

**TC20054 - SODIUM HYPOCHLORITE  
14-15% CHLORINE**

## Safety Data Sheet

According to Annex II to REACH - Regulation (EU) 2020/878 and to Annex II to UK REACH

### SECTION 1. Identification of the substance/mixture and of the company/undertaking

**1.1. Product identifier**

Code:	TC20054
Product name	SODIUM HYPOCHLORITE 14-15% CHLORINE
Chemical name and synonym	Ipcloclorito di Sodio in soluzione, candeggina
INDEX number	017-011-00-1
EC number	231-668-3
CAS number	7681-52-9
Registration Number	01-2119488154-34-xxxx
UFI :	TRHS-017F-Y00X-5Q1F

**1.2. Relevant identified uses of the substance or mixture and uses advised against**

Intended use	Professional use as cleaning agent
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**1.3. Details of the supplier of the safety data sheet**

Name	TITOLCHIMICA SPA
Full address	VIA S.PIETRO MARTIRE 1054
District and Country	45030 PONTECCHIO POLESINE (RO) ITALIA
	Tel. +39425492644

e-mail address of the competent person

responsible for the Safety Data Sheet	utecnico@titolchimica.it
Supplier:	TITOLCHIMICA SPA

**1.4. Emergency telephone number**

For urgent inquiries refer to

Pavia - National Center for Toxicological Information 0382/24444;  
Milan - Hosp. Niguarda Ca' Granda 02/66101029;  
Bergamo - Hosp. "Pope John XXIII" 800/883300;  
Verona - Hosp. Integrated Verona 800/011858  
Florence - Hosp. "Careggi" U.O. Medical Toxicology 055/7947819;  
Rome - "A. Gemelli" Polyclinic 06/3054343;  
Rome - "Umberto I" Polyclinic 06/49978000;  
Rome - "Bambino Gesù Pediatric Hospital" 06/68593726  
Naples - Hosp. "A. Cardarelli" 081/5453333;  
Foggia - Hosp. University of Foggia 800/183459

### SECTION 2. Hazards identification

**2.1. Classification of the substance or mixture**

The product is classified as hazardous pursuant to the provisions set forth in (EC) Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of (EU) Regulation 2020/878.  
Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Hazard classification and indication:

Substance or mixture corrosive to metals, category 1	H290	May be corrosive to metals.
Skin corrosion, category 1B	H314	Causes severe skin burns and eye damage.
Serious eye damage, category 1	H318	Causes serious eye damage.
Hazardous to the aquatic environment, acute toxicity, category 1	H400	Very toxic to aquatic life.
Hazardous to the aquatic environment, chronic toxicity, category 2	H411	Toxic to aquatic life with long lasting effects.

**2.2. Label elements**

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

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Hazard pictograms:


Signal words: **Danger**

Hazard statements:

**H290** May be corrosive to metals.  
**H314** Causes severe skin burns and eye damage.  
**H400** Very toxic to aquatic life.  
**H411** Toxic to aquatic life with long lasting effects.  
**EUH031** Contact with acids liberates toxic gas.

Precautionary statements:

**P260** Do not breathe dust / fume / gas / mist / vapours / spray.  
**P264** Wash hands thoroughly after handling.  
**P280** Wear protective gloves/ protective clothing / eye protection / face protection.  
**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.  
**P310** Immediately call a POISON CENTER / doctor.

Contains: Sodium hypochlorite solution ..% Cl active

INDEX 017-011-00-1

**2.3. Other hazards**

On the basis of available data, the product does not contain any PBT or vPvB in percentage  $\geq$  than 0,1%.

The product does not contain substances with endocrine disrupting properties in concentration  $\geq$  0.1%.

**SECTION 3. Composition/information on ingredients**
**3.1. Substances**

Contains:

Identification	Conc. %	Classification (EC) 1272/2008 (CLP)
Sodium hypochlorite solution .. % Cl active		
INDEX 017-011-00-1	14-15	Met. Corr. 1 H290, Skin Corr. 1B H314, Eye Dam. 1 H318, Aquatic Acute 1 H400 M=10, Aquatic Chronic 1 H410 M=1, EUH031, Classification note according to Annex VI to the CLP Regulation: B EUH031: C $\geq$ 5 %

EC 231-668-3

CAS 7681-52-9

REACH Reg. 01-2119488154-34-xxxx

The full wording of hazard (H) phrases is given in section 16 of the sheet.

**SECTION 4. First aid measures**
**4.1. Description of first aid measures**

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**EYES:** Remove contact lenses, if present. Wash immediately with plenty of water for at least 30-60 minutes, opening the eyelids fully. Get medical advice/attention.

**SKIN:** Remove contaminated clothing. Rinse skin with a shower immediately. Get medical advice/attention.

**INGESTION:** Have the subject drink as much water as possible. Get medical advice/attention. Do not induce vomiting unless explicitly authorised by a doctor.

