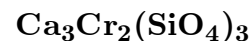


Uvarovite



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Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. Commonly as euhedral crystals, dodecahedra or trapezohedra, or in combination with other cubic forms, to 4.5 cm. Fine or coarse granular, compact, or massive.

Physical Properties: *Fracture:* Uneven to conchoidal. *Tenacity:* Brittle. Hardness = 6.5–7 D(meas.) = 3.77–3.81 D(calc.) = 3.848

Optical Properties: Transparent to translucent. *Color:* Emerald-green to dark green; in thin section, green; may be sector. *Streak:* White. *Luster:* Vitreous.

Optical Class: Isotropic; weak anisotropism due to internal strain is typical. $n = 1.865$

Cell Data: *Space Group:* $Ia\bar{3}d$. $a = 12.00$ $Z = 8$

X-ray Powder Pattern: Synthetic.

2.684 (100), 2.999 (70), 1.603 (60), 2.449 (55), 2.352 (25), 1.664 (25), 2.557 (20)

Chemistry:

	(1)	(2)
SiO ₂	36.79	36.02
Al ₂ O ₃	1.93	
Fe ₂ O ₃	0.41	
Cr ₂ O ₃	27.54	30.37
MgO	0.50	
CaO	32.74	33.61
Total	99.91	100.00

(1) Outokumpu, Finland; corresponds to $(\text{Ca}_{2.88}\text{Mg}_{0.06})_{\Sigma=2.94}(\text{Cr}_{1.79}\text{Al}_{0.19}\text{Fe}_{0.03}^{3+})_{\Sigma=2.01}\text{Si}_{3.02}\text{O}_{12}$.

(2) $\text{Ca}_3\text{Cr}_2(\text{SiO}_4)_3$.

Polymorphism & Series: Forms a series with grossular.

Mineral Group: Garnet group.

Occurrence: From hydrothermal alteration of serpentinite containing chromite; in metamorphosed limestones and skarns from the reaction of dolomite and chromite.

Association: Chromite, diopside, zoisite, olivine, dolomite, tremolite, quartz, plagioclase, epidote, calcite, chromian clinocllore, pyroxenes.

Distribution: Although an uncommon garnet, still with numerous localities. From the Saranovskii mine, Biserskoye, in the Gorozavod district, and other localities around Yekaterinburg (Sverdlovsk), Ural Mountains, Russia. Exceptional crystals from Outokumpu, Finland. From Pico do Posets, near Vénasque, Pyrenees, Spain. In Canada, at South Ham, Wolfe Co., Quebec. In the USA, from Wood's Chrome mine, Lancaster Co., Pennsylvania; at Riddle, Grant Co., Oregon; in the Red Ledge mine, near Washington, Nevada Co., around Newcastle, Placer Co., near New Idria, San Benito Co., and elsewhere in California. On Taiwan, Formosa. From Ergani Maden and in the Kop Krom [chrome] mine, Kop Mountains, near Aşkale, Turkey.

Name: For Count Sergei Semenovitch Uvarov (1786–1855), Russian nobleman, President of Academy of Sciences.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 437–447.

(2) Deer, W.A., R.A. Howie, and J. Zussman (1982) Rock-forming minerals, (2nd edition), v. 1A, orthosilicates, 468–698, esp. 642–648. (3) Novak, G.A. and G.V. Gibbs (1971) The crystal chemistry of the silicate garnets. Amer. Mineral., 56, 791–825. (4) (1960) NBS Circ. 539, 10, 17.

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