



>>Entry Name: Sodium sulfate, USAN

Synonym(s): Disodium sulfate. Sulfuric acid disodium salt, 8Cl. Salt cake. Sodium sulfoxylate

CAS Registry Number: 7757-82-6

Related CAS Registry Numbers(s): 14262-80-7 29381-14-4

Na_2SO_4

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

Molecular Weight: 142.043

Accurate Mass: 141.931264

Percentage Composition: Na 32.37%; O 45.06%; S 22.57%

Source/Synthesis: Manuf. directly from sulfate salt deposits or by treatment of NaCl with H_2SO_4 , NaHSO_4 or $(\text{NH}_4)_2\text{SO}_4$. Alternatively produced by dehydrating the decahydrate

Use/Importance: Commercially available. Used in the Kraft process for the manuf. of brown paper. Drying agent in org. chem. Calcium regulator, cathartic. ^{35}S labelled compd. used as radioactive agent (*Sodium sulfate S 35*, USAN). Important industrial chemical, USA production in 1999 660,000 tons

Physical Description: Colourless orthorhombic cryst. Undergoes a transition between two orthorhombic polymorphs at 185° and an orthorhombic to hexagonal transition at 241° . A metastable orthorhombic polymorph is formed on cooling the hexagonal polymorph under anhydrous conditions. A fifth polymorph may exist above 713°

Melting Point: Mp 884°

Solubility: Mod. sol. H_2O (4.8 g per 100 cm^3 at 0° ; 43 g per 100 cm^3 at 100°)

Other Data: $\Delta H_f^\circ -1387.8\text{ kJ mol}^{-1}$; $\Delta G_f^\circ -1269.8\text{ kJ mol}^{-1}$; $S^\circ 149.6\text{ J K}^{-1}\text{ mol}^{-1}$

Aldrich: 31956-2

Fluka: 86126

Sigma: S9627

>>Variant: Mineral-form

Synonym(s): Thenardite

CAS Registry Number: 13759-07-4

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

Molecular Weight: 142.043

Accurate Mass: 141.931264

Percentage Composition: Na 32.37%; O 45.06%; S 22.57%

Source/Synthesis: Occur. widespread in salt lake and playa deposits

Physical Description: Colourless to grey or yellow translucent cryst.

>>Derivative: Heptahydrate

CAS Registry Number: 13472-39-4

Molecular Formula: $\text{H}_{14}\text{Na}_2\text{O}_{11}\text{S}$

Molecular Weight: 268.149

Accurate Mass: 268.005219

Percentage Composition: H 5.26%; Na 17.15%; O 65.63%; S 11.96%

Source/Synthesis: Synth. by partial dehydration of the decahydrate (desiccation over aq. 80% H_2SO_4)

Physical Description: White orthorhombic cryst.; dec. on heating by H_2O loss

Solubility: V. sol. H_2O (20 g per 100 cm^3 at 0° ; 44 g per 100 cm^3 at 20°); insol. EtOH

>>Derivative: Decahydrate

>>Derivative: Peroxohydrate, hydrate

Synonym(s): Sodium sulfate peroxohydrate hydrate

CAS Registry Number: 29761-94-2

References: