Impression for Complete Denture

Dental impression: a negative likeness or copy in reverse of the surface of an object; an imprint of the teeth and adjacent structures for use in dentistry.

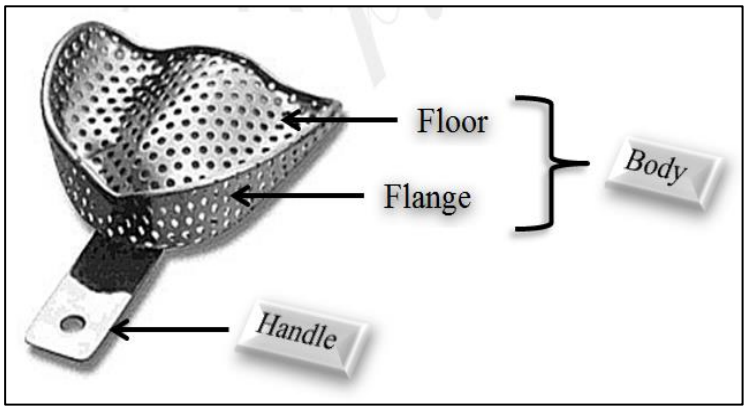
Complete denture impression: is a negative registration of the entire denture bearing, stabilizing and border seal areas of either the maxilla or the mandible present in the edentulous mouth.
In complete denture prosthesis, we make two impressions for the patient:

1- Primary impression.
2- Final or Secondary impression.

To make an impression we should have a suitable tray and impression material.

***Tray*:** It is a device that is used to carry, confine and control the impression material while making an impression.
During the impression making, the tray facilitates insertion and removal of the impression material from the patient's mouth.

Parts of the tray

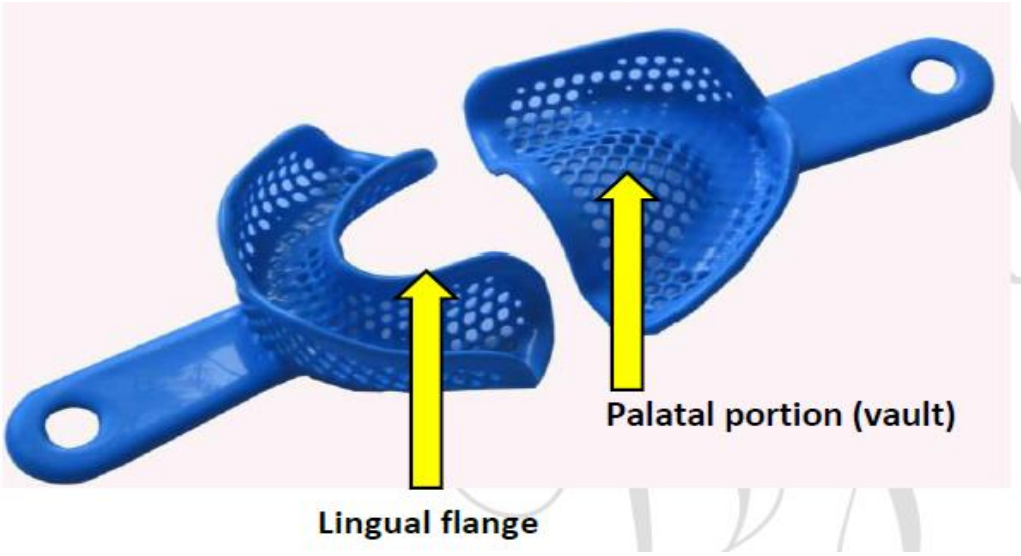


1- Body: It consists of:
a) Floor.
b) Flange.

2- Handle

It is an extension from the union of the floor and labial flange in the middle region **(midline)**, it is **(L)** in shape so that, it will not interfere with lip during impression procedure.

- The difference between upper and lower tray is that in the upper tray, there is the palatal portion we called (vault) and in the lower tray there is the lingual flanges.



In general there are two types of trays

1-Stock tray: It is used for primary impression procedure.

2-Special tray (individual tray) (custom tray): It is used for final impression procedure.

I- Stock tray:

It is an impression tray serves to carry the impression material to the mouth and support it in the correct position while it is hardening. This type of trays can be used for making primary impression. It makes from different materials such as Aluminum, Tin, Brass or plastic, in variety of shapes, sizes to fit different mouth.

