



>> **Name:** Ammonium cobalt(2+) phosphate (1:1:1), 9Cl, 8Cl

CAS Registry Number: 14590-13-7

$\text{Co}(\text{NH}_4)\text{PO}_4$

Molecular Formula: $\text{CoH}_4\text{NO}_4\text{P}$

Molecular Weight: 171.943

Accurate Mass: 171.920994

Percentage Composition: Co 34.27%; H 2.34%; N 8.15%; O 37.22%; P 18.01%

Source/Synthesis: Synth. from $\text{CoSO}_4 + (\text{NH}_4)_2\text{HPO}_4$ in H_2O

Physical Description: Dark blue amorphous solid existing in two forms

Other Data: When heated very strongly $\rightarrow \text{Co}_2\text{P}_2\text{O}_7$

>>>**Derivative:** Monohydrate

CAS Registry Number: 16827-96-6

Molecular Formula: $\text{CoH}_6\text{NO}_3\text{P}$

Molecular Weight: 189.958

Percentage Composition: Co 31.02%; H 3.18%; N 7.37%; O 42.11%; P 16.31%

Source/Synthesis: Obt. in reactions at $>80^\circ$

Physical Description: Violet-purple or red-purple plates (hot H_2O)

Solubility: Sol. acids

Other Data: Orthorhombic. P-O 149-157 pm, Co-O 208-211 pm. Loses H_2O and NH_3 over wide temp. range when heated up to 450° . Dehydr. in NH_3 atm. at 260° to one form of the anhydrous salt. Dec. in hot H_2O

>>>**Derivative:** Hexahydrate

CAS Registry Number: 16674-72-9

Molecular Formula: $\text{CoH}_{16}\text{NO}_{10}\text{P}$

Molecular Weight: 280.034

Percentage Composition: Co 21.05%; H 5.76%; N 5.00%; O 57.13%; P 11.06%

Source/Synthesis: Obt. in reactions at r.t.

Physical Description: Large pink square-ended prisms

Other Data: Probably has the struct. $\text{NH}_4[\text{Co}(\text{OH}_2)_6]\text{PO}_4$

References:

Bassett, H. *et al.*, *J.C.S.*, 1933, 854, (*synth, props*)

Gmelin Handbook Inorg. Chem., Syst. No. 58, 1961, 817, (*rev, bibl*)

Fraissard, J. *et al.*, *Bull. Soc. Chim. Fr.*, 1968, 1756, (*ir, struct*)

Etienne, J.-J. *et al.*, *Bull. Soc. Chim. Fr.*, 1968, 1805; 1969, 1534, (*synth, props*)

Tran Qui, D. *et al.*, *Bull. Soc. Fr. Mineral. Cristallogr.*, 1968, **91**, 10, (*cryst struct*)

Shchegrov, L.N. *et al.*, *Zh. Neorg. Khim.*, 1971, **16**, 3056; *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1971, **16**, 1622, (*synth, props*)

Paulik, J. *et al.*, *J. Therm. Anal.*, 1975, **8**, 567, (*props*)