



**>>Entry Name: Sodium thiophosphate (Na<sub>3</sub>(PO<sub>3</sub>S))**

**Synonym(s):** Trisodium phosphorothioate, 9Cl, 8Cl. Trisodium monothiophosphate

**CAS Registry Number:** 10101-88-9

Na<sub>3</sub>[PO<sub>3</sub>S]

**Molecular Formula:** Na<sub>3</sub>O<sub>3</sub>PS

**Molecular Weight:** 180.007

**Accurate Mass:** 179.899878

**Percentage Composition:** Na 38.31%; O 26.66%; P 17.21%; S 17.81%

**Source/Synthesis:** Synth. by dehydration of dodecahydrate over P<sub>2</sub>O<sub>5</sub> *in vacuo*, or of nonahydrate at 790°

**Physical Description:** Cryst. solid

**Solubility:** Sol. cold H<sub>2</sub>O (13.3 g per 100 cm<sup>3</sup> at 28°), more sol. hot H<sub>2</sub>O

**Other Data:** Dec. at 300° *in vacuo*

**>>Derivative: Nonahydrate**

**CAS Registry Number:** 51674-18-1

**Source/Synthesis:** Synth. by dehydration of dodecahydrate over H<sub>2</sub>SO<sub>4</sub>

**Melting Point:** Mp 62-64°

**Other Data:** Monoclinic. Loses 9H<sub>2</sub>O at 79°

**>>Derivative: Dodecahydrate**

**CAS Registry Number:** 51674-17-0

**Source/Synthesis:** Synth. from PSCl<sub>3</sub> + NaOH aq. or NaOH aq. + P<sub>4</sub>S<sub>10</sub>. Also from the trisilver salt and NaCl aq.

**Physical Description:** Hexagonal flakes

**Melting Point:** Mp 60°

**Solubility:** V. sol. hot H<sub>2</sub>O

**Other Data:** Effloresces in air. Hexagonal unit cell with discrete [PO<sub>3</sub>S]<sup>3(-)</sup> and (Na<sub>3</sub>)<sup>3(+)</sup>(OH<sub>2</sub>)<sub>12</sub> groups. Slowly evolves H<sub>2</sub>S in air. Dec. rapidly at 60°

**Aldrich:** 37812-7

**Fluka:** 72045

**References:**

Corbridge, D.E.C. *et al.*, *J.C.S.*, 1954, 4555, (*ir*)

*Inorg. Synth.*, 1957, **5**, 102; 1977, **17**, 193, (*synth*)

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Pelavin, M. *et al.*, *J. Phys. Chem.*, 1970, **74**, 1116, (*pe*)

Palazzi, M., *Bull. Soc. Chim. Fr.*, 1973, 3246, (*synth, cryst struct*)

Brauer, G., *Handbuch Prap. Anorg. Chem.*, 3rd edn., Ferdinand Enke Verlag, 1975, **1**, 552, (*synth*)

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