, optiprint clara can remain in the material tray after printing.

Due to its high viscosity, optiprint clara cannot be filtered. Do not use after the expiry date. When handling the optiprint resins, expose them to daylight / room light for as short as possible, as a too long exposure to light leads to unwanted polymerisation of the material.

### 8. Disposal

Disposal of liquid resin 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 light cured fragments on the printed part?

You can prevent these fragments from forming by covering the entire top of the splint with supports. Please note point 4.2. Positioning and supporting of the objects to be printed with the auto support function. The fragments are harmless for the further processing of the splint and will be removed during cleaning. Remove any remaining fragments from the material tray before you start the next print job.

### Is the object discolored?

Whitish-cloudy color: Indication of errors in the cleaning process.

- Make sure to avoid unnecessarily long contact with the cleaning liquid.
- Yellowish color: Indication of errors in the light curing process.
- Check whether the plexiglass tub with UVB filter has been used (NK Optik 360N2). Is the plexiglass tub in good condition?
- Minimize the generation of heat during light-curing by turning the object. You can also cool the object with compressed air. Please also note point 4.4. Finishing.

### Is optiprint clara suitable for situations with minor undercuts?

- Yes, optiprint clara can also be used if the patient's situation does not offer sufficient retention areas for the printed part.
- With the help of dentona flexisplint, button anchors can be incorporated into the light cured object as a retaining element. For this purpose, the surface of the printed part is to be roughened and to wet with flexisplint. The processing instructions for dentona flexisplint must be observed.

### Is the high glossy finish not achieved?

- Special attention must be paid to prepolishing when using this product. Since you can do without sanding the surface, you have to apply more pressure than usual on the polishing motor.  
Make sure you always use enough polishing agent to ensure a cooling at the same time. Use the cotton buff until you can no longer see any print layers on the outside of the splint. Note the recommendations for polishing in point 4.4. Finishing
- If you cannot apply the necessary pressure, sand the surface with fine sandpaper (220 grit) before prepolishing in order to clean up the print layers.
- The subsequent high-gloss polish should be done with a little less pressure than usual.

### How can you optimize the inside of the printed part?

- Since the inside of the object cannot be polished, the printed layers remain visible. The material appears less transparent because the layers deflect the light.

### 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, if necessary, 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 clara“ to [support@dentona.de](mailto:support@dentona.de)

We will be pleased to help you!



λ 385 –  
405 nm