**INHALATION:** Get medical advice/attention immediately. Remove victim to fresh air, away from the accident scene. If the subject stops breathing, administer artificial respiration. Take suitable precautions for rescue workers.

**4.2. Most important symptoms and effects, both acute and delayed**

Specific information on symptoms and effects caused by the product are unknown.

Sodium hypochlorite solution ..% Cl active

Acute Effects:

Skin: irritation, burns, necrosis and perforations.

Eyes: irritation, corneal damage.

Respiratory tract: severe irritation to the respiratory tract.

Ingestion: irritation of the digestive system with sometimes bloody vomiting.

Chronic effects.

Skin: dermatosis

**4.3. Indication of any immediate medical attention and special treatment needed**

Sodium hypochlorite solution ..% Cl active

Treat symptomatologically.

In the event of an accident or if you feel unwell, consult a doctor immediately (show the instructions for use or the safety data sheet if possible).

**SECTION 5. Firefighting measures****5.1. Extinguishing media**

SUITABLE EXTINGUISHING EQUIPMENT

Extinguishing substances are: carbon dioxide and chemical powder. For product loss or leakage that has not caught fire, water spray can be used to disperse flammable vapours and protect those trying to stem the leak.

UNSUITABLE EXTINGUISHING EQUIPMENT

Do not use jets of water.

Water is not effective for putting out fires but can be used to cool containers exposed to flames to prevent explosions.

**5.2. Special hazards arising from the substance or mixture**

HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

If large quantities of the product are involved in a fire, they can make it considerably worse. Do not breathe combustion products.

Sodium hypochlorite solution ..% Cl active

Heating can release dangerous gases. Reacts violently with acids and is corrosive to metals, evolving flammable hydrogen gas. If directly involved it can give rise to toxic fumes (chlorine). Avoid breathing combustion products.

**5.3. Advice for firefighters**

GENERAL INFORMATION

In the case of fire, use jets of water to cool the containers to prevent the risk of explosions (product decomposition and excess pressure) and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Remove all containers containing the product from the fire, if it is safe to do so.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

**SECTION 6. Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

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For those who do not intervene directly

Do not take any action involving any personal risk or without suitable training. Evacuate surrounding areas. Do not touch or walk on spilled material.

Wear appropriate protective equipment (including personal protective equipment referred to in section 8 of this Safety Data Sheet) to prevent contamination of skin, eyes and personal clothing. Wear an appropriate respirator when ventilation is inadequate.

Do not inhale mists/vapours/gases. Avoid dispersion of the product in the environment. Follow the appropriate internal procedures provided for personnel not authorized to intervene directly in the event of accidental release.

For those who intervene directly

Stop the leak if there is no danger.

Evacuate unauthorized personnel. Wear suitable protective equipment. (see section 8 of this Safety Data Sheet). Follow the appropriate internal procedures for authorized personnel. Isolate the danger area and deny entry. Ventilate enclosed spaces before entering.

**6.2. Environmental precautions**

Prevent dispersion of spilled material, runoff and contact with soil, streams, drains, sewers and groundwater. Inform the competent authorities immediately in the event of pollution in order to limit environmental damage as far as possible. Water mist can be used to dilute the vapors.

**6.3. Methods and material for containment and cleaning up**

Vacuum the liquid into a suitable container and absorb the rest with inert absorbent material (clay, sand or other non-combustible material). Place the collected material in clean and labelled containers. Use neutralization media and keep the pH value under control.

The equipment must be resistant to corrosion.

Provide sufficient ventilation of the place affected by the leak. The disposal of contaminated material must be carried out in accordance with the provisions of point 13.

In the event of a large quantity of product being dispersed, inform the local authorities as soon as possible. After removing all the product, wash the contaminated area with plenty of water without the use of solvents and acidic products, and retain the contaminated wash water to manage it as waste.

Do not use acidic products to clean.

Cleaning products that are incompatible agents should not be used (ref. section 10.5).

**6.4. Reference to other sections**

For information about risks to the environment, health and means of protection, refer to the other sections of the sheet.

**SECTION 7. Handling and storage****7.1. Precautions for safe handling**

Check the integrity of the packaging. If possible, operate upwind.

Avoid contact with skin and eyes. Do not inhale mists/vapours/gases. Do not eat, drink or smoke when using or handling. Wash hands after use. Avoid dispersion of the product in the environment. Handle in a suitable place and with good general ventilation. The containers, once emptied, must be transferred without delay to the area identified for the collection of the same pending disposal.

Keep away from heat, sparks and open flames, do not smoke or use matches or lighters. Avoid the accumulation of electrostatic charges.

**7.2. Conditions for safe storage, including any incompatibilities**

Handle the product after consulting all other sections of this safety data sheet. Avoid dispersion of the product in the environment. Remove contaminated clothing and protective equipment before entering eating areas.

