

SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND THE COMPANY / UNDERTAKING

1.1 Product identifier

Product chemical name:	SODIUM HYPOCHLORITE
EC number:	231-668 – 3
CAS number:	7681-52-9
INDEX number:	017- 011-00- 1
IUPAC name:	sodium hypochlorite
Molecular formula:	NaOCl
Synonym:	sodium salt of hypochlorous acid
Molecular weight:	74.44
Type of product:	mono-constituent substance
REACH registration number:	01-2119488154-34

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

The main industrial and professional uses: cleaning and disinfection: household application, water treatment (drinking, cooling, sewage water), swimming pool sanitation; production of other chemicals; bleaching: textile industry, pulp and paper products, ph-regulators, flocculants, precipitants, neutralization agents.

The main household use: washing and cleaning products, bleaches and other processing aids.

Table Identified uses

Identified use/ UI number	Sector of end use (SU)	Product category (PC)	Process category (PROC)	Environmental release category (ERC)	Article category (AC)	Exposure scenario
1	SU 8	Not applicable	PROC 1-4, 8a, 8b, 9	ERC 1	Not applicable	ES1- Manufacturing of sodium hypochlorite
2	SU 3, 10	Not applicable	PROC 1-5, 8a, 8b, 9, 14, 15	ERC 2	Not applicable	ES2 - Formulation
3	SU 3, 8, 9	PC 19	PROC 1-4, 8a, 8b, 9	ERC 6a	Not applicable	ES 3- Industrial use as intermediate
4	SU 3,5	PC 34	PROC 1-5, 8a, 8b, 9, 13	ERC 6b	Not applicable	ES 4- Industrial use in textile industry
5	SU 3, 23	PC 20, 37	PROC 1-5, 8a, 8b, 9	ERC 6b	Not applicable	ES 5- Industrial use in sewage and cooling or heating water treatment
6	SU 3, 6b	PC 26	PROC 1-5, 8a, 8b, 9	ERC 6b	Not applicable	ES 6- Industrial use in pulp and paper
7	SU 3, 4	PC 35	PROC 5, 7, 8a, 9, 10, 13	ERC 6b	Not applicable	ES 7 Industrial cleaning use
8	SU 22	PC 35	PROC 5, 9, 10, 11, 13, 15	ERC 8a, 8b, 8d, 8e	Not applicable	ES 8 - Professional cleaning use
9	SU 21	PC 34, 35, 37	Not applicable	ERC 8a, 8b, 8d, 8e	Not applicable	ES 9- Consumer use

Uses advised against: not available.

1.3 Details of the supplier of the safety data sheet

Name of the company:	Vinyl Kft.
Address:	3524 Miskolc Adler Károly u 19. HUNGARY
Telephone/Fax:	003646432633
Email address:	info@vinyl.hu
Email of the competent person responsible with SDS:	ehsq@vinyl.hu

1.4 Emergency telephone number

Unique emergency telephone :	112
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SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS –Global Hazardous System Classification according to the European Regulation (EC) no. 1272/2008, as amended:

Hazard class	Code of hazard class and hazard category	Hazard statement
Metals Corrosive	Met Corr. 1	H 290 – May be corrosive to metals
Skin Corrosion	Skin Corr.1B	H 314 - Causes severe skin burns and eye damage.
Eye Damage	Eye Dam. 1	H 318 - Causes serious eye damage.
Hazardous to the aquatic environment	Aquatic Acute 1	H 400 - Very toxic to aquatic life.

Risk advice to the human and the environment

Chlorine gas released from sodium hypochlorite causes irritation of respiratory system, consisting in coughing, difficult breathing, nausea and pulmonary edema. The product contact with skin can cause skin irritation, followed by blisters. The eye contact causes serious damages of eyes. Ingestion of product cause mucous, membrane burns, perforation of the esophagus and stomach, and laryngeal edema.

2.2 Labels elements

Labeling according to the European Regulation (EC) no. 1272/2008, as amended:

- Name on label: **SODIUM HYPOCHLORITE 12.5 % active chlorine**
- Signal word: **DANGER**
- Hazard symbols



GHS 05 - corrosive



GHS 09 - hazardous to the aquatic environment

Hazards statements:

H 290: May be corrosive to metals.

H 314: Causes severe skin burns and eye damage.

H 400: Very toxic to aquatic life.

Precautionary statements:

Prevention:

P 260: Do not breathe dust/fume/gas/mist/vapours/spray.

