

Garnet – Almandine



Iron aluminium silicate, $\text{Fe}_3\text{Al}_2(\text{SiO}_4)_3$

RI – 1.76 to 1.81

DR – none

Crystal system – Cubic

Isotropic

SG – 3.8 to 4.2

Colours range from brownish-red to purplish-red, and pale to deep mauve. Stones displaying six- or four-rayed stars are rare although some stones do occur which display both.

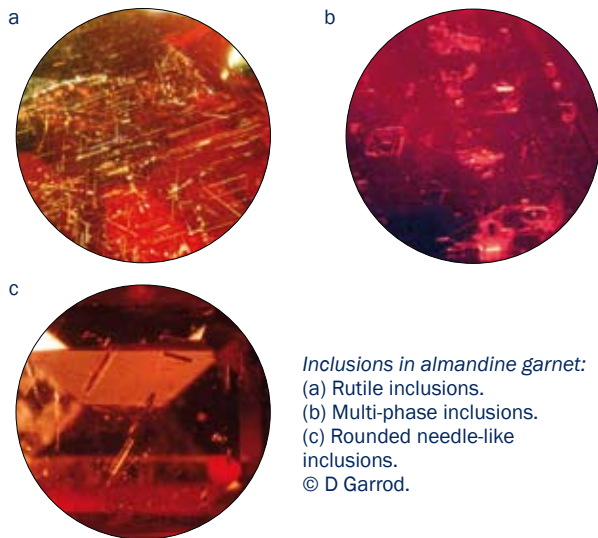
This material is typically fashioned as faceted stones, cabochons and beads. Intensely coloured stones may be cut as hollow-backed cabochons and these are known as 'carbuncles'.

Almandine garnet is part of an isomorphous series with pyrope garnet. Further information on this is given under pyrope garnet.

Localities and inclusions

Almandine may contain rounded or irregular crystal inclusions, sometimes with associated stress cracks (zircon haloes). Needle-like crystals of rutile are characteristic inclusions, usually orientated parallel to the edges of the dodecahedron.

Almandine occurs worldwide in metamorphic rocks. Commercially important localities include Brazil, India, Madagascar, Sri Lanka, Tanzania, USA and Zambia.



Inclusions in almandine garnet:
 (a) Rutile inclusions.
 (b) Multi-phase inclusions.
 (c) Rounded needle-like inclusions.
 © D Garrod.



Almandine-pyrope garnet and diamond ring.
 © Hirsh London.

Materials with a similar appearance

Ruby, red spinel, paste, tourmaline and garnet-topped-doublet (GTD).

Garnet-topped doublets are made by fusing together red almandine garnet and coloured glass and then faceting the resulting doublet. See section 14 for the identification features of GTDs.

Tests

Polariscope – Under the polariscope anomalous extinction is common and caution is required when testing these stones.

Cleavage – None

Hardness – 7½

Stability – Good

Toughness – Good



Spectrum — Absorption in almandine is due to iron and consists of three bands in the yellow, green and blue-green parts of the spectrum. These are sometimes accompanied by a weak band in the orange and a narrow band in the blue.



Almandine garnet (Fe spectrum)

Yellow is absorbed, together with thinner bands at mid-green and blue-green. The latter two may merge into one with dark or large stones or insufficient light. Weak bands in the orange and blue are often seen. Note that this pattern can be seen not only within the spectrum of almandine garnet but also in other garnet varieties.

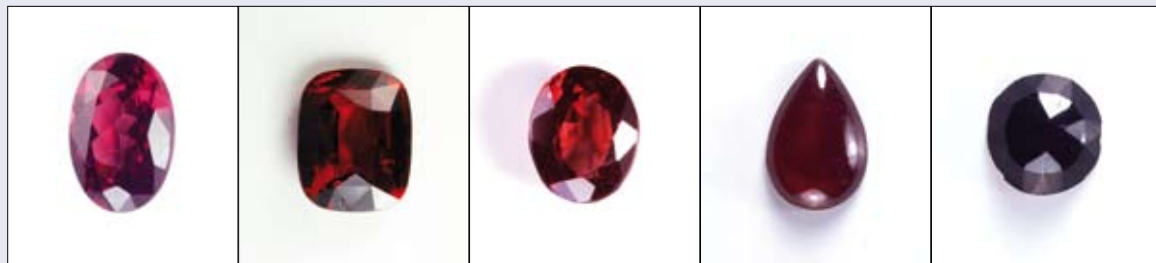


A Victorian bracelet set with one oval cabochon garnet and two pear-shaped cabochon garnets, circa 1860.
© Bentley & Skinner.

Refractometer — Most almandine garnets are very close to or over the RI of the contact liquid used.

Quality factors for the almandine-pyrope series

Three important quality factors that affect value are colour, clarity and quality of cut. The highest value stones have a good rich red colour but are not too dark and are relatively free from inclusions. In the series below, the stones are in order of value per carat, with the highest value on the left.



Good strong purplish-red colour, lively appearance and good clarity.

Deep red but included and slightly dark.

Slight brownish-red colour and slightly included.

Translucent dark coloured cabochon.

Low quality over-dark stone with chips and translucent to opaque appearance. Note the strong bright vitreous lustre.

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