SAFETY DATA SHEET

SODIUM HYPOCHLORITE **SDS 010/R08**
04-08-2020

Reg. No 2003/017152/07

Safety Data Sheet (SDS) According to ISO / SANS 11014:2009/10, UN Transport of Dangerous Goods, UN Globally Harmonized System of Classification & Labelling and EC Directive 1272/2008

SECTION 1. Identification – Chemical Product and Company

Trade Name	:	Sodium hypochlorite
Chemical Name / Proper Shipping Name:	:	HYPOCHLORITE SOLUTION
UN Number	:	1791
CAS Number	:	7681-52-9
Chemical Family	:	Inorganic mono-constituent substance
EC Number	:	231-668-3
IUPAC Name	:	Sodium hypochlorite / Hypochlorous acid, sodium salt
Other means of identification	:	Clear light-yellow Liquid
Recommended use of the chemical	:	Household bleach and sanitizer, bleaching agent in the pulp and paper industry, oxidising agent in the chemical industry. Sanitizer for water and effluent.
Restrictions on use	:	Not for retail or domestic use without dilution, nor use by untrained persons
Supplier's details	:	NCP Chlorchem (Pty) Ltd
Address	:	Cnr. Allandale Road and Chloor Road Chloorkop, Gauteng, South Africa
Telephone No.	:	+27 (0) 11 976 2115
24hour Emergency phone number	:	+27 (0) 11 921 3333

SECTION 2. Hazards Identification

Hazard classes/Hazard categories **Transport – Class 8** Corrosive substance	GHS Hazard Statement
Metal Corrosion Category 1	H 290 May be corrosive to metals
Skin Corrosion Category 1B	H314 Causes severe skin burns
Serious Eye damage Category 1	H318 Causes serious eye damage
Skin Irritation Category 2	H315 Causes skin irritation
Specific Target Organ Toxicity (STOT) SE 3	H335 May cause respiratory irritation
Aquatic Acute Category 1	H400: Very toxic to aquatic life.

GHS Classification of the substance: corrosive liquid, causes severe skin burns and eye damage, and is very toxic to aquatic life

GHS Label elements -

GHS 05 Severe skin burns & Eye damage: GHS 09 very toxic to aquatic life; GHS 07 irritation
Signal word: Danger

Reg. No 2003/017152/07

The most important adverse effects to know in emergency are – corrosive to skin and eyes, and toxic to aquatic life

GHS label elements – Hazard and Precautionary Statements:

Hazard Statements –
H290 May be corrosive to metals
H314 Causes severe skin burns and H315 Causes skin irritation
H318 Causes severe eye damage and H319 Causes eye irritation
H 335 May cause respiratory irritation
H400 Very toxic to aquatic life with long lasting effects

Precautionary statements:
P406: store in corrosion resistant containers or with a corrosion resistant liner
P260: Do not breathe mist
P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P302 +352 If on skin wash with plenty of water
P301 + P330 + P331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P337 + P317 If eye irritation persists get medical help
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing
P342 + P316: If experiencing respiratory symptoms: **Get emergency medical help immediately**
P363 Wash contaminated clothing before reuse.

Response:
Refer Sections 5, 6 and 8

Storage:
Refer Section 7

Special Labelling requirements – refer Section 14 for transport labels

Main hazards
May be corrosive to metals. Causes severe skin burns and eye damage. May cause respiratory irritation, Very toxic to aquatic life.

SECTION 3. Composition/information on ingredients

Chemical identity	:	Substance
Other means of identity	:	Clear yellowish-green liquid
Common name, synonyms, etc	:	Liquid bleach, sodium hypo solution
CAS number	:	7681-52-9
EC number	:	231-668-3
IUPAC names	:	Sodium hypochlorite / Hypochlorous acid, sodium salt
Stabilizing additives	:	Sodium hydroxide maximum 1.5%
Impurities	:	< 0.7% Sodium chlorate,

Hazardous components : Available/Active Chlorine

Ingredient name	UN Number	CAS number	% m/v Available Chlorine	EC List number
Sodium Hypochlorite	1791	7681-52-9	Min 15 %	231-668-3

SECTION 4. First Aid Measures

Product in eye
Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 20 minutes, holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Continue rinsing. Take care not to rinse contaminated water into the non-affected eye. If irritation persists, obtain medical attention immediately.

