THE MERCK INDEX

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THIRTEENTH EDITION

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AN ENCYCLOPEDIA OF
CHEMICALS, DRUGS, AND BIOLOGICALS

THIRTEENTH EDITION

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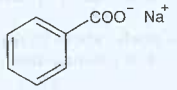
tachycardia, bradycardia, tachypnea; hypothermia; acidosis; convulsions; kidney changes. *See NIOSH Pocket Guide to Chemical Hazards* (DHHS/NIOSH 97-140, 1997) p 280; *Clinical Toxicology of Commercial Products,* R. E. Gosselin *et al.,* Eds. (Williams & Wilkins, Baltimore, 5th ed., 1984), Section II, p 114; *Prudent Practices for Handling Hazardous Chemicals in Laboratories* (National Academy Press, Washington, D.C., 1981) pp 145-147.

USE: In organic syntheses; in the preparation of hydrazoic acid, lead azide, pure sodium. In the differential selection of bacteria; in automatic blood counters; as preservative for laboratory reagents. Propellant for inflating automotive safety bags. Agricultural nematocide; herbicide; in fruit rot control.

8654. Sodium Benzoate. [532-32-1] $C_7H_5NaO_2$; mol wt 144.10. C 58.34%, H 3.50%, Na 15.95%, O 22.21%. Toxicity: Smyth, Carpenter, *J. Ind. Hyg. Toxicol.* **30,** 63 (1948).



White, odorless granules or crystalline powder; sweetish, astringent taste. One gram dissolves in 1.8 ml water, 1.4 ml boiling water, about 75 ml alcohol, in 50 ml of a mixture of 47.5 ml alcohol and 3.7 ml water. The aq soln is slightly alkaline to litmus. pH about 8. *Incompat:* Acids, ferric salts. LD_{50} orally in rats: 4.07 g/kg (Smyth, Carpenter).

USE: Antimicrobial agent, flavoring agent and adjuvant in food; not to exceed a maximum level of 0.1% in food (**21 CFR,** 184.1733, 582.3733). Antifungal and bacteriostatic preservative in pharmaceuticals at concentrations of ~0.1%. Clinical reagent (bilirubin assay).

THERAP CAT: Diagnostic aid (hepatic function).

8655. Sodium Bicarbonate. [144-55-8] Sodium hydrogen carbonate; sodium acid carbonate; baking soda. $CHNaO_3$; mol wt 84.01. C 14.30%, H 1.20%, Na 27.37%, O 57.13%. $NaHCO_3$. The bicarbonate of commerce is about 99.8% pure. Prepd from sodium carbonate, water and carbon dioxide. Manuf: *Faith, Keyes & Clark's Industrial Chemicals,* F. A. Lowenheim, M. K. Moran, Eds. (Wiley-Interscience, New York, 4th ed., 1975) pp 702-705.

White cryst powder or granules. Begins to lose CO_2 at about 50° and at 100° it is converted into Na_2CO_3. Readily dec by weak acids. In aq soln it begins to break up into carbon dioxide and sodium carbonate at about 20° and completely on boiling. Sol in 10 parts water at 25°, in 12 parts water at about 18°. Insol in alcohol. Its aq soln prepd with cold water and without agitation is only slightly alkaline to litmus or phenolphthalein; on standing or rise in temp the alkalinity increases. pH of freshly prepd 0.1 molar aq soln at 25°: 8.3.

USE: Manuf many sodium salts; source of CO_2; ingredient of baking powder, effervescent salts and beverages; in fire extinguishers, cleaning compds.

THERAP CAT: Antacid, urinary and systemic alkalizer.

THERAP CAT (VET): Antacid, systemic and urinary alkalizer. Locally in burns, erythema, to dissolve mucus, exudates, scabs.

8656. Sodium Bifluoride. [1333-83-1] F_2HNa; mol wt 61.99. F 61.30%, H 1.63%, Na 37.09%. NaF.HF.

White, cryst powder. Sol in water. The aq soln corrodes glass.

USE: As a "sour" in laundering.

8657. Sodium Bismuthate(V). [12232-99-4] $BiNaO_3$; mol wt 279.97. Bi 74.64%, Na 8.21%, O 17.14%. $NaBiO_3$. The bismuthate of commerce contains about 85% $NaBiO_3$; the balance is chiefly water and Bi_2O_3.

Yellow to yellowish-brown, somewhat hygroscopic. Slowly dec on keeping; decompn accelerated by moisture and higher temp. Insol in cold, dec by hot water forming Bi_2O_3, NaOH, and liberating oxygen; dec by acids; with HCl chlorine is formed; with oxy-acids oxygen is liberated. LD_{100} orally in rats: 720 mg/kg, Hanzlik *et al., J. Pharmacol. Exp. Ther.* **62,** 372 (1938).