Keep the packaging closed and labelled. The containers must also be protected from damage, accidental knocks and falls. Store in a well-ventilated, dry and cool place.

Protect from direct sunlight. Minimize all possible sources of leakage through appropriate procedural and plant engineering interventions. Keep away from food, feed or drink. Keep only in the original container.

The arrangement of the storage area must be such as to prevent accidental spills from percolating into the ground.

Store containers away from any incompatible materials, checking section 10.

For the storage area, provide floors resistant to alkaline solutions.

Recommended storage temperature: <20°C.

Do not use metal containers.

To be avoided: iron, stainless steel, copper and copper alloys, aluminium, unprotected metals.

**7.3. Specific end use(s)**

Information not available

**SECTION 8. Exposure controls/personal protection**

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**8.1. Control parameters**

## Regulatory References:

ITA	Italia	Decreto Legislativo 9 Aprile 2008, n.81
EU	OEL EU	Directive (EU) 2022/431; Directive (EU) 2019/1831; Directive (EU) 2019/130; Directive (EU) 2019/983; Directive (EU) 2017/2398; Directive (EU) 2017/164; Directive 2009/161/EU; Directive 2006/15/EC; Directive 2004/37/EC; Directive 2000/39/EC; Directive 98/24/EC; Directive 91/322/EEC.
	TLV-ACGIH	ACGIH 2022

**Sodium hypochlorite solution ..% Cl active  
Threshold Limit Value**

Type	Country	TWA/8h		STEL/15min		Remarks / Observations
		mg/m3	ppm	mg/m3	ppm	
VLEP	ITA			1,5	0,5	Cloro da decomposizione
OEL	EU			1,5	0,5	Cloro da decomposizione
TLV-ACGIH			0,1		0,4	Cloro da decomposizione
Predicted no-effect concentration - PNEC						
Normal value in fresh water				0,00021	mg/l	
Normal value in marine water				42	mg/l	
Normal value for water, intermittent release				0,00026	mg/l	
Normal value of STP microorganisms				4,69	mg/l	
Normal value for the food chain (secondary poisoning)				11,1	mg/kg	

**Health - Derived no-effect level - DNEL / DMEL**

Route of exposure	Effects on consumers				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation					3,1 mg/m3	3,1 mg/m3	1,55 mg/m3	1,55 mg/m3

## Legend:

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.

VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified ; LOW = low hazard ; MED = medium hazard ; HIGH = high hazard.

**Sodium hypochlorite solution ..% Cl active**
**Recommended monitoring practices**

This product contains substances with exposure limits which may require personal, workplace atmosphere and biological monitoring to determine the effectiveness of ventilation or other control measures and/or the need to use protective equipment respiratory.

The reference European Standards, as recommended in Annex XLI of Legislative Decree 81/2008, are:

- UNI EN 689 standard "Guide to the assessment of exposure by inhalation to chemical compounds for the purpose of comparison with the limit values and measurement strategy";
- UNI EN 482 standard "general requirements for the performance of chemical agent measurement procedures".

**8.2. Exposure controls**

Generic occupational hygiene practice involves certain measures (e.g. shower and change of clothes at the end of the work shift) in order to avoid any kind of third party contamination and appropriate cleaning practices (i.e. regular cleaning with suitable cleaning devices ), do not eat and smoke in the workplace.

In general, inhalation and ingestion should be avoided. Unless otherwise stated, certified work shoes and workwear must be worn. Contaminated work clothing must not be taken out of the workplace.

Ensure good general ventilation in the place of and effective local aspiration or other technical equipment in order to keep the levels in the air below the exposure limit values.

In the absence of adequate ventilation, indicator devices and automatic warning devices must be installed to signal the achievement of dangerous concentrations or conditions.

Where this is not possible, frequent checks and measurements should be performed.

For the choice of personal protective equipment, ask your PPE suppliers for advice if necessary.

Personal protective equipment must bear the CE marking which certifies their compliance with current regulations.

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Provide for an emergency shower with a visor basin.  
Exposure levels should be kept as low as possible to avoid significant accumulation in the body.  
Manage personal protective equipment in such a way as to ensure maximum protection (e.g. reduction of replacement times).

**HAND PROTECTION**

Protect your hands with work gloves, category III (ref. standard EN 374).

Main recommended materials: PVC.

Protection class: 6 (permeation time greater than 480 minutes).

In the identification phase of the relevant material and the relative thickness to be used, it is highly recommended to deal directly with the PPE manufacturer to evaluate the effective protection with regard to the specific characteristics of the same on the basis of use and duration of use.

The following must be considered: compatibility, degradation, breakthrough time and permeation.

In the case of preparations, the resistance of work gloves to chemical agents must be checked before use as it cannot be foreseen. The gloves have a wear time that depends on the duration and method of use.

