

# Crowns – Materials Comparison (Zirconia, Gold, E-max or Other)

Dental crowns are widely used for restoring damaged or decayed teeth. Zirconia, gold, and E-max crowns are popular materials, each offering unique advantages. Here's a detailed comparison of these three types of crowns (Photos shown are all crowns fabricated or placed at Colombo Street Dental). For hybrid and other types of crowns see our end notes.



# 1. Material Composition

Zirconia	Made from zirconium dioxide, a strong ceramic material. Known for durability and biocompatibility Usually a two-appointment process
Gold	Composed of a gold alloy (mixture of gold, platinum, or other metals) Gold content can vary; higher karats indicate more gold Always a two-appointment process
E-max	Made from lithium disilicate glass-ceramic Renowned for its translucent, natural appearance. Sometimes a one-appointment process depending on patient needs for aesthetics.

#### 2. Strength and Durability

Zirconia	Extremely strong and fracture resistant. Suitable for high-stress areas like molars.
Gold	Exceptionally durable and resistant to chipping or cracking. Ideal for back teeth where biting forces are highest.
E-max	Strong, but less so than zirconia or gold. Best suited for front teeth with low-stress areas. Bonds well to tooth structure which can allow less retentive preps to be used that in some cases preserves tooth structure.

#### 3. Aesthetics

Zirconia	Can mimic natural tooth colour, but less translucent than E-max Often used with a porcelain overlay for better aesthetics
Gold	Not tooth-coloured; the metallic appearance is visible Best for posterior teeth or patients who prefer its distinct look
E-max	Superior aesthetics with excellent translucency and natural appearance. Ideal for visible teeth



#### 4. Biocompatibility

Zirconia	ghly compatible, causing minimal irritation to surrounding tissue. w risk of allergic reactions	
Gold	Biocompatible and non-reactive, making them a great option for sensitive patients. Rarely causes allergies	
E-max	Biocompatible and gentle on gums.	

Hypoallergenic properties similar to zirconia.

## 5. Longevity

Zirconia	Can last 10-20 years or more with proper care. Resistant to wear and		
Gold	Often lasts 20+ years due to their strength and adaptability		
E-max	Average lifespan is 10-15 years, depending on care and placement		

# 6. Tooth Preparation

Zirconia	Requires minimal removal of tooth structure	
Gold	Requires the least amount of tooth removal due to its thinness	
E-max	Requires moderate tooth preparation for proper fit	

# 7. Cost

Zirconia	Moderate. Cost-effective given their durability	
Gold	Typically, the most expensive due to materials and labour costs.	
E-max	Moderate cost due to material and manufacturing process.	

#### 8. Wear on Opposing Teeth

Zirconia	Can cause more wear on opposing teeth if polished poorly.
Gold	Gentle on opposing teeth due to malleability.
E-max	Low wear on opposing teeth, like natural enamel.

### 9. Best Applications

Zirconia	Back teeth (molars), cases requiring strength and durability.
Gold	Molars, patients with heavy grinding or clenching habits.
E-max	Front teeth (incisors and canines), high aesthetic demand.

#### **In Summary**

- Choose Zirconia for strength, durability, and moderate aesthetics.
- Choose Gold for unmatched longevity and wear resistance, especially in posterior teeth.
- **Choose E-max** for superior aesthetics in visible areas of the mouth.
- Some situations will suit Hybrid 3d printed or milled restorations.



Summary Table			
Feature	Zirconia	Gold	E-max
Strength	Very strong	Extremely durable	Moderately strong
Aesthetics	Good, less translucent	Metallic appearance	Excellent, very natural
Biocompatibility	High	High	High
Durability	10–20+ years	20+ years	10–15 years
Tooth Preparation	Minimal	Minimal	Moderate
Cost	Moderate to high	High	High
Wear on Opposing Teeth	Moderate (if unpolished)	Low	Low

# Other Unique and new materials. What is a hybrid material crown?

3D printed materials of milled like Cerasmart, Lisi, N!ce or 3D printed Rodin Titan

This is a new generation of non-glazing crowns where the crown comes out of the mill and is polished and placed in the mouth.

#### The benefit is speed to make and cost.

Some have strengths that are comparable to Emax or in some cases the strength of amalgam silver fillings. But they are often about two thirds the cost of the other materials.

Another advantage of some of these materials is they can often be adjusted easily in the mouth unlike other materials. This makes it useful in changing people's bites in the initial stages of a rehabilitation of a mouth.

#### Downside is these are new and unproven materials.

They are new materials and so do not have long term study data much over 5-7 years. In dentistry we prefer studies that are 3 years.

We also have 3D printed materials which are weaker (stronger than a filling but weaker than most crown materials). Once again, the benefit is the cost and ease of fabrication, so for large plans it can be beneficial to keep the costs down and allow adjustments in the mouth.

