

How to differentiate between amalgam alloy and dental amalgam essay sample



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I. Objectives:

A. To differentiate between amalgam alloy and dental amalgam.

B. To learn the manipulation of dental amalgam.

C. To explain the trituration and setting processes.

II. Materials:

Amalgam alloy, mercury, proportioner , mortar and pestle, squeeze cloth, rubber dam, class I prepared cavities, amalgam carrier, cotton plier, amalgam plugger, carver, burnisher.

III. General consideration:

Amalgam is a metal alloy the components of which are predominantly silver (Ag), and tin (Sn), other components are copper (Cu), and zinc (Zn). Dental amalgam is made by mixing equal parts (by weight) of powdered metal alloy with the liquid mercury (Hg). The mixing process of the alloy with the liquid mercury is called trituration.

Amalgam is one of dentistry's main therapeutic agents for restoring defective teeth. It is a very old but it is still a widely used restorative material. The oldest written record of the use of amalgam in dentistry is a complication in 1528. Amalgam is plastic at temperature of the body for a few minute and then hardens. During hardening little change in volume in occurs. Properly condensed amalgam exhibit compressive strength as high as some cast irons. The amalgam can withstand the corrosive mouth environment, and are bland to the host. The combination of all these properties makes amalgam the most universally used restorative material.

The revised specifications for dental amalgam took effect on June 1970. The major difference in the present specifications is the inclusion of a diametric tensile test and the adjustment in setting change in flow requirements, due to changes in test procedure. Whereas in the past, hand trituration and condensing are utilized, the revision includes mechanical mixing with an amalgamator and condensation. As a result the specification limits for setting changes during hardening have been increased and now allow either a small contraction or small expansion

Fillings, pellets, and spheroidal particles with or without reinforcing components are permitted by the specification. Pressing the alloy in a pharmaceutical pill machine makes the pellets. The advantages of the pellets are convenience and accuracy in proportioning the alloy and mercury as the pellets are produced by atomization process in which the molten alloy is sprayed into an inert atmosphere resulting in droplets that solidified as spheroidal shaped particles of many sizes. The alloy must be used with low mercury content.

Functions of components of amalgam. Ag causes setting expansion and increase strength and corrosion resistance. Sn causes setting contraction and decreases strength corrosion resistance. Cu function much the same as Ag. If Zn content is greater than 0.01%, it is called non-zinc amalgam. Zinc reduces oxidation of the other metals.

IV. Procedures

1. With the ratio of one (1) amalgam pellet is the one (1) drop of Hg. Using a mortar and pestle, pulverize the amalgam pellet first. And then triturate the

pulverized amalgam pellet 1 drop of Hg, until it exhibits the shiny surface that does not cling to the side of the mortar, and then coheres into a mass when the mortar is jarred. 2. Transfer the mass to a rubber dam sheet, roll into a cylinder or rub against your palm. 3. Then transfer mass into a squeeze cloth. Wring out excess Hg mercury prior to condensation. 4. Using an amalgam carrier, bring mass into the cavity and condense or plug well increment by increment into the cavity. Fill cavity with a 1mm excess. Using an egg shaped burnisher, slightly burnish the sides of your amalgam to initially adapt the restorations to the margins of your cavity preparation. 5. Carve the restoration as soon as it offers a little resistance to the carving instruments. 6. Polish 24-48 hours after condensation using dull bur or mounted stone purnice and water with a brush and finally zinc oxide and water with a rubber cup

V. Results and Observations

VI. Questions

1. Explain the importance of following the alloy/mercury ratio specified by the manufacturer.
2. What are the objectives of the trituration procedure?
3. Why should trituration be continued by kneading it for a few seconds in the rubber dam sheet?
4. What is the purpose of the squeeze cloth?
5. Explain why you should avoid over trituration or under trituration of amalgam .

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6. Why should condensation be than within 3 1/2 minutes? Why is there a decrease in the strength in this condition?
7. Why should amalgam be condensed into the prepared cavity in small increment?
8. Explain why contamination with moisture of amalgam should be avoided?
9. Explain the importance of polishing the restoration 24-48 hours after condensation.
10. Explain the effect of delayed or secondary expansion of the restoration.