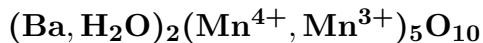


Romanèchite



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Crystal Data: Monoclinic. *Point Group:* $2/m$. Euhedral crystals very rare, flat, ridged, to 200 μm ; acicular to fibrous, divergent; commonly reniform, botryoidal, stalactitic, colloform banded; very fine-grained massive.

Physical Properties: Hardness = 5–6 VHN = 514–715 (100 g load). $D(\text{meas.}) = 4.70\text{--}4.74$ $D(\text{calc.}) = [4.90]$

Optical Properties: Opaque. *Color:* Iron-black, dark steel-gray; gray-white in reflected light. *Streak:* Black, brownish black. *Luster:* Submetallic; dull when massive.

Optical Class: Biaxial. *Anisotropism:* Strong. *Birefractance:* Strong; gray to white.

$R_1\text{--}R_2$: (400) 26.7–38.7, (420) 26.3–37.7, (440) 25.6–35.9, (460) 25.2–34.8, (480) 24.8–34.0, (500) 24.3–33.0, (520) 23.8–32.1, (540) 23.4–31.1, (560) 22.9–30.1, (580) 22.4–29.3, (600) 22.0–28.6, (620) 21.6–28.0, (640) 21.3–27.5, (660) 21.2–27.2, (680) 20.9–26.8, (700) 20.7–26.5

Cell Data: *Space Group:* $C2/m$. $a = 13.929(1)$ $b = 2.8459(4)$ $c = 9.678(1)$
 $\beta = 92.39(1)^\circ$ $Z = 2$

X-ray Powder Pattern: Schneeberg, Germany.

2.190 (100), 3.465 (70), 2.875 (70), 2.415 (70), 1.820 (70), 1.560 (70), 1.399 (70)

Chemistry:	(1)	(2)	(1)	(2)	
WO ₃		0.89	MgO	0.20	0.15
As ₂ O ₅	1.50		CaO	0.40	0.19
SiO ₂	0.40	0.52	BaO	16.20	17.46
MnO ₂	66.87	66.62	K ₂ O	0.10	
Fe ₂ O ₃	1.45	0.15	H ₂ O ⁺		4.38
MnO	8.23	7.09	H ₂ O [−]		0.48
CoO		0.90	H ₂ O	4.65	
CuO	0.10	0.48	Total	100.10	99.68

(1) Romanèche, France. (2) Schneeberg, Germany. (3) Do.; by electron microprobe, analysis not given, H₂O by the Penfield method; corresponds to $(\text{Ba}_{0.66}\text{Ca}_{0.03}\text{Na}_{0.01})_{\Sigma=0.70}[(\text{Mn}^{4+}, \text{Mn}^{3+})_{4.83}\text{Si}_{0.06}\text{Mg}_{0.02}\text{Al}_{0.01}(\text{W}, \text{Cu}, \text{Zn}, \text{Ni}, \text{Co})_{0.08}]_{\Sigma=5.00}\text{O}_{10} \cdot 1.2\text{H}_2\text{O}$.

Occurrence: A product of weathering of manganese-bearing oxides, carbonates, silicates; in sedimentary deposits; as replacement deposits in limestones and dolostones; a principal component of “psilomelane” and “desert varnish” (manganese oxide-rich coatings formed on rocks in arid regions); in some plume agates.

Association: Pyrolusite, hausmannite, chalcophanite, braunite, goethite, calcite, quartz.

Distribution: While of common occurrence, characterization by X-ray, chemical analysis, or both, is necessary. Authenticated from: Romanèche, Saône-et-Loire, France. In Germany, well-crystallized from Schneeberg, Saxony, and at the Clara Mine, near Oberwolfach, Black Forest. From the Restormel mine, Lostwithiel, Cornwall, England. In the USA, at Austinville, Wyeth Co., Virginia; from Sodaville, Mineral Co., Nevada; at the Hoggett mines, Hidalgo Co., New Mexico; at the Tolbard mine, Paymaster district, Imperial Co., California. In the Talmantes mine, near Parral, Chihuahua, Mexico. From Pilbara, Western Australia.

Name: For the occurrence at Romanèche, France.

Type Material: The Natural History Museum, London, England, 69160.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana’s system of mineralogy, (7th edition), v. I, 668–671 [psilomelane = romanèchite, part]. (2) Fleischer, M. (1960) Studies of the manganese oxide minerals. III. Psilomelane [romanèchite]. *Amer. Mineral.*, 45, 176–187. (3) Mukherjee, B. (1965) Crystallography of psilomelane [romanèchite], $\text{A}_3\text{X}_6\text{Mn}_8\text{O}_{16}$. *Mineral. Mag.*, 35, 643–655. (4) Picot, P. and Z. Johan (1982) Atlas of ore minerals. B.R.G.M., Orléans, France, and Elsevier, Amsterdam, Holland, 328. (5) Turner, S. and J.E. Post (1988) Refinement of the substructure and superstructure of romanèchite. *Amer. Mineral.*, 73, 1155–1161.

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