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SODIUM HYPOCHLORITE

PRODUCT IDENTIFICATION

CAS NO.	7681-52-9
EINECS NO.	231-668-3
FORMULA	NaOCl
MOL WT.	74.44
H.S. CODE	2828.90

TOXICITY

SYNONYMS Sodium Chloride Oxide; Sodium Oxychloride; Bleach Liquor; active chlorine; Hychlorite; Hipofosfito De Sodio;

RAW MATERIALS Sodium Hydroxide; Chlorine

CLASSIFICATION

PHYSICAL AND CHEMICAL PROPERTIES (12%)

PHYSICAL STATE	Clear to yellowish liquid with Chlorine like odor
MELTING POINT	25 C
BOILING POINT	101 C
SPECIFIC GRAVITY	1.165
SOLUBILITY IN WATER	100%
pH	12 - 13
VAPOR DENSITY	1.3
AUTOIGNITION	
NFPA RATINGS	Health: 2 ; Flammability: 0 ; Reactivity: 1

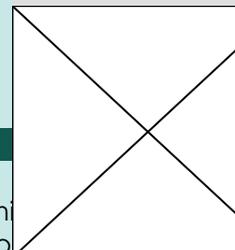
REFRACTIVE INDEX

FLASH POINT

STABILITY Slowly decomposes on contact with air liberating Cl₂

GENERAL DESCRIPTION & APPLICATIONS

Sodium hypochlorite (NaOCl), is commercially available in several solution concentrations, with 12% being the most common for bulk, as this material is highly unstable salt which become sodium chlorate easily. It is formed by the electrolysing of sodium chloride solution when chlorine is bubbled through cold caustic soda solution.



powerful disinfection and oxidation properties offer a wide range of applications include bleaching in both the paper and textile industries, water purification, odour control, chemical Intermediates and etc. Sodium hypochlorite is used in household bleach material to remove stains particularly on cotton. Chlorine is a general biocide substance killing germs, micro-organisms, algae, etc. The most widely used chloride chemical disinfectants are chlorine, ozone, chlorine dioxide and chloramine. Hypochlorite is an alternative chlorine source when chlorine gas is impractical. The commercially available liquid hypochlorite form is sodium hypochlorite (NaOCl) which is used as the disinfectant in hospitals. But this is highly caustic, ethanol class disinfection has replaced. Sodium hypochlorite have also been used extensively in the disinfection of drinking-water. Hypochlorite anion, ClO^- , changes the oxidation-reduction potential of the cell, and resulting in the inactivations of the micro-organism's function. Hypochlorite [or chlorate(I)] contains the ion, ClO^- ; chlorite [or chlorate(III)], ClO_2^- ; Chlorate [or chlorate(V)], ClO_3^- ; perchlorate [or chlorate(VII)], ClO_4^- . Hypochlorite solution gradually releases chlorine into water. Sodium hypochlorite is used as a bleaching and disinfection agent for both industry and household, oxidant, sterilizer, decoloring agent, deodorant, water Treatment and food additive.

Sodium hypochlorite phosphate, an inclusion complex of trisodium phosphate and sodium hypochlorite, is a dry form of sodium hypochlorite. providing germicidal and disinfectant properties as well as alkalinity. It is used in as a bactericide in food and dairy processing and cleanser of medical instruments and scouring. It is used in detergents, automatic dishwasher detergent and laundry soaps.

SALES SPECIFICATION

APPEARANCE	Clear to yellowish liquid
CONCENTRATION	12.0% - 14.0%
pH	11 min
Cl	11.4% min