Product on skin
Avoid direct contact with this chemical. Remove contaminated clothing, shoes, and leather goods and metal(e.g. watchbands, belts) and wash with lukewarm, gently running water for at least 20 minutes. If irritation persists, obtain medical attention immediately. Completely decontaminate clothing, shoes and leather goods before re-use or discard.

Product ingested
Do not induce vomiting, give water or milk to drink if conscious. Only when casualty is conscious, rinse mouth with plenty of water. Never give anything by mouth if victim is rapidly losing consciousness, or, is unconscious. Obtain medical assistance immediately.

Product inhaled
Remove to fresh air and keep at rest in a position comfortable for breathing, and obtain medical attention. If symptoms persist or breathing gets difficult, get medical help immediately.

SECTION 5. Fire Fighting Measures

Sodium hypochlorite is water based and is not flammable – however,

Suitable extinguishing media if involved in a fire – Use water spray, carbon dioxide, dry chemical, fog or alcohol-resistant foam to extinguish fires.

Reactivity: Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently

ERG - Emergency Response Guide 2020 and **SANS 10232 - 3** Guide 154

Small Fire - immediate response action should quickly put out the fire:use water spray to keep containers cool, and water spray, CO_2, dry chemical, dry sand, alcohol-resistant foam can be used on fire.

Large fires – evacuate area, move containers out and away from fire if can be done safely without increasing risk and cool containers with quantities of water until the fire is out. Isolate and contain fire as much as possible, dike or use inert material to contain run-off water for later disposal. Do not spread the material.

Special hazards:
- Reacts violently with strong acids and acid components to release chlorine and other toxic compounds.
- Reacts with organic materials to form chlorinated organic compounds and chlorine
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.
- Substance is not flammable but may decompose upon heating to produce corrosive and/or toxic fumes.
- Vapors if produced, may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
- Substance may react with water (some violently), releasing corrosive and/or toxic gases and runoff.
- Contact with metals may evolve toxic gas.
- Containers may explode when heated, or if contaminated with water.

Protective clothing - Wear full protective clothing and respirator, with self-contained, positive breathing apparatus for large fires.

NB: Prompt actions can stop small fires but large fires involving chemicals require professional Emergency Response Teams

SECTION 6. Accidental Release Measures

Personal precautions

Wear full protective clothing and self-contained for large spills. Avoid inhaling vapours of product. Avoid contact with eyes and skin.

Environmental precautions

- Do not dispose large volumes of any chemical into watercourses or sewers as disinfectant properties of this can adversely impact the bacterial digestion.
- Evacuate personnel to safe areas (keep upwind).
- Call the emergency response unit for large spills
- Use personal protective equipment (see exposure controls/ personal protection)
- Suppress gas/mists with water spray jet

Clean-up methods

Small Spills: Cover with DRY earth, DRY sand or other inert material and cover with plastic sheet to minimize spreading or contact with rain. Place collected material into plastic containers and label clearly for disposal.

Large Spills:

- Collect leaking product in suitable corrosion resistant containers. Stop the leakage by shutting valves, as long as this can be done safely.
- Do not allow to enter into drains or surface waters. Retain leaking product with earth, diatomaceous earth (kieselguhr) or universal absorbent. Collect contaminated material in corrosion resistant containers. Dispose of contaminated material and its container as hazardous waste according to local regulations.
- In case of entry into waterways, drains or soil inform the responsible authorities.

GHS Disposal Precautionary Statement - P501 dispose of product and containers in accordance with SA National and / or regional Regulations refer National Environmental Management: Waste Act (NEM:WA) and Regulations see http://sawic.environment.gov.za/ for licensed facilities.

