

## Amalgam in dentistry

In dentistry, amalgam is an alloy of mercury with various metals used for dental fillings. It commonly consists of mercury (50%), silver (~22-32%), tin (~14%), copper (~8%), and other trace metals. Dental amalgams were first documented in a *Tang Dynasty* medical text written by Su Kung in 659, and appeared in Germany in 1528. In the 1800s, amalgam became the dental restorative material of choice due to its low cost, ease of application, strength, and durability.

Recently however, its popularity has diminished somewhat. Its concern for aesthetics, environmental pollution, health, and the availability of improved, reliable, composite materials have all contributed; In particular, concerns about the toxicity of mercury have made its use increasingly controversial.

The greatest toxicity concern with dental amalgam is the potential for mercury poisoning when used as the dental material in a dental filling. Major health and professional organizations say that amalgam is safe. However, critics argue that it has toxic effects that make it unsafe, both for the patient and perhaps even more so for the dental professional manipulating it during a restoration. A study by the Life Sciences Research Office found that studies on mercury vapor and dental amalgam "provided insufficient information to enable definitive conclusions." Some dentists recommend removing amalgam fillings for health and cosmetic reasons, however removal also involves exposure to mercury vapor released during the removal process. Amalgams also contribute to mercury toxicity in the environment.

Amalgam is "tolerant to a wide range of clinical placement conditions and moderately tolerant to the presence of moisture during placement". In contrast, the techniques for composite resin placement are more sensitive to many factors and require "extreme care".

Mercury has properties of a bacteriostatic agent whereas certain methacrylate polymers (for example TEGMA, triethylene glycol methacrylate) composing the matrix of resin composites "encourages the growth of microorganisms".

This is the reason why amalgam has remained a superior restorative material over resin-base composites. *The New England Children's Amalgam Trial* (NECAT), has put the emphasis during a study that the longevity of amalgam is higher than that of *resin-based compomer* in primary teeth and composites in permanent teeth.

There are circumstances in which composite serves better than amalgam. For example, when a more conservative preparation would be beneficial, composite is the recommended restorative material. These situations would include small occlusal restorations, in which amalgam would require the removal of more sound tooth structure, as well as in "enamel sites beyond the height of contour." For cosmetic purposes, composite is preferred when a restoration is required on an immediately visible portion of a tooth.

## I- Reading comprehension:

1. In dentistry, what is amalgam made of?
2. What are the properties of mercury?
3. Do you think that amalgam is the best restorative material?
4. What is the comparison made between amalgam and resin composite?
5. Find titles to each paragraph.

## II- Key structure:

1. Choose suitable qualities from the list for the students in these descriptions:

Competitiveness- Creativity- Self confidence- Cooperation- Perseverance- Tolerance

- a- John is very good at most school subjects, but he has no interest in being “the best”. Instead, he is very kind and helpful. The world would be a better place if everyone showed as much..... as John.
  - b- Felix finds school very hard, but no one tries harder than he does. He always spends the whole weekend in the library trying to keep up with his studies. He shows great.....
  - c- Best always wants to do better than everyone else. In her schoolwork, she always tries to get the best grades. Her favorite sport is badminton because she's the best player in the school. No one needs to teach Betsy.....
  - d- Andrea has more ..... Than any of her classmates. She writes fascinating stories that show she has a wonderful imagination. She's also very artistic and does very interesting paintings.
2. When we use *noun+noun*, the first noun is like an adjective. It is normally singular but the meaning is often plural. For example, a **bookshop** is a shop where you can buy books, an **apple** tree is a tree that has apples.

In the same way we say:

- a three-hour** journey (not “a tree-hours journey”)
- a ten-pound** note (not “pounds”)
- a four-week** English course (not “weeks”)
- two 14- **year-old** girls (not “years”)
- a three-page** letter (not “pages”)

So we say:

It was **a three-hour** journey. *but* The journey took three **hours**.

### Exercise:

What do we call these things and people? Use the structure *noun+noun*

- a- A ticket for a concert is.....
- b- A magazine about computers is .....

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- c- Photographs taken on your holiday are your.....
- d- Chocolate made with milk is.....
- e- Somebody whose job is not inspect factories is.....
- f- A hotel in central London is.....
- g- The results of your examinations are your.....
- h- The carpet in the dining room is.....
- i- A scandal involving a football club is.....
- j- A question that two parts is .....
- k- A girl who is seven years old is.....