



>>Entry Name: Samarium(III) phosphate (SmPO₄)

Synonym(s): Samarium(3+) phosphate (1:1), 9Cl, 8Cl. Samarium(3+) orthophosphate

CAS Registry Number: 13465-57-1

Related CAS Registry Numbers(s): 14913-18-9 59211-78-8

SmPO₄

Molecular Formula: O₄PSm

Molecular Weight: 245.331

Accurate Mass: 246.873151

Percentage Composition: O 26.09%; P 12.63%; Sm 61.29%

Source/Synthesis: Synth. from Sm₂O₃ + (NH₄)₂HPO₄ in Pt vessel at 1100°; from Sm(NO₃)₃ or SmCl₃ + NaH₂PO₄ aq. or NH₄H₂PO₄ aq.

Physical Description: Hygroscopic light yellow cryst.

Melting Point: Mp 2040° (1916°)

Other Data: ΔH_{f298} -1961 (-1986) kJ mol⁻¹

>>Derivative: Hemihydrate

CAS Registry Number: 60840-91-7

Source/Synthesis: Synth. from Sm₂O₃ + H₃PO₄ at 300°. Also readily formed from the anhydrous salt

Other Data: Hexagonal. Dehydrates at 600° → anhydrous, monoclinic phase

>>Derivative: Monohydrate

CAS Registry Number: 106534-67-2

Other Data: Rhabdophane struct. type when prep. at 100°. At 700° → monoclinic anhydrous form

>>Derivative: 1.5 Hydrate

CAS Registry Number: 14690-55-2

Other Data: Metastable hexagonal

>>Derivative: 2.5 Hydrate

CAS Registry Number: 22992-20-7

Other Data: Hexagonal. Completely dehydrates at 500°. A dihydrate has also been reported

>>Variant: Hexagonal-form

Synonym(s): Rel. low temp. form

Molecular Formula: O₄PSm

Molecular Weight: 245.331

Accurate Mass: 246.873151

Percentage Composition: O 26.09%; P 12.63%; Sm 61.29%

Other Data: Exhibits no phase transitions between -269° and *ca.* 350°. Transforms into monoclinic form at >600°

>>Variant: Monoclinic-form

Synonym(s): High temp. form

Molecular Formula: O₄PSm

Molecular Weight: 245.331

Accurate Mass: 246.873151

Percentage Composition: O 26.09%; P 12.63%; Sm 61.29%

103.3-114.5°

Source/Synthesis: Synth. from the hemihydrate at 600°. Products from wet preparations dried at 900°

Other Data: Exhibits no phase transitions between -269° and *ca.* 350°

References: