



**TECHNICAL DATA SHEET**  
**EZ-CRYL® ACRYLIC RESIN POLYMERIZED BY MICROWAVE**  
**DPFTPT-065**

**1. GENERALITIES OF THE PRODUCT**

Methacrylate polymers have become very popular in dentistry because they are easily processed using relatively simple techniques, and they offer the essential properties and features required for oral restorations.

One its applications is the elaboration of total, partial and removable prostheses that restore the chewing, phonetic and stetic function. These prostheses are compound by different artificial teeth placed on a acrylic base as a support to preservate the contact with oral tissues. The acrylic bases can be elaborated using thermo-polymerized acrylic that needs heat to be polymerized, aplying either a thermostatic bath or a microwave oven. These resins have advantages as dimensional stability, handling features, color and compatibility with oral tissues, and also they allow to be trimmed and polished easily.

The microwave polymerization process involves the generation of heat within the resin, using electromagnetic waves produced by a generator called Magnetron. Methyl methacrylate molecules are able to be directed by the electromagnetic field at a frequency of 2450 MHz, and change their direction 5 billion times per second approximately, which implies many intermoleculares collisions and cause a quick polymerization; therefore, the process can be done in a relatively short time in comparison to other conventional techniques (temperature curve in thermostatic bath).

**2. INFORMATION ABOUT COMPOSITION**

- Polymer components: Polymerized Acrylic by microwaves (Type 5)  
Poly (methylmethacrylate).  
Pigments.  
Polyester (If a veined reference is required).
- Monomer components: Polymerized Monomer by microwaves (Type 5).  
Methyl methacrylate.  
Ethylene glycol dimethacrylate.

**3. PROPERTIES OF THE PRODUCT**

The physical properties of polymers are measured in New Stetic's Quality Control Laboratory by means of well-gauged high specialized equipment, according to ISO Standard 20795 for finished product.

<b>Creation date</b>		<b>Elaborated by:</b>		<b>Revised by:</b>	
2011-07-12		Technical Analyst of Medical Devices		Prosthetic Solutions Analyst	
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The most relevant physical properties of acrylic polymerized by microwave are shown in the following chart:

Parameters	Requirements	Experimental results
Absorption	Not higher than 32 $\mu\text{g}/\text{mm}^3$	22.05
Solubility	Not higher than 1.6 $\mu\text{g}/\text{mm}^3$	0.31
Flexural Strength	65 MPa minimum	67.08
Flexural Modulus	2000 MPa minimum	2272.41
Residual Monomer Content	2.2% maximum (in weight)	0.71

Other physical properties like color, color stability, polishing capacity, translucency, and porosity are evaluated qualitatively, and these properties meet with the limits accepted.

#### 4. USES AND APPLICATIONS

The composition of the EZ-Cryl acrylic resins polymerized by microwave (polymer and monomer) are intended for the elaboration of total, partial and removable denture bases. The main characteristics are the following:

- Acrylic polymerized by microwaves can be molded in complex forms by applying heat and pressure.
- They have the essential capacities and the necessary properties to be used in the oral cavity.
- They are easy to manipulate.
- They have enough translucency to give the natural appearance of replaced tissues.
- They do not change their color or their pigmentation through time, even if they are subjected to body temperature.
- Using the polymer-monomer ratio as it is indicated, the possible vertical and linear contractions of the acrylic can be avoided.

#### 5. QUALITY ASSURANCE OF THE PRODUCT

Acrylic resins are made from the highest quality raw materials through a completely standardized production process which conforms to ISO Standard 9001 and ISO Standard 13485. Moreover, in its Quality Control Laboratory, New Stetic verifies the compliance of ISO Standard 20795 according to the quality requisites for the finished product, using specialized equipment.

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**Water absorption and solubility:** Verifies the amount of water that can be absorbed by acrylic resins or the amount of weight that they can lose when are immersed in water. Acrylic is not soluble in saliva or in any other oral fluid.

**Porosity:** The surface of processed acrylics is free from imperfections and porosity.

**Flexural Strength and Flexural Modulus:** Measure the degree of distortion suffered by acrylic resins under the occlusion forces that are applied during the use; additionally, the force supported by a resin until its fracture is also measured. This aspect ensures the good clinical performance of resins.

**Translucency:** An object placed at the opposite side of the test tube containing acrylic resin must be visible.

**Residual Monomer Content:** The amount of monomer that can remained during the prosthesis elaboration, must be minimum in order to guarantee the absence of irritations in oral tissues.

## 6. INSTRUCTIONS FOR USE

The EZ-Cryl polymer must be used with the EZ-Cryl monomer, and both must be polymerized by a microwave oven under the instructions given in the manual of the product.

### 6.1 POLYMERIZATION MICROWAVE TECHNIQUE

This technique guarantees prosthesis with less residual monomer and it reduces the polymerization time to 4 minutes. The two most relevant differences about the conventional technique are the type of equipment for the polymerization process and the material of the flask.