SECTION 7. Handling and Storage

Storage requirements

Store only in double-walled leakage monitored tanks, or in tanks/containers in a bunded area (SANS 310 for tank & bund construction). Provide impermeable flooring and corrosion resistant equipment. Keep containers tightly closed in a dry and well-ventilated place. Provide sufficient air exchange and/or exhaust in work rooms.

Handling precautions

Keep drums tightly closed when not in use. Avoid contact with skin, eyes or clothing. Avoid breathing mist. Handle as a corrosive liquid, wear rubber gloves if likely to come into skin contact, face shield / safety glasses and acid respirator to protect against splashes and fumes.
Eating, drinking and smoking shall be prohibited in areas where chemicals are handled, stored or processed. Workers must wash hands before eating, drinking or smoking to remove any chemicals that could be ingested or inhaled.
Remove contaminated clothing and protective equipment before entering eating areas

Conditions for Safe Storage - refer SANS 10263: The Warehousing of dangerous goods, and **10263 - Part 8** The storage and handling of corrosive substances, for more specific information, relevant regulations and recognised practices for storage, warehousing and handling.

GHS Precautionary Statement P 406 store in corrosion resistant containers. **P403+P233** Store in a well-ventilated place. Keep the container tightly closed.
Suitable materials

Reg. No 2003/017152/07

Containers or tanks rubber lined or coated with a suitable plastic material.
Containers of polyethylene or polyvinyl chloride (PVC) with external glass fibre reinforcement (GFR)
Pack in Composite IBC's, plastic drums and jerricans.

Unsuitable materials
Mild steel, iron, copper, aluminium and alloys

SECTION 8. Exposure Controls/Personal Protection

Control parameters e.g. occupational exposure limit values or biological limit values:

Ingredient name		Exposure limits – OHS Act South Africa 1993
Chlorine	0.5	TWA OEL-RL ppm
	1	Short Term OEL-RL ppm

Occupational exposure standards
American Conference of Governmental Industrial Hygienists (ACGIH): TLV (TWA) = 2mg/m^3

Engineering control measures: Local ventilation should be made available if mists are produced. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Respiratory protection:
- Low concentrations and short-term activity (max 15 min): filter masks with filter type E. Be aware of the filter capacity and the use-time limitation!
- High concentrations or unknown exposure or prolonged activity: self-contained breathing apparatus.

Hand protection:
- Protective gloves have to conform to EN 374 – Gloves giving protection from Chemicals
- Suited glove material: neoprene, nitryl & butyl rubber, natural rubber, neoprene, or polyvinyl chloride
- The suitability of a specific glove of a supplier has to be determined depending on the use conditions (chemical, mechanical, thermal stress, and use/contact time)

Eye and face protection:
- Wear chemical safety goggles with side protection shield or goggles conform to EN 166.
- Full face mask.

Skin and body protection:
- Acid-proof protective overall, safety shoes or boots.

General protective and hygiene measures:
- Avoid contact with skin and eyes.
- Do not inhale gas or aerosol (mist).
- Apply PPE as required.
- Remove contaminated clothing immediately.
- Wash hands immediately after handling chemicals and before breaks.
- Do not eat, drink or smoke in the workplace, remove contaminated clothing and wash hands prior to eating, drinking and smoking.

SECTION 9. Physical and Chemical Properties

Appearance	Colourless or slightly yellowish green liquid
Odour	Strong odour of chlorine
pH	> 11 @ 20°C
Specific gravity	min 1.20 @20°C
Boiling point/range	Not Applicable
Freezing/Crystallization range	-20 to -30°C @ 101.3 kPa

Flash point	> 111 °C @ 101.3 kPa
Flammability	Not flammable
Explosive properties	Not applicable
Oxidising properties	Strong oxidising agent
Vapour pressure	2.5kPa @ 20°C
Viscosity	2.6 in mPa s @20°C
Solubility - water	Completely miscible in water.
Auto-ignition temperature	Not applicable
Decomposition temperature	Not applicable as stable under normal conditions of use
Viscosity	Not viscous, free flowing

SECTION 10. Stability and Reactivity

Stability of sodium hypochlorite solution is affected by heat, light, pH and the presence of heavy metal cations. When exposed to these, depending on amount, the solution can decompose resulting in the reduction of the available Chlorine.

