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Hawley's

Condensed Chemical Dictionary

Fifteenth Edition

Richard J. Lewis, Sr.

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ore processing; analytical reagent; calorimetry; germicidal soaps.

sodium persulfate. (sodium peroxydisulfate). CAS: 7775-27-1. $Na_2S_2O_8$.
Properties: White, crystalline powder. Soluble in water; decomposed by alcohol; decomposes in moist air.
Hazard: By ingestion, strong irritant to tissue. TLV: 0.1 mg/m³.
Use: Bleaching agent (fats, oils, fabrics, soap), battery depolarizers, emulsion polymerization.

sodium phenate. (sodium phenolate; sodium carbolate).
CAS: 139-02-6. C_6H_5ONa.
Properties: White, deliquescent crystals. Soluble in water and alcohol; decomposed by carbon dioxide in the air.
Derivation: Phenol is dissolved in caustic soda solution, concentrated, and crystallized.
Hazard: Strong irritant to skin and tissue.
Use: Antiseptic, salicylic acid, organic synthesis.

sodium phenobarbital. (phenobarbital, solution).
See barbiturate.

sodium phenolate. Legal label name for sodium phenate.

sodium phenolsulfonate. (sodium sulfocarbolate). $HOC_6H_4SO_3Na•2H_2O$.
Properties: Colorless crystals or granules. Slightly efflorescent; chars at high temperature, evolving phenol. Soluble in water, hot alcohol, and glycerol.
Use: Medicine (intestinal antiseptic).

sodium phenylacetate. (sodium α-toluate). $C_6H_5CH_2•COONa$.
Properties: Soluble in water; insoluble in alcohol, ether, and ketones; 50% aqueous solution has pH 7.0–8.5 and is pale yellow. Solution tends to crystallize at 15C.
Grade: 50% solution, dry salt.
Use: Percursor in production of penicillin G, intermediate for producing heavy metal salts that act as fungicides.

sodium-*N*-phenylglycinamide-*p*-arsonate.
See tryparsamide.

sodium-*o*-phenylphenate. (sodium-*o*-phenylphenolate). $C_6H_4(C_6H_5)ONa•4H_2O$.
Properties: Practically white flakes. Bulk d 38–43 lb/cu ft, pH of saturated solution in water 12.0–13.5.

sodium phenylphosphinate.
$C_6H_5PH(O)(ONa)$.
Properties: Crystals. Mp 355C (decomposes to give phenylphosphine), stable at room temperature. Soluble in water.
Use: Antioxidant, heat and light stabilizer.

sodium phenyl sulfinate dihydrate.
CAS: 25932-11-0. mf: $C_6H_5O_2S•Na•2H_2O$.
Hazard: A mild eye irritant.

sodium phosphate. See "Nutrifos" *[Solutia]*; sodium metaphosphate; sodium phosphate, dibasic; sodium phosphate, monobasic; sodium phosphate (P-32); sodium phosphate, tribasic; sodium polyphosphate; sodium pyrophosphate; sodium pyrophosphate, acid; sodium tripolyphosphate.

sodium phosphate, dibasic. (DSP; disodium phosphate; sodium orthophosphate, secondary; disodium orthophosphate; disodium hydrogen phosphate).
CAS: 7558-79-4. (1) Na_2HPO_4. (2) $Na_2HPO_4•2H_2O$. (3) $Na_2HPO_4•7H_2O$. (4) $Na_2HPO_4•12H_2O$. The dihydrate (2) is also marketed as the duohydrate.
Properties: Colorless, translucent crystals or white powder; saline taste. (1) Hygroscopic; converted to sodium pyrophosphate at 240C; (2) mp loses water at 92.5C, d 2.066 (15C); (3) d 1.679, loses $5H_2O$ at 48C; (4) mp 35C, d 1.5235, readily loses $5H_2O$ on exposure to air at room temperature, loses $12H_2O$ at 100C. Soluble in water; very soluble in alcohol; pH of 1% solution 8.0–8.8. Nonflammable.
Derivation: (1) By treating phosphoric acid with a slight excess of soda ash, boiling the solution to drive off carbon dioxide, and cooling to permit the dodecahydrate to crystallize; (2) by precipitating calcium carbonate from a solution of dicalcium phosphate with soda ash.
Grade: Commercial, NF (1) and (3), FCC (1) or (2).
Use: Chemicals, fertilizers, pharmaceuticals, textiles (weighting silk, dyeing and printing), fireproofing wood and paper; ceramic glazes, tanning, galvanoplastics, soldering enamels, analytical reagent, cheese, detergents, boiler-water treatment, dietary supplement, buffer, sequestrant in foods.