Thermal Hazards: Wear heat resistant gloves in case of thermal hazards.

**SKIN PROTECTION**

Wear long-sleeved overalls and category III professional safety footwear (ref. Directive 89/686/EEC and standard EN ISO 20344). Wash with soap and water after removing protective clothing.

**EYE PROTECTION**

Wear a hooded visor or protective visor combined with airtight goggles (ref. standard EN 166).

**RESPIRATORY PROTECTION**

Wear a mask with a type B filter whose class (1, 2 or 3) must be chosen in relation to the limit concentration for use. (ref. standard EN 14387). If gases or vapors of a different nature and/or gases or vapors with particles (aerosols, fumes, mists, etc.) are present, it is necessary to provide combined type filters.

The use of respiratory protection means is necessary if the technical measures adopted are not sufficient to limit the worker's exposure to the threshold values taken into consideration. However, the protection offered by masks is limited.

In the event that the substance in question is odorless or its olfactory threshold is higher than the relevant TLV-TWA and in case of emergency, wear an open-circuit compressed air respirator (ref. standard EN 137) or a plug-in respirator external air (ref. standard EN 138). For the correct choice of respiratory protection device, refer to the EN 529 standard.

**ENVIRONMENTAL EXPOSURE CONTROLS**

Emissions from production processes, including those from ventilation equipment, should be controlled for compliance with environmental protection legislation.

Product residues must not be discharged uncontrolled into waste water or watercourses.

## SECTION 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Properties	Value	Information
Appearance	clear liquid	
Colour	Light yellow	
Odour	characteristic of chlorine	
Melting point / freezing point	-20 / -30°C	
Initial boiling point	not available	
Boiling range	96-120 °C	
Flammability	not flammable	
Lower explosive limit	not applicable	non-flammable product
Upper explosive limit	not applicable	non-flammable product
Flash point	not applicable	No flash point has been observed up to 111°C (at 101.3Kpa), therefore the substance is not considered flammable.
Auto-ignition temperature	not applicable	Sodium hypochlorite solution has no flash point up to 111°C temperature at which the product begins to decompose.
Decomposition temperature	not applicable	No decomposition observed up to 111°C.
pH	11-12	
Kinematic viscosity	not available	
Solubility	Completely soluble in water	
Partition coefficient: n-octanol/water	-3,42	
Vapour pressure	17,4 hPa	Temperature: 20 °C

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Density and/or relative density	1,22
Relative vapour density	not available
Particle characteristics	not applicable

**9.2. Other information**
**9.2.1. Information with regard to physical hazard classes**

Information not available

**9.2.2. Other safety characteristics**

Molecular weight g/mol	74,44
Explosive properties	Not applicable (absence of chemical groups associated with explosive properties in accordance with the provisions of Annex I, Part 2, Chapter 2.1.4.3 of Reg. (EC) 1272/2008 - CLP).
Oxidising properties	strong oxidizing agent
Formula	NaClO
Corrosion	La sostanza è classificata come corrosiva per i metalli (secondo i criteri del CLP – 2.16 dell'allegato I)

**SECTION 10. Stability and reactivity**
**10.1. Reactivity**

Sodium hypochlorite solution ..% Cl active  
Contact with metals evolves flammable hydrogen gas. Contact with strong acids can cause violent reactions and explosions.  
Potential danger for exothermic reactions. Corrosive power towards metals.

**10.2. Chemical stability**

Sodium hypochlorite solution ..% Cl active  
Stable under normal conditions of use and storage (at room temperature).  
The stability of the solution decreases due to the action of light, heat and the presence of impurities (traces of iron, nickel, cobalt, copper).

**10.3. Possibility of hazardous reactions**

Sodium hypochlorite solution ..% Cl active  
Contact with strong acids liberates chlorine and chlorine dioxide gas. Releases hydrogen in reaction with metals.  
Sodium hypochlorite decomposes on heating, on contact with acids and on exposure to light producing toxic and corrosive gases containing chlorine.

**10.4. Conditions to avoid**

Sodium hypochlorite solution ..% Cl active  
Protect from light.  
Avoid exposing the product to high temperatures. Avoid humidity.

**10.5. Incompatible materials**

Sodium hypochlorite solution ..% Cl active  
Keep away from flammable and reducing substances, acids, strong acids, metals, food and feedstuffs.

**10.6. Hazardous decomposition products**

Sodium hypochlorite solution ..% Cl active  
Decomposes on heating, developing toxic fumes including Chlorine, Hypochlorous acid, Sodium chlorate.

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## SECTION 11. Toxicological information

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Metabolism, toxicokinetics, mechanism of action and other information

Sodium hypochlorite solution ..% Cl active

Sodium hypochlorite is absorbed by mouth, skin and inhalation. The plasma peak is reached in 2 hours after oral administration to the young animal. The elimination half-life is 44 hours. A study in rats indicates that sodium hypochlorite in aqueous solution is metabolized to chloride ions, which are distributed in decreasing order over 96 hours after exposure, in plasma, whole blood, bone marrow, testis, kidney and in the lungs.

