

Crystal Data: Monoclinic. *Point Group:* 2/m. Crystals are dominated by {001}, {100}, flattened on {001} and elongated on [010], with minor {201}, {301}, {211}, {211}, {411}, to 10 cm; may be fibrous or columnar massive, as rosettelike aggregates.

Physical Properties: *Cleavage:* {100}, perfect; {211} and {001}, interrupted.
Fracture: Uneven to subconchoidal. Hardness = 2.5–3 D(meas.) = 2.11 D(calc.) = 2.124
Soluble in H₂O, alkaline taste; may fluoresce under SW UV.

Optical Properties: Translucent. *Color:* Colorless, gray, pale yellow, brown; colorless in transmitted light. *Luster:* Vitreous.

Optical Class: Biaxial (-). *Orientation:* X = b; Z ∧ c = 83°. *Dispersion:* r < v; strong.
α = 1.412–1.417 β = 1.492–1.494 γ = 1.540–1.543 2V(meas.) = 76°16' 2V(calc.) = 74°

Cell Data: *Space Group:* I2/a. a = 20.4218(9) b = 3.4913(1) c = 10.3326(6)
β = 106.452(4)° Z = 4

X-ray Powder Pattern: Sweetwater Co., Wyoming, USA.
2.647 (100), 3.071 (80), 4.892 (55), 9.77 (45), 2.444 (30), 2.254 (30), 2.029 (30)

Chemistry:	(1)	(2)
CO ₂	38.13	38.94
SO ₃	0.70	
Na ₂ O	41.00	41.13
Cl	0.19	
H ₂ O	20.07	19.93
insol.	0.02	
-O = Cl ₂	0.04	
Total	100.07	100.00

(1) Owens Lake, California, USA; average of several analyses. (2) Na₃(CO₃)(HCO₃)·2H₂O.

Occurrence: Deposited from saline lakes and along river banks as efflorescences in arid climates; rarely from fumarolic action.

Association: Natron, thermonatrite, halite, glauberite, thénardite, mirabilite, gypsum (alkali lakes); shortite, northupite, bradleyite, pirssonite (Green River Formation, Wyoming, USA).

Distribution: Widespread in arid regions. Historically important deposits in the lower Nile delta, near Memphis, Egypt, and elsewhere in the Sahara Desert, Africa. Large crystals at Lake Magadi, Kenya, about which 2 billion tons have formed. Around Lake Chad, Chad. At Lake Katwe, western Uganda. From Lake Nyassa, Tanzania. At the Otjiwalundo salt pan, about 400 km west-northwest of Otavi, Namibia. In the USA, in California, at Searles Lake, San Bernardino Co., Borax Lake, Lake Co., and Owens Lake, Inyo Co.; extensive deposits, aggregating over 100 billion tons, occur in the Green River Formation, Wyoming, Colorado, and Utah; in Nevada, from Little Soda Lake, Churchill Co., and elsewhere. At Lagunillas, about 80 km southeast of Merida, Venezuela. In the Bepazari deposit, west of Ankara, Turkey, estimated at over 200 million tons. On Vesuvius, and at Campi Flegrei, near Naples, Campania, Italy.

Name: A short form of the Arabic word for the natural compound.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 138–140. (2) Pabst, A. (1959) On the hydrates of sodium carbonate, a correction, and the crystallography of trona. *Amer. Mineral.*, 44, 274–281. (3) Choi, C.S. and A.D. Mighell (1982) Neutron diffraction study of sodium sesquicarbonate dihydrate. *Acta Cryst.*, 38, 2874–2876. (4) Pertlik, F. (1986) Ein vergleich von ergebnissen routinemässiger strukturbestimmungen mittels röntgen-bzw. neutronen-einkristalldaten am beispiel der Trona, Na₃H[CO₃]₂·2H₂O. *Mitt. Österr. Miner. Ges.*, 131, 7–14 (in German). (5) (1978) NBS Mono. 25, 15, 71.

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