

PROCESSING THE DENTURE

After the trial dentures (Acrylic base, wax and teeth) have been waxed, they are prepared for denture processing to substitute the acrylic record base and the wax with a hot cure denture base attached to the teeth. This is done in the following steps:

- 1) Flasking.
- 2) Wax elimination.
- 3) Mixing.
- 4) Packing.
- 5) Curing.
- 6) De-Flasking.
- 7) Shaping and Polishing

Flask: Is a metal tube used in investing procedures.

1-Flasking:

The process of investing the cast and a waxed denture in a flask to make a sectional mold used to form the acrylic resin denture base.

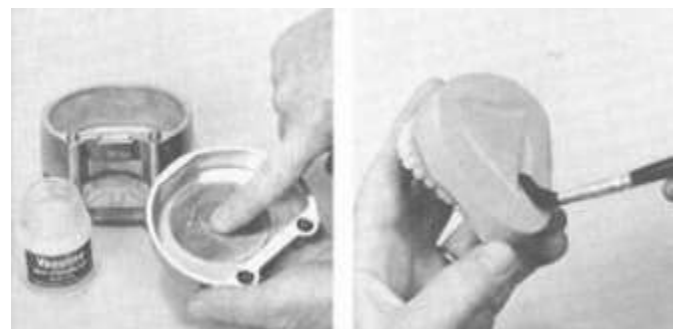
The flask is made of 3 major parts, **(1)** lower half (which contains the cast)

(2) upper half and **(3)** the cover or lid. The lower half may have a round plate, covering a round hole in the base of the lower half.

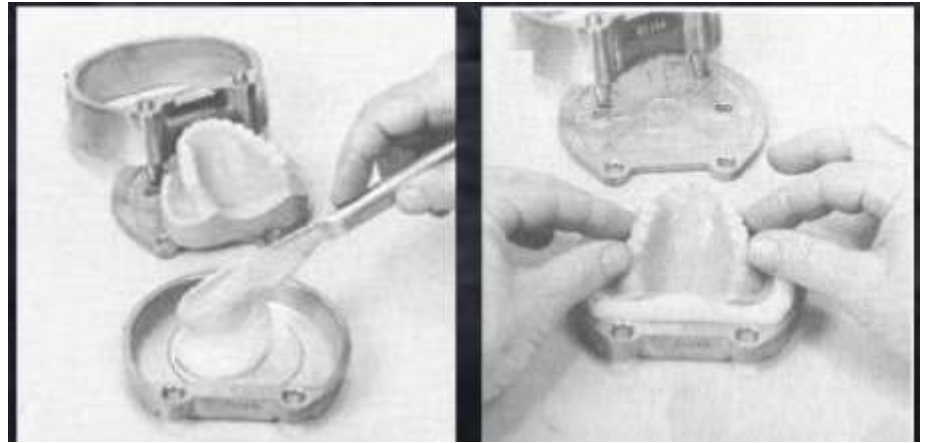
1) The master cast and the wax dentures are placed in the flask, to insure that the cast fit in the flask.

2) The Inner surface of the flask is coated with Vaseline, while the base of the cast is painted with separating medium (cold mold seal). To prevent the investment material (plaster of Paris) from attaching to the cast.

3-The first layer of gypsum investment is poured in the lower half and the cast is placed on top of the investment.



4-After the set of the first gypsum investment layer, a plaster separating medium is painted on it, to prevent the sticking of the second layer of gypsum investment to the first layer.



5-The upper half of the flask is put in place, then the second mix of gypsum investment is placed on the first layer and covers the wax, denture base and teeth.



6- Before the second layer sets the lid or flask cover is put in place and tapped to sit properly allowing the excess gypsum to flow out of the holes in the lid.



2 Wax elimination

After the complete set of the gypsum the flask is ready for the next step which is "Wax elimination", in which the flask is placed in boiling water for 4 to 6 minutes. Then it is removed from the water and opened. Then the wax is washed away with boiling water. After that the mold is washed with boiling water containing detergent, then finally washing it with clean boiling water.

After the stone of the flask is dry, the inner side of the mold and the cast are painted with a separating medium. The separating medium must not come in contact with the teeth because wax residue on the teeth is contaminant and causes adhesion failure with the denture resin.



3-MIXING

Acrylic resin dough is made by mixing the powder (polymer) and liquid (monomer) to form dough, which is packed into a gypsum mold for curing. The ratio of powder to liquid is important since it controls the workability of the mix as well as the dimensional changes on setting. The mixing should be done in a clean jar which should be covered to prevent evaporation of the monomer.



4- Packing:

It should be done when the mixture reaches dough stage, as the dough is rolled into a rod-like form and placed in the upper half of the flask then a polyethylene (nylon sheet) is placed over the dough

in the upper half and then the two halves of the flask are closed until they are almost in approximation, this is done to spread the dough evenly throughout the mold. Then the two halves of the flask are separated, the excess material at the borders of the denture is removed by a wax knife, and additional resin is added at any places that are deficient. At least two trial closures, the polyethylene sheet is removed and then the two halves of the flask are closed under pressure by bench press of about 100 Kg/cm². Then the flask is put in a spring clamp and the clamp is close tightly.



5_ CURING

It is polymerization of the hot cure acrylic to produce the final denture. The material is cured by heating in a water bath; pressure by clamp is applied during curing for the following reasons:

- 1- To decrease the effect of thermal expansion.
- 2- To decrease the polymerization shrinkage.
- 3- To increase the evaporation of monomer thus decreases porosity.

Types of curing cycles for heat cure acrylic:

- 1- Short curing cycle .
- 2- Long curing cycle .

1- Short curing cycle:

The denture is placed in water at room temperature and the curing temperature is programmed to 74 °C for one and half hour followed by 100 °C for one hour.

2- Long curing cycle:

The curing temperature is programmed to 74 °C for 8 hours. Polymerization can occur at any temperature but it is very slow at temperature below 70 °C, the best curing cycle is the long curing cycle because most of the conversion of monomer to polymer occurs during the period at 70 °C and during this time the dough itself may approach 100 °C because the polymerization reaction is exothermic.

6-Deflasking

Deflasking is the process of removal of the processed denture from the flask and investment mold. Before deflasking of the processed denture begins the flask is left to cool to room temperature. If not, increased distortion of the acrylic may occur.

7-shaping & polishing

In this step any excess acrylic is removed from the processed denture by the use of stone wheel burs, stone burs, and steel burs. Care must be taken not to heat the denture during grinding, because this may cause distortion of the denture base. Finally, the denture should be smooth and clean, as no plaster and no deep scratches should remain after the preparation for polishing.

