

THE GEM DETECTIVE: GREEN GEMSTONES



Transparent, faceted green gemstones ranging from mint to moss to dark viridian have held our fascination for generations. What could they be? Megan Austin continues the Gem Detective series.

The prime suspect for any green gemstone is emerald from the beryl family. This much-loved gemstone derives regal colour from the ingredient chromium (and sometimes vanadium) that is absent in lighter-toned green beryl.

Chromium is an important trace element that can transform certain gemstones from run-of-the-mill to red-carpet-worthy when incorporated into the crystal structure during growth. A good dose of chromium, for example, can transform common, bottle-green tourmaline into the intense emerald tones of chrome tourmaline.

Chromium is also partly responsible for the beauty of tsavorite garnet and the rare

demantoid garnet. The latter is famous for its high dispersion, magnetism and tiny horsetail inclusions that may be present in Russian material.

Another highly-dispersive green gemstone is diamond, although natural green diamond is extremely rare. More commonly seen is irradiated or synthetic diamond in green to bluish-green or yellowish-green hues of varying tone and saturation.

Three popular and commonly-confused green gemstones are zircon, tourmaline and sapphire. Zircon contains levels of the radioactive elements uranium and thorium; parcels of tourmaline or sapphire are often 'salted' with green zircon and sold to unsuspecting tourists.

A more exotic member of the tourmaline family is Paraiba-type mint tourmaline, which possesses a light tone and intense saturation and owes its stunning colour to copper.

WATCH OUT FOR A CLEVER EMERALD IMITATION CALLED A 'COMPOSITE' WHERE COMPONENTS ARE CEMENTED OR FUSED TOGETHER TO APPEAR GREEN WHEN VIEWED FACE-UP

Next up are three green gemstones of lower dispersion – quartz, peridot and chrysoberyl. Natural green quartz or prasiolite is quite rare in nature. Most material is actually heat-treated amethyst or synthetic quartz sold online as natural. Peridot is separated from the other two gemstones by its strong doubling but may be confused with sinhalite, which tends to be brownish rather than green.

Watch out for a clever emerald imitation called a 'composite' where components are cemented or fused together to appear green when viewed face-up – a garnet-topped doublet has a hard almandine garnet crown fused to a green glass pavilion; a triplet has a crown and pavilion of colourless material such as synthetic spinel, quartz or beryl that is sandwiched together with a green cement layer.

Another emerald imitation is quench-cracked quartz. Colourless quartz is heated then quenched in a cold liquid solution that contains green dye. Thermal shock causes the quartz to develop surface-reaching cracks that absorb the green solution.

Then there's synthetic emerald, which has the same chemical, physical and optical properties as its natural counterpart but is grown in a laboratory.

Popular imitations of many green gemstones include glass, synthetic cubic zirconia, synthetic spinel and synthetic moissanite. Less common natural green gemstones include sphene, sphalerite, spinel and enstatite.

If you're surprised by the number of green gemstones, this list is only the beginning. Gemmologists and registered valuers are formally trained to identify these gemstones so one can buy and sell with confidence. ✱

Megan Austin FGAA FGA Dip DT BA, is an in-house gemmologist and registered valuer for a retail jeweller. For more information about gemstones, visit: gem.org.au