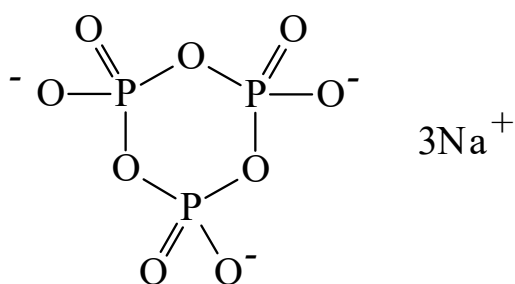




>>Entry Name: Trisodium metaphosphate ($\text{P}_3\text{O}_9^{3(-)}$), 9Cl, 8Cl

Synonym(s): Sodium cyclotriphosphate. Sodium trimetaphosphate. Sodium cyclotrimetaphosphate



CAS Registry Number: 7785-84-4

Molecular Formula: $\text{Na}_3\text{O}_9\text{P}_3$

Molecular Weight: 305.885

Accurate Mass: 305.844822

Percentage Composition: Na 22.55%; O 47.07%; P 30.38%

Source/Synthesis: Synth. by heating NaH_2PO_4 or its hydrate; or $\text{Na}_4\text{P}_2\text{O}_7 + \text{NH}_4\text{NO}_3$

Other Data: Orthorhombic unit cell. Chair conformn. of ring. Av. P-O(ring) 161.5, P-O(exo) 148.4 pm. OPO(ring) 101.1°, OPO(exo) 126.9°. $\text{Na}^{(+)}$ ions are pentacoordinated in non-equiv. sites

Sigma: T5258

>>Derivative: Monohydrate

CAS Registry Number: 31072-76-1

Source/Synthesis: Synth. by evap. of aq. solns. at 60°. Alternatively, from Sodium triphosphate ($\text{Na}_5(\text{P}_3\text{O}_{10})$) [HTW37-V](#) with AcOH at 60°

Other Data: Orthorhombic with 6-coord. Na

>>Derivative: Sesquihydrate

CAS Registry Number: 23318-55-0

Source/Synthesis: Synth. by addition of EtOH to 10% aq. soln. at 30°. Also from $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O} + \text{Ac}_2\text{O}$

Physical Description: Thin elongated plates

>>Derivative: Trihydrate

CAS Registry Number: 99552-38-2

Source/Synthesis: Synth. by addition of EtOH to aq. 5-10% soln. at 20°

Other Data: Readily effloresces

>>Derivative: Hexahydrate

Synonym(s): Knorre's salt

CAS Registry Number: 29856-33-5

Molecular Formula: $\text{H}_{12}\text{Na}_3\text{O}_{15}\text{P}_3$

Molecular Weight: 413.977

Accurate Mass: 413.908212

Percentage Composition: H 2.92%; Na 16.66%; O 57.97%; P 22.45%

Source/Synthesis: Synth. by addition of EtOH to aq. solns. at 0-20°

Physical Description: Air-sensitive colourless efflorescent triclinic cryst.

Solubility: Sol. H_2O

Other Data: Loses $6\text{H}_2\text{O}$ at 53°

>>Variant: I-form

Molecular Formula: $\text{Na}_3\text{O}_9\text{P}_3$

Molecular Weight: 305.885

Accurate Mass: 305.844822

Percentage Composition: Na 22.55%; O 47.07%; P 30.38%

Source/Synthesis: Synth. by heating NaH_2PO_4 to 500-625° and cooling melt very slowly. Heating $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$ to 250-400° yields I-form together with Maddrell's salt

Melting Point: Mp 625°