

How can I spot the difference between a natural and a synthetic alexandrite?

Knowing the difference between a synthetic and a natural alexandrite requires both experience and knowledge but most impostors are easy to spot. In the case of alexandrite, the size and the clarity of a stone are important clues in the determination its formation. Since large clean alexandrites are so rare in nature, it is unlikely that a large stone offered for a few dollars in a pawn shop, on a beach, or on a street corner by a native seller could ever be a natural alexandrite. Although large stones cannot be discounted altogether, any large gem represented as a natural alexandrite should be examined by an experienced gemologist or tested in a lab.

Many gemstones described as synthetic alexandrite are actually synthetic corundum laced with vanadium to produce the color change. This Alexandrite like sapphire material has been around for almost 100 years. The material shows a characteristic purple-mauve color change which although attractive, does not really look like alexandrite because there is never any green. The stones are very clean and may be available in large sizes. Gemological testing will reveal a refractive index of 1.759 - 1.778 (corundum) instead of 1.741 - 1.760 (chrysoberyl). Under magnification, gas bubbles and curved stria may be evident. When examined with a spectroscope a strong vanadium absorption line at 475 nm will be apparent.

Since synthetic alexandrites share the same chemical and physical properties with natural alexandrites normal gemological tests for density and refractive index will be of little use to gemologists. Czochralski or pulled alexandrite is easier to identify because it is so clean. Curved striations visible with magnification are confirmation of a synthetic origin. (Natural gemstone never show curved growth lines). The color change in pulled stones has been described as changing from blue to red. Although the stones look nice, the color change doesn't resemble alexandrite from any deposit. Synthetic alexandrites may also contain spherical bubbles or tadpole inclusions with long tails.

Flux grown alexandrite is more difficult to identify because the inclusions of undissolved flux can look like natural inclusions. Alexandrite grown by the flux-melt process will contain particles of flux, resembling liquid feathers with a refractive index and specific gravity exactly the same as natural alexandrite. Layers of dust-like particles parallel to the seed plate, and strong banding or growth lines may also be apparent. Stones may contain groups of parallel negative crystals, flux inclusions, triangular metallic platelets, or gas bubbles. Flux grown alexandrites are more difficult to spot because the colors are convincing and because they are not clean. These stones are expensive to make and are grown in platinum crucibles and crystals of platinum may still be evident in the cut stones.

When buying Alexandrite jewelry the buyer should always ask for a Certificate of Authenticity or a Gem Identification report from a reputed Gem Laboratory. Most Reputable stores selling alexandrites will be able supply a certificate.

See Alexandrite Tsarstone collectors guide, How can I spot the difference between a natural and a synthetic alexandrite?, <http://www.alexandrite.net/viewpage.html?id=GG-0132> (Description may include but is not limited to: an abstract, a table of contents, a graphical representation, or a free-text account of the resource.) (as of).