#### 6.1.1 Microwave oven features:

- Any oven that has a minimum power of 900 watts and a maximum of 1350 watts. The maximum power corresponds to the output power or cooking power declared in the manual of the oven.
- It should have a turntable plate with the aim to help to distribute the heat generated by the friction of the molecules and allows a homogenous polymerization of the acrylic, avoiding an overheating on its punctual areas.
- Programmable powers with an increase of the 10% and it should have a programmable chronometer in minutes.

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**6.1.2 Features of the flask**

To this resin must be used the flask recommended by New Stetic, which is manufactured from engineering plastic reinforced with fiberglass, screws, expulsion disk and stainless steel assembly nuts, that gives to the flask high properties of mechanical, chemical and thermal strength; necessary features to get a good performance in its use.

**6.1.3 Recommendations to flask process and elimination of the wax**

It is performed by conventional technique.

**6.1.4 Flask**

At this manufacturing stage, it's important to take into account that the expulsion disk of the base of the flask, be correctly placed in the base hole, and verifying if there is any plaster excess or waste between the contact surfaces of the base and the counter flask, with the purpose of protect it from the concentrated efforts at the moment to do the pressing. Finally, cover the prosthesis with plaster and position the screws by adjusting them to eliminate the excesses of plaster, wait for the plaster to set.

**6.1.5 Elimination of wax**

The wax can be eliminated by the using of conventional technique, and pouring hot water directly on the wax. If it is desired to eliminate it by means of the microwave oven, remove the screws, take the flask to the oven with the expulsion disk placed down and turn on the oven for 1 minute in the maximum power. Remove the flask from the oven, open it and remove the wax; eliminate the wax excesses using cotton moistened in water, close the flask with the screws and take it to the oven, programming it in the maximum power for 2 minutes.

**6.1.6 Preparation of the mixture**

Follow the same instructions declared by the conventional technique, only take into account that to the microwave technique its necessary the mixture achieve the filamentous stage to begin with the packing process.

**6.1.7 Handling time**

The mixture allows a working time of 10 minutes approximately, taking into account the temperature of the environment.

**6.1.8 Packing**

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Put the filamentous mixture inside the flask.

**6.1.9 Pressing**

- Hydraulic press: Press the flask without the screws and using the metallic disk until it has completely adjusted; taking care does not overpass the 1500 psi.
- Manual press: Press the flask without the screws and using the metallic disk until it has completely adjusted.
- If there is not a press, the flask can be adjusted using de screws. In this case the adjustment should be done pressing in an alternatively and gradually way, and taking care the acrylic does not achieve the plastic stage.
- Close and press the flask again until it has completely adjusted, and taking care does not overpass the 2000 psi. Do not keep the flask under pressure for long time periods. After the final pressing and still being under pressure, put the screws using the key that comes with the product. It is not necessary tighten excessively the screws.

**6.1.10 Polymerization**

Place the flask inside the oven with the expulsion disk placed down. Perform the polymerization during 4 minutes, according to the following chart:

Maximum power of the oven (Watts)	Programmed Power (%)
900 - 1100	100
1100 - 1250	90
1250 - 1350	80

Removes the flask from the oven and allow it gets cold at room temperature. Do not subject the flask to sudden refrigeration with cold water.

**6.1.11 Finish the flask process**

Remove the screws, open the flask using the lateral slots, and hit the expulsion disk placed in the base of the flask using a rubber or plastic hammer, and never use a metallic hammer.

**6.1.12 Polishing**

Use the habitual polishing procedure according to the dental laboratory techniques.

For further information about microwave technique, please search the web site [www.newstetic.com](http://www.newstetic.com).

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Address: Cra. 53 N° 50-09  
Guarne (Antioquia) COLOMBIA.  
Telephone: (574) 550 00 00  
Fax: (574) 551 31 34

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**NOTE:** The professional in dentistry is the direct responsible of the diagnosis and treatment generated to the patient for the suitable use of the product. The technologist/technician in dental laboratory is the direct responsible for the correct use of the product in the elaboration of denture bases of the different types of restoration.

**7. COMMERCIAL PRESENTATIONS**

**EZ-Cryl® Heat-polymerized individual polymer:**

Jar of 60 g and 500 g.

**EZ-Cryl® Heat-polymerized individual monomer:**

Amber glass bottle of 55 ml and 250 ml.

**EZ-Cryl® Heat-polymerized Kit:**

Jar per 500 g of acrylic powder + 250 ml of acrylic liquid.  
Jar per 60 g of acrylic powder + 55 ml of acrylic liquid.

**8. EXPIRATION DATE**

Ez-Cryl®, Polymerized by Microwave, Powder: Four (4) years.  
Ez-Cryl®, Polymerized by Microwave, Monomer: Four (4) years (on kit).

**9. STORAGE AND PRESERVATION CONDITIONS**

- Storage: Keep the product in a cool and well-ventilated place.
- Keep it away from any flame or spark source.
- Keep it away from heat and direct sunlight.
- Do not smoke.
- Storage it away from oxidants, acids, bases, and polymerization initiators.
- Do not store for long periods of time.

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REFERENCE DOCUMENT: DPDDPR-019  
UPDATE: 2017-12-02  
VERSION: 00