

MinIdent-Win - almandine

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Formula: $(\text{Fe}^{2+}, \text{Mg}, \text{Mn})_3\text{Al}_2[\text{SiO}_4]_3$

Status: Mineral name is IMA approved or traditional

Level: Species

Parents: almandine-spessartine-series and almandine-pyrope-series

Symmetry: Cubic

Mean Atomic Number: 14.2

Diffraction Values: 2.570, 1.540, 2.870, 1.600, 4.040

Kretz abbreviation: Alm

First Described in 1546

Space Group: Ia-3d

Z number: 8

ICDD (TM) Number: 9-427

| | Minimum | Maximum | Average | Std. Dev. |
|--------|---------|---------|---------|-----------|
| a (A) | 11.520 | 11.624 | 11.574 | 0.027 |
| b (A) | 11.520 | 11.624 | 11.574 | 0.027 |
| c (A) | 11.520 | 11.624 | 11.574 | 0.027 |
| Alpha | 90.000 | 90.000 | 90.000 | |
| Beta | 90.000 | 90.000 | 90.000 | |
| Gamma | 90.000 | 90.000 | 90.000 | |
| Volume | 528.824 | 570.604 | 550.343 | |

| | Minimum | Maximum | Average | Std. Dev. |
|---|---------|---------|---------|-----------|
| n | 1.751 | 1.830 | 1.782 | 0.021 |

Colour  Pale Brown, Pink, Pale Pink, Colourless

| | Minimum | Maximum | Average | Std. Dev. |
|---------|---------|---------|---------|-----------|
| Mohs | 6.0 | 7.5 | 7.0 | |
| Vickers | 771 | 1343 | 1133 | |
| Density | 3.82 | 4.32 | 3.99 | 0.13 |

| | Total Min Wt (%) | Anal. Min Wt (%) | Average Wt (%) | Anal. Max Wt (%) | Total Max Wt (%) | Average Atomic | Coordination |
|--------------|------------------|------------------|----------------|------------------|------------------|----------------|--------------|
| H | 0.0000 | 0.0000 | 0.0081 | 0.0783 | 0.0783 | 0.0375 | |
| C | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | |
| O | 38.5713 | 38.5738 | 41.0220 | 42.5868 | 42.6222 | 12.0000 | |
| Na | 0.0000 | 0.0000 | 0.0294 | 0.1632 | 0.1632 | 0.0060 | 8 |
| Mg | 0.0000 | 0.2292 | 4.0909 | 7.5686 | 8.0949 | 0.7876 | 8 |
| Al | 10.2463 | 10.2463 | 11.2323 | 12.3845 | 12.3845 | 1.9485 | 6 |
| Si | 16.3557 | 16.3557 | 17.8388 | 18.8378 | 18.8378 | 2.9723 | 4 |
| P | 0.0000 | 0.0000 | 0.0036 | 0.0436 | 0.0436 | 0.0005 | |
| K | 0.0000 | 0.0000 | 0.0119 | 0.0664 | 0.0664 | 0.0014 | 8 |
| Ca | 0.0000 | 0.0572 | 3.3379 | 8.6050 | 8.6050 | 0.3898 | 8 |
| Ti | 0.0000 | 0.0000 | 0.1561 | 1.2770 | 1.2770 | 0.0153 | 6 |
| V | 0.0000 | 0.0000 | 0.0018 | 0.0218 | 0.0218 | 0.0002 | 6 |
| Cr | 0.0000 | 0.0000 | 0.0211 | 0.2668 | 0.2668 | 0.0019 | 6 |
| Mn | 0.0000 | 0.0310 | 3.3060 | 14.2655 | 16.6010 | 0.2816 | |
| Fe | 12.0022 | 13.2465 | 18.8630 | 28.8513 | 33.6595 | 1.5808 | 8 8 |
| Co | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | |
| Ni | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | |
| Zn | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | |
| Y | 0.0000 | 0.0000 | 0.0072 | 0.1575 | 0.1575 | 0.0004 | |
| Total | | | 99.9301 | | | 20.0239 | |


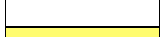

Atomic proportions calculated for O = 12.0

Compilation based on 1 general and 25 sample records

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Values in italics are calculated from the minimum and maximum values. Other data are from the sample and general records.

| | |
|-----------------------|--|
| Lustre | Vitreous, Resinous |
| Aggregation | Massive, Granular, Disseminated |
| Habit | Dodecahedral, Icositetrahedral, Trapezohedral, Granular |
| Tenacity | Brittle |
| Fracture | Conchoidal, Subconchoidal, Uneven |
| Cleavage | None |
| Surface Colour |  Dark Reddish Brown, Reddish Brown, Brownish Red, Red, Dark Red |
| Streak |  Colourless, White |
| Other lumin. |  Cathodoluminescent: Yellow |

Synonyms: almandite

Remarks: Deep red to brownish black, transparent to translucent, with a vitreous to subadamantine or resinous lustre and a very pale pink streak. Almandine has a subconchoidal fracture and no cleavage. It has a strong force of crystallisation and euhedral dodecahedra and icositetrahedra are usual. Crystals are sometimes partially or completely pseudomorphed by chlorite. Gemmy, flawless almandine is a popular and relatively cheap semi-precious stone.

Occurrences: Typically in garnet schists formed from pelitic sediments. Occurs right up through granulite to eclogite facies. Also occurs sparsely in some granites and rhyolites.

Localities of samples used in compilation: Falun, Sweden. Chinkwell Tor, Dartmoor, England. Glen Skiag, Strathpeffer, Ross-shire; Leverburgh, South Harris; South Morar, Inverness-shire, Scotland. Pizzo Robone, Peloritani Mountains, Sicily. Alij-Sanfins, northern Portugal. Halvaneset, Allmenningen, Nordfjord, Norway. Mir pipe, Siberia; Urals, Russia. Bielice, Sudeten Mountains, Poland. Jijal complex, near Parao, Swat Kohistan, Pakistan. Quairading district, Western Australia, Australia. Thomas Range, Utah; Russian River, Sonoma County, California; Emery Hill, Cortlandt, New York; North of the Idaho batholith, Idaho, U.S.A. Kumamoto Prefecture, Japan. Christmas Point and Mount Pardoe, Napier complex, Casey Bay, Enderby Land, Antarctica.

References: Deer et al. (1962) v.1, p.85-89; (1982) v.1A, p.536-589. Polar Geoscience No.13, p.1-40. Roberts et al. (1990) Encycl. Mins. USGS Bull. 1627.

MinIdent-Win

Almandine garnet in chlorite phyllite



Almandine garnet in chlorite phyllite.
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Caption: A euhedral dodecahedron of almandine garnet sits in a fine grained chlorite matrix. The rock is a phyllite from the green schist facies of metamorphism. Locality: New South Wales, Australia.

Keywords: almandine; garnet; dodecahedron; chlorites; phyllite; New South Wales; Australia; greenschist facies; sheet silicates; phyllosilicates; nesosilicates

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