Only 51.2% of the dose is eliminated 96 hours after exposure, 36.4% in the urine and 14.8% in the faeces.

After 120 hours the elimination is still not complete (INRS, 2006).

#### Information on likely routes of exposure

Sodium hypochlorite solution ..% Cl active

The main routes of potential exposure are inhalation, skin contact and ingestion.

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sodium hypochlorite solution ..% Cl active

The substance is corrosive to the respiratory tract and if swallowed (solution with chlorine > 10%) (IPCS, No. 1119, 1999).

The toxic effects in humans depend on the concentration of the solution. High concentrations are dangerous while the dilutions usually used do not involve any risk.

The main manifestations are linked to the corrosive nature of the concentrated forms.

The ingestion of modest quantities of dilutions normally used causes only mild digestive disturbances.

On the contrary, concentrated solutions cause a strong irritation of the digestive system with vomiting, sometimes bloody. There may be necrosis and perforations. These effects may be accompanied by shock and haemolysis. You may have significant hypernatremia, sometimes causing death.

Prolonged use of the substance can cause dermatoses.

#### Interactive effects

Sodium hypochlorite solution ..% Cl active

The dangers in case of mixtures with acid products are important. In these cases, chlorine is released which can cause severe bronchial irritation and acute, sometimes delayed, pulmonary edema.

Similarly, mixtures with ammonia, which cause the formation of chloramine, are irritating to the respiratory tract (INRS, 2006).

#### ACUTE TOXICITY

ATE (Inhalation) of the mixture:

Not classified (no significant component)

ATE (Oral) of the mixture:

Not classified (no significant component)

ATE (Dermal) of the mixture:

Not classified (no significant component)

Sodium hypochlorite solution ..% Cl active

LD50 (Dermal):

> 2000 mg/kg coniglio

LD50 (Oral):

1100 mg/kg ratto

LC50 (Inhalation vapours):

> 10,5 mg/l/1h ratto

Method: equivalent or similar to OECD 401

Reliability (Klimisch score): 2

Species: Rat (Wistar; male)

Routes of exposure: oral

Results: LD50 = 1100 mg/kg (12.5% Cl solution)

Method: equivalent or similar to OECD 403

Reliability (Klimisch score): 2

Species: Rat (Albino; male)

Routes of exposure: inhalation (vapours)

Results: LD50 > 10.5 mg/L/1h

Method: equivalent or similar to OECD 402

Reliability (Klimisch score): 2

Species: Rabbit (Albino; male/female)

Routes of exposure: dermal



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Results: LD50 > 2000 mg/kg

SKIN CORROSION / IRRITATION

Corrosive for the skin

Sodium hypochlorite solution ..% Cl active

In contact with the skin, concentrated solutions can cause severe burns.

Sodium hypochlorite is corrosive to rabbit skin (3.5% solution 15-30 min.); at a concentration of 20%, the severity of the irritation depends on the applied dose (INRS, 2006).

In guinea pigs and rabbits in a test with the FHSA method (equivalent to Draize) mild irritant effects were observed with only an available 5.25% chlorine solution in a four hour patch test which included application to both intact and abraded skin (Nixon et al 1975 on EU, 2007). However, the results of Nixon's study should not raise any concern considering that in another rabbit study using the FHSA method, no significant irritation was observed after application of a 4.74% available chlorine solution with a semi-occlusive bandage for 24 hours on the skin of the back (Osterberg, 1977).

Furthermore, the available human data do not contradict this conclusion as they clearly indicate irritation at concentrations above 5% (Nixon et al., 1975 on EU, 2007).

SERIOUS EYE DAMAGE / IRRITATION

Causes serious eye damage

Sodium hypochlorite solution ..% Cl active

In contact with the eye, the concentrated solutions can cause severe burns with important sequelae.

In rabbits, ocular corrosivity depends on the applied dose. A 0.5% solution causes reversible irritation within 24 hours; a 5% solution causes immediate pain; if the eye is washed within 30 seconds, the lesion (slight transient opacification of the cornea and edema of the conjunctiva) is reversible within 24 hours, on the contrary, without washing, reversibility occurs after more than a week; an identical dose applied to the eye of a monkey causes a more rapidly reversible lesion (INRS, 2006).

It is difficult to compare the different studies available as some of them have modified protocols and the original data are not available. All the data obtained with the LVET method (which is considered to more accurately predict the real effects on humans) report effects similar to those deriving from experience in humans showing reversibility of the effects within short periods of time. Available human exposure data (Poison Control Centres) support some observations in animals (Pashley, 1985 in EU, 2007) that ocular irritant effects are less severe in humans than in rabbits. Eye rinsing with water shows a reduction in irritant effects, both in animals and humans (EU, 2007).