Conditions to avoid:
Strong reducing agents, combustible materials, aluminium, metals, ammonia and strong acids.
Heat, flames, sparks and other sources of ignition
Exposure to direct sunlight.

Corrosive to: common metals with evolution of highly flammable hydrogen gas.

Incompatible materials:
- Acids or acidic salts with the evolution of toxic gases (Chlorine)
- High concentration of ammonia, ammonium salts + derivatives, and iso-cyanurate derivates which causes vigorous reaction resulting in the formation of nitrogen trichloride.

Hazardous decomposition products:
Reaction with acids causes evolution of toxic gases - chlorine and oxygen.
Product does not polymerize.

SECTION 11. Toxicological Information

Acute toxicity	Result	Species	Dose/ Exposure	Caution
Oral	Burns to lips, mouth & digestive tract	Rat	LD50 = 8200 mg/kg	Avoid splashes & exposure
Dermal	Causes blisters, burns & tissue damage	Rabbit	LD50 > 10000 mg/kg	Prevent skin contact
Inhalation	Nose throat and lung irritation. Coughing and severe shortness of breath.	Rat	> 10500 mg/l in 1 hour	Fumes / mists are Respiratory irritants, respiratory protection should be used if exposed to high concentration of fumes

GHS – EU Group Classification, and C & L Inventory:

Acute Toxicity: not classified
Skin Corrosion/Irritation: Skin Corrosion, Category 1B, H314 Causes severe skin burns
Eye Damage/ Irritation: Category 1, Causes serious eye damage and /or eye irritation
Respiratory or skin Sensitization: Not Classified
Germ Cell Mutagenicity: No data available
Carcinogenicity: Not considered to be carcinogenic by IARC, ACGIH, NTP or OSHA
Reproductive Toxicity: Not Considered to have any reproductive effects

STOT SE – Single Exposure: Category 3 fumes may cause respiratory irritation
STOT RE – Repeated Exposure: not classified
Aspiration Hazard: Not classified

SECTION 12. Ecological Information

GHS – EU Group Classification, and C & L Inventory:
Hazardous to the Aquatic Environment: Aquatic Acute, Category 1

The product is classified as: Very toxic to aquatic organisms

Component	Freshwater fish	Water flea	Freshwater algae
Sodium hypochlorite	LC_{50}=0.82-0.98 mg/l 96 h Pimephales promelas	EC_{50} 96 h = 26-35 µg/l EC_{50} 48 h = 26 µg/l	EC_{50}: = 49.9 µg/l 24h (skeletonema costatum)

Hazardous to the Ozone layer: Not classified
Biodegradability: Biodegradation studies are not applicable to sodium hypochlorite as it is an inorganic substance.
Bio-accumulation: No bioaccumulation studies have been performed but based on the environmental fate and behaviour of the substance, bioaccumulation in the aquatic ecosystem is not expected.

Mobility: No data available but the product is water soluble, and may spread in water systems. It is likely to be mobile in the soil environment due to its water solubility.

SECTION 13. Disposal Considerations

Disposal methods
Disposal must be made in accordance with the applicable National and Regional Government regulations at approved and permitted chemical disposal sites – refer to the SA National Environmental Management Waste Act - NEM: WA, it's regulations and local by-laws. This informs permitted waste facilities and service providers see the South African Waste Information Centre sawic.environment.gov.za

Disposal of packaging
Packagings and containers, even those that have been emptied, can retain product residue and vapours, handle empty containers as if they were full. Remove all possible traces of product and wash prior to disposal of packaging and containers. Dispose in compliance with regulations – see above and Industry Best Practice
Always observe and comply with hazard warnings.

