

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. $\text{Na}_2\text{S}_2\text{O}_8$.

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. $\text{C}_6\text{H}_5\text{ONa}$.

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). $\text{HO}_2\text{C}_6\text{H}_4\text{SO}_3\text{Na}\cdot 2\text{H}_2\text{O}$.

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).
 $\text{C}_6\text{H}_5\text{CH}_2\cdot\text{COONa}$.

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: Precursor in production of penicillin G, intermediate for producing heavy metal salts that act as fungicides.

sodium-N-phenylglycinamide-p-arsenate.

See tryparsamide.

sodium-o-phenylphenate. (sodium-o-phenylphenolate). $\text{C}_6\text{H}_4(\text{C}_6\text{H}_5)\text{ONa}\cdot 4\text{H}_2\text{O}$.

Properties: Practically white flakes. Bulk d 38–43 lb/cu ft. pH of saturated solution in water 12.0–13.5.

sodium phenylphosphinate.

$\text{C}_6\text{H}_5\text{PH}(\text{O})(\text{ONa})$.

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: $\text{C}_6\text{H}_5\text{O}_2\text{S}\cdot\text{Na}\cdot 2\text{H}_2\text{O}$.

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) $\text{Na}_2\text{HPO}_4\cdot 2\text{H}_2\text{O}$. (3) $\text{Na}_2\text{HPO}_4\cdot 7\text{H}_2\text{O}$. (4) $\text{Na}_2\text{HPO}_4\cdot 12\text{H}_2\text{O}$. 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 5H₂O at 48C; (4) mp 35C, d 1.5235, readily loses 5H₂O on exposure to air at room temperature, loses 12H₂O 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) $\text{NaH}_2\text{PO}_4\cdot \text{H}_2\text{O}$.

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

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SODIUM PHOSPHATE (P-32)

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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 radio-phosphate). 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. $\text{Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O}$.

Properties: Colorless crystals. D 1.62 (20C), mp 75C (decomposes), loses $12\text{H}_2\text{O}$ 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: $\text{O}_4\text{P} \cdot 3\text{Na} \cdot 12\text{H}_2\text{O}$.

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. $\text{Na}_2\text{HPO}_3 \cdot 5\text{H}_2\text{O}$.

Properties: White, crystalline powder. Hygroscopic. Mp 53C, bp 200–250C. Soluble in water; insoluble in alcohol. (decomposes).

Use: Antidote in mercuric chloride poisoning.

retention of filler and fiber and in pH control, boiler-feed-water treatment, and as a food additive.

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

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

sodium phytate. (USAN; inositol hexaphosphoric ester, sodium salt). $\text{C}_6\text{H}_9\text{O}_{24}\text{P}_6\text{Na}_9$.

Properties: Hygroscopic powder. Water-soluble.

Use: Chelating agent for trace heavy metals, color improvement, medicine.

sodium picramate.

CAS: 831-52-7. $\text{NaOC}_6\text{H}_4(\text{NO}_2)_2\text{NH}_2$.

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. $\text{Na}_2\text{PbO}_3 \cdot 3\text{H}_2\text{O}$.

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. $\text{Na}_{n+2}\text{P}_n\text{O}_{3n+1}$. The two most important crystalline sodium polyphosphates are the pyrophosphate ($n = 2$) and the triphosphate ($n = 3$). The term *sodium polyphosphate* also includes the system of vitreous sodium phosphates for which the mole ratio of $\text{Na}_2\text{O}/\text{P}_2\text{O}_5$ 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.

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