

G-PRINT 3D Model V2. This product consists of a graphene-doped resin for 3D printing of dental models. For dental use.

Please read this instruction sheet carefully before using the product.

1. G-PRINT 3D Model V2

G-PRINT 3D Model V2 is a light-curing acrylic resin whose main base is a graphene-doped polymer (graphene being an allotropic form of carbon), designed for the three-dimensional printing of dental models. The product can be used in DLP/LCD printers with a wavelength between 385 and 405 nm.

The product is available in 1 format:

- 1L safety container.

2. Indications

G-PRINT 3D Model V2 is especially suitable for the manufacture of working models and references in the dental sector.

3. Contraindications

Since this product does not come into contact with the patient's tissues, it does not present any type of contraindication.

4. Information on risks and safety

This product has been manufactured and tested according to the most demanding quality standards. To ensure optimal product processing, carefully read the information contained in these instructions for use.

Improper use and failure to follow the instructions may alter the quality of the product.

Handling of the liquid resin and of the printed object without post-polymerization (objects in "basic state") must comply with the safety indications and precautions included in the instructions for use and the safety data sheet for this product.

For trained personnel only.

4.1 Side effects and precautions

Prevention / protection

It is mandatory to wear protective clothing when handling this product.

Protective eyewear and nitrile gloves should be worn.

4.2. General instructions on handling

Supply

G-PRINT 3D Model V2 is supplied in sealed opaque bottles.

Filling weight

- REF = 1 kg

4.3 Storage

This product should be stored in its original sealed bottle at room temperature (approx. 21 °C) in a dark, dry environment.

You must ensure that the temperature does not fall below +5 °C or exceed +35 °C.

⚠ **Note:** Observe the printed expiration date. If the product is processed after its expiration date, it is no longer possible to guarantee that the processing result will be satisfactory.

When not in use or in storage, uncured printed models (objects in their "basic state") should be stored in a light-protected

location, if possible, to prevent changes in shape. Fully cured printed objects should be stored at room temperature in a place protected from light sources.

5. Resin parameters

- Hardness: **87 Shore D**
- Viscosity (25 °C): **200 cPs**
- Curing wavelength: **385-405 nm**
- Liquid density: **1.1 g/cm³**
- Solid density: **1.184 g/cm³**
- Elastic modulus ⁽¹⁾: **2780 MPa**
- Flexural strength (5%) ⁽¹⁾: **87 MPa**
- Curing time: **1.4 - 6 s**
- Shelf life: **12 months**

⁽¹⁾ ISO 178:2019

6. Working with G-PRINT 3D Model V2

Processing requirements

6.1. Design

- Create an object (STL dataset) using commercial CAD software intended for dental applications.
- For the design, observe the minimum wall thickness requirements for finished restorations.

Note: In hollow printed models, a minimum wall thickness of 2.5 mm must be respected.

6.2. Compatible 3D printer

G-PRINT 3D Model V2 can generally be processed on all DLP/LCD 3D printing systems that use a wavelength between 385 and 405 nm.

6.3. Preparation for printing

- Import STL file
- Manual/automatic rotation and placement
- Optimal orientation: horizontal positioning of the print object on the build platform
- Manual/automatic generation of support structures.

6.4. Tools, equipment and materials needed for finishing

- Stainless steel spatula
- Cleaning device
- Cleaning solution (e.g., 96% ethanol/99% isopropanol solution)
- Spray bottle for cleaning solution
- Separating disc or side-cutting pliers (for removing the support structure)

6.5. Processing

G-PRINT 3D Model V2 is compatible and can be used with 3D printing system components from different 3D printer vendors (open systems).

Refer to the 3D printer's operating instructions to prepare for the printing process. The ideal temperature for processing G-PRINT 3D Model V2 is between 25 and 30 °C.

Before use, the resin must be homogeneous. Before first use, shake the bottle for approximately 2 minutes. When pouring the material, ensure that the resin's exposure to daylight is minimized. Mix the resin in the resin vat if a transparent layer is visible on the surface. For further processing during the printing process (resin selection, material parameters, print job settings), follow the operating instructions for your printer.

Note: If this is the first time you are using the resin, it must be calibrated. Please follow the manufacturer's instructions.

6.6. Cleaning

Once printing is complete, separate the printed objects from the build platform using a spatula. The printed object should then be cleaned with 96% ethanol or isopropanol in a cleaning device.

Carefully read the information contained in the device manufacturer's instructions for use.

1. Clean the printed object for 4 minutes with alcohol.

Precautionary measures: The total duration of the cleaning should not exceed 5 minutes, otherwise the quality of the printed objects could deteriorate and cause the printed object to swell.

Once cleaning is complete, dry the printed object with compressed air. If you then find liquid resin still adhering to the surface of the object, spray cleaning solution onto the object again and apply another blast of compressed air to remove it completely.

6.7. Preparation for post-curing

- Begin by separating the support structures. You can use a separating disc or side-cutting pliers to separate them.
- For adaptations to the model, carbide or diamond burs can be used.

Precautionary measures: Due to the possibility of dust formation during the carving/finishing of printed objects, a dust mask must also be worn.

6.8. Post-curing process

For the re-hardening of objects manufactured with G-PRINT 3D Model V2 to achieve the final properties of the material, a post-curing chamber with the following characteristics is used: two xenon strobe lamps, flash frequency 10 Hz, light spectrum 300–700 nm, or one xenon strobe lamp, flash frequency 20 Hz, light spectrum 390–540 nm, or multidirectional LEDs with flash power 39 W/9.1 W, light spectrum 405 nm.

Orient/place the models in the device with the work surface facing the light source.

To ensure optimal product processing, carefully read the information contained in the instructions for use of the post-curing chambers.

The times indicated are only valid for equipment that is periodically maintained and provides the corresponding light intensity.

Tips for further processing of printed and photopolymerized models of G-PRINT 3D Model V2.

1. The models can be isolated from plaster adhesion.
2. The models can be duplicated with silicone or duplication gel.
3. Copings can be made using a deep-drawn foil (Adapta) on the dies.
4. Only one deep-drawing can be carried out on the models.

Note: When deep-drawing plastic sheets, avoid overheating the sheets.

5. Repair of models printed with G-PRINT 3D Model V2: Models can be repaired with instant glue if the fractured surface they present is suitable for repair.

Note: In case of defects, cracks or large fractures, it is recommended to manufacture a new model.

To ensure optimal product processing, carefully read the information contained in the instructions for use from the different manufacturers.

7. Cleaning in the dental laboratory

Models manufactured with G-PRINT 3D Model V2 are easy to clean. They can be cleaned with steam, water, and then with alcohol.

The model can also be cleaned with a toothbrush, running water, and soap.

Note: Do not pour boiling water (100 °C) on the model, as it may deform.

8. Waste management

The cured and trimmed material (base plate, support structure) must not be reused. The cured material can be disposed of with household waste. Any unused resin, or 96% ethanol or isopropanol used for cleaning that contains resin residue, must be disposed of through the local waste management service or taken to the appropriate hazardous waste collection point, quoting the safety data sheet.

9. Other observations

G-PRINT 3D Model V2 should only be used by dentists, dental technicians and qualified personnel with specific training.

This instruction sheet reflects the current state of the art and our own experience. The product may only be used for the indications described in section 2. The user is solely responsible for the application of the product. As manufacturers, we are not liable for unsuccessful results, as we are not involved in the processing. The right to compensation for damages is limited exclusively to the market value of our products.

Contact

In case of doubt or incident with this product, please contact **Graphenano Dental, S.L.**

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