SECTION 14. Transport information

	UN TDG / SANS 10228/ADR	IMDG	IATA
UN Number	UN 1791	UN 1791	UN 1791
UN proper shipping name – PSN	HYPOCHLORITE SOLUTION	HYPOCHLORITE SOLUTION	HYPOCHLORITE SOLUTION
Transport Class 8 and hazard - Corrosive			
Packing group - 11	Use UN Certified packaging P001 or IBC03	UN Certified packaging P001 or IBC03	UN Certified packaging P001
Environmental hazards	Toxic to aquatic organisms	Not a Marine Pollutant	Refer ICAO & IATA 2020
Additional information		IMDG Supplement EmS: F-A & S-B	
Emergency Response Guide - ERG 2020	Guide 154 Toxic and/or corrosive (non-combustible)	Refer IMDG 39-18 2018 Supplement & MARPOL	Refer ICAO & IATA 61st Edn. Regulations 2020

SECTION 15. Regulatory information

OHS Act - Occupational Health and Safety Act 85 of 1993: requires site risk assessment and monitoring to inform personnel health / biological monitoring. **Section 9A** Regulation requires provide MSDS to ISO 11014
MHI – Major Hazards Installations Regulations - OHS Act: require site Risk Assessment to ascertain potential impacts outside of the site and potential impacts on the public or neighbours. Copy to be lodged with the Dept Labour, and local emergency services.
Pressure Equipment Regulations - OHS Act: encompasses containers and service equipment
NEMA – National Environmental Management Act 107 of 1998: Duty of care and producer responsibility for products and packaging on a life cycle basis. Environmental impact assessment regulations for new installations or proposed increase in capacity over 25%
NEM: WA – National Environmental Management: Waste Act 59 of 2008: Extended producer responsibility, requirements and regulations for waste management, classification and disposal
NEM: AQA – National Environmental Air Quality Act 39 of 2004: AQA Licenses and Emissions
National Department of Health – Hazardous Substances Act
EU Directive EC 1272/2008 (EU GHS /CLP) – Safety data sheets and labelling
ECHA – European Chemical Agency Website, chemical information, C&L inventory, SVHCs & CoRAP
ERG 2016 Transport Canada and US Dept Transportation PHMSA - Pipeline and Hazardous Materials Safety Administration

SECTION 16. Other information, including information used for revision of this SDS:

ISO 11014:2009 Safety Data Sheets for Chemical Products – content, adopted in SA as SANS 11014:2010
UN Recommendations for Transport of Dangerous Goods Model Regulations commonly known as **the "Orange Books"** latest revision, currently 21st revision
UN Globally Harmonized System of Classification and Labelling of Chemicals – GHS commonly known as **the "Purple Book"** latest revision, currently 8th revision
IMDG – International Maritime Dangerous Goods Code, latest 2018 edition, amendment 39-18
IATA Technical Regulations 61st edition, 2020
SANS 50901:1999 Chemicals used for treatment of water for human Consumption: sodium hypochlorite.

Date of original MSDS	**:1993-10-28**	**Compiled by DD Liebenberg**
Date of issue for revision 3	**: 2009-07-22**	**Compiled by HH Maringa**
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Date of Revision 7	**: 2017:02-28**	**Complied by P Govender**
Date of Revision 8	**: 2020: 08-04**	**Compiled by E Anderson**

Approved as per Management of Change No. 24-08-2020-94

EXCLUSION OF LIABILITY

All information and instructions provided in this Safety Data Sheet (SDS) in respect of the substance is given in terms of the provisions of the Occupational Health and Safety Act No 85 of 1993 and its Regulations. Information is based on best available scientific and technical knowledge as at the date of compiling this SDS, and is presented in good faith to be correct.

The information provided in this SDS apply only to the product in its present form and not to any formulation or mix. It should be used only as directed, and any formulations or other use is at the responsibility of the user of the product as formulated and/or mixed to investigate and establish any hazards or risks which may arise out of its use, wherever such user may be situated.
It is the legal responsibility of the person in receipt of this SDS, wherever such may be situated, to ensure that the information provided is communicated to, and understood by any person who may come in contact with the product in any place and in any manner whatsoever. If such recipient produces formulations or mixes

using the product, then it is the recipient's sole responsibility to comply with the provisions of the Act in respect of the provision of the necessary SDS, and/or to comply with any other applicable legislation.