

# Paulingite



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**Crystal Data:** Cubic. *Point Group:*  $4/m\bar{3}2/m$ . As dodecahedra, modified by the cube and a trapezohedron, may be faintly striated, up to 1 cm. *Twinning:* Lamellae seen optically may indicate twinning.

**Physical Properties:** Hardness =  $\sim 5$  D(meas.) = 2.085(5) D(calc.) = 2.10

**Optical Properties:** Transparent. *Color:* Colorless, yellow, bright orange. *Luster:* Vitreous. *Optical Class:* Isotropic; very rarely, may show faint, isolated, birefringent lamellae in thin section.  $n = 1.473-1.484$

**Cell Data:** *Space Group:*  $Im\bar{3}m$ .  $a = 35.049-35.114$   $Z = 32$

**X-ray Powder Pattern:** Wenatchee, Washington, USA.

8.29 (10), 6.88 (10), 4.78 (9), 3.261 (9), 3.078 (9), 3.582 (8), 3.346 (8)

## Chemistry:

	(1)	(2)
SiO <sub>2</sub>	63.53	62.65
Al <sub>2</sub> O <sub>3</sub>	16.43	18.36
Fe <sub>2</sub> O <sub>3</sub>	0.16	0.08
MgO	0.02	0.00
CaO	3.46	6.94
SrO	0.00	0.00
BaO	0.90	0.50
Na <sub>2</sub> O	0.97	0.89
K <sub>2</sub> O	6.87	3.57
Total	[92.34]	[92.99]

(1) Wenatchee, Washington, USA; by electron microprobe, average of five partial analyses; corresponds to  $\text{K}_{2.22}\text{Ca}_{0.94}\text{Na}_{0.48}\text{Ba}_{0.09}\text{Fe}_{0.03}(\text{Si}_{16.10}\text{Al}_{4.91})_{\Sigma=21.01}\text{O}_{42} \cdot 22\text{H}_2\text{O}$ . (2) Ritter, Oregon, USA; by electron microprobe, average of four partial analyses, H<sub>2</sub>O determined separately by loss on heating as 18.5%; corresponds to  $\text{Ca}_{1.85}\text{K}_{1.14}\text{Na}_{0.43}\text{Ba}_{0.05}(\text{Si}_{15.60}\text{Al}_{5.39})_{\Sigma=20.99}\text{O}_{42} \cdot 17.40\text{H}_2\text{O}$ .

**Mineral Group:** Zeolite group.

**Occurrence:** In vesicles in basalt flows.

**Association:** Zeolites, pyrite, calcite.

**Distribution:** In the USA, at Rock Island Dam, on the Columbia River, Wenatchee, Douglas Co., Washington; from near Riggins, Idaho Co., Idaho; and at Three Mile Creek, near Ritter, Grant Co., Oregon. On Chase Creek, at the junction with Charcoal Creek, north of Falkland, British Columbia, Canada. Large crystals from the Giant's Causeway and Craigahulliar, Portrush, Co. Antrim, Ireland. At Kladno and Vinařice, Czech Republic. In the Höwenegg quarry, Hegau, Baden-Württemberg, and in the Ortenberg quarry, Vogelsberg, Hesse, Germany.

**Name:** For Linus Carl Pauling (1901–1994), Nobel Laureate, Professor of Chemistry, California Institute of Technology, Pasadena, California, USA.

**Type Material:** n.d.

**References:** (1) Kamb, W.B. and W.C. Oke (1960) Paulingite, a new zeolite, in association with erionite and filiform pyrite. *Amer. Mineral.*, 45, 79–91. (2) Gordon, E.K., S. Samson, and W.B. Kamb (1966) Crystal structure of the zeolite paulingite. *Science*, 154, 1004–1007. (3) Tschernich, R. and W.S. Wise (1982) Paulingite: variations in composition. *Amer. Mineral.*, 67, 799–803. (4) Andersson, S. and L. Fälvh (1983) An alternative description of the paulingite structure. *J. Solid State Chemistry*, 46, 265–268.

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