



>>Entry Name: Chromium phosphate (CrPO₄)

Synonym(s): Chromium(3+) phosphate (1:1), 9Cl. Chromium(*III*) orthophosphate. Chromic phosphate

CAS Registry Number: 7789-04-0

Related CAS Registry Numbers(s): 13475-97-3 24381-60-0 26469-46-5 59178-47-1 59178-48-2 59178-49-3 84359-31-9

Extra CAS Registry Numbers(s): 16453-74-0

CrPO₄

Molecular Formula: CrO₄P

Molecular Weight: 146.967

Accurate Mass: 146.893931

Percentage Composition: Cr 35.38%; O 43.55%; P 21.08%

Source/Synthesis: Obt. by heating mixt. of (NH₄)H₂PO₄ and Cr₂O₃

Use/Importance: Various hydrates have found application in paint technology and 'anti-rust' preparations. ⁵¹CrPO₄ and Cr³²PO₄ used as radioactive agents. (*Chromic phosphate Cr 51*, *Chromic phosphate P 32*, USAN)

Other Data: Many additional hydrates have been recorded and are probably based on the α-form. They are said to be amorphous

>>Variant: α-form

Molecular Formula: CrO₄P

Molecular Weight: 146.967

Accurate Mass: 146.893931

Percentage Composition: Cr 35.38%; O 43.55%; P 21.08%

General Statement: Struct. possesses pairs of edge-sharing CrO₆ octahedra connected with two PO₄ tetrahedra at opposite edges, and contains large channels

Source/Synthesis: Synth. from amorphous phosphate by chemical (Cl₂) transport

Physical Description: Dark green or blue-green well shaped cryst.

Melting Point: Mp 1850°

Other Data: Fairly inert

>>Derivative: Tetrahydrate

CAS Registry Number: 10101-59-4

Source/Synthesis: Synth. from CrO₃ + H₃PO₄ + N₂H₄

Physical Description: Grey-green amorphous cryst.

Other Data: Heating at 800° yields amorphous CrPO₄

>>Derivative: Hexahydrate

Synonym(s): Hexaaquachromium(*III*) phosphate

CAS Registry Number: 13475-98-4

Source/Synthesis: Synth. from Cr(NO₃)₃ + NaH₂PO₄ at pH 3.5-4 in acetate buffer

Physical Description: Dull purple, hexagonal plates or pale green microcryst.

Other Data: Best formulated as [Cr(OH₂)₆]PO₄. When heated, dehydrates in discrete stages. Loses 90% H₂O → 400°. Monoclinic. Forms purple aq. solns. which become green when heated at >20°

>>Variant: β-form

Molecular Formula: CrO₄P

Molecular Weight: 146.967

Accurate Mass: 146.893931

Percentage Composition: Cr 35.38%; O 43.55%; P 21.08%

Source/Synthesis: From amorphous phosphate at 900-1000°

Physical Description: Khaki-coloured solid

Other Data: Cryst. at 1180°. Yields α-form (+ P₂O₅) at 1500°. Antiferromagnetic at -236°

References: