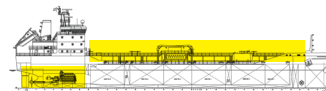


# CHLOR 12



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## 12% SODIUM HYPOCHLORITE DISINFECTANT ACTIVATOR

### PHYSICAL DATA

Form: liquid  
Colour: Light yellow  
Odour: Chlorine  
pH (at 20° C): 11  
Flash point: none

### DESCRIPTION

Sodium hypochlorite is a chemical compound with the formula NaClO. Sodium hypochlorite solution, commonly known as bleach, is frequently used as a disinfectant or a bleaching agent.

### ADVANTAGES

Control and removal of bacterial flora ensured thus meeting the essential requirements for drinking water. 12% SODIUM HYPOCHLORITE is universally recognized as a disinfectant for drinking water (approval by the MINISTRY OF HEALTH) therefore its use is allowed in all civil water supply lines.

### RECOMMENDED DOSAGE

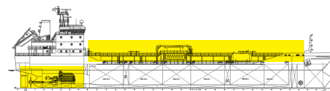
0,2 PPM of RESIDUAL ACTIVE CHLORINE as assessed by DPD method and tablets or ortho-tolidine should always be present in the ship or pipeline farthest point from place of application. Residual chlorine in drinking water tanks should range between 0,5 and 2 (maximum) PPM, to ensure wide range antibacterial protection. To obtain 2 PPM in a drinking water tank, put 20 cc of CHLOR 12 (corresponding to approximately 20 pump strokes of the proportioning pump) for every cubic meter of water.

CHLOR 12 may either be proportioned manually with the proportioning pump or automatically upon water loading by means of a proportioning system featuring a pulse water meter connected with a special proportioning pump. To obtain 20 cc per ton of CHLOR 12 (or 200 cc every 10 tons), a meter must be installed releasing one impulse every 50 ltrs of water flowing inside the pipe. Alternatively, an oversized meter can be used (i.e. every 10 lt.)

In this case the sodium hypochlorite solution must be diluted with water or the proportioning pump has to be set to have a pump stroke every 50 litres.

Consult UNIservice Service Engineer for Swimming Pool and Jacuzzi pool disinfection.

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## MEASURES IN CASE OF ACCIDENTS AND FIRES

Inhalation: fresh air, rest, half upright position and transport to hospital. Skin: remove contaminated clothes, rinse skin with plenty of water or shower and call a doctor, if necessary. Eyes: first rinse with plenty of water, then transport to a doctor. Ingestion: rinse mouth, give plenty of water to drink and transport to hospital immediately.

## PROTECTIVE MEASURES, STORAGE AND HANDLING

Technical protective measures:

1. **Storage:** Do not keep the container sealed. (Keep original closing on drum and be aware of filthiness). Keep container in a well ventilated dark place.
2. **Handling:** Personal protective equipment
3. **Respiratory protection**
4. **Hand protection:** gloves (PVC)
5. **Eye protection:** safety glasses
6. **Industrial hygiene:** keep away from food, drink and animal feeding stuff. Take off immediately all contaminated clothing.

Protection against fire and explosion: In case of fire keep container cool with waterspray Disposal: Waste disposal for chemical waste

## INFORMATION ON TOXICITY

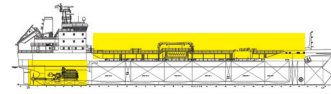
Inhalation: pungent, sore throat, coughing, laboured breathing Skin: redness, pain Eyes: corrosive, redness, pain, blurred vision Ingestion: corrosive, sore throat, abdominal spasm, vomiting

## INFORMATION ON ECOLOGICAL EFFECTS

Spilling of the product into the water may cause damage to fishes and water organisms by raising pH and liberation of chlorine.

