

**Swartzite****CaMg(UO<sub>2</sub>)(CO<sub>3</sub>)<sub>3</sub>•12H<sub>2</sub>O**

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**Crystal Data:** Monoclinic. *Point Group:* 2/m. As crystals, to about 0.3 mm, prismatic along [001], in efflorescent crusts.

**Physical Properties:** Hardness = n.d. D(meas.) = 2.3 D(calc.) = 2.32 Radioactive; soluble in H<sub>2</sub>O; fluoresces bright yellow-green under SW UV.

**Optical Properties:** Transparent. *Color:* Green; turns dull pale yellow on dehydration. *Optical Class:* Biaxial (-). *Pleochroism:* X = colorless; Y = Z = yellow. *Dispersion:* r > v. α = 1.465 β = 1.51 γ = 1.540 2V(meas.) = n.d. 2V(calc.) = 40°

**Cell Data:** *Space Group:* P2<sub>1</sub>/m (synthetic). a = 11.080(2) b = 14.634(2) c = 6.439(1) β = 99.43(1)° Z = 2

**X-ray Powder Pattern:** Hillside mine, Arizona, USA.  
8.76 (10), 5.50 (10), 7.31 (9), 4.82 (8), 2.91 (8), 2.06 (8), 1.707 (8)

**Chemistry:**

	(1)	(2)
UO <sub>3</sub>	38.85	39.15
CO <sub>2</sub>	17.92	18.07
MgO	5.47	5.52
CaO	7.32	7.67
Na <sub>2</sub> O	0.26	
K <sub>2</sub> O	0.49	
H <sub>2</sub> O	29.69	29.59
Total	[100.00]	100.00

(1) Hillside mine, Arizona, USA; recalculated to 100% after deduction of gypsum 4.38% and insoluble 0.30%. (2) CaMg(UO<sub>2</sub>)(CO<sub>3</sub>)<sub>3</sub>•12H<sub>2</sub>O.

**Occurrence:** A secondary mineral in oxidized portions of a polymetallic sulfide deposit, the source of uranium undetermined.

**Association:** Gypsum, schrockingerite, andersonite, bayleyite (Hillside mine, Arizona, USA).

**Distribution:** In the USA, from the Hillside mine, about 5.5 km north of Bagdad, Eureka district, Yavapai Co., Arizona; in Colorado, in the Rifle mine, Garfield Co., and the Schwartzwalder mine, Jefferson Co.; at the Coral prospect, Elk Ridge, San Juan Co., Utah.

**Name:** Honors Charles K. Swartz (1861–1949), Professor of Geology and Mineralogy, Johns Hopkins University, Baltimore, Maryland, USA.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 106107, 106108.

**References:** (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 238–239. (2) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Survey Bull. 1064, 117–119. (3) Mereiter, K. (1986) Synthetic swartzite, CaMg[UO<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub>]•12H<sub>2</sub>O, and its strontium analogue, SrMg[UO<sub>2</sub>(CO<sub>3</sub>)<sub>3</sub>]•12H<sub>2</sub>O: crystallography and crystal structure. Neues Jahrb. Mineral., Monatsh., 481–492.