

KIT

# ALGLASS

ALUMINA GLASS COMPOSITE  
FOR STRUCTURE AND COPING MAKING



M.S. 1180084100001

# CELMAT



*In 2000, during an informal conversation between a Dental prosthesis technician and a material engineer, they pointed out the lack of prosthesis material in the Brazilian market. They discussed that the worldwide market tends to eliminate the metal of the structures (metal free) and the Alumina Glass is relevant but not much utilized in Brazil due to the high price as it is an imported material. Adding the physics and mental power, an agreement with UFSCAR (Federal University of São Carlos) had been signed and working hard with many efforts and dedication, the Alumina Glass composite was created, adding all the chemistry, physics and handling features required to be used in prosthesis with benefits that distinguishes from the imported material. The ALGLASS was created; “AL” means alumina and together with GLASS adds its potential to each other. It was still required to have equipments compatible with the Brazilian reality to enable the use of state-of-the-art technology by the most number of Dental prosthesis technicians. From this point, a partnership was made with EDG Equipamentos, that designed a specific and complete line of products to adequate the “ALGLASS” process. After it, CELMAT company was created with a technological base and the target to produce and commercialize materials with high technology for odontological use. As ALGLASS, CELMAT also utilize the quality of its individual components, that added, multiplies its potential.*

**CELMAT**

## 1 Mixing to obtain the casting slip



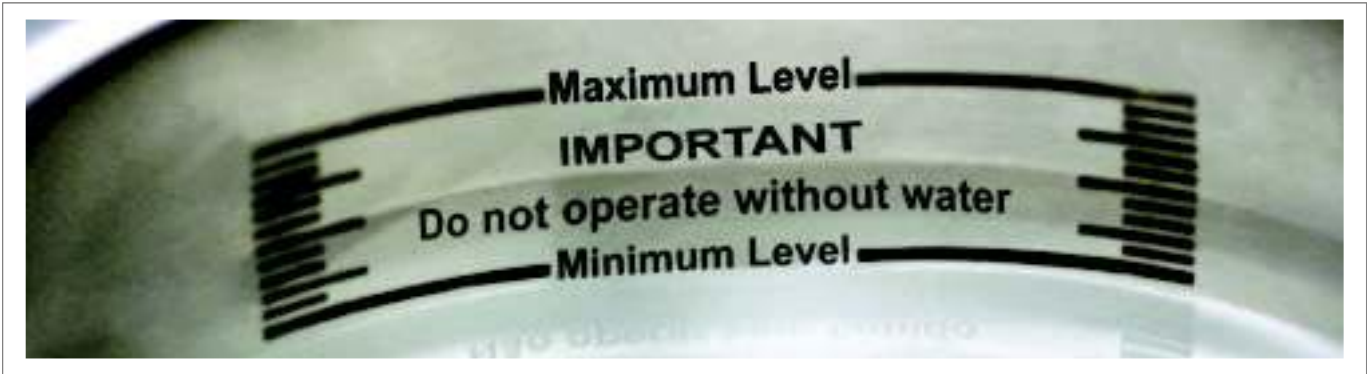
- 38g of alumina Alglass powder
- 5ml of Alglass liquid
- 2 drops of Alglass dispersant

## 2 Instruction for Ultrasound use



Never turn it on without water on its recipient

## 3 Fill with water until the indicated level



Caution: The indicated level must be respected. The use of the equipment without water may damage the equipment.

## 4 Add ice on its recipient



Caution: Do not surplus the volume of water. Avoid the entrance of water into the Beaker

5



Fill a dry BEAKER of 50ml with the entire Alglass liquid bottle and add 2 drops of Alglass dispersant. Take it to the Ultrasound equipment for 30 seconds.

6



On the ultrasound or vibrator, slowly add the alumina on small portions into the BEAKER, mixing with the glass spatula (use the canted side).

