

**Bazhenovite****CaS<sub>5</sub>·CaS<sub>2</sub>O<sub>3</sub>·6Ca(OH)<sub>2</sub>·20H<sub>2</sub>O**

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**Crystal Data:** Monoclinic. *Point Group:* 2/m. As bladed or platy crystals, to 5 mm, showing {110}, {011}, {101}, and {111}, flattened on {010}, elongated along [001]; in aggregates, to 1 cm.

**Physical Properties:** *Cleavage:* {010}, very good. *Fracture:* Uneven. *Tenacity:* Brittle but elastic. Hardness = 2 D(meas.) = 1.83(1) D(calc.) = 1.845 Soluble in H<sub>2</sub>O, hydrolyzes in air, with sulfur evident in the residue.

**Optical Properties:** Transparent in thin crystals, translucent in aggregates. *Color:* Orange to yellow. *Streak:* Pale yellow. *Luster:* Vitreous, pearly on intergrowths of parallel plates. *Optical Class:* Biaxial (+). *Pleochroism:* Strong; X = deep yellow-green; Y = greenish yellow; Z = pale greenish yellow. *Orientation:* X = b; Y = a; Z ∩ c = 30°. *Absorption:* X > Z > Y. α = 1.595(2) β = 1.619(2) γ = 1.697(3) 2V(meas.) = n.d. 2V(calc.) = 60°20′.

**Cell Data:** *Space Group:* P2<sub>1</sub>/c. a = 8.45(1) b = 17.47(1) c = 8.24(1) β = 119.5° Z = 1

**X-ray Powder Pattern:** Chelyabinsk coal basin, Russia. 8.76 (10), 4.39 (10), 1.996 (7), 2.91 (6), 2.81 (5), 2.62 (5), 2.28 (5)

<b>Chemistry:</b>	(1)	(2)
Fe	1.34	
Ca	28.12	27.58
O	[9.08]	12.20
S	19.56	
S <sup>s</sup>		6.11
S <sup>p</sup>		7.25
S <sup>t</sup>		6.20
OH		9.46
H <sub>2</sub> O	41.9	31.20
Total	[100.00]	100.00

(1) Chelyabinsk coal basin, Russia; H<sub>2</sub>O by TGA. (2) Analysis (1) after deduction of Fe as impurity, portlandite 1%, adsorbed H<sub>2</sub>O 1%, recasting S as S<sup>s</sup> = sulfide S, S<sup>p</sup> = polysulfide S, S<sup>t</sup> = thiosulfate S; then corresponding to Ca(S<sub>2.63</sub><sup>p</sup>S<sub>2.22</sub><sup>s</sup>)<sub>Σ=4.85</sub>·Ca(S<sub>2.25</sub><sup>t</sup>O<sub>3.00</sub>)·Ca<sub>6.00</sub>(OH)<sub>12.20</sub>·20.14H<sub>2</sub>O.

**Occurrence:** Among the melt products of old, burning coal dumps.

**Association:** Siderite, pyrite, iron, sulfur, oldhamite, portlandite, periclase, troilite, pyrrhotite, fluorite.

**Distribution:** In the Chelyabinsk coal basin, Southern Ural Mountains, Russia.

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**Type Material:** Mining Institute, St. Petersburg, 1956/1; Il'menskii Preserve Museum, Miass, Russia, 5873–5875; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.

**References:** (1) Chesnokov, B.V., V.O. Polyakov, and A.F. Bushmakin (1987) Bazhenovite CaS<sub>5</sub>·CaS<sub>2</sub>O<sub>3</sub>·6Ca(OH)<sub>2</sub>·20H<sub>2</sub>O – a new mineral. Zap. Vses. Mineral. Obshch., 116, 737–743 (in Russian). (2) (1989) Amer. Mineral., 74, 500 (abs. ref. 1). (3) (1988) Mineral. Abs., 39, 495–496 (abs. ref. 1).