Other studies (Héry et al. 1994 and Erdiger et al. 1998, in EU, 2007) clearly point out that the effects observed on the eye may be related to the reaction products (found in swimming pools, for example, chlorinated carboxylic compounds) and not to hypochlorite, therefore they should not be taken into consideration in the evaluation of hypochlorite.

Regarding corrosivity, animal data show that a 12.7% hypochlorite solution produced severely irritating or corrosive effects to the eye. However, the same concentration applied to rabbit skin did not show any corrosive effects but only moderate irritation was observed. For these concentrated products, accident data is available (mostly from the French market) which does not show any serious or long-lasting consequences associated with accidental skin and eye contact.

Available human and animal data support the conclusion that the substance is irritant above 5% and corrosive above 10% (EU, 2007).

RESPIRATORY OR SKIN SENSITISATION

Does not meet the classification criteria for this hazard class

Respiratory sensitization

Sodium hypochlorite solution ..% Cl active

Date not available.

Skin sensitization

Sodium hypochlorite solution ..% Cl active

Method: equivalent or similar to OECD 406

Reliability (Klimisch score): 2

Species: Guinea pig (Dunkin-Hartley; male/female)

Routes of exposure: dermal

Results: Non-sensitizing to skin (40% v/v aqueous solution).

GERM CELL MUTAGENICITY

Does not meet the classification criteria for this hazard class

Sodium hypochlorite solution ..% Cl active

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Based on available data, the substance does not show carcinogenic effects and is not classified under the relevant CLP hazard class.

The International Agency for Research on Cancer (IARC) allocates hypochlorite salts in group 3 (not classifiable as a human carcinogen), based on the absence of human data and evidence of inadequate carcinogenicity in laboratory animals (IARC, 1991).

Two-year studies were conducted with chlorinated drinking water in F344/N rats and male and female B6C3F1 mice. There is "no evidence of carcinogenic activity" in male rats and "doubtful evidence of carcinogenic activity" in female rats based on the increased incidence of mononuclear cell leukaemias. In conclusion, there is "no evidence of carcinogenic activity" in mice (NTP, 1992).

**CARCINOGENICITY**

Does not meet the classification criteria for this hazard class

Sodium hypochlorite solution ..% Cl active

There are no clinical cases or epidemiological studies of carcinogenicity directly related to the administration of sodium hypochlorite in humans, the only studies available are related to the use of drinking water disinfected with sodium hypochlorite (EU, 2007).

Animal studies have not shown any carcinogenic effects.

-The International Agency for Research on Cancer (IARC) allocates hypochlorite salts in group 3 (not classifiable as a human carcinogen), based on the absence of human data and evidence of inadequate carcinogenicity in laboratory animals (IARC, 1991).

In F344/N rats and B6C3F1 mice m. and f. two-year studies were conducted with chlorinated drinking water. There is "no evidence of carcinogenic activity" in rats m. and "doubtful evidence of carcinogenic activity" in rats f. based on the increased incidence of mononuclear cell leukemia. There is "no evidence of carcinogenic activity" in mice m. and f. (NTP, 1992).

**REPRODUCTIVE TOXICITY**

Does not meet the classification criteria for this hazard class

**Adverse effects on sexual function and fertility**

Sodium hypochlorite solution ..% Cl active

Method: Equivalent or similar to OECD Guideline 415

Reliability (Klimisch score): 1

Species: Long-Evans rat, male/female

Routes of exposure: Oral

Results: No adverse effects observed

NO(A)EL

Parent Male  $\geq 5.0$  mg/kg bw/day

Female parent  $\geq 5.0$  mg/kg bw/day

F1 male  $\geq 5.0$  mg/kg bw/day

F1 female  $\geq 5.0$  mg/kg bw/day

**Adverse effects on development of the offspring**

Sodium hypochlorite solution ..% Cl active

Method: Equivalent or similar to OECD Guideline 414

Reliability (Klimisch score): 1

Species: Male/female Sprague-Dawley rat

Routes of exposure: oral

Results: NOAEL (teratogenesis):  $\geq 5.7$  mg/kg bw/day

**STOT - SINGLE EXPOSURE**

Does not meet the classification criteria for this hazard class

Sodium hypochlorite solution ..% Cl active

Sodium hypochlorite aerosols can be irritating to the respiratory tract (EU, 2007).

In humans, the toxic effects depend on the concentration of the solution. High concentrations are dangerous while the dilutions usually used do not involve any risk.

The main manifestations are linked to the corrosive nature of the concentrated forms.

The ingestion of modest quantities of dilutions normally used causes only mild digestive disturbances.

Conversely, concentrated solutions cause severe irritation of the digestive system with vomiting, sometimes bloody. There may be necrosis and perforations. These effects may be accompanied by shock and haemolysis. You can have an important hypernatremia, sometimes cause of death (INRS, 2006).