P 273: Avoid release to the environment.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P 303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P 305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P 310: Immediately call a POISON CENTER or doctor/physician.

P 390: Absorb spillage to prevent material damage.

Storage:

P 403 + P233: Store in a well ventilated place. Keep container tightly closed.

Disposal:

P 501: Dispose of contents/ container in accordance with local regulation.

SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

Additional labelling requirements: EUH 031: Contact with acids liberates toxic gas.

Note B – sodium hypochlorite solution 12.5 % active chlorine

EC "Label"

2.3 Other hazards

The product does not meet the criteria for classification as PBT, Persistent Bio-accumulative and Toxic or vPvB –very persistent, very bio-accumulative.

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Substances

The product is considered:	Substance
Chemical identity of substance:	sodium hypochlorite
Classification according to the (EC) Regulation no. 1272/2008-CLP:	Met Corr. 1, H 290; Skin Corr.1B, H 314; Eye Dam.1, H318; Aquatic Acute 1, H400.
EINECS no:	231-668 – 3
CAS no:	7681-52-9
INDEX no:	017- 011-00- 1
% Weight:	12,5 ± 2.5 % active chlorine
Generic name:	hypochlorous acid salt
Impurities:	No impurities relevant for classification and labeling

3.2. Mixtures: not applicable

4. FIRST AID MEASURES

4.1 Description of first-aid measures

Irritant for mucous and breathing system. Causes severe skin burns and eye damage.

It is mandatory to request immediately medical assistance, in case of accidental contact with this product (if possible, show the product label). **Remove contaminated clothing.**

If inhaled

Evacuate the victim from the contaminated area to ventilated place. Administer oxygen or artificial respiration if necessary. Call a physician immediately.

In case of skin contact

Remove quickly contaminated clothing and shoes. Wash skin with plenty of water.

Call a physician or poison control centre. Wash the contaminated clothes before re-using.

In case of eye contact

Immediately flush eyes with plenty of water, for at least 15 minutes, while moving eye pupils in all directions.

Call a physician or poison control centre immediately.

If ingestion

Call a physician or poison control centre immediately. Rinse mouth with plenty of water.

Administer oxygen or artificial respiration if necessary. Do not induce vomiting.

4.2 Most important symptoms and effects, acute and delayed

Inhalation

Symptoms of sodium hypochlorite exposure: decreased activity, backs badly burned and swollen, nasal discharge, ataxia, urinary incontinence, sores on mouth, bloody nasal discharge, bloody salivation.

Organs affected: eye, skin, breathing system.

Skin contact

May appear redness, swelling of tissue, rash and oedema.

Eye contact

Causes severe burns. Signs of irritation were observed in the cornea, iris and or conjunctiva.

Ingestion

If ingested, the substance causes severe burns of the mouth, throat, esophagus and the stomach. Symptoms: sternum and gastric pains, nausea, abundant salivation, vomiting, diarrhea, danger of suffocation.

4.3 Indication of any immediate medical attention and special treatment needed

It is mandatory to request immediately medical assistance, in case of accidental contact with this product.

Treatment for inhalation is symptomatic and supportive.

SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

5. FIREFIGHTING MEASURES

5.1 Extinguishing media:

- *recommended* : Water spray in large quantities, sand
- *not recommended*: Foam, extinguishing powder, steam, inert gases, halons

5.2 Special exposure hazards arising from the substance or mixture

Thus the substance is not flammable. A test on flammability in contact with water does not need to be conducted as the substance is marketed and used in aqueous solution.

5.3 Advice for firefighters

Use breathing apparatus and individual protective clothing for interventions.

For large fires (caused by packing ignition) use large quantities of water spray.

Waste resulting from fire extinguishing must be treated as dangerous waste according to legislation in force.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personnel protection

Advice for non-emergency personnel:

Try to limit leaks of the product if possible. Keep away from incompatible products.

Advice for emergency personnel:

Keep unnecessary and unprotected personnel away from entering. Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal equipment. Persons performing clean-up work should wear adequate personal protective equipment and a self contained breathing apparatus. Do not touch or walk through spill material. Use individual protection equipment and adequate gloves (see chapter 8).

6.2 Environmental protection measures

Do not release into the environment (running waters, lakes, sewages or soil). Do not let product enter drains. In case of accidental release: dam up and absorb on an inert material. Sewage treatment: No concern, activated sludge flocks are not very sensitive to hypochlorite. Inform local authorities in case of accidental spillages!