7

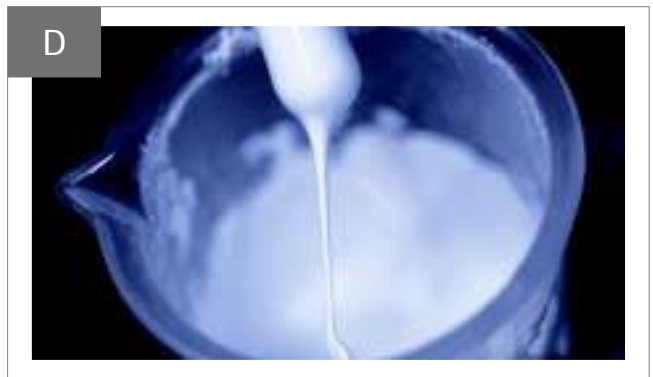


When the mixing starts to get difficult to manipulate, take it for 2 minutes on the ultrasom until it gets homogeneous. Repeat the process if necessary.

8

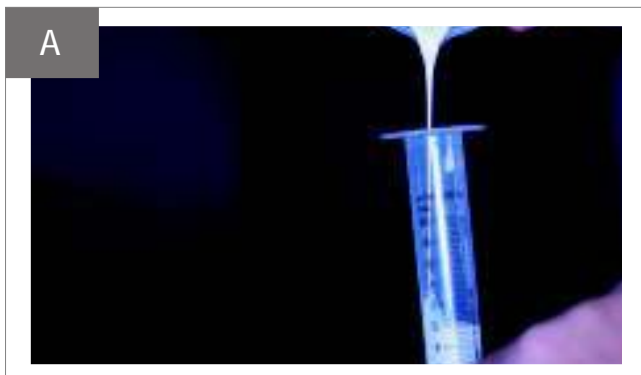


After all the alumina powder is dissolved, take the BEAKER to the ultrasound for 7 minutes to finish the homogenization process.

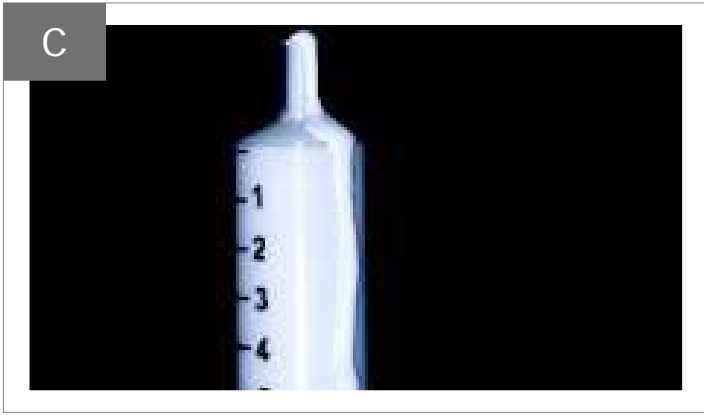


After its manipulation, we obtain a mixture denominated casting slip.

9



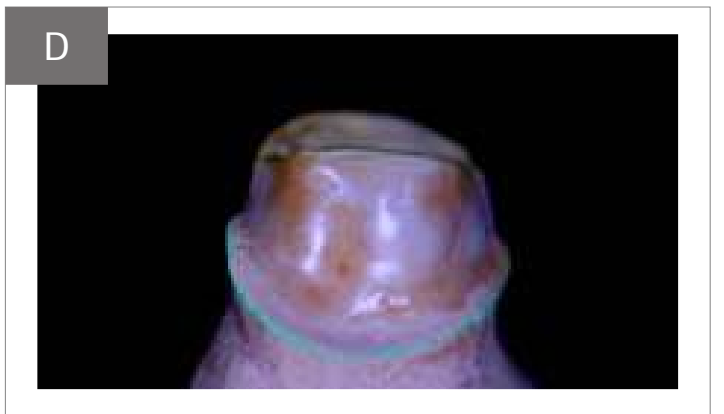
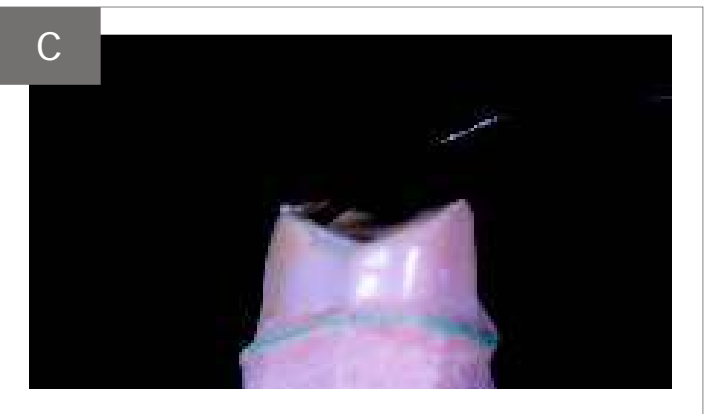
Put the BEAKER content in a 20ml syringe, removing the air from inside. Take it into the freezer for 20 minutes before its utilization. After 20 minutes, distribute the volume into smaller syringes of 5 or 10ml for a better use. Always keep it hermetically closed without air and into the freezer. After this step, the casting slip will be ready to use.