From the available accidental human ingestion and parenteral exposure data it can be concluded that accidental ingestion of bleaches containing sodium hypochlorite in the household is not expected to cause serious or permanent damage to the gastrointestinal tract and recovery should be rapid and without permanent health consequences. This is also expected for small amounts of solutions accidentally injected into the blood system or tissue (EU, 2007).

**TC20054 - SODIUM HYPOCHLORITE  
14-15% CHLORINE****STOT - REPEATED EXPOSURE**

Does not meet the classification criteria for this hazard class

Sodium hypochlorite solution ..% Cl active

Prolonged use of the substance can cause dermatoses (INRS, 2006).

Slight local irritant effects have been observed following dermal exposure to a 1000 mg/l sodium hypochlorite solution. No systemic effects were observed following dermal exposure to 10,000 mg/l sodium hypochlorite (EU, 2007).

Method: Equivalent or similar to OECD Guideline 453

Reliability (Klimisch score): 2

Species: Fischer 344 rat, male/female

Routes of exposure: Oral

Results: No adverse effects observed

NO(A)EL 50 mg/kg (males) and 57.2 mg/kg (females)

**ASPIRATION HAZARD**

Does not meet the classification criteria for this hazard class

**11.2. Information on other hazards**

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with human health effects under evaluation.

**SECTION 12. Ecological information**

This product is dangerous for the environment and highly toxic for aquatic organisms.

This product is dangerous for the environment and is toxic for aquatic organisms. In the long term, it have negative effects on acquatic environment.

**12.1. Toxicity**

Sodium hypochlorite solution ..% Cl active

In case of spillage of large quantities of product the possible impact on the environment is the lowering of the pH and the formation of chlorine.

LC50 - for Fish	0,032 mg/l/96h Oncorhynchus kisutch, Thatcher (1978)
EC50 - for Crustacea	0,165 mg/l/48h Daphnia magna (OECD TG 202)
Chronic NOEC for Fish	0,04 mg/l/28d Menidia peninsulae (pubblicazione, nessuna linea guida seguita)
Chronic NOEC for Crustacea	0,007 mg/l/14d Specie differenti (Liden et al., 1980)
Chronic NOEC for Algae / Aquatic Plants	0,02 mg/l/96h Myriophyllum spicatum (Water Res. 18(8), 1037-1043)

**12.2. Persistence and degradability**

Sodium hypochlorite solution ..% Cl active

No dispersion is expected in the atmosphere as hypochlorite solutions are not volatile. However, hypochlorite when accidentally mixed with acids can release chlorine. No data are available on the effects of hypochlorite in the atmospheric compartment (EU, 2009).

Degradability: the study is not applicable as the substance is inorganic.

**12.3. Bioaccumulative potential**

Sodium hypochlorite solution ..% Cl active

Based on the n-octanol/water distribution coefficient an accumulation in organisms is not to be expected.

Partition coefficient: n-octanol/water -3,42

**12.4. Mobility in soil**

Sodium hypochlorite solution ..% Cl active

The contact between hypochlorite and the soil immediately destroys the solution, due to the oxidation of the compounds on the soil (EU, 2009).

**12.5. Results of PBT and vPvB assessment**

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14-15% CHLORINE**

On the basis of available data, the product does not contain any PBT or vPvB in percentage  $\geq$  than 0,1%.

**12.6. Endocrine disrupting properties**

Based on the available data, the product does not contain substances listed in the main European lists of potential or suspected endocrine disruptors with environmental effects under evaluation.

**12.7. Other adverse effects**

Sodium hypochlorite solution ..% Cl active  
Spillage of large quantities can affect the operation of wastewater treatment plants.

**SECTION 13. Disposal considerations**
**13.1. Waste treatment methods**

Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.

Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

Waste transportation may be subject to ADR restrictions.

CONTAMINATED PACKAGING

Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

**SECTION 14. Transport information**
**14.1. UN number or ID number**

ADR / RID, IMDG, IATA: 1791

**14.2. UN proper shipping name**

ADR / RID: HYPOCHLORITE SOLUTION

IMDG: HYPOCHLORITE SOLUTION

IATA: HYPOCHLORITE SOLUTION

**14.3. Transport hazard class(es)**

ADR / RID: Class: 8 Label: 8

IMDG: Class: 8 Label: 8

IATA: Class: 8 Label: 8


**14.4. Packing group**

ADR / RID, IMDG, IATA: II

**14.5. Environmental hazards**

ADR / RID: NO

IMDG: NO

IATA: NO

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**14.6. Special precautions for user**

ADR / RID:	HIN - Kemler: 80 Special provision: -	Limited Quantities: 1 L	Tunnel restriction code: (E)
IMDG:	EMS: F-A, S-B	Limited Quantities: 1 L	
IATA:	Cargo: Passengers: Special provision:	Maximum quantity: 30 L Maximum quantity: 1 L A3, A803	Packaging instructions: 855 Packaging instructions: 851

**14.7. Maritime transport in bulk according to IMO instruments**

Information not relevant

**SECTION 15. Regulatory information**
**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Seveso Category - Directive 2012/18/EU: E1

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006

Product  
Point 3

Contained substance  
Point 75

Regulation (EU) 2019/1148 - on the marketing and use of explosives precursors

not applicable

Substances in Candidate List (Art. 59 REACH)

On the basis of available data, the product does not contain any SVHC in percentage  $\geq$  than 0,1%.