TRANSPORTATION

PACKING	
HAZARD CLASS	8 (9.2 ; Packing group:III)
UN NO.	1791

GENERAL DESCRIPTION OF CHLORINE

Chlorine is a toxic, corrosive, greenish yellow gas with a pungent, irritating odor. Chlorine belongs to the halogen family of elements, found in group VIIa of the periodic table. Chlorine is produced mostly by electrolysis of brine; some is obtained as a by-product in the manufacture of sodium metal by the electrolysis of sodium chloride either molten or in solution. Chlorine is soluble in water. Its aqueous solution (called chlorine water) consists of a mixture of chlorine, hydrochloric acid, and hypochlorous acid; only a part of the chlorine introduced actually goes into solution, the major part reacting chemically with the water. Chlorine water has strong oxidizing properties resulting from the oxygen set free when the unstable hypochlorous acid decomposes. Chlorine combines directly with almost all the elements except the rare gases, excluding xenon, and nitrogen. Besides the -1 oxidation state of the chlorides, chlorine also exhibits oxidation state respectively : +1 (hypochlorite, ClO^-), +3 (chlorite, ClO_2^-), +5 (chlorate, ClO_3^-) and +7 (perchlorate, ClO_4^-). Very reactive and unstable four oxide compounds have been indirectly synthesized; chlorine monoxide (Cl_2O), chlorine dioxide (ClO_2), dichlorine hexoxide (Cl_2O_6), and dichlorine heptoxide (Cl_2O_7). Uncombined chlorine does not occur in nature due to its activity, but its compounds are numerous. Chlorine can displace the heavier halogens, bromine and iodine, from their ionic compounds and undergoes addition or substitution reactions with organic compounds. Chlorine is used in water purification; as a disinfectant and as an antiseptic (mercuric chloride). Chlorine is a

general biocide substance killing germs, micro-organisms, algae, etc. The most widely used chloride chemical disinfectants are chlorine, ozone, chlorine dioxide and chloramine.

Chloramine is an ammonium containing chlorine disinfectant. Monochloramine, dichloramine and trichloramine are in equilibrium when produced by the chemical chloramination of ammonia. Monochloramine is the only effective ammonia-chloramine disinfectant. Dichloramine (NHCl_2) and nitrogen trichloride (NCl_3) are too unstable to be useful and highly malodorous. Production conditions are practically employed for the production of monochloramine by lowering the pH and adjusting the molar ratios of the reactants. Chloramine is a toxic yellow liquid at room temperature. Due to high CT values, chloramine is a poor primary disinfectant but is an attractive secondary disinfectant for the maintenance of a stable distribution system residual and eliminating the formation of chlorination by-products. Chloramine is one of the most widely used chemical disinfectants in drinking water system. Chloramine-B and Chloramine-T are antiseptic agents derived from combining chloramine and benzenesulfonamide (or p-toluenesulfonamide) respectively. Sulfonamide molecular structure is similar to p-Aminobenzoic acid (PABA) which is needed in bacteria organisms as a substrate of the enzyme dihydropteroate synthetase for the synthesis of tetrahydrofolic acid (THF). Sulfonamides are capable of interfering with the metabolic processes in bacteria that require PABA. They act as antimicrobial agents by inhibiting bacterial growth and activity. Chloramine B and Chloramine T are used as an oxidizing agent, an antiseptic, a germicide as well as a chlorinating agent in organic synthesis. Its ions resulting from dissolving in water involve in interfering with micro-organisms' cell process by oxidations of proteins or enzymes.

Hypochlorite is an alternative chlorine source when chlorine gas is impractical. The commercially available liquid hypochlorite form is sodium hypochlorite (NaOCl) which is used as the disinfectant in hospitals. But this is highly caustic, ethanol class disinfection has replaced. Sodium hypochlorite have also been used extensively in the disinfection of drinking-water. Hypochlorite anion, ClO^- , changes the oxidation-reduction potential of the cell, and resulting in the inactivations of the micro-organism's function. Chlorine is used to bleach fabrics, woodpulp and paper, to clean dairy equipment, to control biofouling in cooling systems, to shrink-proof wool, and to detin and dezinc iron. Chlorine are used directly or as an intermediate for the synthesis of many organic chemicals; pesticides, antifreeze, refrigerants, antiknock compounds, synthetic rubber and plastics, chlorinated hydrocarbons, polyvinyl chloride, ethylene dichloride hypochlorous acid, chlorobenzene, chlorinated lime, carbon tetrachloride, ethylene and propylene oxides, glycols, trichloroethylene, perchloroethylene, chloroform, vinylidene chloride, polychloropropene, hydrogen chloride, metal chlorides, chloroacetic acid, chloral, synthetic glycerine, methyl chlorides, chlorinated benzenes, tetraethyl lead, fluorine compounds, titanium tetrachloride, monochloroacetic acid, phosgene, chloroisocyanuric acid, phosphorus chloride dichlorobutene, and chlorinated paraffins.