USE: For the determination of manganese in iron and steel, etc., the manganese being oxidized by it in hot HNO_3 or H_2SO_4 soln to permanganate.

8658. Sodium Bisulfate. [7681-38-1] Sodium acid sulfate; sodium hydrogen sulfate; sodium pyrosulfate. $HNaO_4S$; mol wt 120.06. H 0.84%, Na 19.15%, O 53.30%, S 26.71%. $NaHSO_4$.

Fused $NaHSO_4$, hygroscopic pieces. d 2.435. mp ~ 315°. Sol in 2 parts water, 1 part boiling water; dec by alcohol into sodium sulfate and free H_2SO_4. *Keep well closed.*

Monohydrate. Odorless crystals. When strongly heated it changes into pyrosulfate. Sol in about 0.8 part water; dec by alcohol into sodium sulfate and free H_2SO_4. The aq soln is strongly acid. pH of 0.1 molar soln: 1.4.

USE: Fusion of minerals to make them sol for analysis; for liberating CO_2 in carbonic acid baths. Technical grades are used for pickling metals, carbonizing wool, bleaching and swelling leather, manuf magnesia cements, etc.

8659. Sodium Bisulfide. [16721-80-5] Sodium sulfhydrate; sodium hydrosulfide; sodium hydrogen sulfide. $HNaS$; mol wt 56.06. H 1.80%, Na 41.01%, S 57.20%. NaSH. Prepd from sodium ethylate and hydrogen sulfide: Rule, *J. Chem. Soc.* **99,** 558 (1911); Teichert, Klemm, *Z. Anorg. Allgem. Chem.* **243,** 86 (1939); Eibeck, *Inorg. Syn.* **7,** 128 (1963). The technical grade may be obtained by reacting sodium bisulfate with calcium sulfide in the cold or by saturating NaOH solns with H_2S.

Rhombohedric-cubic crystals. White to colorless. Odor of hydrogen sulfide. Very hygroscopic. Readily hydrolyzed in moist air to NaOH and Na_2S. d 1.79. Turns yellow upon heating in dry air, changing to orange at higher temps. mp 350° forming a black liquid. Sol in water, alcohol, ether. Gives a blue-green soln in dimethylformamide.

Dihydrate. Needles or flakes, mp 55°. Completely and rapidly sol in water, alcohol, ether. *Note:* The commercial product is usually the dihydrate. Can be shipped in lacquer-lined steel drums.

Trihydrate. Shiny rhombs, mp 22°.

USE: Dehairing hides; desulfurizing viscose rayon; in the manuf of sulfur-contg dyes and other thio compds such as thioamides, thiourea, thioglycolic acid, thio- and dithiobenzoic acids, sodium thiosulfate.

8660. Sodium Bisulfite. [7631-90-5] Sodium acid sulfite. $HNaO_3S$; mol wt 104.06. H 0.97%, Na 22.09%, O 46.12%, S 30.81%. $NaHSO_3$. The bisulfite of commerce consists chiefly of sodium metabisulfite, $Na_2S_2O_5$, and for all practical purposes possesses the same properties as the true bisulfite. Toxicity: Hoppe, Goble, *J. Pharmacol. Exp. Ther.* **101,** 101 (1951).

White, crystalline powder; SO_2 odor; disagreeable taste; on exposure to air it loses some SO_2 and is gradually oxidized to sulfate. d 1.48. Sol in 3.5 parts cold water, 2 parts boiling water, in about 70 parts alcohol. Its aq soln is acid. *Keep well closed and in a cool place.* LD_{50} i.v. in rats: 115 mg/kg (Hoppe, Goble).

Caution: Potential symptoms of overexposure are irritation of eyes, skin, mucous membranes. *See NIOSH Pocket Guide to Chemical Hazards* (DHHS/NIOSH 97-140, 1997) p 282.

USE: As disinfectant and bleach, particularly for wool; in dyeing for preparing hot and cold indigo vats; in paper-making in place of sodium hyposulfite to remove Cl from bleached fibers; as stripper (reducer) in laundering; to remove permanganate stains from skin and clothing; to render certain dyes sol; manuf sodium hydrosulfite; coagulating rubber latex; as preservative for deteriorative liqs or solns used for technical purposes; as antiseptic in fermentation industries. As preservative and bleach in food. Pharmaceutic aid (antioxidant).

8661. Sodium Bitartrate. [526-94-3] Sodium acid tartrate. $C_4H_5NaO_6$; mol wt 172.07. C 27.92%, H 2.93%, Na 13.36%, O 55.79%. $NaHC_4H_4O_6$.

Monohydrate. White crystals. Sol in about 9 parts water, 2 parts boiling water. Almost insol in alcohol. The aq soln is acid.

USE: For detecting potassium; in nutrient media.