

# NEW: FREEPRINT<sup>®</sup> cast 2.0

## Light-curing plastic material for 3D printing of high-precision casting objects



FREEPRINT<sup>®</sup> cast 2.0 (wavelength 385 nm) is a new, light-curing plastic material for additive manufacturing of molds in 3D printers. The material is versatile and can therefore be used for the fabrication of model casting frameworks, in crown and bridge manufacturing, and for pressed ceramics.

The construction of the frameworks took place on the computer with Dentalwings of the 7 series after scanning of the models with the Cares Visual software. The finished files are in the STL format.

FREEPRINT<sup>®</sup> cast 2.0 has a very low viscosity compared to other printing materials, which allows good material spread and provides error-free printing results even with few supports. The printing took place in the P30 by Rapidshape (Figs. 1 + 2).



Fig. 1 Print job directly on building platform

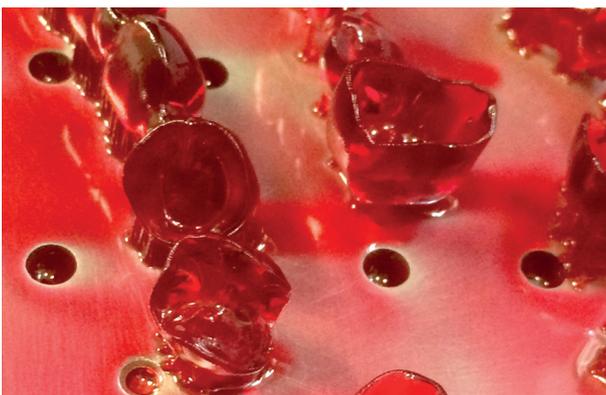


Fig. 2 Frameworks after printing

After printing, the platform is raised. After a draining time of approx. 10 minutes, the objects are detached from the carrier plate and cleaned twice for three minutes each in pure isopropanol in an ultrasonic bath to remove excess material. The cleaning time of the pre-cleaning and main cleaning should not be exceeded. The frameworks are then cured under a protective gas atmosphere (nitrogen 5.0) with 2 × 2000 flashes. This was done with the xenon flash unit “Sheraflash-light plus” (Fig. 3).



Fig. 3 Xenon flash post-exposure under inert gas

The very stable material does not become brittle and can subsequently be processed using cross-toothed plastic milling cutters with smooth running without jamming or tilting, and has a uniform, smooth grinding pattern.

The translucency gives a good feeling for the material thickness. With correctly selected parameters, there is no need for special care, and a good marginal fit is achieved. This also applies to wide-span bridges.

During the embedding (Fig. 4), there is nothing special to consider compared to wax-ups. FREEPRINT<sup>®</sup> cast 2.0 burns out without leaving residues, and there are no cracks formed in the embedding material; the metal surface is without significant irritations.



Fig. 4 Prepared for embedding

With the castable material FREEPRINT® cast 2.0 by DETAX, it is also possible to produce pressed ceramic crowns economically and with convincing quality (Fig. 5).

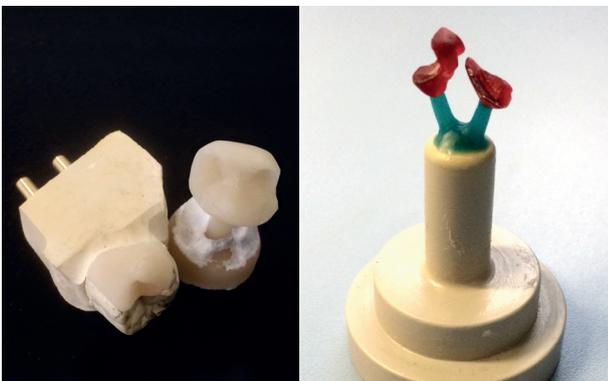


Fig. 5 Pressed ceramics

The minimum thickness maintained prevents fraying in the marginal area and thus ensures gap-free marginal closure.

Thanks to advanced digitization, 3D printing with the quality of FREEPRINT® cast 2.0 is an economically viable manufacturing method for integrating the area of model casting frameworks (Fig. 6) into this working process as a fixed element as well (Fig. 7). By correct



Fig. 6 Model cast of the maxilla, mandible partially, mandible stabilization base

parameter selection, constant quality and a process reliability that cannot be had with modeling work are achieved. If yet the desired result is not achieved, the affected areas are modified, the framework is reprinted and cast without the entire process having to be restarted.

FREEPRINT® cast 2.0 by DETAX is a major step forward into the digital manufacture of restorations. Dental laboratories will not remain unaffected by the ongoing digitalization either. Thus, the combination of an analog casting procedure (Fig. 8) and digital data and master mold production offers the best balance between efficiency and quality.



Fig. 7 Model cast of the mandible, casting channel design



Fig. 8 Casting results CoCrMo



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