



BORAX

ANHYDROUS AND HYDRATED

MATERIAL & FUNCTION

The term borax is often used for a number of closely related minerals or chemical compounds that differ in their crystal water content:

- Anhydrous Borax (Disodium tetraborate, anhydrous; $\text{Na}_2\text{B}_4\text{O}_7$), CAS No: 1330-43-4 (EC No 215-540-4).
- Borax Sodium salts (Borates, tetra, sodium salts (includes anhydrous, decahydrate, pentahydrate), CAS No: 1303-96-4. Borax pentahydrate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$). Borax decahydrate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$). Anhydrous Borax is a free flowing mixture of clear, glass-like particles and white granules formed by the crushing of relatively large masses of fused materials.

Occurrence

Borax occurs naturally in evaporite deposits produced by the repeated evaporation of seasonal lakes. The most commercially important deposits are found in Turkey, Boron, California, and Searles Lake, California. Also, it has been found at many other locations in the Southwestern United States, the Atacama desert in Chile, and in Tibet and Romania. Borax can also be produced synthetically from other boron compounds.

Searles Valley supply the Three Elephant **Pyrobor** (anhydrous) brand. Rio Tinto (US Borax subsidiary) supply the 20 mule Team Brand with grades **Dehybor** (anhydrous) and **Neobor** (pentahydrate).

PROPERTIES (anhydrous borax)

Appearance: White, glassy crystalline solid

Formula: $\text{Na}_2\text{B}_4\text{O}_7$

MW: 201.2

Melting Point ($^{\circ}\text{C}$): 742

Boiling Point ($^{\circ}\text{C}$): 1575 (dec)

Specific Gravity: 2.37 (decahydrate 1.73)

Vapour Pressure: No data (decahydrate 0.213 hPa at 20C)

Log(pow): cannot be measured in n octanol (forms H_3BO_3)

Flashpoint ($^{\circ}\text{C}$): Not flammable

Solubility in Water: 2.5% at 20 $^{\circ}\text{C}$; 34.5% at 100 $^{\circ}\text{C}$.

pH (1% solution): 9.2 approx.

Theoretical composition (%): Sodium oxide (Na_2O) 30.8; Boric oxide (B_2O_3) 69.2

Specific heat @ 25oC: 44.64 cal/deg-mol

Heat of solution @ 18oc: 7.26 Kcal/g-mol or 28.81 Btu

Heat of formation @ 25oC: -786.6 Kcal/g-mol or -3121.6 Btu

APPLICATIONS

Borax has many applications in chemistry, mining and pharmaceuticals.

In flux applications it functions to lower the melting pint of a mixture. Anhydrous Borax is mainly utilized by Klen as an additive for the manufacture of gold fire assay fluxes.

SAFETY

Toxicity. Borax, sodium tetraborate decahydrate, is not acutely toxic. Its LD50 (median lethal dose) score is tested at 2.66 g/kg in rats. This does not mean that it is safe, merely that a significant dose of the chemical is needed to cause severe symptoms or death.. Simple exposure can cause respiratory and skin irritation. Ingestion may cause gastrointestinal distress including nausea, persistent vomiting, abdominal pain, and diarrhea. Effects on the vascular system and brain include headaches and lethargy, but are less frequent. "In severe poisonings, a beefy red skin rash affecting palms, soles, buttocks and scrotum has been described. With severe poisoning, erythematous and exfoliative rash, unconsciousness, respiratory depression, and renal failure."

A reassessment of boric acid/borax by the United States Environmental Protection Agency Office of Pesticide Programs found potential developmental toxicity (especially effects on the testes). It is classified as a developmental and reproductive toxin by the EU and Australia.

Avoid contact with skin and eyes and avoid breathing dust.

PACKAGING

25 kg bags

IMPORTANT NOTICE TO CUSTOMER

*Since the use of this product is beyond the control of either seller or manufacturer, their only obligation shall be to replace any quantity of product which is proven defective. They cannot assume any risk or liability in excess of the purchase price of the product itself, which does not include labour or any consequential damages resulting from the use of this product. Determining the suitability of this product for any intended use shall be solely the responsibility of the user. **ALWAYS TEST FIRST.***

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