



>>Entry Name: Disodium tetraborate, 11Cl, 10Cl, 9Cl, 8Cl

ENTRY UNDER REVIEW

Synonym(s): Borax ($\text{B}_4\text{Na}_2\text{O}_7$), 10Cl. Boron sodium oxide ($\text{B}_4\text{Na}_2\text{O}_7$), 10Cl. Boric acid, disodium salt, 8Cl. Anhydrous borax. Borax, fused

CAS Registry Number: 1330-43-4

Related CAS Registry Numbers(s): 14312-40-4

$\text{Na}_2\text{O} \cdot 2\text{B}_2\text{O}_3$

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

Molecular Weight: 201.219

Accurate Mass: 201.981159

Percentage Composition: B 21.49%; Na 22.85%; O 55.66%

General Statement: Known in three forms, α - and metastable β - and γ -forms. Contains $[\text{B}_8\text{O}_{14}]^{4(-)}$ anions consisting of linked B_3O_3 and B_5O_6 groups

Use/Importance: Feedstock for glass, glazes, fertilisers and welding or brazing fluxes

Physical Description: Colourless solid

Melting Point: Mp 743° (α -form). Mp 720° (β -form). Mp 663° (γ -form)

Boiling Point: Bp 1575°

Solubility: Sol. H_2O (1.1 g per 100 cm^3 at 0°, 8.8 g per 100 cm^3 at 40°), MeOH, ethylene glycol

Other Data: $\Delta H_f -3259 \text{ kJ mol}^{-1}$; $\Delta G_f -3082 \text{ kJ mol}^{-1}$; $S^\circ 189.5 \text{ J K}^{-1} \text{ mol}^{-1}$

Hazard & Toxicity: Irritant

Aldrich: 22173-2

Fluka: 72001

Sigma: B0127

>>Derivative: Monohydrate

CAS Registry Number: 12447-36-8

Molecular Formula: $\text{B}_4\text{H}_2\text{Na}_2\text{O}_8$

Molecular Weight: 219.234

Accurate Mass: 219.991724

Percentage Composition: B 19.72%; H 0.92%; Na 20.97%; O 58.38%

Physical Description: Colourless cryst.

Solubility: Sol. $\text{H}_2\text{O} \rightarrow \text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$

Other Data: Correctly formulated as $\text{Na}_2\text{B}_4\text{O}_6(\text{OH})_2$

>>Derivative: Dihydrate

Synonym(s): Metakernite

Molecular Formula: $\text{B}_4\text{H}_4\text{Na}_2\text{O}_9$

Molecular Weight: 237.25

Accurate Mass: 238.002289

Percentage Composition: B 18.23%; H 1.70%; Na 19.38%; O 60.69%

Source/Synthesis: Mineral or prepd. by thermal dec. of $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ or $\text{Na}_2\text{B}_4\text{O}_7 \cdot 4\text{H}_2\text{O}$ either under vacuum or over P_2O_5

Physical Description: Amorphous powder

Other Data: Correctly formulated as $\text{Na}_2\text{B}_4\text{O}_5(\text{OH})_4$

>>Derivative: Tetrahydrate

see Disodium tetraborate tetrahydrate, [KBM00-S](#)

>>Derivative: Pentahydrate

see Disodium tetraborate pentahydrate, [KBM17-C](#)

>>Derivative: Decahydrate

see Borax, [KBS68-W](#)

References: