

GPS SAFETY SUMMARY

Sodium Hypochlorite

1. General Statement

Sodium hypochlorite is an inorganic sodium salt in which hypochlorite is the counter ion. It has a role as a disinfectant and a bleaching agent.

2. Chemical Identity

Name: Sodium Hypochlorite
CAS number(s): 7681-52-9
ES number: 231-668-3
Molecular formula: NaOCl
Structure:



3. Use and applications

Sodium hypochlorite is used primarily as a disinfectant in processes used by municipal drinking water authorities to purify and improve the quality of drinking water as it is distributed to the public. It is also used as a disinfectant in municipal wastewater. The main benefits from the use of sodium hypochlorite products are the following:

1. Provides disinfection for drinking water and wastewater applications.
2. Oxidizes inorganic compounds
3. Textile Treatment

4. Physical / Chemical properties

The liquid chlorine from liquefier goes to the storage tank from where it is transferred to Cl₂ cylinder through dehumidified air padding. Chlorine gas & Caustic soda lye reacts in MS reactor to form Sodium hypochlorite

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Property	Value
Form	Solution
Physical state (Liquid/solid/gaseous)	Liquid at 20°C at 1013 hPa
Colour	Colourless to light yellow
Odour	Characteristic odour
Density	About 1.2 g/cm ³ (depending on concentration and temperature)
Melting / boiling point	It is only found as a solution in water
Flammability	Not flammable
Explosive properties	Not explosive
Self-ignition temperature	No relative self-ignition temperature
Oxidising properties	Not oxidising according to regulatory criteria
Vapour pressure	2500 Pa at 20°C
Mol weight	74.4 g/mol
Water solubility	Completely miscible in water
Flash point	No flash point
Octanol-water partition coefficient (LogKow)	Log Kow < -3.42

5. Health Effects

Sodium hypochlorite is corrosive and may cause burns to skin and eyes. The substance should never be mixed with acid cleaners or other acids, as toxic fumes may result.

6. Environmental Effects

Sodium hypochlorite is very toxic to aquatic organisms. However, as the substance is extremely reactive, any sodium hypochlorite which is poured into the drain from household use will react with organic matter and will be removed before reaching the environment. The substance can be handled at all stages of manufacture and use with a minimal impact on the aquatic environment.

Additionally, the substance is not bioaccumulative, is rapidly degraded and will not persist in the environment.

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7. Exposure

Sodium hypochlorite is corrosive and causes serious eye damage, severe skin burns, and damage to the respiratory system if inhaled. The likely routes of exposure are:

Worker Exposure

Exposure could occur in the manufacturing facility, transportation personnel, or users in municipal drinking water or waste water treatment facilities and or industrial facilities that use sodium hypochlorite chemicals. When exposures occur, they are typically skin, eye, or inhalation exposures. Ingestion exposure is not very likely to occur. To minimize the risk of exposure, good industrial hygiene practice, engineering controls and the use of personal protective equipment, such as chemical goggles, chemical resistant gloves, and work clothing that covers arms and legs as needed, have been established. Emergency responders such as firefighters could also be exposed to sodium hypochlorite if they are present during an incident. Normal turnout protective gear for first responders such as positive pressure breathing units, chemical resistant suits, boots and gloves will minimize their risk.

Consumer Exposure

Carus Corporation does not sell sodium hypochlorite in retail stores, although the components present in our products may also be an ingredient in some consumer products from other manufacturers. Public exposure to sodium hypochlorite is possible through accidents, spills, and inadvertent misuse of the products or overdosing from the municipality.

Environment:

Sodium hypochlorite is harmful to the aquatic environment, but exposure rarely occurs. Household waste flushed down the drain or toilet is destroyed by reaction before reaching the environment.

Professional or industrial waste generally enters into waste water treatment plants, where the substance reacts and is removed before reaching the environment. Weak solutions are sometimes released directly into the environment from industrial sites such as power plants, but these levels have been assessed as being safe and not causing damage to the wider environment, due to the rapid reaction of the substance with organic matter.

Based on the risk assessment, the use of sodium hypochlorite is safe under conditions recommended in the extended safety data sheet.

Non-routine releases to the environment can occur from accidents, spills and inadvertent misuse of the products. If a spill occurs, emergency personnel should wear protective equipment suitable for the task to minimize exposures.

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8. Risk Management recommendations

Human health measures		
Organizational	A basic standard of occupational hygiene is recommended. Ensure operatives are well informed of the hazards and trained to minimise exposures. Ensure regular inspection and maintenance of equipments and machines. Handle and store according to the indications of the Safety Data Sheet.	
Protection	Eye/Face protection:	Safety glasses with side-shields
	Skin protection:	Waterproof suit, boots
	Hand protection:	Splash contact, intermittent and prolonged PVC gloves. Glove thickness: 1 – 1.2 mm
	Respiratory protection:	In case of hazardous fumes, wear self contained breathing apparatus.
Engineering controls	Provide appropriate local exhaust ventilation at points of emission. Minimize manual phases. Should be handled in well ventilated areas. Ensure that eyewash stations and safety showers are close to workstation locations. Ensure that self-contained breathing apparatus are located nearby.	
Environment protective measures		
Do not release into the environment. Incinerate or treat any release.		

9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

This substance is currently assessed or has been registered under:




- EU Regulation EC 1907/2006 (REACH)
- EU Directive EC 98/8 (Biocidal Products Directive)
- OECD HPV program
- EU Regulation EC 793/93 (European Priority Lists and Risk Assessment)

9.2 Classification and labelling

Under GHS substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended

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audience (workers, consumers, transport workers, and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification	
According to REGULATION (EC) no 1272/2008: – Corrosive to metals; Category 1; May be corrosive to metals – Skin corrosion: Category 1B; Causes severe burns and eye damage – Serious eye damage: Category 1; Cause serious eye damage – Specific target organ toxicity – single exposure: Category 3; May cause respiratory irritation – Acute aquatic toxicity: Category 1; Very toxic to aquatic life – Chronic aquatic toxicity: Category 1; Very toxic to aquatic life with long lasting effects.	
Signal Word	
Danger	
Pictogram	
– GHS05: Corrosion	
– GHS07: Exclamation mark	
– GHS09: Environment	
Hazard statement	
– H290: May be corrosive to metals – H314: Causes severe skin burns and eye damage – H335: May cause respiratory irritation – H410: Very toxic to aquatic life with long lasting effects Supplemental information: – EUH031: Contact with acids liberates toxic gas.	

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