

## Instructions for use

### Material description

With ECOsint, Gramm presents a completely new moulding material consisting of 22K gold, bonding agent, and water. Thanks to ECOsint, the range of indication of the advantageous electroforming technique, offering optimum fitting precision and the surrounding of the die, expands.

From time to time, it happens that the anatomical preparation desired cannot be maintained for some reason or another. In such cases, the porcelain layer applied would result in uneven thickness and, thus, increase the risk of tension cracks and flake-off. ECOsint allows to directly reproduce the anatomical shape of the metal framework on the electroformed crown. Small defects in the marginal area or thin, porous points at the incisal edge can be repaired in an easy and comfortable way. ECOsint may also be used to build up splints without great efforts or complicated constructions.

ECOsint consists of 22K gold, plus additives ensuring firing resistance, and water, and therefore the risk of allergic reactions is as minimal as in case of electroforming gold, especially since the bonding agent out of carbon, water, and oxygen supporting the mouldability of this new material resolves into harmless CO<sub>2</sub> and steam when baked. An independent cytotoxicity test proves its excellent biocompatibility.

### Procedure

ECOsint is a water-based, clay-like, pasty material. In case the consistency becomes too hard; the consistency desired is achieved by adding water and mixing it thoroughly with a spatula. However, a more liquid mass requires a longer predrying period and increases the shrinkage of the material.

Rub your hands with a separating agent or with a few drops of olive oil to prevent that ECOsint sticks to your hands during handling.

If opened ECOsint is stored for a long time, it may discolour. But this does not affect the use; even after baking, no differences will occur.

Since gold melts at a temperature of 1,063°C, it would be wise to make sure that the final temperature does not exceed 990°C (because of the inaccurate temperature indication of some furnaces).

It is not necessary to use vacuum during the firing process.

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#### 1 Preparation

- Take only as much ECOsint out of the package as necessary and mix it thoroughly with a spatula. Unused material is prevented from becoming dry by storing it in an airtight, lockable plastic bag at a dry, dark place.
- Roughen the according area of the electroforming item with 110µm aluminumoxide at max. 2 bar and clean it with acetone (to degrease it).
- In order to increase the compound between ECOsint and the electroforming gold, we recommend to put a little bit of the ECOsint material on a glass slab and mix it with water to a thin consistency, then apply it onto the joining gap.

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## 2 Moulding

- Roughly form ECOsint with your fingers or a modelling instrument and stick it to the electroforming crown by means of the diluted "glue" (see 1.3). If ECOsint has become too dry, put it in a plastic bag, add a few drops of water and knead it until it is soft again.
- Since ECOsint is subject to shrinkage, overmould the defect by approx. 15% – as in case of overlaying the porcelain layers.

## 3 Drying

- Besides drying at room temperature, you may also use a conventional hairdryer, a porcelain furnace, etc. We recommend to allow the following drying periods at least (depending on the size of the item):
  - at room temperature 24 hours
  - with a hairdryer 15 minutes at 1,200 W,
  - distance between object and hairdryer 15 cm
  - on a hotplate 10 minutes at 150–180°C
  - in a porcelain furnace dry for 10 minutes with door open, slowly lift the plate to close the chamber (at stand-by temperature of 250°C)

*Start drying at a temperature below 250°C since otherwise the bonding agent dissolves and, thus, causes discolouration of the item.*

- Our tip is to check the dryness level as follows:  
Place the thus repaired item on a plane glass or plastic slab. Remove it after 20–30 seconds. The item is absolutely dry if no condense water has precipitated on the slab.trocken.

## 4 Firing

- Place the item on a firing tray or on refractory die material (avoid contact between items that are not to be connected).
- Firing temperature and delay (no vacuum):
 

start temperature	firing temperature	delay	heat rate
400°C	990°C	20 minutes	55°C/min
- After opening the firing chamber, remove the item and cool it down in front of the furnace.

## 5 Finish

- Acidify the item in a hot, clean neacid pickling bath or in a cleaning unit with magnetic needle.
- Smoothen the surface with a cross-cut HM bur. Always grind in the same direction to prevent overlapping of the material.
- Sandblast the complete compound area with 110 µm (max. 2 bar) aluminumoxide. Then, cover the complete item with Gramm's Galvanobonder (art. No. 910.00.021) following the according instructions.