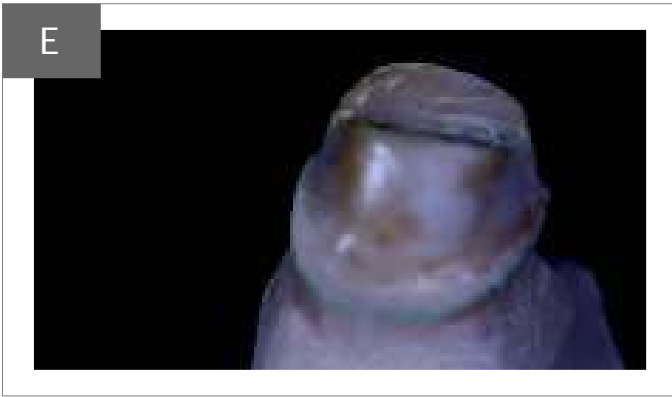
*Caution: when the casting slip is frozen, wait from 5 to 10 minutes before use, being able to make the content uniform when pumping the syringe piston. Two different techniques, the direct and indirect, can be used for the casting slip application preparation.*

## 10 Process to isolate the die model: Direct technique

*See attachment 1*



With a warm sounding lead, apply a fine layer of vegetal fat on the die model, relieving the retentions and regions with sharp angles.



On the cervical region, which requires adaptation, use a flat brush to remove the excess of vegetal fat.



Delimit the edge of the troquel with a wax graphite to avoid excesses. The excess can stimulate retention, breaking the coping when it is removed.

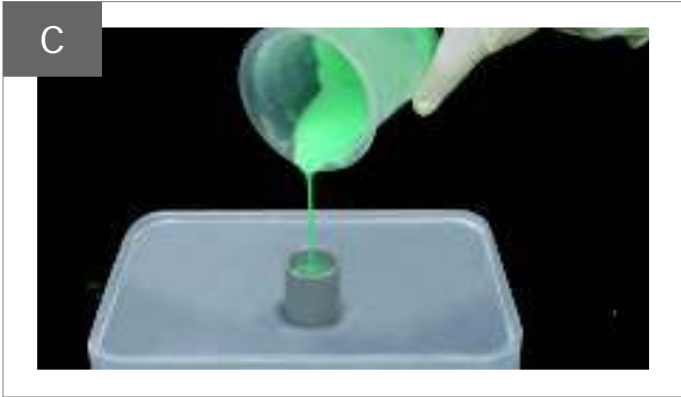
**Caution:** It is important to keep the casting slip always frozen. Make a silicone support, adapting the dapin kept previously in the freezer. Dry the bottle and the silicone support to remove the small drops that maybe created.

## 11 Process to duplicate the die model: Indirect technique



Prepare the die models to make the duplication possible.

Prepare a support of a plastic tube or cardboard, always utilizing silicone of good quality.



Fill the bottle with silicone (prepared according to the manufacturer instructions).



Prepare the Alglass plaster with vacuum or manually, according to the following proportion: 20g of Alglass plaster and 6ml of distilled water.



Leak the Alglass plaster into the silicone and take out the mould.



Remove the die models from the silicone and put them on a humid paper napkin to make them humid. Apply the casting slip as indicated by the direct technique. The Alglass plaster will contract during the sinterization process and will be released from the coping.

