

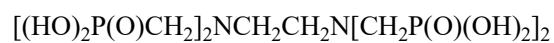


>>Entry Name: [1,2-Ethanediyibis[nitrilobis[methylene]]]tetrakisphosphonic acid, 9CI

Synonym(s): *N,N,N',N'*-Tetrakis(phosphonomethyl)-1,2-ethanediamine. Dequest 2040. Dequest 2041. Wayplex 45K

CAS Registry Number: 1429-50-1

Related CAS Registry Numbers(s): 15142-96-8 34274-30-1 40588-70-3 71334-91-3 85480-89-3



Molecular Formula: $\text{C}_6\text{H}_{20}\text{N}_2\text{O}_{12}\text{P}_4$

Molecular Weight: 436.125

Accurate Mass: 435.996676

Percentage Composition: C 16.52%; H 4.62%; N 6.42%; O 44.02%; P 28.41%

General Statement: Behaves as a hexabasic acid, existing in a zwitterionic form

Use/Importance: Sequestering agent, used as a corrosion inhibitor, in electroplating, in the extraction of Am and Eu, and as an antidote to Be poisoning. Used for photometric detn. of Ce(IV), Fe(II), Fe(III), Hg(II), Pb (λ_{max} 242 nm, ϵ 6600), Th

Melting Point: Mp 214 dec.°

Solubility: Sol. H_2O

pKa Value: $\text{p}K_{\text{a}1}$ 12.99; $\text{p}K_{\text{a}2}$ 9.78; $\text{p}K_{\text{a}3}$ 7.94; $\text{p}K_{\text{a}4}$ 6.42; $\text{p}K_{\text{a}5}$ 5.17; $\text{p}K_{\text{a}6}$ 3.02; $\text{p}K_{\text{a}7}$ 1.33 (25°)

Other Data: The tetraammonium salt marketed as Dequest 2042. The (tetra?)-K salt marketed as Dequest 2044. The Ca-Na salt marketed as Dequest 2047

>>Derivative: Monohydrate

Melting Point: Mp 250 dec.°

References:

Moedritzer, K. *et al.*, *J.O.C.*, 1966, **31**, 1603, (*synth, P-31 nmr, props*)

Motekaitis, R.J. *et al.*, *Inorg. Chem.*, 1976, **15**, 2303, (*synth, complexes*)

Kurochkina, L.V. *et al.*, *Zh. Neorg. Khim.*, 1978, **23**, 2676; *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1978, **23**, 1481, (*complexes*)

Bermejo Barrera, A. *et al.*, *CA*, 1979, **94**, 113767q, (*use*)

Levin, V.I. *et al.*, *Zh. Neorg. Khim.*, 1981, **26**, 1180; *Russ. J. Inorg. Chem. (Engl. Transl.)*, 1981, **26**, 637, (*complexes, props*)

Rizkalla, E.N. *et al.*, *Inorg. Chem.*, 1983, **22**, 1478, (*synth, pmr, P-31 nmr, complexes*)

Bermejo Barrera, A. *et al.*, *Microchem. J.*, 1986, **33**, 162, (*detn, Pb*)

Vasil'ev, V.P. *et al.*, *Zh. Obshch. Khim.*, 1986, **56**, 949; *J. Gen. Chem. USSR (Engl. Transl.)*, 1986, **56**, 835, (*props*)