6.3 Cleaning methods and materials used

Contain and recover liquid when possible. Small spills will be absorbed by covering with incombustible absorbers (earth, sand). Large spills will be recovered as such, if is possible. Soak up residues with an absorbent such as sand or other suitable material; place in a chemical waste containers for proper disposal. Neutralize with sodium sulfite, bi-sulfite or thiosulfate, and then flush with plenty of water. For small spills, take up with an absorbent material and place in a chemical waste containers. Collect the product spilled in properly labeled containers. Keep closed containers for disposal. Dispose the waste according to the environmental legislation in force.

6.4. Reference to other sections

Firefighting measures are described in the chapter 5. Individual protection equipment is described in the chapter 8. The disposal consideration is described in the chapter 13.

7. HANDLING AND STORAGE

Handling imposes caution measures specific for a corrosive product.

7.1 Precaution for safe handling

Protection measure

Provide water sources, eyewash station, individual respiratory apparatus in the working area; provide local ventilation in confined spaces. Avoid direct contact with product or vapor inhaling. Use individual protection equipment and adequate gloves (see chapter 8). Avoid package degradation during handling.

No eating, drinking, smoking while working with the product.

Advice on general occupational hygiene

Avoid inhalation or ingestion and contact with skin and eyes. General occupational hygiene measures are required to ensure safe handling of the substance. These measures involve good personal and housekeeping practices, no drinking, eating and smoking at the workplace.

SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

7.2. Condition for storage, including incompatibilities

The product will be stored and kept in the original package, tightly closed, in well vented places, away from moisture, in special arranged places.

Provide adequate drainage so that in case of accidental spillages, disposal of the product can be made safely. Provide spaces for keeping and using of the neutralizing substances, necessary in case of accidental leakages (sodium sulfite, bisulfite, thiosulfate, urea. Maximum filling grade of packing is of 94%. Avoid the storage for long period because the product degrades over time.

Incompatible materials: reducing agents, combustible materials (wood, cellulose), organic materials, metals, acids. Materials to avoid: carbon steel, stainless steel, copper and its alloys, aluminum, unprotected metals

Packaging materials used	Steel tanks protected with rubber or polyvinyl chloride (PVC) Vessel from materials resistant to the action of sodium hypochlorite
Recommended	Plastic LDPE, CPVC, Hytrel, Noryl, Nylon, Ryton, Teflon, PVC, Polypropylene; Elastomers: Hypalon, Kel-F; Nonmetals: Viton.
Not recommended	Metals (aluminum, brass, bronze, cast iron); plastics (nylon, polypropylene); Neoprene, polyacetal, silicone; Polyacetal, carbon, silicon, neopren; Colorless glass.

7.3. Specific end-use(s)

The identified uses are described in the chapter 1.2.

For more information please check the relevant exposure scenario, available in the annex of this safety data sheet.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits values for sodium hypochlorite:

National legislation in force regarding the occupational health and safety which transposing European Legislation (Directive 2006/15/CE, concerning establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EEC) do not provide exposure limits values for sodium hypochlorite.

Exposure limits values for chlorine: VLE = 1.5 mg/mc, exposure period = 15 minutes.

8.2 Exposure control

8.2.1. Appropriate engineering controls

Provide local and general ventilation systems in the working area and storage spaces. Provide water sources and eyewash station in the proximity of the working area.

8.2.2. Individual protection measures, such as personal protective equipment

Workers will be fully equipped with individual protective equipment. The type and material of which it is made the protective equipment shall respect the national/european legal rules in force, on health and safety at work.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment. In the case of hazardous fumes, wear self contained breathing apparatus

Hand protection

Protective gloves – chemical resistant

Suitable materials: polyvinyl chloride, rubber

Unsuitable material: not known

Eye protection

Wear protective goggles for all industrial operations. If risk of splashing, chemical proof goggles/face shield.

Skin and body protection

Waterproof suit, boots; Intervention at incident: complete chemical protection suit, boots

SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

Specific hygiene measures

After working with this product, change protection equipment and wash face and hands with plenty of water and soap. Ensure water sources and eyewash station in the proximity of the working area. It is forbidden to smoke, eat, drink in the working areas.

