Metacinnabar HgS

Crystal Data: Cubic. *Point Group:* $\overline{4}3m$. Commonly massive; rarely as small (to 1 mm) tetrahedral crystals having rough faces. *Twinning:* Common on {111}, forming lamellae in polished section.

Physical Properties: *Fracture:* Subconchoidal. *Tenacity:* Brittle. Hardness = 3 VHN = n.d. D(meas.) = 7.65 D(calc.) = 7.63

Optical Properties: Opaque. *Color:* Grayish black; in polished section, grayish white. *Streak:* Black. *Luster:* Metallic. *Pleochroism:* Weak, rarely. *Anisotropism:* Very weak, rarely. R: (400) 28.4, (420) 27.6, (440) 26.8, (460) 26.3, (480) 25.9, (500) 25.6, (520) 25.4, (540) 25.2, (560) 25.1, (580) 25.0, (600) 24.9, (620) 24.9, (640) 24.8, (660) 24.7, (680) 24.7, (700) 24.7

Cell Data: *Space Group:* $F\overline{4}3m$. $a = 5.8717(5)$ $Z = 4$

X-ray Powder Pattern: Synthetic.
3.378 (100), 2.068 (55), 1.7644 (45), 2.926 (35), 1.3424 (12), 1.6891 (10), 1.3085 (10)

Chemistry:

	(1)	(2)	(3)	(4)
Hg	79.73	67.45	81.33	86.22
Zn	4.23	3.10		
Cd		11.72		
Fe	trace	0.2		
Se	1.08		6.49	
S	14.58	15.63	10.30	13.78
Total	99.62	98.10	98.12	100.00

(1) Guadalcázar, Mexico; corresponds to $(Hg_{0.85}Zn_{0.14})_{\Sigma=0.99}(S_{0.97}Se_{0.03})_{\Sigma=1.00}$. (2) Uland area, Russia; corresponds to $(Hg_{0.69}Cd_{0.21}Zn_{0.10}Fe_{0.01})_{\Sigma=1.01}S_{1.00}$. (3) San Onofre, Mexico; corresponds to $Hg_{1.00}(S_{0.80}Se_{0.20})_{\Sigma=1.00}$. (4) HgS.

Polymorphism & Series: Trimorphous with cinnabar and hypercinnabar.

Mineral Group: Sphalerite group.

Occurrence: In mercury deposits formed under low-temperature near-surface conditions.

Association: Cinnabar, mercury, wurtzite, stibnite, marcasite, realgar, calcite, barite, "chalcedony", hydrocarbons.

Distribution: Not uncommon in mercury deposits; may be a principal ore mineral. In the USA, in California, in the Redington mine [TL] and other properties, near Knoxville, Napa Co.; at the Ryne mine, Mt. Diablo, Contra Costa Co.; from New Almaden, Santa Clara Co.; at Skaggs Springs, Sonoma Co.; from New Idria, San Benito Co.; and many other places. At Terlingua, Brewster Co., Texas; from Marysvale, Ohio district, Piute Co., Utah; and in the Reward mines, Franklin, King Co., Washington. In Canada, from Read Island, Nanaimo mining division, British Columbia. In Mexico, at San Onofre, near Plateros, Zacatecas; also from Guadalcázar, San Luis Potosí. At Idrija (Idria), Slovenia. In Italy, from Levigliani, Tuscany. In Romania, at Baia Sprie (Felsőbánya). From Almadén, Ciudad Real Province, Spain. In the Uland area, Kurai ore zone, Altai Mountains, and other deposits in Russia. At Wen-Shan-Chang, Kweichow, and elsewhere in China.

Name: From the Greek for *with*, plus *cinnabar*, in allusion to its common association.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana's system of mineralogy, (7th edition), v. I, 215–217. (2) Aurivillius, K. (1964) An X-ray and neutron diffraction study of metacinnabarite. Acta Chem. Scand., 18, 1552–1553. (3) (1955) NBS Circ. 539, 4, 21–23. (4) Criddle, A.J. and C.J. Stanley, Eds. (1993) Quantitative data file for ore minerals, 3rd ed. Chapman & Hall, London, 367.