

MinIdent-Win - spessartine

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Formula: $Mn_3Al_2[SiO_4]_3$

Status: Mineral name is IMA approved or traditional

Level: Species

Parents: almandine-spessartine-series

Symmetry: Cubic

Mean Atomic Number: 15.1

Diffraction Values: 2.600, 1.560, 1.610, 2.910, 1.890

Kretz abbreviation: Sps

First Described in 1832

Space Group: Ia-3d

Z number: 8

ICDD (TM) Number: 10-354

	Minimum	Maximum	Average	Std. Dev.
a (A)	11.526	11.720	11.627	0.050
b (A)	11.526	11.720	11.627	0.050
c (A)	11.526	11.720	11.627	0.050
Alpha	90.000	90.000	90.000	
Beta	90.000	90.000	90.000	
Gamma	90.000	90.000	90.000	
Volume	531.214	609.840	571.618	

	Minimum	Maximum	Average	Std. Dev.
n	1.755	1.835	1.801	0.012

Colour  Pale Brown, Pale Pink, Colourless

	Minimum	Maximum	Average	Std. Dev.
Mohs	6.0	7.5	7.0	
Vickers	771	1343	1133	
Density	3.79	4.26	4.12	0.10

	Total Min Wt (%)	Anal. Min Wt (%)	Average Wt (%)	Anal. Max Wt (%)	Total Max Wt (%)	Average Atomic	Coordination
H	0.0000	0.0000	0.0100	0.0962	0.0962	0.0485	
Li	0.0000	0.0000	0.0024	0.0836	0.0836	0.0017	
O	36.9347	36.9347	39.1587	40.7751	40.7751	12.0000	
Na	0.0000	0.0000	0.0070	0.0964	0.0964	0.0015	
Mg	0.0000	0.0000	0.4773	3.1663	3.1663	0.0963	
Al	5.9805	5.9805	10.5424	11.9187	11.9187	1.9159	6
Si	15.5190	15.5190	16.9643	17.7627	17.7627	2.9611	4
P	0.0000	0.0000	0.0050	0.0829	0.0829	0.0008	
K	0.0000	0.0000	0.0043	0.0830	0.0830	0.0005	
Ca	0.0000	0.2787	2.7704	9.4198	9.4198	0.3389	8
Sc	0.0000	0.0000	0.0006	0.0196	0.0196	0.0001	
Ti	0.0000	0.0000	0.0831	0.3597	0.3597	0.0085	
V	0.0000	0.0000	0.0002	0.0068	0.0068	0.0000	
Cr	0.0000	0.0000	0.0010	0.0274	0.0274	0.0001	
Mn	11.9267	11.9267	23.8856	31.9154	33.6265	2.1317	8
Fe	0.0000	0.0000	6.0385	14.2843	14.2843	0.5301	8
Ni	0.0000	0.0000	0.0017	0.0550	0.0550	0.0001	
Zn	0.0000	0.0000	0.0093	0.2892	0.2892	0.0007	
Y	0.0000	0.0000	0.0981	1.6536	1.6536	0.0054	
Dy	0.0000	0.0000	0.0030	0.1046	0.1046	0.0001	
Ho	0.0000	0.0000	0.0012	0.0436	0.0436	0.0000	
Er	0.0000	0.0000	0.0067	0.2361	0.2361	0.0002	
Tm	0.0000	0.0000	0.0013	0.0438	0.0438	0.0000	
Yb	0.0000	0.0000	0.0158	0.5533	0.5533	0.0004	
Lu	0.0000	0.0000	0.0028	0.0967	0.0967	0.0001	

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Total

100.0907

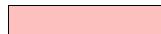
20.0429

Atomic proportions calculated for O = 12.0

Compilation based on 2 general and 35 sample records

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

Other lumin.



Cathodoluminescent: Pale Red

Comp. Plan.	Comp. Surf.	Twin Plane	Twin Axis	Notes
{010}			[001]	Penetration, Contact
{021}		{021}		Contact
{0-21}		{0-21}		Contact
{001}		{001}		Contact
{010}		{010}		Polysynthetic
			[010]	Parallel, Polysynthetic
			[100]	Parallel, Polysynthetic

Notes on hand specimen data: Commonly exhibits "labradorescence, a play of colours due to submicroscopic, film-like exsolution.

Synonyms: johnstonotite, spessartite

Remarks: Transparent to translucent and shades of yellow, orange, brown, red, violet and black; the streak is always white. Spessartine has a vitreous lustre and is brittle with a conchoidal fracture and no cleavage. Euhedral dodecahedra, icositetrahedra and hexoctahedra (or combination thereof) are common and faces are often striated. More rarely it is granular or massive and compact. The mineral is also called spessartite, but spessartine is preferred.

