

**Juanite****Ca<sub>10</sub>Mg<sub>4</sub>Al<sub>2</sub>Si<sub>11</sub>O<sub>39</sub>•4H<sub>2</sub>O(?)**

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**Crystal Data:** Orthorhombic (?). *Point Group:* n.d. As slender fibers in sheaflike aggregates, to about 1 mm; massive.

**Physical Properties:** Hardness = 5.5 D(meas.) = 3.01–3.3 D(calc.) = n.d.

**Optical Properties:** Semitransparent. *Color:* Nearly white to pistachio-green. *Luster:* Dull. *Optical Class:* Biaxial (+).  $\alpha = 1.640(3)$   $\beta = \text{n.d.}$   $\gamma = 1.647(3)$   $2V(\text{meas.}) = 50^\circ (?)$

**Cell Data:** *Space Group:* n.d.  $Z = \text{n.d.}$

**X-ray Powder Pattern:** Kuznetsk, Kazakhstan.

3.27 (100), 2.98 (100), 1.93 (100), 2.90 (90), 1.97 (80), 3.58 (50), 3.41 (50)

**Chemistry:**

	(1)	(2)	(3)
SiO <sub>2</sub>	42.05	37.72	42.45
TiO <sub>2</sub>	0.00	0.00	
Al <sub>2</sub> O <sub>3</sub>	5.19	10.79	6.55
Fe <sub>2</sub> O <sub>3</sub>	3.26	5.18	
FeO		1.08	
MnO	0.09	0.16	
MgO	9.52	4.99	10.35
CaO	34.68	34.0	36.02
Na <sub>2</sub> O	1.06	1.01	
K <sub>2</sub> O	0.14		
H <sub>2</sub> O	4.45	0.00	4.63
P <sub>2</sub> O <sub>5</sub>		0.03	
LOI		5.87	
Total	100.44	100.83	100.00

(1) Iron Hill, Colorado, USA. (2) Kuznetsk, Kazakhstan. (3) Ca<sub>10</sub>Mg<sub>4</sub>Al<sub>2</sub>Si<sub>11</sub>O<sub>39</sub>•4H<sub>2</sub>O.

**Occurrence:** Formed by hydrothermal alteration of a coarse-grained melilite rock (uncompahgrite) previously subjected to deuteric alteration (Iron Hill, Colorado, USA); in skarns at a contact zone with carbonates in a gabbro-urtite massif (Kuznetsk, Kazakhstan).

**Association:** Perovskite, phlogopite, magnetite, titaniferous garnet, melilite, diopside, vesuvianite, brugnatellite, hastingsite, tremolite, aegirine, cebollite (Iron Hill, Colorado, USA); melilite, pyroxene, wollastonite, vesuvianite, cebollite, calcite (Kuznetsk, Kazakhstan).

**Distribution:** In the Iron Hill carbonatite, Powderhorn-Cebolla district, Gunnison Co., Colorado, USA. From the Kiya-Shaltyrsk massif, Kuznetsk, Ala-Tau Range, Tien Shan, Kazakhstan. In the Kovdor massif, Kola Peninsula, Russia.

**Name:** For the San Juan Mountains, Colorado, USA, where the mineral was discovered.

**Type Material:** Harvard University, Cambridge, Massachusetts; National Museum of Natural History, Washington, D.C., USA, 105990.

**References:** (1) Larsen, E.S. and E.A. Goranson (1932) The deuteric and later alterations of the uncompahgrite of Iron Hill, Colorado. *Amer. Mineral.*, 17, 343–356. (2) Rodygina, V. (1971) First find of juanite and cebollite in the Kuznetsk Ala-Tau. *Geol. Geofiz.*, 12, 62–70. (3) (1972) *Chem. Abs.*, 76, 156622 (abs. ref. 2).