8.2.3. Environmental Exposure Control

All ventilation systems should be filtered before discharge to atmosphere. Avoid any releasing to the environment. Contain the spillage. For detailed explanations of the risk management measures that adequately control exposure of the environment to the substance please check the relevant exposure scenario, available in the annex of this safety data sheet. Waters contaminated with this product will not be discarded in watercourses, on the ground or in sewages without previous neutralization

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

<i>Appearance</i>	liquid
<i>Color</i>	yellow
<i>Odor</i>	chlorinated
<i>pH</i>	12.5 – 13
<i>pKa</i>	No data
<i>Chlorine available content</i>	12.5 ± 2.5
<i>Boiling point</i>	Not applicable
<i>Melting/freezing point</i>	-28.9°C at ambient pressure
<i>Flash point</i>	No data
<i>Evaporation rate</i>	No data
<i>Flammability (solid, gas)</i>	Non flammable
<i>Vapor pressure at 20 °C</i>	2.5 kPa
<i>Vapor density</i>	No data
<i>Relative Density at 21.2°C</i>	1.3
<i>Bulk density</i>	No data
<i>Solubility(ies)</i>	No data
<i>Solubility in water at 20°C</i>	completely soluble in water
<i>Partition coefficient (n-octanol/water) at 20 °C</i>	log Kow (Pow): - 3.42
<i>Auto-ignition temperature</i>	Not applicable
<i>Decomposition temperature</i>	No data
<i>Viscosity at 20°C</i>	6.2 – 6.6 mPa.s (dynamic)
<i>Explosive properties</i>	Not explosive
<i>Oxidizing properties</i>	yes

9.2. Other information: -

10. STABILITY AND REACTIVITY

10.1 Reactivity: This product is stable under normal handling and storing conditions, but for a limited time.

10.2 Chemical stability

Common metals should never be used for the storage and handling of sodium hypochlorite. The stability of sodium hypochlorite solutions is affected by heat, light and the presence of heavy metal such as nickel, cobalt, copper and iron. Sodium hypochlorite solutions remain stable for at least one year, when stored protected from sunlight at a cool place. Store and transport the product separate from incompatible substances.

10.3 Possibility of hazardous reactions

Sodium hypochlorite is corrosive for aluminum, brass. Reacts with metals (nickel, copper, tin) with oxygen release, with ammonia, oxidizing substances, ammonium nitrate, ammonium oxalate, ammonium phosphate, ammonium acetate, methanol.

SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

10.4 Condition to avoid: Store keep and transport the product away from moisture and weather conditions, heat.

10.5 Materials to avoid

Reducing substances, metals -aluminum, brass, cellulose, steel, stainless steel, bronzes; strong acids, strong oxidizers, heavy metals (which act as catalysts), reducing agents, ammonia and ammonium salts, ether, and many organic and inorganic chemicals (ex. trichloroethylene, iron trichloride).

10.6 Hazardous decomposition product

The decomposition is an exothermal process. In contact with acids fumes, sodium hypochlorite is rapidly decomposes with chlorine gas releasing.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

11.1. Acute toxicity: oral, inhalation, dermal

Causes serious eye irritation and is fatal if inhaled.

LC50 / oral = 1100 mg/kg body, sodium hypochlorite as available chlorine;

LD50/ inhalation/ rat = 10.5 mg/m³ air;

LD50/ dermal/ rabbit > 20000 mg/kg body (the study was performed with sodium hypochlorite 12.5% aqueous solution).

Repeated dose toxicity

NOAEL: 50 mg/kg body/day.

11.1.2 Skin corrosion/irritation

The product is light irritant at low concentrations, medium irritant at concentrations around 5% and corrosive at concentration higher than 10%.

11.3 Serious eye damage/eye irritation

Eye contact with sodium hypochlorite causes serious burns and discomfort, irritation of epithelium.

11.4 Respiratory or skin sensitization

The sensory respiratory irritation potential of sodium hypochlorite was assessed using aerosol of sodium hypochlorite (concentration of 10%). The conclusion is that the substance is irritating for the respiratory tract. Inhalation of sprayed solution and vapors can cause respiratory system irritation, caught, difficulty of breathing, nausea and pulmonary edema.

11.5 Mutagenicity

Sodium hypochlorite / hypochlorous acid is not considered to be genotoxic/ mutagenic or clastogenic.

11.6 Carcinogenicity

Not carcinogenic.

11.7 Toxicity for reproduction

The available studies show that there is no evidence to suggest that sodium hypochlorite present adverse effects on development or fertility.