**IMPORTANT:** WHILE THE DESCRIPTIONS, DESIGNS, DATA AND INFORMATION CONTAINED HEREIN ARE PRESENTED IN GOOD FAITH AND BELIEVED TO BE ACCURATE, THIS INFORMATION IS PROVIDED FOR YOUR GUIDANCE ONLY. BECAUSE MANY FACTORS MAY AFFECT PROCESSING OR APPLICATION/USE, WE RECOMMEND THAT YOU DO A TEST TO DETERMINE THE SUITABILITY OF A PRODUCT FOR YOUR PARTICULAR PURPOSE PRIOR TO USE. NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE. FURTHER, YOU EXPRESSLY UNDERSTAND AND AGREE THAT THE DESCRIPTIONS, DESIGNS, DATA AND INFORMATION FURNISHED BY URRUTY GG NIEGO SRL HEREUNDER ARE GIVEN GRATIS, AND URRUTY GG NIEGO SRL ASSUMES NO OBLIGATION OR LIABILITY FOR THE DESCRIPTION, DESIGNS, DATA AND INFORMATION GIVEN OR RESULTS OBTAINED, ALL SUCH BEING GIVEN AND ACCEPTED AT YOUR RISK.

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## Safety Data Sheet

### 1. Identification of the substance / preparation and the Company

#### 1.1 Identification of the substance or preparation

Product name CHLOR 12

#### 1.2 Use of the substance / preparation

Intended use Potable water disinfectant

#### 1.3 Company identification

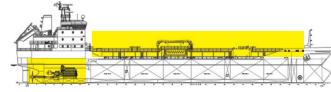
Name Urruty gg Niego S.r.l.  
Full address Via al Santuario di N.S. Guardia 58 a  
District and Country 16162 Genova Bolzaneto (GE)  
Italia  
Tel. + 39 010 711395  
Fax + 39 010 713120

e-mail address of the competent person responsible for the Safety Data Sheet info@uniservicemarine.com

#### 1.4 Emergency telephone

For urgent inquiries refer to First Aid Information: Centro Antiveleni Milano - Niguarda  
Phone: 02 - 66101029 (specialized in chemical products poisoning).

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## 2. Hazards Identification

### 2.1 Substance/Preparation Classification

This product is dangerous under 67/548/EEC and 1999/45/EC directives and subsequent amendments. Therefore, this product requires a safety data sheet according to the Regulation (EC) 1907/2006 and subsequent amendments. Further information on health and/or environmental hazards can be found in sections 11 and 12 of this sheet.

Danger Symbols: C-N  
R phrases: 31-35-50

### 2.2 Danger Identification

CONTACT WITH ACIDS LIBERATES TOXIC GAS.  
CAUSES SEVERE BURNS.  
VERY TOXIC TO AQUATIC ORGANISMS.

Be careful not to combine this product with other products - such an operation may lead to the development of gases harmful to the human health (chlorine).

## 3. Composition / Information on ingredients

Contains:

Name	Concentration % (C)	Classification
SODIUM HYPOCHLORITE	100,00 %	R31
CAS No 7681-52-9		C R34
CE No 231-668-3		N R50
Index No 017-011-00-1		Note B

The complete text of -R- phrases is specified in section 16.

## 4. First aid measures

**EYES:** Irrigate copiously with clean, fresh water for at least 15 minutes. Seek medical advice.

**SKIN:** Immediately wash with plenty of water. Remove all contaminated clothing. Obtain immediate medical attention. Wash contaminated clothing separately before using them again.

**INHALATION:** Remove to open air. If breathing is irregular or stopped, administer artificial respiration. Obtain immediate medical attention.

**INGESTION:** Obtain immediate medical attention. Induce vomiting only if indicated by the doctor. Give nothing by mouth to an unconscious person.

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## 5. Fire-fighting measures

### GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Excess pressure may form in containers exposed to fire at a risk of explosion. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

### SUITABLE EXTINGUISHING MEDIA

The extinction equipment to be used is the conventional kind: carbon dioxide, foam, powder and nebulised water.