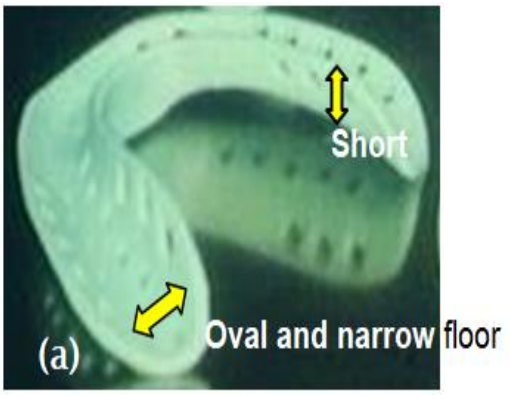
Types of stock trays

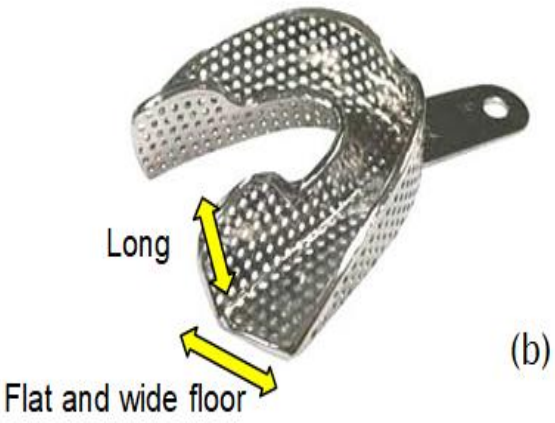
A. Stock tray for dentulous patient

B. Stock tray for edentulous patient

We can distinguish between them by:

Stock tray for edentulous	Stock tray for dentulous
• Short flanges. • Oval and narrow floor.	• Long flanges. • Flat and wide floor.





Classification of stock tray according to the impression material used

1- Perforated stock tray: used with alginate impression material.

2- Non-perforated stock tray: used with sticky impression material like impression compound.

Factors affect the selection of the stock tray

1- The type of material used in the primary impression procedure, like impression compound we used non-perforated tray, because it will be stick on the tray. And if we use alginate material we should use perforated stock tray for mechanical retention of impression material to the tray surface.

2- Size of the arch, stock tray comes in different sizes.

3- Form of the arch, (ovoid, square, V-shaped).

The stock tray must cover all the anatomical landmarks needed in complete denture and give a sufficient space (4-5 mm) for the impression material in all directions.

Primary impression

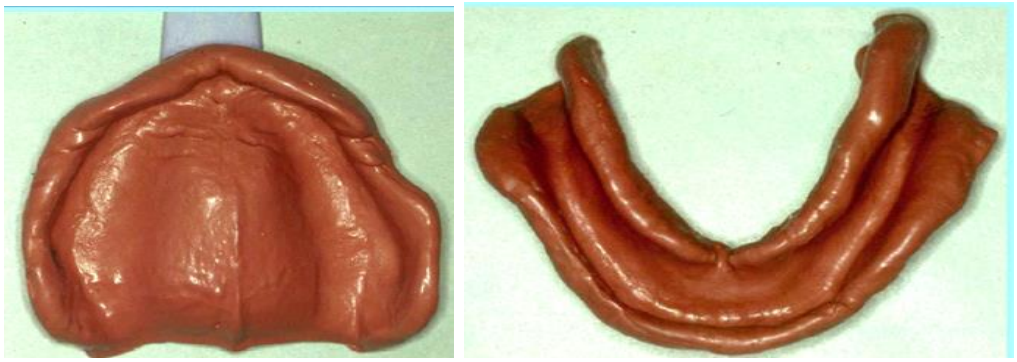
a negative likeness made for the purpose of diagnosis, treatment planning, and/or the fabrication of a custom impression tray. It is the first impression made for the patient and from which the study cast was produced. These impressions are obtained by a stock tray.

When the primary impression is made, the objectives are to record all areas to be covered by the impression surface of the denture and the adjacent landmarks with an impression material.

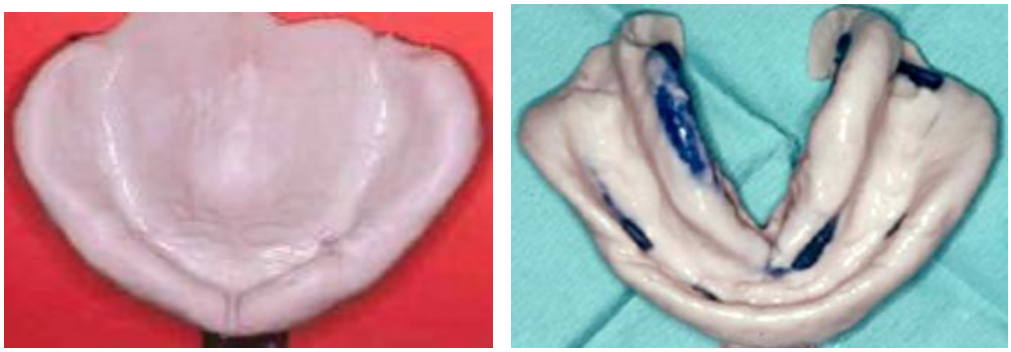
Materials used for making primary impression

1- Impression compound.
2- Alginate impression material.
3- Putty body silicone rubber base.