11.8 Repeat dose toxicity

Based on the results obtained in the repeated dose toxicity studies sodium hypochlorite does not have to be classified with respect to repeated dose oral, dermal and inhalation toxicity, respectively.

12. ECOLOGICAL INFORMATION

12.1 Toxicity acute –short term for aquatic organisms:

LC50 /96h / fish (fresh water)= 0.06 mg/l;

LC50 /96h/ fish (salt water) = 0.032 mg/l;

SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

LC50 /48 h/ daphnia magna (fresh water) = 0.141 mg/l;
LC50 /48H/ invertebrate (salt water) = 0.026 mg/l; species: crassostrea virginica
NOEC(7 days)/ algae (fresh water) = 0.0021 mg/l; species: periphyton

Chronic toxicity – long term for aquatic organisms:

EC50 /LC50 /algae/fresh water = 0,1 mg/l;
EC10 /LC10 or NOEC /algae/ marine water = 0,02 mg/L.

PNECs –Predictible No-Effect Concentrations

PNEC fresh water /10 = 0.21 g/L (aquatic toxicity -short term);
PNEC marine water /50 = 0.042 g/L (aquatic toxicity -long term).

Long-term toxicity to birds, plants

EC10 /LC10 / long term = 200 mg/kg food

In accordance with column 2 of REACH Annexes IX and X, there is no need to further investigate the effects of the substance on birds.

Due the fact that PEC/PNEC for terrestrial toxicity is less than 1 and at contact with soil hypochlorite dissipates quickly (TD 50 <1 min) there is not estimated short/long toxicity to plants.

12.2 Persistence and degradability

Abiotic degradation

The adsorption of hypochlorous acid to aerosol particles, the volatilisation from water into air and the adsorption of hypochlorite onto soil are very low. Thus, hypochlorite remains in the aqueous phase where it degrades very rapidly to chloride. In concentrated sodium hypochlorite solutions, the content of available chlorine decreases because this product tends to disproportionate to chloride and chlorate ions. The process is dependant on the time, temperature, impurities, pH and concentration of the sodium hypochlorite solution. Also light can decompose hypochlorite solutions.

Mobility - Adsorption

At medium pH (6,5 - 8,5) value, half of sodium hypochlorite is present as hypochlorous acid and the other half is dissociate as hypochlorite ions. The absorption of hypochlorous acid particles, the air volatilization and soil absorption are very low. Thus, hypochlorite remains in aqueous phase and degrades to chlorine.

12.3 Bioaccumulative potential

log Kow = -3.42

Sodium hypochlorite has not potential for bioaccumulation.

12.4 Mobility

Water/Soil/Sediments

Sodium hypochlorite as an inorganic substance with an infinite water solubility and very low partitioning coefficients; should be considered as highly mobile in soil and sediment.

12.5 Results of PBT and vPvB

The product does not meet the criteria for classification as PBT, Persistent Bio-accumulative and Toxic or vPvB –very persistent, very bio-accumulative.

12.6 Other adverse effects

Not applicable.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

It is recommended to dilute waste of product with water. Absorb the product with sulfite, bisulfite or alkaline thiosulfate. Recover waste water for processing later. Waste will be discarded in accordance with local regulations in force. Waste Code recommended according to the legislation in force: 16 09 04.

Contaminated packaging

Clean container with water. Recover waste water for processing later.

SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

Packaging that cannot ensure anymore the qualitative and quantitative integrity of the product are destroyed through specific measures in accordance with local regulations in force.

The recommendation is to use dedicated containers in order to avoid treatments.

Contaminated packaging waste will not be used to store other products.





European Regulations regarding waste

European Directive no. 94/62/EC on packaging and packaging waste as amended;

European Directive no. 91/689/CEE on hazardous waste, as amended.

14. TRANSPORT INFORMATION

14.1 UN number, UN proper shipping name, transport hazard class(es), packing group, environmental hazards

International Transport Regulation: ADR	
- UN no. /HI no.	1791/ 80
- Class / classification code	8 / C9 – liquid corrosive and dangerous for environmentally
- Product name	HYPOCHLORITE IN SOLUTION
- Packing group	II – substance with medium degree of danger
- Transport labeling	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  8 –corrosive </div> <div style="text-align: center;">  environmentally hazardous substance </div> </div>
RID	
- UN /HI no.	1791/ 80
- Class / classification code	8 / C9 – liquid corrosive and dangerous for environmentally
- Product name	HYPOCHLORITE IN SOLUTION
- Packing group	II – substance with medium degree of danger
- Transport labeling	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  8 –corrosive </div> <div style="text-align: center;">  environmentally hazardous substance </div> </div>
IMDG	
- UN no.	1791
- Class	8
- Packing group	II – substance with medium degree of danger
- Label	-
- EmS	F-A S-B
- Proper shipping name	HYPOCHLORITE SOLUTION
- Subsidiary risk	No subsidiary risk

ICAO/IATA: no data

14.2 Environmental hazards

The product is dangerous for the environment.