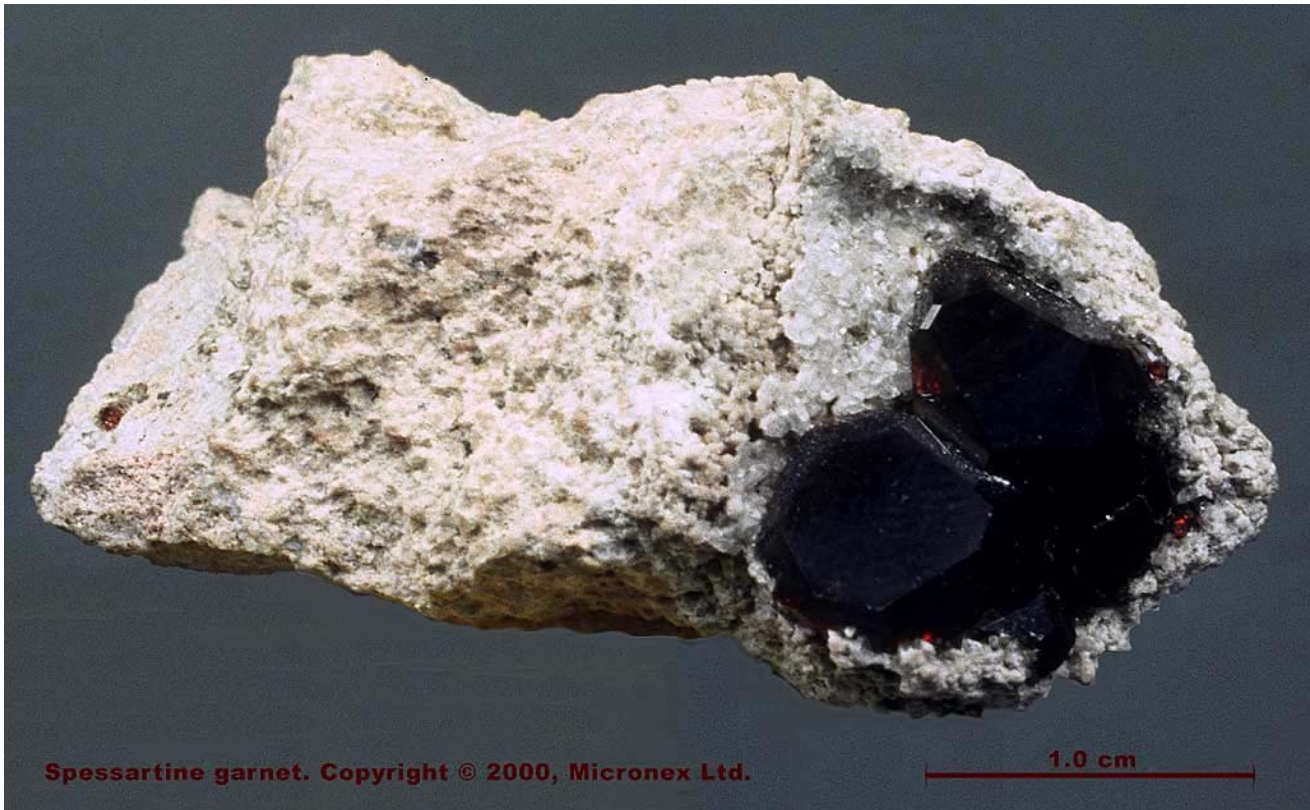
Occurrences: In a wide variety of rock types, particularly acid igneous rocks (pegmatites, granites and rhyolites). Also in metamorphic rocks - gneisses, schists and hornfels. Common in skarns and Mn-rich mineral veins and some sulphide deposits. Also found sedimentary concentrations in gravels and placers.

Localities of samples used in compilation: Bald Knob, North Carolina; Elk Mountain, New Mexico; Avondale, Delaware County, Pennsylvania; Valley Ford, California; U.S.A. Kawarau Survey district and near Staircase Creek, Lake Wakatipu, Otago, New Zealand. Budislav, Bohemia, Czechoslovakia. Meldon, Okehampton, Devonshire, England. Kinko mine, Yamaguchi Prefecture; Mie mine, Nagasaki Prefecture; Japan. Sebit mine, West Suk, Kenya. Bhuket, Thailand. Uмба River, Tanzania. Darmstadt, West Germany. Monte Arssicio, Tuscany, Italy.

References: Deer et al. (1978) v.1A, p.592-596; (1962) v.1, p.77-112. Phillips & Griffen (1981) Opt. Min. p.115. Roberts et al. (1974) Encycl. Mins. USGS Bull. 1627.

MinIdent-Win

Spessartine garnet



Dorian G.W. Smith

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Caption: This image shows deep reddish brown, gemmy spessartine crystals associated with quartz within a vug in an altered rhyolite. The crystals are probably combinations of unevenly developed icositetrahedra (trapezohedra) {211} with small dodecahedral {110} faces also present. Locality: Ely, Nevada, U.S.A.

Keywords: spessartine; garnets; nesosilicates; gemstone; altered rhyolite; Ely; Nevada; U.S.A.; spessartite

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