

The chemistry of the coronation crowns

St Edward's Crown

Weight

2.23 kg



Metals



St Edward's Crown is the official coronation crown with which the monarch is crowned during the coronation ceremony. The crown was made in 1661.

444 gemstones

345



Aquamarine

Beryllium aluminium silicate with iron(II) ion impurities

37



White topaz

Silicate mineral with aluminium and fluorine

27



Tourmaline

Boron silicate mineral; variable composition

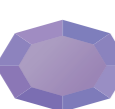
12



Ruby

Aluminium oxide with chromium ion impurities

7



Amethyst

Silicon dioxide with iron ion impurities

6



Sapphire

Aluminium oxide with titanium and iron ion impurities

The crown also contains 2 jargoons, 1 garnet, 1 spinel and 1 carbuncle.

Imperial State Crown

Weight

1.06 kg



Metals



The Imperial State Crown is exchanged for St Edward's Crown at the end of the coronation ceremony. The crown was made in 1937.

3,174 gemstones

2,868



Diamond

Allotrope of the element carbon

273



Pearl

Calcium carbonate

17



Sapphire

Aluminium oxide with titanium and iron ion impurities

11



Emerald

Beryllium aluminium silicate with chromium ion impurities

5



Ruby

Aluminium oxide with chromium ion impurities

1



Spinel

Magnesium aluminium oxide with chromium impurities

Queen Mary's Crown

Weight

590 g



Metals



Queen Mary's Crown will be used to crown the queen consort. The crown was made in 1911. It is the first time a queen consort crown has been reused since 1727.

2,200 gemstones

2,200



Diamond

Allotrope of the element carbon

Koh-i-Noor diamond



105.6 carats
(21.12 grams)

Cullinan III diamond



94.4 carats
(18.88 grams)

The largest diamond set in Queen Mary's crown was the Koh-i-Noor diamond. However, due to continued controversy over its ownership, for the upcoming coronation the crown is being reset with Cullinan III, IV and V, diamonds cut from the Cullinan diamond. Cullinan II is set in the Imperial State crown.