

Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals are typically elongated along [001], to about 1 cm, with large {110}, {010}, {101}, smaller {120}, $\{\bar{1}01\}$, {111}; as fibrous masses, oriented perpendicular to bedding planes; in friable porous aggregates. *Twining:* Common on {101} as twin and composition plane, interpenetration and contact, may be in reticulated groups.

Physical Properties: *Cleavage:* Perfect on {101}; good on {111}; fair on {100}. *Fracture:* Conchoidal. Hardness = 2.5 D(meas.) = 2.21–2.238 D(calc.) = 2.16 Soluble in H₂O.

Optical Properties: Transparent. *Color:* Colorless, white, yellow, may be gray, reddish brown, to black from impurities; colorless in transmitted light. *Streak:* White. *Luster:* Vitreous, resinous on cleavages.

Optical Class: Biaxial (-). *Orientation:* $Y = b$; $X \wedge c = 27^\circ$. *Dispersion:* $r < v$, weak. $\alpha = 1.375(2)$ $\beta = 1.498\text{--}1.503$ $\gamma = 1.583$ $2V(\text{meas.}) = \sim 75^\circ$ $2V(\text{calc.}) = 74^\circ$

Cell Data: *Space Group:* $P2_1/n$ (synthetic). $a = 7.525(4)$ $b = 9.72(4)$ $c = 3.53(3)$
 $\beta = 93^\circ 19'$ $Z = 4$

X-ray Powder Pattern: Anvil Points, ten miles west of Rifle, Garfield Co., Colorado, USA. 2.97 (100), 2.60 (90), 3.08 (25), 2.217 (18), 2.032 (18), 3.48 (15), 1.900 (15)

Chemistry:	(1)	(2)
CO ₂	51.15	52.39
(Al, Fe) ₂ O ₃	0.16	
CaO	0.20	
Na ₂ O	36.74	36.89
H ₂ O	10.76	10.72
insol.	0.82	
Total	99.83	100.00

(1) Searles Lake, California, USA. (2) NaHCO₃.

Occurrence: A precipitate from hot springs; as efflorescences around saline lakes and in brines; formed at a late stage in differentiated alkalic massifs; as a solid in liquid inclusions in a variety of other mineral species.

Association: Trona, thermonatrite, thénardite, halite, gaylussite, burkeite, northupite, borax.

Distribution: In a Roman conduit at Stufe de Nerone, Campi Flegrei, near Naples, and on Vesuvius, Campania, Italy. In the USA, from Searles Lake, San Bernardino Co., California; abundant in the Green River Formation, Colorado and Utah, northwestern Colorado having estimated reserves of over 30 billion tons. In the Tincalayu deposit, Salar del Hombre Muerto, Salta Province, Argentina. Along the Ilmajok River and on Mt. Alluaiv, Lovozero massif, and at Tuliylukht Bay and on Mt. Kukisvumchorr, Khibiny massif, Kola Peninsula, Russia. Around Mt. Erebus, Victoria Land, Antarctica.

Name: From the composition, NaHCO-lite.

Type Material: National School of Mines, Paris, France, 17912.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 134–136. (2) Fahey, J.J. (1962) Saline minerals of the Green River Formation. U.S. Geol. Surv. Prof. Paper 405, 30–31, 47. (3) Sass, R.L. and R.F. Scheuerman (1962) The crystal structure of sodium bicarbonate. Acta Cryst., 15, 77–81.