>>**Entry Name: Cobalt phosphate ($Co_3(PO_4)_2$)**
Synonym(s): Cobalt(2+) phosphate (3:2), 9CI. Cobalt(*II*) orthophosphate

CAS Registry Number: 13455-36-2
Related CAS Registry Numbers(s): 10101-56-1
$Co_3(PO_4)_2$

Molecular Formula: $Co_3O_8P_2$
Molecular Weight: 366.742
Accurate Mass: 366.706438
Percentage Composition: Co 48.21%; O 34.90%; P 16.89%
General Statement: Monoclinic. Co atoms occupy two distinct coord. polyhedra with coordination nos. 5 and 6 in ratio 2:1 P-O 152.6-155.4 pm, OPO 104.6-112.9°. Mean Co -O 212.5, 204.5 pm
Source/Synthesis: Synth. from $CoCO_3$ + $(NH_4)H_2PO_4$ at 900°; from monohydrate at 350°
Physical Description: Deep reddish-violet plates
Other Data: Exists in low pressure and high pressure forms

>>**Derivative:** Monohydrate

CAS Registry Number: 60305-65-9
Source/Synthesis: Synth. from dihydrate at 250°
Physical Description: Light reddish-purple needles
Other Data: Co atoms are coordinated to 5 or 6 oxygen atoms with P-O 151.9-154.1 pm, OPO 103.4-112.7°, Co-O 197.6-220.9 pm

>>**Derivative:** Dihydrate

CAS Registry Number: 96143-80-5
Source/Synthesis: Synth. from 3.5 hydrate at 200° or octahydrate at 150°
Physical Description: Dark purple-red granules

>>**Derivative:** 3.5 Hydrate

Source/Synthesis: Synth. from octahydrate at 150°
Physical Description: Light bluish-purple plates

>>**Derivative:** Tetrahydrate

CAS Registry Number: 36550-56-8
Source/Synthesis: Synth. by hydrothermal hydrol. of $CoHPO_4.1.5H_2O$ at 130°; or from $Co^{2(+)}$ aq. with hot Na_2HPO_4 soln.
Physical Description: Pale blue rosettes of thin prisms
Other Data: The H_2O molecules are coordinated to the Co

>>**Derivative:** Octahydrate

CAS Registry Number: 10294-50-5
Source/Synthesis: Synth. from $Co^{2(+)}$ solns. with cold aq. Na_2HPO_4 or Na_3PO_4, or $CoCO_3$ + H_3PO_4
Physical Description: Small pink or large red diamond-shaped cryst.
Other Data: When heated, loses $4H_2O$ reversibly, but product is not identical to the tetrahydrate. It is thought that $2H_2O$ are held in phosphate lattice, and $6H_2O$ are coordinated to Co. Isotypic with the octahydrate of Iron phosphate ($Fe_3(PO_4)_2$) HTM88-N

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