

Spurrite

Ca₅(SiO₄)₂(CO₃)

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Crystal Data: Monoclinic, pseudo-orthorhombic. *Point Group:* 2/m. Anhydrous crystalline, granular or massive. *Twinning:* Polysynthetic twins on {001} and {101}, composition planes {001} or {20 $\bar{5}$ }.

Physical Properties: *Cleavage:* Perfect on {001}, poor on {100}, (001) \wedge (100) = 79°. *Fracture:* Uneven to splintery. *Tenacity:* Brittle. Hardness = 5 D(meas.) = 3.02 D(calc.) = 3.025 Green cathodoluminescence.

Optical Properties: Transparent to translucent. *Color:* White to gray or lavender-gray; colorless in thin section. *Luster:* Vitreous to resinous. *Optical Class:* Biaxial (-). *Orientation:* X = b; Y \wedge a \simeq 45°; Z \wedge c = 33°. *Dispersion:* r > v, weak, crossed, distinct. α = 1.637–1.641 β = 1.672–1.676 γ = 1.676–1.681 2V(meas.) = 35°–41°

Cell Data: *Space Group:* P2₁/a. a = 10.49 b = 6.705 c = 14.16 β = 101°19' Z = 4

X-ray Powder Pattern: Luna Co., New Mexico, USA. (ICDD 13-496). 2.701 (100), 2.635 (70), 3.019 (65), 2.663 (50), 2.170 (40), 3.81 (30), 2.609 (30)

Chemistry:	(1)	(1)
SiO ₂	26.96	CaO 62.34
TiO ₂	0.01	Na ₂ O 0.05
Al ₂ O ₃	0.39	K ₂ O trace
Fe ₂ O ₃	0.11	H ₂ O ⁺ 0.00
MnO	0.03	CO ₂ 9.73
MgO	0.23	Total 99.85

(1) Velardeña, Mexico; corresponds to (Ca_{4.95}Mg_{0.02}Na_{0.01})_{Σ=4.98}(Si_{2.00}Al_{0.03}Fe_{0.01}³⁺)_{Σ=2.04}O₈(C_{0.98}O₃).

Polymorphism & Series: Dimorphous with paraspurrite.

Occurrence: A product of high-temperature thermal metamorphism along the contact between carbonate rock and mafic magma.

Association: Gehlenite, merwinite, tilleyite, hillebrandite, scawtite, kilchoanite, rankinite, larnite, foshagite, wollastonite.

Distribution: From the Santa Juana mine, Velardeña, Durango, and in the Encantada district, Coahuila, Mexico. In the USA, at Crestmore, Riverside Co., California; in the Tres Hermanas district, Luna Co., New Mexico; and from the Little Belt Mountains, Lewis and Clark and Meagher Co., Montana. In Ireland, from Scawt Hill, near Larne, and at Carneal, Co. Antrim, and at Carlingford, Co. Louth. From Camas Mòr, Isle of Muck, and at Camphouse, Ardnamurchan, Argyllshire, Scotland. At Golden Gully, Tokatoka district, about 150 km north of Auckland, New Zealand. From the Güneyce-İkizdere area, Trabzon Province, Turkey. In the Hatrurim Formation, Israel. At Kushiro and Hirata, Hiroshima Prefecture, and at Fuka, near Bicchu, Okayama Prefecture, Japan. Found near Anakit Creek, at the mouth of the Lower Tunguska River, central Siberia, and elsewhere in Russia.

Name: For Josiah Edward Spurr (1870–1950), American geologist.

Type Material: National Museum of Natural History, Washington, D.C., USA, 86532; The Natural History Museum, London, England, 1923,1032.

References: (1) Dana, E.S. and W.E. Ford (1909) Dana's system of mineralogy, (6th edition), app. II, 97. (2) Deer, W.A., R.A. Howie, and J. Zussman (1986) Rock-forming minerals, (2nd edition), v. 1B, disilicates and ring silicates, 263–271. (3) Smith, J.V., I.L. Karle, H. Hauptman, and J. Karle (1960) The crystal structure of spurrite, Ca₅(SiO₄)₂CO₃. II. Description of structure. Acta Cryst., 13, 454–458.

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