Substances subject to authorisation (Annex XIV REACH)

None

Substances subject to exportation reporting pursuant to Regulation (EU) 649/2012:

None

Substances subject to the Rotterdam Convention:

None

Substances subject to the Stockholm Convention:

None

Healthcare controls

Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

**TC20054 - SODIUM HYPOCHLORITE  
14-15% CHLORINE**
**15.2. Chemical safety assessment**

A chemical safety assessment has been performed for the substances indicated in section 3.

**SECTION 16. Other information**

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

<b>Met. Corr. 1</b>	Substance or mixture corrosive to metals, category 1
<b>Skin Corr. 1B</b>	Skin corrosion, category 1B
<b>Eye Dam. 1</b>	Serious eye damage, category 1
<b>Aquatic Acute 1</b>	Hazardous to the aquatic environment, acute toxicity, category 1
<b>Aquatic Chronic 1</b>	Hazardous to the aquatic environment, chronic toxicity, category 1
<b>Aquatic Chronic 2</b>	Hazardous to the aquatic environment, chronic toxicity, category 2
<b>H290</b>	May be corrosive to metals.
<b>H314</b>	Causes severe skin burns and eye damage.
<b>H318</b>	Causes serious eye damage.
<b>H400</b>	Very toxic to aquatic life.
<b>H410</b>	Very toxic to aquatic life with long lasting effects.
<b>H411</b>	Toxic to aquatic life with long lasting effects.
<b>EUH031</b>	Contact with acids liberates toxic gas.

**LEGEND:**

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- ATE: Acute Toxicity Estimate
- CAS: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE: Identifier in ESIS (European archive of existing substances)
- CLP: Regulation (EC) 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: Regulation (EC) 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA: Time-weighted average exposure limit
- TWA STEL: Short-term exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

**GENERAL BIBLIOGRAPHY**

1. Regulation (EC) 1907/2006 (REACH) of the European Parliament
2. Regulation (EC) 1272/2008 (CLP) of the European Parliament
3. Regulation (EU) 2020/878 (II Annex of REACH Regulation)
4. Regulation (EC) 790/2009 (I Atp. CLP) of the European Parliament
5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament

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6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
10. Regulation (EU) 2015/1221 (VII Atp. CLP) of the European Parliament
11. Regulation (EU) 2016/918 (VIII Atp. CLP) of the European Parliament
12. Regulation (EU) 2016/1179 (IX Atp. CLP)
13. Regulation (EU) 2017/776 (X Atp. CLP)
14. Regulation (EU) 2018/669 (XI Atp. CLP)
15. Regulation (EU) 2019/521 (XII Atp. CLP)
16. Delegated Regulation (UE) 2018/1480 (XIII Atp. CLP)
17. Regulation (EU) 2019/1148
18. Delegated Regulation (UE) 2020/217 (XIV Atp. CLP)
19. Delegated Regulation (UE) 2020/1182 (XV Atp. CLP)
20. Delegated Regulation (UE) 2021/643 (XVI Atp. CLP)
21. Delegated Regulation (UE) 2021/849 (XVII Atp. CLP)
22. Delegated Regulation (UE) 2022/692 (XVIII Atp. CLP)
- The Merck Index. - 10th Edition
- Handling Chemical Safety
- INRS - Fiche Toxicologique (toxicological sheet)
- Patty - Industrial Hygiene and Toxicology
- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition
- IFA GESTIS website
- ECHA website
- Database of SDS models for chemicals - Ministry of Health and ISS (Istituto Superiore di Sanità) - Italy

**Note for users:**

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

**CALCULATION METHODS FOR CLASSIFICATION**

Chemical and physical hazards: Product classification derives from criteria established by the CLP Regulation, Annex I, Part 2. The data for evaluation of chemical-physical properties are reported in section 9.

Health hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 3, unless determined otherwise in Section 11.

Environmental hazards: Product classification is based on calculation methods as per Annex I of CLP, Part 4, unless determined otherwise in Section 12.

Safety Data Sheet No.3 of 18/05/23. Changes from previous revision No.2 of 19/09/18

The following sections were modified:

01 / 02 / 03 / 04 / 05 / 06 / 07 / 08 / 09 / 10 / 11 / 12 / 14.