



>>Entry Name: Tantalum phosphides

Molecular Formula: [PTa]

>>Variant: Tantalum phosphide (Ta₃P)

CAS Registry Number: 12066-51-2

Molecular Formula: PTa₃

Molecular Weight: 573.817

Accurate Mass: 573.817738

Percentage Composition: P 5.40%; Ta 94.60%

Source/Synthesis: Synth. by arc-melting the elements. The α -form converts to the β -form at = 2000°

>>Variant: Tantalum phosphide (Ta₂P), 9Cl

CAS Registry Number: 12188-48-6

Molecular Formula: PTa₂

Molecular Weight: 392.87

Accurate Mass: 392.869746

Percentage Composition: P 7.88%; Ta 92.12%

Source/Synthesis: Synth. by sintering Ta and red P at 750° then arc-melting the product

>>Variant: Tantalum phosphide (Ta₅P₃)

CAS Registry Number: 76130-34-2

Molecular Formula: P₃Ta₅

Molecular Weight: 997.661

Accurate Mass: 997.661246

Percentage Composition: P 9.31%; Ta 90.69%

Source/Synthesis: Synth. by heating TaP + Ta to >1035° in an Ar atm. in an induction furnace

>>Variant: Tantalum phosphide (TaP), 11Cl

CAS Registry Number: 12037-63-7

Molecular Formula: PTa

Molecular Weight: 211.922

Accurate Mass: 211.921754

Percentage Composition: P 14.62%; Ta 85.38%

Source/Synthesis: Synth. by arc melting the elements and quenching or by electrolysing a melt containing P using a Ta cathode or by heating Ca₃P₂ and Ta or TaCl₅

Use/Importance: Can be used as oxidation catalyst in fuel cells

Physical Description: Hard metallic solid

References:

Ripley, R.L., *J. Less-Common Met.*, 1962, **4**, 496, (*synth, props, TaP*)

Nylund, A., *Acta Chem. Scand.*, 1966, **20**, 2393, (*synth, cryst struct, Ta₂P*)

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Phavanantha, P. *et al.*, *Acta Chem. Scand., Ser. A*, 1978, **32**, 515, (*cryst struct, β -Ta₃P*)

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