## 12 Application of the casting slip on the direct technique



On a glass plate, use 2 drops of isopropyl alcohol, 1 drop of distilled water and mix a small quantity of casting slip with a brush.



Quickly apply this mix on a die model and make a fine layer.



Always dries the brush before starting the application of the casting slip.



Apply small proportions of the casting slip on the die model to facilitate the drying process.

**G**

Follow the instructions below:  
Prepare orientation guides around 0,5 mm thick.

**H****I**

Fill out the spaces with casting slip, making it uniform and follow the criteria of creating a metalo ceramic coping (reduced form of the tooth). Always check out the thickness.

**J****L**

When the layers are thick, wait a few seconds before doing the next layer.

13



After the casting slip application, wait from 15 to 30 minutes. After this period, the casting slip loose water, becoming resistant. Using a bistoury, rectify the structure to obtain the desired form and remove the excesses of the edge.

14



To remove the coping, take it to the furnace at a 100°C temperature for 5 minutes.  
*Caution: only direct technique.*



After this period, carefully remove the coping from the troquel supporting the fingers and keeping a parallel position.

## 15 Sinterization



Sinterization :

Take the coping (to be sinterized) on a soft blanket with the edge at the up side (without vacuum). Follow the table below with the time and temperature.

### Sinterization (Direct Technique)

T1 - 500 °C	T2 - 1120 °C
V1 - 20 °C/min	V2 - 70 °C/min
Pat1 - 12min	Pat2 - 30min

*See attachments 02, 03 and 04.*

### Sinterization (Indirect Technique)

T1 - 200 °C	T2 - 1120 °C
V1 - 5 °C/min	V2 - 30 °C/min
Pat1 - 20min	Pat2 - 30min

*See attachments 02, 03 and 04.*

## 16 Coping adjustments after sinterization (Direct and Indirect techniques)

*See attachment 05*



After sinterization, using an adequate drill and rubber, give the necessary finishing to the coping doing the thickness adjustment, edge correction and adaptation. Remember that the minimum thickness must not be less than 0,5 mm.

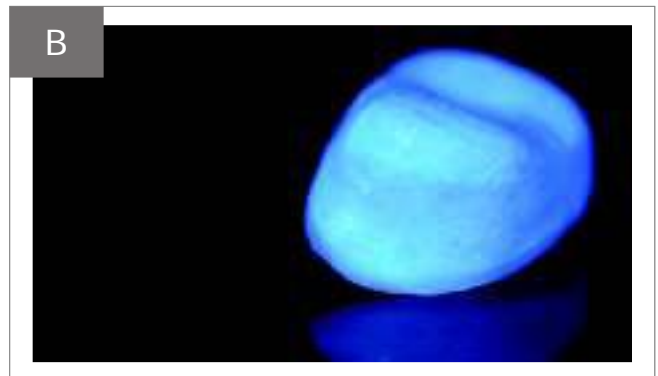


## 17 Cracks checking (Direct and Indirect techniques)

Made all the adjustments, use the verifier of cracks Alglass, before the glass infiltration, that can be made of two forms:



First form: Put 1 drop of the cracks checking substance and 1 drop of distilled water on a glass plate and the coping on the top.



Second form: Apply the cracks checking substance with a brush.

