

# FINISHING AND POLISHING MATERIALS

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Dental restorations are finished and polished before placement in the oral cavity (except for direct filling ) to provide:

1. Good oral health this is maintained by:
  - a. Resisting the accumulation of food debris and pathogenic bacteria by reducing the roughness of the restoration surface.
  - b. Smooth surfaces are easier to maintain in hygienic state, also with some metal restoration, tarnish and corrosion activity can be reduced if the surface is highly polished.
2. Oral function  
Function is enhanced because food glides more freely over occlusal surface and embrasure surface during mastication.
3. Esthetic  
Give gloss to the visible surface of restoration.

## ABRASIVE MATERIALS

It is a material which is harder than the material which needs to be abraded (restoration or appliance). The abrasive particles should possess sharp edges that cut rough surface of the abraded material.

The abrasive particles could be bonded together to form grinding wheel or may be carried across the surface of bristles of a revolving brush or buff or bonded to a piece of cloth or paper and rubbed across the surface.

**The smoothness of the surface depends on:**

1. Hardness and shape of the abrasive particles.

The abrasive particles should be harder than the material which is abraded and should be strong and its elastic limit should equal to its maximum strength so that it will fracture cleanly to form new cutting edges without permanent deformation.

## 2. Size of the particles.

Large particles have wide cutting edge and cut more than smaller size, start with large size then fine size.

## 3. Speed of movement.

The slower speed of movement, the deeper the scratches which are produces, but in slow speed and in high speed; the total amount of material removed will be approximately the same (1450-3000 rpm). To increase the speed of the abrasion, it is suggested to use compressed air to blast an abrasive powder on to the surface (sandblasting), it is useful for cobalt/chromium alloy; or to use ultrasonic frequency vibration.

## 4. Pressure.

Always, only slight guiding pressure should be applied, high pressure will lead to increase the rate of wear of the abrasive, also the heat produced.

## 5. Lubricant.

Facilitate the movement of the cutting edges into the surface and carries away the debris besides cooling the restoration. **Abrasive particles**

### 1. Diamond dust:

It could be embedded in porcelain binder which is the most efficient abrasive for dental use.

### 2. Sand:

It is an intermediate abrasive for removing the coarse scratches.

### 3. Quartz particles:

It is obtained by crushing sand stone and bonded to paper.

**4. Carbide:**

It is extremely hard and brittle, used for cutting tooth surface and for metal, ceramic and plastic.

**5. Garnet:**

It is silicate of aluminum, cobalt, or magnesium.

**6. Emery:**

It is natural oxide of aluminum (carborundum).

**7. Pumice:**

It is fine abrasive, the powder is obtained by crushing pumice stone; porous volcanic rock. It is excellent for denture polymer; it is suitable for gold alloy, tooth surface and amalgam. Pumice powder is mixed with water and sometimes with glycerin with low speed.

## POLISHING MATERIALS

It is the material which causes the fine scratches to be filled and to produce smooth surface probably due to that; the rapid movement of the polishing agent across the surface heats the top layer of the material and cause it to flow and fill in the scratches.

### Polishing materials are:

**1. Rouge (iron oxide):**

It is red powder or cake, it is rather dirty to handle, but

it produces excellent shine on gold alloy, it is not used with stainless steel, instead we should use chromic oxide.

**2. Whiting (precipitated chalk):**

It is mild abrasive used for softer materials and polymers, it is mixed with water.

**3. Tripoli:**

It is obtained from porous rocks.

**4. Tin oxide:**

It is extremely fine used for polishing teeth and restoration inside the mouth.

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