>>**Entry Name: Yttrium phosphate (YPO_4)**
Synonym(s): Yttrium(3+) phosphate (1:1), 9CI, 8CI. Yttrium(3+) orthophosphate

CAS Registry Number: 13990-54-0
Related CAS Registry Numbers(s): 34054-55-2

YPO_4

Molecular Formula: O_4PY
Molecular Weight: 183.877
Accurate Mass: 183.859271
Percentage Composition: O 34.80%; P 16.84%; Y 48.35%

Source/Synthesis: Synth. from YCl_3 + $NaPO_3$ at 200-1000°; $Y(NO_3)_3$ + $NH_4H_2PO_4$
Use/Importance: Ce activated YPO_4 is a fast-decay uv phosphor. Used in catalysis. Possible host for nuclear waste
Physical Description: Colourless solid
Melting Point: Mp 2150° (1995°; 1980°)
Other Data: Part. sol. H_3PO_4 yielding acid salts, incongr. sol. in H_2O. Ferromagnetic, T_c 360°

>>**Derivative:** Dihydrate

CAS Registry Number: 31512-68-2
Source/Synthesis: Synth. from YCl_3 + $NH_4H_2PO_4$ in H_2O; YCl_3 + H_3PO_4 aq. at pH 0.5-5 and 20-50°
Physical Description: Colourless cryst.
Other Data: Monoclinic. Weinschenkite struct. type. At higher temp., even in soln., becomes Monazite type. Loses H_2O at =273°

>>**Derivative:** Trihydrate

CAS Registry Number: 17069-92-0
Source/Synthesis: Synth. from $Y(NO_3)_3$ + H_3PO_4 aq.
Other Data: Tetragonal

>>**Variant:** Mineral-form
Synonym(s): Xenotime

CAS Registry Number: 13817-22-6

Molecular Formula: O_4PY
Molecular Weight: 183.877
Accurate Mass: 183.859271
Percentage Composition: O 34.80%; P 16.84%; Y 48.35%

Source/Synthesis: Commonly associated with Monazite, Zircon, or other minerals. Found in Europe (Germany, Austria, Italy) and N. America (California, Colorado, Mexican Gulf) as well as Brazil
Physical Description: Short to long, colourless to pale yellowish-green, yellow, or yellowish-brown, prisms
Other Data: V. stable to hot acids. Contains small amounts of other rare-earth elements eg. Er, La, and also Sc, Ce

References:

Buyers, A.G. *et al.*, *J. Inorg. Nucl. Chem.*, 1958, **5**, 133, *(synth)*
Hezel, A. *et al.*, *Spectrochim. Acta*, 1966, **22**, 1949, *(ir, synth)*
Mooney, R.W. *et al.*, *J. Chem. Phys.*, 1967, **46**, 3364, *(ir, struct)*
Hezel, A. *et al.*, *J. Inorg. Nucl. Chem.*, 1967, **29**, 2085, *(synth, cryst struct)*
Tananaev, I.V. *et al.*, *Izv. Akad. Nauk SSSR, Neorg. Mater.*, 1969, **5**, 1402; *Inorg. Mater. (Engl. Transl.)*, 1969, **5**, 1197, *(synth)*
Armbruster, A.*, J. Phys. Chem. Solids*, 1976, **37**, 321, *(ir)*
Bondar', I.A. *et al.*, *Zh. Neorg. Khim.*, 1976, **21**, 2045; *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1976, **21**, 1126, *(synth)*
Hikichi, Y. *et al.*, *Bull. Chem. Soc. Jpn.*, 1978, **51**, 3645, *(synth)*
Yurchenko, E.N. *et al.*, *Izv. Akad. Nauk SSSR, Neorg. Mater.*, 1978, **14**, 2038; *Inorg. Mater. (Engl. Transl.)*, 1978, **14**, 1586, *(ir, Raman)*
Begun, G.M. *et al.*, *J. Raman Spectrosc.*, 1981, **11**, 273, *(synth, Raman)*
Milligan, W.O. *et al.*, *Inorg. Chim. Acta*, 1982, **60**, 39, *(cryst struct)*
Agrawal, D.K. *et al.*, *Mater. Res. Bull.*, 1985, **20**, 697, *(ir, Raman, struct)*
Eshchenko, L.S. *et al.*, *Zh. Neorg. Khim.*, 1985, **30**, 1377; *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1985, **30**, 785, *(synth, morphology)*
Turner, G.L. *et al.*, *J. Magn. Reson.*, 1986, **70**, 408, *(P-31 nmr)*
Prabhakar, S. *et al.*, *Chem. Phys. Lett.*, 1987, **139**, 96, *(P-31 nmr)*
Lazarevski, E. *et al.*, *Izv. Akad. Nauk SSSR, Neorg. Mater.*, 1987, **23**, 481; *Inorg. Mater. (Engl. Transl.)*, 1987, **23**, 422, *(synth)*