



>>Entry Name: Phosphoryl chloride, 9Cl, 8Cl

ENTRY UNDER REVIEW

Synonym(s): Trichlorophosphine oxide. Trichlorooxophosphorus(*V*). Phosphorus oxychloride

CAS Registry Number: 10025-87-3

$\text{P}(\text{O})\text{Cl}_3$

Molecular Formula: Cl_3OP

Molecular Weight: 153.331

Accurate Mass: 151.875233

Percentage Composition: Cl 69.36%; O 10.43%; P 20.20%

angles: OPCI 114.9°, CIPCI 103.3°

Source/Synthesis: Synth. from Cl_2 or COCl_2 on metal phosphates (incl. minerals); $\text{P}_4\text{O}_{10} + \text{PCl}_3 + \text{Cl}_2$; or from $\text{PCl}_3 + \text{O}_2$

Use/Importance: Commercially available. Phosphorylating agent. Chlorinating agent. With bases eg. Py, quinoline, can act as a dehydrating agent, eg. amides → nitriles. Also used in cyclodehydrations, deselenations. Synthetic intermed. in organophosphorus chemistry. Reagent for peptide synth.

Physical Description: Colourless mobile liq. Fumes in air. V. reactive to nucleophiles. Hydrolysed rapidly by H_2O at r.t. Readily complexes through P=O bond

Melting Point: Mp 1-1.5°

Boiling Point: Bp 107-107.5°

Density: d_4^0 1.712. d_4^{25} 1.666

Other Data: $\Delta H_{298} -561(\text{g})$, $-601(\text{l})$ kJ mol⁻¹

Hazard & Toxicity: V. pungent vapour. Lachrymator

Aldrich: 20117-0

Fluka: 79580

References:

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