

Crystal Data: Monoclinic. *Point Group:* $2/m$. Rare minute crystals, flattened on {001}, and in extremely fine-grained masses.

Physical Properties: *Fracture:* Conchoidal. Hardness = 3.5 $D(\text{meas.}) = 2.720\text{--}2.734$
 $D(\text{calc.}) = [2.72]$ Soluble in H_2O , dissolving sodium phosphate.

Optical Properties: Semitransparent. *Color:* Light gray. *Luster:* Vitreous.
Optical Class: Biaxial (-). *Orientation:* $X = b$; $Z \wedge c = 7^\circ$. *Dispersion:* $r < v$. $\alpha = 1.487(2)$
 $\beta = 1.546(2)$ $\gamma = 1.560(2)$ $2V(\text{meas.}) = 49^\circ$ $2V(\text{calc.}) = 50^\circ$

Cell Data: *Space Group:* $P2_1/m$. $a = 8.85(1)$ $b = 6.63(1)$ $c = 5.16(1)$ $\beta = 90^\circ 25(5)'$
 $Z = 2$

X-ray Powder Pattern: Westvaco mine, Wyoming, USA.
 2.655 (100), 3.312 (71), 8.85 (50), 2.576 (35), 1.839 (30), 3.694 (25), 1.658 (25)

Chemistry:	(1)	(2)
SO_3	0.55	
P_2O_5	26.34	28.59
SiO_2	0.02	
CO_2	18.39	17.73
Al_2O_3	0.29	
Fe_2O_3	0.62	
MgO	15.44	16.23
Na_2O	37.57	37.45
Cl	0.42	
H_2O^-	0.36	
Total	[100.00]	100.00

(1) John Hay, Jr. Well No. 1, Wyoming, USA; recalculated to 100% after deduction of shortite 0.36% and clay 14.46%. (2) $\text{Na}_3\text{Mg}(\text{PO}_4)(\text{CO}_3)$.

Occurrence: A rare mineral in oil shale in the Green River formation.

Association: Shortite, clay minerals, trona, pirssonite, northupite, gaylussite, alstonite, dolomite, quartz.

Distribution: In the John Hay, Jr. Well No. 1, about 30 km west of Green River, and in the Westvaco mine, Green River, Sweetwater Co., Wyoming, USA.

Name: Honoring Dr. Wilmot Hyde Bradley (1899–1979), geologist, U.S. Geological Survey, who studied the Green River formation.

Type Material: National Museum of Natural History, Washington, D.C., USA, 117718.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 295. (2) Fahey, J.J. and M.E. Mrose (1962) Saline minerals of the Green River formation. U.S. Geol. Sur. Prof. Paper 405, 34–35, 48.