

**Crystal Data:** Monoclinic. *Point Group:* 2/m. As crystals, to 0.15 mm, acicular, and as flakes; may be intimately intergrown with another vanadium oxide hydrate; massive, in veinlets.

**Physical Properties:** Hardness = 4.7 D(meas.) = n.d. D(calc.) = [3.51]

**Optical Properties:** Opaque. *Color:* Black; yellowish gray to dark gray in reflected light.

*Optical Class:* Biaxial. *Anisotropism:* Very strong; yellowish gray to bluish gray.

R<sub>1</sub>–R<sub>2</sub>: (440) 11.7–11.0, (460) 11.8–11.0, (480) 12.0–11.0, (500) 12.3–11.0, (520) 12.3–11.0, (540) 13.0–11.1, (560) 13.4–11.2, (580) 13.7–11.2, (600) 14.0–11.2, (620) 14.3–11.2, (640) 14.6–11.2, (660) 14.9–11.3, (680) 15.2–11.5, (700) 15.6–11.9

**Cell Data:** *Space Group:* C2/m. *a* = 12.17(5) *b* = 2.99(1) *c* = 4.83(2)  $\beta$  = 98°15(5)'  
Z = 2

**X-ray Powder Pattern:** Carlile, Wyoming, USA.

4.80 (100), 4.05 (50), 3.02 (25), 2.44 (25), 1.959 (18), 3.51 (12), 1.815 (12)

**Chemistry:**

	(1)	(2)
V <sub>2</sub> O <sub>5</sub>	99.61	
V <sub>2</sub> O <sub>4</sub>		44.86
V <sub>2</sub> O <sub>3</sub>		40.53
H <sub>2</sub> O	n.d.	14.61
Total	99.61	100.00

(1) Russia, two localities; by electron microprobe, multiple determinations averaging V = 55.8%, here converted to V<sub>2</sub><sup>5+</sup>O<sub>5</sub>. (2) V<sup>4+</sup>V<sup>3+</sup>O<sub>2</sub>(OH)<sub>3</sub>.

**Occurrence:** In the oxidized zone of Colorado Plateau-type U–V deposits.

**Association:** Doloresite (USA); pyrite, selenium (Russia).

**Distribution:** In sandstone drill core at a depth of 55 m, from near Carlile, Crook Co., Wyoming; from the Runge mine, near Edgemont, Fall River Co., South Dakota; in the Grants district, McKinley Co., New Mexico; at the Gold Quarry mine, Eureka Co., Nevada, USA. In Russia, at undefined localities in the Voronezh anticline, around Kursk. In the Syr Dar'ya basin, southern Kara-Tau Mountains, Kazakhstan. From an undefined locality in Turkmenistan.

**Name:** Honors Gunnar Hägg (1903– ), chemist and crystallographer, of the University of Uppsala, Uppsala, Sweden.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 162623.

**References:** (1) Evans, H.T., Jr. and M.E. Mrose (1958) The crystal structures of three new vanadium oxide minerals. *Acta Cryst.*, 11, 56–58. (2) Evans, H.T., Jr. and M.E. Mrose (1960) A crystal chemical study of the vanadium oxide minerals, häggite and doloresite. *Amer. Mineral.*, 45, 1144–1166. (3) Ryabeva, Y.G., L.S. Dubakina, A.A. Gorshkov, Z.A. Nekrasova, L.I. Taychikova, and T.A. Khruleva (1978) New data on häggite. *Doklady Acad. Nauk SSSR*, 243, 1295–1297 (in Russian).