### EXTINGUISHING MEDIA WHICH SHALL NOT BE USED FOR SAFETY REASONS

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.

### HAZARDS CAUSED BY EXPOSURE IN THE EVENT OF FIRE

Do not breathe combustion products (carbon oxide, toxic pyrolysis products, etc).

### SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Hardhat with visor, fireproof clothing (fireproof jacket and trousers with straps around arms, legs and waist) work gloves (fireproof, cut proof and dielectric), self-respirator (self-protector).

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## 6. Accidental release measures

### PERSONAL PRECAUTIONS

Eliminate all sources of ignition (cigarettes, flames, sparks, etc.) from the leakage site. If there are no contraindications, spray solid products with water to prevent the formation of dust. Use breathing equipment if fumes or powders are released into the air. Block the leakage if there is no hazard. Do not handle damaged containers or the leaked product before donning appropriate protective gear. For information on risks for the environmental and health, respiratory tract protection, ventilation and personal protection equipment, see the other sections of this sheet.

### ENVIRONMENTAL PRECAUTIONS

The product must not penetrate the sewers, surface water, ground water and neighbouring areas.

### METHODS FOR CLEANING UP

Use inert absorbent material (sand, vermiculite, diatomaceous earth, Kieselguhr, etc.) to soak up leaked product. Collect the majority of the remaining material and deposit it in containers for disposal. If there are no contraindications, use jets of water to eliminate product residues. Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

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## 7. Handling and storage

Make sure that equipment is available for cooling the vessels, to prevent the danger of overpressure and overheating in the event of fire in the vicinity. Refer to the other sections of this data sheet for information relating to health and environmental risks.

## 8. Exposure control / personal protection.

### 8.1 Exposure limit values

Not available

### 8.2 Exposure controls

As the use of adequate technical equipment must always take priority over personal protection equipment, make sure that the workplace is well aired through effective local aspiration or bad air vent. If such operations do not make it possible to keep the concentration of the product below the permitted workplace exposure thresholds a suitable respiratory tract protection must be used. See product label for hazard details during use. Ask your chemical substance suppliers for advice when choosing personal protection equipment. Personal protection equipment must comply with the rules in force indicated below.

#### HAND PROTECTION

Protect hands with category III (ref. Directive 89/686/EEC and standard EN 374) work gloves, such as those in PVA, butyl, fluoroelastomer or equivalent. The following should be considered when choosing work glove material: degradation, breakage times and permeation. Work glove resistance to preparations should be checked before use, as it can be unpredictable. Gloves' limit depends on the duration of exposure.

#### EYE PROTECTION

Wear hood visor or protective visor together with airtight goggles (ref. standard EN 166)

#### SKIN PROTECTION

Wear category III professional long-sleeved overalls and safety footwear (ref. Directive 89/686/CEE and standard EN 344). Wash body with soap and water after removing overalls.

#### RESPIRATORY PROTECTION

If the threshold value for one or more of the substances present in the preparation for daily exposure in the workplace or to a fraction established by the company's prevention and protection service is exceeded, wear a mask with an E or universal filter, the class (1, 2 or 3) of which must be chosen according to the limit concentration of use (ref. standard EN 141).

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The use of breathing protection equipment, such as masks with organic vapour and dust/mist cartridges, is necessary in the absence of technical measures limiting worker exposure. The protection provided by masks is in any case limited.

If the substance in question is odourless or its olfactory threshold is higher than the relative exposure limit and in the event of an emergency, or when exposure levels are unknown or the concentration of oxygen in the workplace is less than 17% volume, wear self-contained, open-circuit compressed air breathing apparatus (ref. standard EN 137) or fresh air hose breathing apparatus for use with full face mask, half mask or mouthpiece (ref. standard EN 138).

An emergency eye washing and shower system must be provided.

All appropriate action must be taken to ensure that the above substance or preparation (blend, solution, dispersion, etc.) does not come into contact, even by accident, with acids, by adopting suitable technological and/or organisational measures.