A

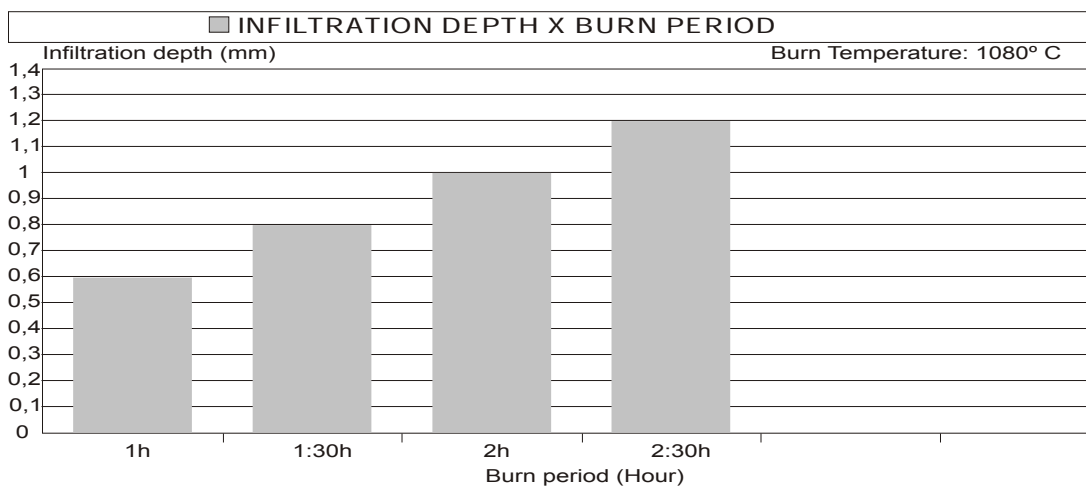


Dust the coping surface with a brush until all the powder deposited by the consuming process is removed. Using a ware base or a plate of glass, put a portion of Alglass's glass with the desired color. Add distilled water drop by drop and manipulate with a spatula of glass or plastic until getting an arenaceous consistency.

B



Using a brush, re-covers the coping with glass leaving the cervical margins without cover about 2 mm (to avoid internal infiltration of this glass).



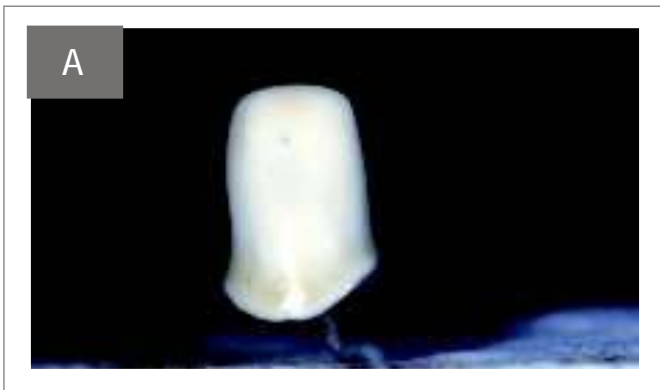
Influence of the burn period on the infiltration depth:

1h infiltrates 0,6mm      2h infiltrates 1mm  
 1h 30min infiltrates 0,8mm      2h 30min infiltrates 1,2mm

## INFILTRATION TABLE

T1 - 200 °C	T2 - 1100 °C
V1 - 20 °C/min	V2 - 70 °C/min
Pat1 - zero	Pat2 - 60min

### 20 Infiltration holders



A plate or a platinum pin can be used as an infiltration holder.



Or a holder made by Alglass plaster.

The cervical margins should not touch the coping internal lateral faces.

### 21 Finishing



The excess withdrawal of the glass and adjustments on the adaptation will be made by special rubbers and drills and jet of aluminum oxide.



When using the special drills, cool with water at rotations from 10 to 15 thousand rpm, Jet with aluminum oxide: meshes (from 125 to 325) using pressure from 30 to 45 PSI (from 2 to 3 Kg/cm<sup>2</sup>).

Attention: first remove the internal glass and verify adaptation, after it, remove the external glass.

See attachment 06

## 22 Ceramic Application



When preparing the coping surface to receive the ceramic, it is necessary to make a control burn and equalization of glass, as indicated by the following table:

Control and Equalization of Glass	
T1 - 500 °C	Pat.2 - 5 min
T2 - 1000 °C	VA - 0
Vel. - 55 °C / min	

A ceramic furnace can be used. Jet the coping once again to remove the excess of glass before the ceramic application. Utilized ceramics: all of which are aluminized. Coefficient of thermal expansion:  $7 \times 10^{-6} \text{ m/Co}$ . Flexional hardness: From 400 to 500mPa.



This is Alglass. The easiness that fits on your hand.

# Attachments

## Equipments

1. FV Plus Sinter
2. Sinter Plus
3. Alumini Sinter 20P
4. Alumini Ceram Sinter
5. Alumini Sinter Press
6. Moto Torre EDG
7. Professional Jet Slim
8. Bunsen burner

**SALV**  
®Pat Req.

01



02



03, 04 e 05



**SALV**®Pat Req. – Heating system of long durability  
2 years of total warranty

06



07



08

