

Kernite

Na₂B₄O₆(OH)₂•3H₂O

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Crystal Data: Monoclinic. *Point Group:* 2/*m*. Crystals commonly nearly equant, with over 30 forms noted; typically as cleavable masses, to 3.5 m, bent or warped; massive. *Twinning:* On {011}.

Physical Properties: *Cleavage:* On {100} and {001}, perfect; on { $\bar{1}02$ }, fair. *Fracture:* Splintery. *Tenacity:* Flexible and elastic in cleavage fragments. Hardness = 2.5 D(meas.) = 1.906(3) D(calc.) = 1.905 Soluble in H₂O.

Optical Properties: Transparent. *Color:* Colorless, white if surficially altered to tincalconite. *Streak:* White. *Luster:* Vitreous, satiny on fibrous cleavages. *Optical Class:* Biaxial (-). *Orientation:* Z = b; X \wedge c = 70.5°. *Dispersion:* r > v, slight to distinct. α = 1.454 β = 1.472 γ = 1.488 2V(meas.) = 80°

Cell Data: *Space Group:* P2₁/c. a = 7.0172(2) b = 9.1582(2) c = 15.6774(5) β = 108.861(2)° Z = 4

X-ray Powder Pattern: Tincalayu deposit, Argentina. 7.40 (100), 6.64 (85), 3.253 (34), 3.132 (29), 2.882 (29), 2.472 (27), 3.705 (23)

Chemistry:

	(1)	(2)
B ₂ O ₃	50.76	50.95
Na ₂ O	22.63	22.68
H ₂ O	26.50	26.37
Total	99.89	100.00

(1) Kern Co., California, USA. (2) Na₂B₄O₆(OH)₂•3H₂O

Occurrence: An important ore mineral of borax in sedimentary borate deposits, deposited under warm conditions or formed by metamorphism.

Association: Borax, inyoite, ulexite, colemanite.

Distribution: From the Kramer borate deposit, Boron, Kern Co., California, USA. In the Tincalayu borax deposit, Salar del Hombre Muerto, Salta Province, Argentina. From the Kirka borate deposit, Kütahya Province, Turkey.

Name: For Kern Co., California, USA, in which Boron is located.

Type Material: Harvard University, Cambridge, Massachusetts, 88508; National Museum of Natural History, Washington, D.C., USA, 95643.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 335–337. (2) Cooper, W.F., F.K. Larsen, and P. Coppens (1973) Electron population analysis of accurate diffraction data. V. Structure and one-center charge refinement of the light-atom mineral kernite, Na₂B₄O₆(OH)₂•3H₂O. Amer. Mineral., 58, 21–31. (3) Hurlbut, C.S., Jr., L.F. Aristarain, and R.C. Erd (1973) Kernite from Tincalayu, Salta, Argentina. Amer. Mineral., 58, 308–313.