

GEM DETECTIVE: YELLOW, ORANGE GEMSTONES



Brilliant transparent gemstones in warm tropical tones of pale lemon, rich gold, delicate apricot or vivid saffron can be challenging to identify. What could they be? Megan Austin reports.

When confronted with an unknown yellow or orange gemstone, flex your detective muscle by assembling a list of possible identities based on colour and transparency.

First in affordability and popularity is the quartz family – from the delicate pastel tones of 'lemon quartz' to the vibrant, vivid orange hues of citrine and all shades in-between.

Citrine is commonly confused with a similarly-coloured but more expensive gemstone called precious topaz. If an additional reddish pleochroic colour is present, it may qualify for the coveted title of imperial topaz, a rare, exotic and expensive gemstone.

Other less common natural gemstones of similar colour and dispersion to quartz

include yellow beryl (heliodor), chrysoberyl and spinel.

Next comes sapphire from the corundum family. Colours range from strongly-saturated golden yellows typical in Australia to soft pastel tones seen in Ceylon sapphires, although colour is not strictly diagnostic of origin.

Inclusions may help to establish origin if they are consistent with those from a particular location, and also indicate the likelihood of treatment. Most commercially-available sapphires today are heat treated to improve their colour and clarity; however, unheated material of fine quality will sell for a premium.

Other treatments must be disclosed if they significantly alter a gemstone's appearance and value. Beryllium surface or sub-surface lattice diffusion has been used since the early 2000s. This treatment transforms low-quality off-colour corundum into beautiful, vibrant yellow or orange using heat treatment in

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combination with beryllium. This is one of the most challenging treatments to identify because the absence of diagnostic inclusions doesn't rule it out entirely.

Never rule out synthetics; laboratory-grown yellow and orange sapphires are prolific in the marketplace, often sold as natural by online auction sites. These synthetics are challenging to identify from inclusions alone because they have few if any.

Other common orange to yellow synthetic or man-made gemstones include synthetic spinel, synthetic quartz, glass and cubic zirconia, and rarer YAG and GGG.

Another option is diamond, where yellow and orange may be replicated by the irradiation and annealing of natural diamonds or by applying post-growth treatments to laboratory-grown material, often high pressure high temperature (HPHT) treatments or irradiation and annealing.

Zircon and tourmaline are two gemstones that should never be confused with diamond as both display 'double refraction', which a diamond never displays.

Some of the most vibrant yellow and orange gemstones are from the beloved garnet family. In its finest quality, spessartite garnet is Fanta-orange, malaya garnet is orange to reddish-orange and hessonite garnet ranges from orange to brownish-yellow to brownish-red.

Adventurous jewellers may stock less commercial gemstones such as fire opal, apatite, scapolite, danburite, yellow spodumene or sunstone. Colour is a good place to start when exploring the identity of a gemstone. It will open up a whole new world of possibilities whether you are a jeweller, a customer or a gemstone lover. ✨

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