

Learning Series: Birthstones – January

Garnet – The January Birthstone

Background

Found in the ruins of ancient Greece, Rome and Egypt, garnet jewelry has had a place in history for centuries as a gemstone, talisman or sacred stone. In 1500, Czechoslovakia began a cutting and jewelry industry which remained the largest gem garnet source in the world until the 19th century. The name "garnet" may come from either the Middle English word *gernet* meaning 'dark red', or the Latin *granatus* ("grain"), possibly a reference to the *Punica granatum* ("pomegranate"), a plant with red seeds similar in shape, size, and color to some garnet crystals.

Common Species – Composition, Chemical Formula, Colors and Sources

Almandine – Iron aluminum silicate – $\text{Fe}^{2+} \text{Al}_2\text{Si}_3\text{O}_{12}$: A deep, dark, rich red to purplish red to orange red (the more valuable Almandines are less orange and brown in color). Also known as carbuncle, it is the most common and frequently used gem. Found in Brazil, India, Madagascar, Sri Lanka, and US (in Arizona, Idaho, New Mexico, Utah, Arkansas and Kentucky).

Pyrope – Magnesium aluminum silicate – $\text{Mg}_3\text{Al}_2\text{Si}_3\text{O}_{12}$: Deep, dark, rich red to slightly purple red. The only garnet that is always a shade of red, it is often inclusion free and is likely the most famous variety. Pure pyrope is extremely rare and would be colorless (it is allochromatic). Found in Australia, Czechoslovakia, South Africa - Zimbabwe and Mozambique. (Note: The United States produces a highly saturated dark red almandine/pyrope garnet known commercially as Rhodolite.)

Spessartite – Manganese aluminum silicate – $\text{Mn}_3\text{Al}_2\text{Si}_3\text{O}_{12}$: Medium orange to reddish orange. An uncommon and less well known garnet, it is not often found in the type of quality to use as a gem, although cabochons may be cut from it. Found in Brazil, Namibia, Pakistan, Sri Lanka, US and Europe (mainly in Bavaria, Germany).

Andradite – Calcium iron silicate – $\text{Ca}_3\text{Fe}^{3+2}\text{Si}_3\text{O}_{12}$:

Demantoid - a medium green to slightly yellowish green. Rare and valuable, it is sought after by gem collectors. Found in Italy, Korea, Russia, Zaire.

Topazolite - golden yellow to greenish-yellow. Found in the Swiss and Italian Alps.

Melanite - black. Once was used as mourning jewelry and in inlay work before the massive use of Onyx and dyed Chalcedony. Found in France, Germany and the island of Elba (Italy).

Grossular – Calcium aluminum silicate – $\text{Ca}_3\text{Al}_2\text{Si}_3\text{O}_{12}$:

Tsavorite - medium, intense green to slightly yellowish green. Rare and valuable. Found in Kenya around the Tsavo National Park area.

Hessonite - varies in color from a brilliant yellow to yellowish brown. Found in Kenya, Sri Lanka.

Essonite - brown or yellowish-brown. Also known as Cinnamon Stone. Found in Sri Lanka, Brazil and California.

Uvarovite – Calcium chromium silicate – $\text{Ca}_3\text{Cr}_2\text{Si}_3\text{O}_{12}$: Bright green. This green-colored garnet occurs in fine crystal clusters. This form is sometimes referred to as drusy because of the tiny crystals. Occasionally this rare garnet will be faceted into a gem for a collector, but usually, if it is big enough for that it becomes a mineral specimen instead. Found in Russia.

Note: Garnets display the greatest variety of color of any mineral and a few even exhibit a color-change phenomenon when viewed in natural and incandescent light. Until the late 1990s—when a discovery was made in Bekily, Madagascar—garnet was said to occur in every color except blue. Garnet makes up two solid solution series: 1. pyrope-almandine-spessarite, and 2. uvarovite-grossular-andradite.

Identification

Streak – colorless

Hardness – 6½ - 7½

Crystal Forms and Aggregates – (Isometric) Occurs in well-formed, distinct, dodecahedral and trapezohedral crystals. Also occurs in compact crystal groupings, grainy, massive, as rounded crystals, and as groups of small crystals.

Transparency – transparent to opaque

Specific Gravity – 3.5 – 4.3

Luster – vitreous to adamantine

Cleavage – none, but may exhibit parting

Fracture – conchoidal to uneven

Tenacity – brittle

Commonly occurs with – Mica, Feldspar, Quartz, Calcite, Staurolite, Chlorite, Diopside, Olivine, Hornblende

Uses – Garnets have many practical uses. Transparent varieties of cuttable size are faceted for jewelry. The harder garnets are used as an abrasive. "Garnet Paper" is a sandpaper favored by cabinetmakers for finishing bare wood. Well formed crystals and interesting aggregates are very popular among mineral collectors.

Folklore, Legend and Healing Properties

Pyrope Garnet figures in the ancient Talmudic legend which holds that the only light in Noah's Ark was supplied by an enormous red garnet.

The largest documented garnet single crystal was an isometric block measuring 2.3 m and weighing 37.5 tons.

Garnets were historically thought to be able to stop bleeding, cure blood disorders and infections, protect against poison, depression and impure thoughts, and provide prosperity. It is said to stimulate the spleen, bloodstream and pituitary gland, and to relieve rheumatism and arthritis pain.

Trivia

It is the state mineral of Connecticut (Almandine) and the state gemstone for New York, Idaho, and Vermont (Grossular – green).

It is designated for the 2nd and 6th wedding anniversary.

One of the biblical 12 tribes of Israel used garnet as a symbol.

Mixed with very high pressure water, garnet is used to cut steel and other materials in water jets.

In Kashmir in 1892, the Hunzas used garnet bullets to fight the British, in the belief that garnets were deadlier than lead.

Sources:

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