sodium phosphate, monobasic. (sodium acid phosphate; sodium biphosphate; sodium orthophosphate, primary; MSP, sodium dihydrogen phosphate).
CAS: 7558-80-7. (1) NaH_2PO_4. (2) $NaH_2PO_4•H_2O$.
Properties: (1) White, crystalline powder. Slightly hygroscopic. Very soluble in water. Has acid reaction; forms sodium acid pyrophosphate at 225–250C and sodium metaphosphate at

Derivation: By treating disodium phosphate with proper proportion of phosphoric acid.
Grade: Commercial, food, (2) NF, (1) FCC.
Use: Boiler-water treatment, electroplating, dyeing, acid cleansers, baking powders, cattle feed supplement, buffer, emulsifier, nutrient supplement in food, lab reagent, acidulant.

sodium phosphate (P-32). (sodium radiophosphate). A radioactive form of sodium phosphate (which phosphate is not specified) containing phosphorus-32 which can be used as a tracer. See phosphorus-32.
Grade: USP, as solution.
Use: Biochemical research, medicine (diagnostic aid, antineoplastic).

sodium phosphate, tribasic. (TSP; trisodium orthophosphate; trisodium phosphate; tertiary sodium phosphate; sodium orthophosphate, tertiary).
CAS: 7601-54-9. $Na_3PO_4 \bullet 12H_2O$.
Properties: Colorless crystals. D 1.62 (20C), mp 75C (decomposes), loses $12H_2O$ at 100C, pH of 1% solution is 11.8–12.0. Soluble in water. Nonflammable.
Derivation: By mixing soda ash and phosphoric acid in proper proportions to form disodium phosphate and then adding caustic soda.
Grade: Commercial, high purity, CP, FCC (anhydrous), anhydrous salt also available.
Hazard: Toxic by ingestion, irritant to tissue.
Use: Water softeners, boiler-water compounds, detergent, metal cleaner, textiles, manufacture of paper, laundering, tanning, sugar purification, photographic developers, paint removers, industrial cleaners, dietary supplement, buffer, emulsifier, food additive.

sodium phosphate tribasic dodecahydrate.
CAS: 10101-89-0. mf: $O_4P \bullet 3Na \bullet 12H_2O$.
Hazard: Low toxicity by ingestion.

sodium phosphide.
CAS: 12058-85-4. Na_3P.
Properties: Red solid. Decomposes on heating and in water, forming phosphine.
Hazard: Dangerous fire risk, reacts with water and acids to form phosphine.

sodium phosphite. $Na_2HPO_3 \bullet 5H_2O$.
Properties: White, crystalline powder. Hygroscopic. Mp 53C, bp 200–250C Soluble in water; insoluble in alcohol. (decomposes).
Use: Antidote in mercuric chloride poisoning.

sodium phospho-12-molybdate. See sodium-12-molybdophosphate.

sodium phospho-12-tungstate. See sodium-12-tungstophosphate.

sodium phytate. (USAN; insitol hexaphosphoric ester, sodium salt). $C_6H_9O_{24}P_6Na_9$.
Properties: Hygroscopic powder. Water-soluble.
Use: Chelating agent for trace heavy metals, color improvement, medicine.

sodium picramate.
CAS: 831-52-7. $NaOC_6H_2(NO_2)_2NH_2$.
Derivation: Yellow, water-soluble salt resulting from neutralization of picramic acid with caustic soda.
Hazard: Dangerous fire and explosion hazard when dry. Toxic by ingestion and skin absorption.
Use: Manufacture of dye intermediates, organic synthesis.

sodium platinichloride. See sodium chloroplatinate.

sodium plumbate. $Na_2PbO_3 \bullet 3H_2O$.
Properties: Fused, light-yellow lumps. Hygroscopic, decomposed by water and acids. Soluble in alkalies.
Hazard: As for lead.

sodium plumbite. Na_2PbO_2.
Derivation: Solution of PbO (litharge) in sodium hydroxide.
Hazard: Highly toxic, corrosive.
See lead.
Use: Doctor solution for improving the odor of gasoline and other petroleum distillates.

sodium polyphosphate. $Na_{n+2}P_nO_{3n+1}$. The two most important crystalline sodium polyphosphates are the pyrophosphate ($n = 2$) and the tripolyphosphate, also called the triphosphate ($n = 3$). The term *sodium polyphosphate* also includes the system of vitreous sodium phosphates for which the mole ratio of Na_2O/P_2O_5 is between 1 and 2.
Hazard: As for sodium phosphate.
Use: Sequestering and deflocculating agents, primarily in water treatment, food processing, and cleaning compounds; heavy-set detergent builders.
See sodium metaphosphate; sodium pyrophosphate; sodium tripolyphosphate.