>>**Entry Name: Disodium phosphate,** 9CI, 8CI
ENTRY UNDER REVIEW
Synonym(s): Disodium monohydrogenphosphate. Sodium phosphate (Na_2HPO_4). Soldium phosphate dibasic, USAN

CAS Registry Number: 7558-79-4
Related CAS Registry Numbers(s): 7632-05-5 118830-14-1
Type of Compound Code(s): XA4930 WC1100 WC2400 WC4600 XA1950 XA4140 WC4900 WK6000
Na_2HPO_4

Molecular Formula: HNa_2O_4P
Molecular Weight: 141.959
Accurate Mass: 141.940781
Percentage Composition: H 0.71%; Na 32.39%; O 45.08%; P 21.82%
General Statement: ^{32}P labelled compd. is used as an antineoplastic and antipolycythermic agent and as a neoplasm diagnostic aid (*Phosphote*)
Source/Synthesis: Synth. from NaOH + H_3PO_4
Use/Importance: Employed in fire-proofing, corrosion inhibiting, and catalyst formulations. Constituent of some buffer solns. Used to stabilise oxidants, esp. H_2O_2. Laxative. Used to treat hypophosphataemia. Pharmaceutical excipient (buffering and sequestering agent)
Physical Description: Hygroscopic powder
Solubility: Sol. H_2O (6.4 g per 100 cm^3 at 18°; 12.1 g per 100 cm^3 at 25°)
Other Data: Dehydrates to Sodium diphosphate ($Na_4(P_2O_7)$) HTW34-S at 290-380°. ΔH_f° –1746 kJ mol^{-1}
Hazard & Toxicity: Eye and skin irritant

Aldrich: 25579-3
Fluka: 71639
Sigma: S0876

>>**Derivative:** Dihydrate
Synonym(s): Sorenson's sodium phosphate. Sorenson's salt

CAS Registry Number: 10028-24-7
Molecular Formula: $H_5Na_2O_6P$
Molecular Weight: 177.989
Accurate Mass: 177.961911
Percentage Composition: H 2.83%; Na 25.83%; O 53.93%; P 17.40%
Solubility: V. sol. H_2O (100 g per 100 cm^3 at 50°; 117 g per 100 cm^3 at 80°)
Other Data: Orthorhombic. Two independent distorted Na polyhedra (coordination numbers 5(or 6) and 6(or 7)) share corners, edges or faces. $PO_3(OH)$ tetrahedra are H-bonded and lie between the Na chains. ΔH_f° –2344 kJ mol^{-1}. Loss $2H_2O$ at 95°
Fluka: 71645

>>**Derivative:** Heptahydrate

CAS Registry Number: 7782-85-6
Molecular Formula: $H_{15}Na_2O_{11}P$
Molecular Weight: 268.065
Accurate Mass: 268.014736
Percentage Composition: H 5.64%; Na 17.15%; O 65.65%; P 11.55%
Use/Importance: Commercially available; triboluminescent
Physical Description: Colourless monoclinic prisms (H_2O at 40°)
Solubility: V. sol. H_2O
Other Data: ΔH_f° –3821 kJ mol^{-1}. The prominent structural feature is a column of face- and edge-sharing $[Na_2(OH_2)_7]^{2(+)}$ octahedra H-bonded to tetrahedral $PO_3(OH)$ groups. Mean Na-O 241.8, P-O 155.1 pm, OPO 102.7-114.2°. Loses $7H_2O$ at 60-140°

Aldrich: 22199-6
Fluka: 71647
Sigma: S9390

>>**Derivative:** Dodecahydrate

CAS Registry Number: 10039-32-4
Molecular Formula: $H_{25}Na_2O_{16}P$
Molecular Weight: 358.141
Accurate Mass: 358.067561
Percentage Composition: H 7.04%; Na 12.84%; O 71.48%; P 8.65%
Physical Description: Colourless efflorescent cryst. (H_2O) or white powder; β-form cryst. <30°, α-form at 30-35°
Solubility: Sol. H_2O (87 g per 100 cm^3 at 34°); insol. EtOH
Other Data: ΔH_f° –5299 kJ mol^{-1}. β-Form consists of close-packed layers of $[Na(OH_2)_6]^{(+)}$ octahedra, 1/3 of which are replaced by PO_4 tetrahedra, with no interstitial H_2O molecules; the PO_4 tetrahedra each lie at the centre of a pseudo-hexagonal mesh of Na octahedra. Mean P-O 153.6 pm. Loses $12H_2O$ at <=120°