Compound primary impression



Alginate primary impression



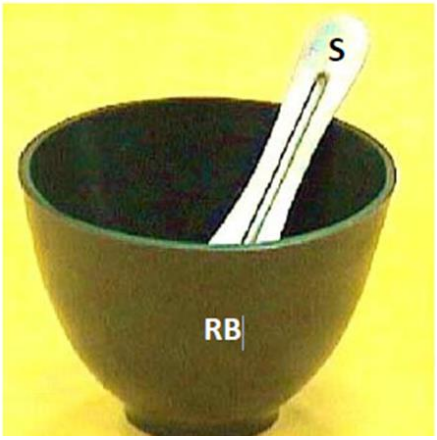
Putty body silicone primary impression

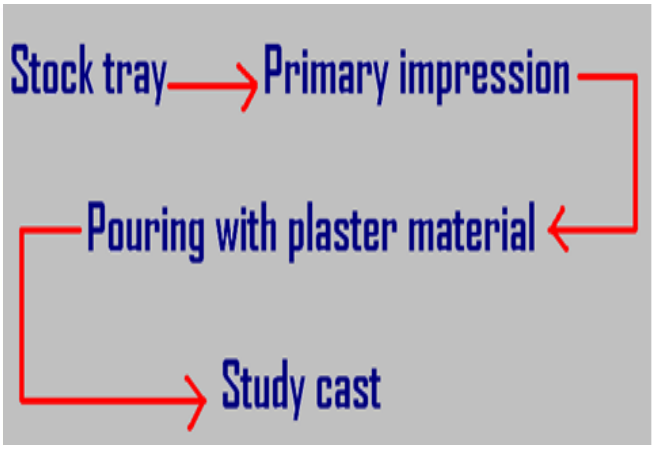
Production of study cast (primary cast)

The Primary cast (study model or diagnostic cast) is produced by pouring the primary impression with ***plaster*** which is the positive reproduction of the oral tissues.

The plaster mixed with water by the saturation method in the rubber bowl and pour in the impression compound impression material after beading and boxing of the impression. When the plaster becomes hard, the cast is separated from the impression by the use of hot water (***55-60ºC***). When using very hot water, the impression compound will be sticky and it will be difficult to remove from the cast. The special tray will be constructed on the primary or study cast which is used to make final impression.

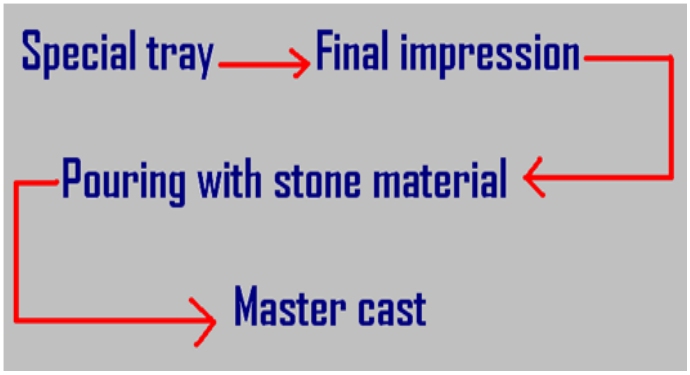
After construction of special tray, it is tried in the patient mouth and checked for proper extension and adaptation on the alveolar ridge, as good impression cannot be obtained unless this step is made. So a correct special tray is a primary fact in obtaining a good working impression.





Final or secondary impression

It represents the completion of the registration of the surface or object. It is a negative likeness or registration of the entire denture bearing, stabilizing area and border seal area of the mandible and maxilla for the purpose of fabricating prosthesis**.**
This impression is made with special tray and poured with **stone material** to produce the **master cast**.



Master cast (definitive or final cast): A replica of the tooth surfaces, residual ridge areas and or other parts of the dental arch and or facial structures used to fabricate a dental restoration or prosthesis.