14.3. Special precaution for use

Users (customers, carriers) who will moving in the area with the product will respect all the security measures, available in an area with dangerous chemicals.

14.4. Transport in bulk according to Annex II of MARPOL73/78 and the IBC code: No data available

SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

The product sodium hypochlorite is not a SEVESO substance, not ozone depleting substance, not a persistent organic pollutant (POP); the product was not included in the SVHC list and no need to be authorized according to the REACH Regulation.

European legislation:

- Regulation (EC) No. 1907/2006 of the European Parliament concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) as amended;
- Regulation (EU) No. 453/2010 amending Regulation (EC) No. 1907/2006 of European Parliament concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), Annex II;
- Regulation (EC) No. 1272/2008 of the European Parliament and of the Council on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006;
- Council Regulation (EC) No 440/2008 on test methods pursuant to Regulation (EC) No 1907/2006 –REACH;
- Commission Regulation (EC) No 340/2008 on the fees and charges payable to the European Chemicals Agency pursuant to Regulation (EC) No.1907/2006 –REACH;
- Council Directive 98/24/EC concerning the protection of the health and safety of workers from the risks related to chemical agents at work, as amended;
- Directive 91/322/EEC - indicative limit values on establishing indicative limit values by implementing Council Directive 80/1107/EEC on the protection of workers from the risks related to exposure to chemical, physical and biological agents at work, as amended;
- Commission Directives 2000/39/EC, 2006/15/CE and 2009/161/UE establishing a first, second and third lists of indicative occupational exposure limit values, in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended;
- Council Directive 89/656/EEC on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace;
- European Directive 91/689/EEC on hazardous waste;
- European Directive no. 2010/75/CE on industrial emissions.

15.2 Chemical Safety Assessment

A chemical safety assessment was carried out as a part of the substance registration, according to the REACH Regulation

16. OTHER INFORMATION

16.1. Updates of safety data sheet

Compared with last revision from February 2015, the safety data sheet have been updated to the following chapters: 1, 2, 15, 16.

16.2 Full text of hazard and precautionary statements stated on Section 2:

H 290: May be corrosive to metals.

H 314: Causes severe skin burns and eye damage.

H 400: Very toxic to aquatic life.

EUH 031: Contact with acids liberates toxic gas.

P 260: Do not breathe dust/fume/gas/mist/vapours/spray.

P 273: Avoid release to the environment.

P 280: Wear protective gloves/protective clothing/eye protection/face protection.

P 303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/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.

P 310: Immediately call a POISON CENTER or doctor/physician

P 390: Absorb spillage to prevent material damage.

P 403 + P233: Store in a well ventilated place. Keep container tightly closed

P 501: Dispose of contents/ container in accordance with local regulation.

SAFETY DATA SHEET

SODIUM HYPOCHLORITE SOLUTION 12.5% active chlorine

16.3 Legend to abbreviations

CSR: Chemical Safety Report;

PBT: Persistent, Bio-accumulative and Toxic;

vPvB: very persistent, very bio-accumulative;

VLE: National exposure limits values;

DNEL: Derived No-Effect levels;

PNEC: Predictable No-Effect Concentrations;

ADR: European Agreement concerning the International Carriage of Dangerous Goods by road;

RID: Agreement concerning the International Carriage of Dangerous Goods by rail;

IMDG: International Maritime Dangerous Goods Code;

ICAO/IATA: International Air Transport Association.

16.4 Literature references and sources for data

The Safety Data Sheet has been revised according to the Annex of European Regulation No. 830/2015-REACH. Information contained herein was obtained from the documents developed in the REACH registration process, from the technical literature and from our own experience. These characterize the product respecting the safety requirements, however without a guarantee of its particular properties.

It is the client's (final users/ downstream users) obligation to take all the necessary caution measures, so that the product can be safely used.

This safety data sheet is accompanied by an annex containing the exposure scenarios developed for the manufacture and uses identified for this product.