

Dental Filling Materials: Your Questions Answered

The dental profession relies on a variety of materials and processes to restore the anatomy and function of teeth. CADTH conducted a review of the available research evidence on benefits, harms, and other considerations of dental restorations made of amalgam compared with the primary alternative restoration material, composite resin.¹ The results of this Health Technology Assessment and other reliable evidence sources have been used to answer common questions regarding the use of these materials.

Why Do I Need a Dental Filling?

A dental filling is needed when a tooth is damaged from tooth decay (also known as cavities) or trauma (for example, an accident or a sports injury). The standard treatment for tooth decay uses filling material to replace damaged dental tissue. The most commonly used filling materials for tooth restorations are amalgam and composite resin.

What Is Dental Amalgam?

Amalgam fillings are a mixture of metals — including mercury, silver, tin, and copper — that have been widely used for more than 150 years.²⁻⁴ Amalgam fillings are strong — they can withstand a lot of force from pressures such as chewing — and they last for a long time. Because they are silver in colour, they are also known as "silver" fillings.

What Is Composite Resin?

Composite resin is one of the most common alternative filling materials for cavities and has been in use for more than 50 years.⁵ It is usually made of plastic and glass compounds and, unlike amalgam, it can be colour-matched to the tooth surface, giving it an aesthetic advantage over the silver colour of amalgam. Composite resin fillings are also known as "white" fillings and have been used more frequently in recent years, especially in front teeth.

Which Filling Material Is More Effective?

The best available evidence indicates that, compared with composite resin, amalgam fillings appear to last longer, while also costing less.¹

Which Filling Material Is Safer?

The evidence shows no clinically important differences in the safety of amalgam compared with composite resin dental fillings.¹

What Is the Environmental Impact of These Filling Materials?

The placement or removal of fillings may introduce harmful substances into the environment through waste water. Whereas amalgam is partly composed of mercury, a chemical element that can be toxic, the contribution of mercury into the Canadian ecosystem from use in dentistry is relatively small.¹ In Canada, most dental clinics have amalgam separators that help reduce the amount of amalgam waste that enters the environment.⁶⁻⁸ On the other hand, despite the increasing use of composite resin dental fillings, little is known about their impact on the environment.¹

How Do I Decide Which Type of Filling I Need?

There are many factors to consider when selecting dental filling materials. There is an opportunity for patients and their dental health care providers to engage in discussion and shared decision-making to ensure that the optimal dental material is selected for a given situation. The desirable and undesirable consequences of using either type of restorative material can be balanced by taking into consideration issues such as the patients' values and preferences, the size and location of the tooth decay, risk for future decay, and cost (including insurance coverage and reimbursement).

Table 1: Summary of Considerations Related to the Use of Dental Amalgam and Composite Fillings

Amalgam	Considerations	Composite Resin
Lasts longer	Efficacy	Higher rate of failure, need for repair and replacement ^a
No clinically important differences were found compared with composite resin fillings	Safety	No clinically important differences were found compared with amalgam fillings
Silver colour cannot be colour-matched to surrounding tooth	Aesthetics	Shade of material can be matched to surrounding tooth
Less expensive	Cost	More expensive and may need to be replaced more frequently; need for a dental crown or tooth extraction may occur sooner for composite fillings compared with amalgam fillings
Small relative contribution to overall mercury contamination in the Canadian environment compared with other sources of mercury	Environmental Impact	Little is known about its impact on the environment

^a Newer composite materials are improving in strength.

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