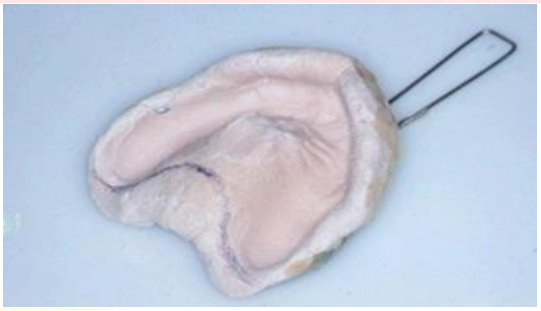
Materials used for final impression:

1- Zinc Oxide Eugenol impression material.
2- Alginate impression material.
3- Impression plaster.
4- Elastomers impression materials (Rubber base).
a- Polysulphide (rubber base).
b- Silicone (light body).
c- Poly ether.

Irrespective of which material is selected, the optimum result will be achieved only if the custom tray has been constructed and refined correctly.

Alginate impression

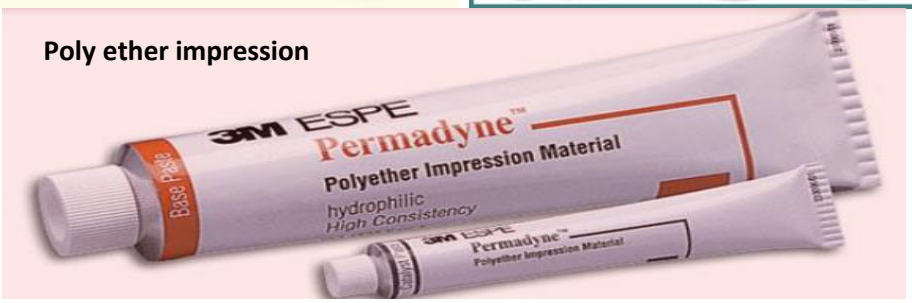
Impression plaster



Polysulphide impression

Silicone impression

Poly ether impression

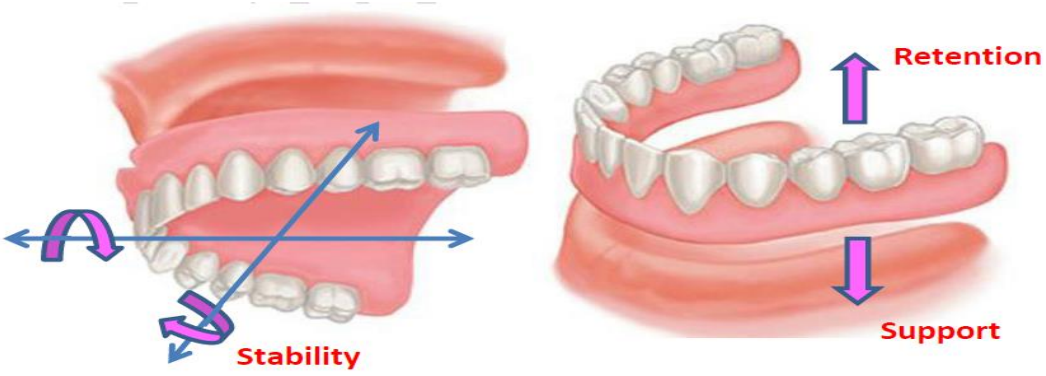


The techniques used for making final impression:

1. Mucostatic impression technique (non- pressure technique).
2. Muco-compression or Functional impression technique (pressure or closed mouth technique).
3. Selective pressure impression technique.

Objectives of impression making:

1. Retention
2. Stability
3. Support for denture
4. Aesthetic
5. Preservation of the residual alveolar ridge and soft tissue.



Retention: Is the resistance of the denture to remove from the mouth by resisting displacement forces at right angle to the occlusal plane.

* Retention = Denture base + Soft tissue.

Stability: Is the quality of prosthesis to be firm, steady or constant to resist displacement by functional horizontal or rotational movement.

* Stability = Denture base + Bone.

*Retention must hold the denture in its position at rest.

*Stability must resist displacement by rocking when a force is applied to teeth over a limited area during function.

Support: is the quality of prosthesis to resist the forces which try to dislodge the denture in a tissue-ward direction and this depends on the anatomical and histological factors of the ridge, therefore the maximum coverage provides the greater the support, which distributes forces over as wide area as possible.

*The best support for denture is the compact bone covered with fibrous connective tissue.

* Support = Denture base + Bone + Soft tissue.

Aesthetics: Border thickness should be varied with the need of each patient in accordance with extend of residual ridge loss. The vestibular fornix should be filled, but not overfilled, to restore facial contour.

Preservation of the remaining residual ridges is one objective. Prosthodontist should keep constantly in mind the effect of impression material and technique on the denture base and the effect of the denture base on the continued health of both the soft and hard tissues of the jaws. Pressure in the impression technique is reflected as pressure in the denture base and results in soft tissue damage and bone resorption.