



## TECHNICAL DATA SHEET HIGH IMPACT HEAT-CURING ACRYLIC RESIN DPFTPT-011

### 1 GENERALITIES OF THE PRODUCT

Methacrylate polymers have been very popular in dentistry because they are easily processed using relatively simple techniques; have the ability to provide the essential properties and characteristics necessary for use in oral restoration.

One of its principal applications is for total or removable prosthesis to rehabilitate the masticatory, phonetic, and esthetic functions.

Prosthesis is composed of artificial teeth placed on an acrylic base as a support to keep the contact with the oral tissue. Denture bases can be made using heat-curing acrylics that require thermal energy to polymerize using a thermostatic water bath. These resins present advantages such as dimensional stability, handling features, color and biocompatibility with the oral tissues.

High impact acrylic is a product that presents an upgrade in the mechanical properties of the denture bases, particularly the resistance to high impact, due to the development of the formulation which incorporates several monomers to produce a copolymer. This product can be processed under the same techniques as the conventional acrylic, keeping the standard quality characteristics according to ISO 20795-1.

Impact resistance is the energy required to fracture a material under the impact force. The impact is related to the reaction of the stationary object to the collision against a moving object. An impact can be a blow from an external object, or the falling of the prosthesis when it is hit to a hard surface.

### 2 INFORMATION ABOUT COMPOSITION

- Copolymer components:

Polymethylmethacrylate  
Butadiene - styrene copolymer  
Pigments  
Polyester fibers

- Monomer components:

Methyl methacrylate  
Ethylene glycol dimethacrylate

### 3 PROPERTIES OF THE PRODUCT

The physical properties of the polymers are measured in the Quality Control Laboratory, through the use of specialized and calibrated equipment, based on the ISO 20795-1 standard for finished product. The most relevant physical properties are shown in the following table.

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Parameter	Requirement	Experimental Results (Average)
Maximum stress intensity factor	1,9 MPa m <sup>1/2</sup> minimum	2,6
Total fracture work	900 J/m <sup>2</sup> minimum	1088
Absorption	It must not exceed 32 µg/mm <sup>3</sup>	25,36
Solubility	It must not exceed 1,6 µg/mm <sup>3</sup>	0,21
Flexural strength	65 MPa minimum	68,68
Flexural modulus	2000 MPa minimum	2133,62
Residual monomer	2,2% in weight maximum	0,86

Other properties are qualitatively evaluated such as: color comparison, color stability, polishing capacity, translucency, and porosity are within the acceptance limits.

#### 4 USES AND APPLICATIONS

The compositions of High Impact heat-curing acrylic resins Veracril® - Opticryl® is indicated for the preparation of total and partial dentures and removable prostheses. Their characteristics are:

- High Impact heat-curing acrylics can be molded into complex shapes with the application of heat and pressure.
- Provides the essential capabilities and features necessary to use them in the oral cavity.
- Easy to manipulate.
- Show enough translucencies to impart the natural appearance of the oral tissues replaced.
- They do not show color changes or pigmentation over time neither being subjected under body temperatures.
- It is recommended for patients with mental disorders that require dental rehabilitation.

#### 5 QUALITY ASSURANCE OF THE PRODUCT

Acrylic resins are manufactured with high quality raw materials and through a process production standardized and certified under ISO 9001 and ISO 13485. In addition, in the Laboratory of Quality Control verifies compliance with the requirements of ISO 20795-1 for finished product, through specialized teams.

- **Water absorption and solubility:** Check the amount of water absorbed by acrylic resins or the amount of weight they lose when submerged in water. Acrylic is insoluble in saliva or in any other oral fluid.
- **Porosity:** The processed acrylic presents a surface free of imperfections and porosities.
- **Flexural strength and flexural modulus:** It measures the degree of deformation of resins acrylics to be able to withstand the occlusal forces exerted at the time of use, additionally it

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measures the force that a resin supports until fracturing, which guarantees its good clinical performance.

- **Translucency:** An object on the opposite side of the acrylic specimen should be visible.
- **Residual monomer:** The monomer content that may remain during the elaboration of the prosthesis must be minimal to guarantee the absence of irritations in the oral tissues.
- **Impact resistance:** Measures the energy required to fracture the acrylic resin under force impact. The impact is related to the reaction of a stationary object to the collision against a moving object. An impact can be a blow from an external object, or the falling of the prosthesis when it is hit to a hard surface.

### 6 INSTRUCTIONS FOR USE

#### 6.1 Technical polymerization thermostat water bath

- The metered polymer is poured over the monomer in the indicated proportions, cross-mixing continuously for approximately 30 seconds, to avoid the generation of air and to ensure that the polymer particles are fully incorporated with the monomer.
- The container is covered to avoid the inclusion of air until the mixture is in the plastic stage (when the mixture does not adhere to the spatula or to the walls of the container).
- Finally, the flask is packed and press.

#### 6.2 Temperature and polymerization times

Steps	Temperature (°C)	Time (min)	Means
1	73	90	Water
2	100	30	Water
3	23	30	Air
4	23	15	Water

The dental professional is directly responsible for the diagnosis and treatment generated to the patient for the proper use of the product. The dental laboratory is directly responsible for the correct use of the product to prepare the denture bases for the different types of rehabilitation. See complete information in the instructions for use of the product.

### 7 COMMERCIAL PRESENTATIONS

#### Individual presentations:

- Bottle per 30, 40, 60, 125, 250, 500 and 1000 g; 2.5 and 10 kg; 1, 5, 22, 44 and 55 lb (for USA only).
- Drum per 20, 25 and 125 kg.

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Polyethylene bottle; plastic or metal drum.

**Kits presentations:**

- 1000 g + 500 ml
- 500 g + 250 ml
- 250 g + 110 ml
- 125 g + 110 ml
- 60 g + 55 ml
- 30 g + 15 ml
- Free sample of 30 g + 15 ml

**8 STORAGE AND PRESERVATION CONDITIONS**

- Keep the product in a cool and well-ventilated place, away from all flames or sources of spark, heat and direct sunlight.
- Do not smoke.
- Store away from oxidants, acids, bases and polymerization initiators.
- Do not store at temperatures above 30 °C (86 °F).

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