If the above substance is intentionally made to react with acids, the need to provide adequate PPE should be considered in view of the characteristics of hazardousness of the reagents and reaction by-products.

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## 9. Physical and chemical properties

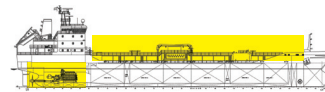
Colour	pale yellow
Odour	pungent
Appearance	liquid
Solubility	soluble
Vapour density	Not available
Evaporation speed	Not available
Comburent properties	Not available
Partition coefficient: n-octanol/water	Not available
pH	13
Boiling point	100°C
Flash point	Not available
Explosive properties	Not available
Vapour pressure	Not available
Specific gravity	1,206Kg/l

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## 10. Stability and reactivity

The product is stable in normal conditions of use and storage. Due to thermal decomposition or in the event of a fire vapours may be produced potentially dangerous to health.

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## 11. Toxicological information

This product generates toxic harmful gases upon contact with acids. This product is corrosive and causes serious burns and vesicles on the skin, which can arise even after exposure. Burns are very stinging and painful. Upon contact with eyes, it may cause serious harm, such as cornea opacity, iris lesions, irreversible eye coloration. Possible vapours are caustic for the respiratory system and may cause pulmonary edema, whose symptoms sometimes arise only after some hours. Exposure symptoms may include: sting, cough, asthma, laryngitis, respiratory disorders, headache, nausea and sickness. If swallowed, it may cause mouth, throat and oesophagus burns, sickness, diarrhoea, edema, larynx swelling and, consequently, asphyxia. Perforation of the gastrointestinal tract is also possible.

SODIUM HYPOCHLORITE: oral LD50 (mg/kg) 8200 (RAT) ; dermal LD50 (mg/kg) > 10000 (RABBIT).

## 12. Ecological information

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

SODIUM HYPOCHLORITE

EC50 (48h): 0,04 mg/l/48h Daphnia magna  
IC50 (72h): 46 mg/l/72h Gracilaria tenuistipitata  
LC50 (96h): 0,059 mg/l/96h Oncorhynchus mykiss

## 13. Disposal consideration

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.

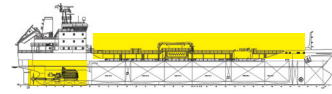
Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

CONTAMINATED PACKAGING

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



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## 14. Transport information

These goods must be transported by vehicles authorized to the carriage of dangerous goods according to the provisions set out in the current edition of the Code of International Carriage of Dangerous Goods by Road (ADR) and in all the applicable national regulations. These goods must be packed in their original packagings or in packagings made of materials resistant to their content and not reacting dangerously with it. People loading and unloading dangerous goods must be trained on all the risks deriving from these substances and on all actions that must be taken in case of emergency situations.


### Road and rail transport:

ADR/RID Class: 8  
UN: 1791  
Packing Group: II  
Label: 8   
Nr. Kemler: 80  
Limited Quantity LQ22  
Tunnel restriction code (E)  
Proper Shipping Name: Hypochlorite solution

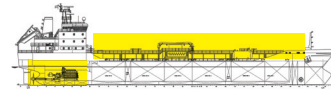
### Carriage by sea (shipping):

IMO Class: 8  
UN: 1791  
Packing Group: II    
Label: 8  
EMS: F-A, S-B  
Marine Pollutant YES  
Proper Shipping Name: HYPOCHLORITE SOLUTION

### Transport by air:

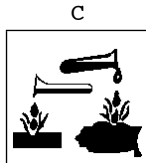
IATA: 8  
UN: 1791  
Packing Group: II  
Label: 8  
Cargo:  
Packaging instructions: 813   
Maximum quantity: 30 L  
Pass.:  
Packaging instructions: 809  
Maximum quantity: 1 L  
Special Instructions: A3  
Proper Shipping Name: HYPOCHLORITE SOLUTION

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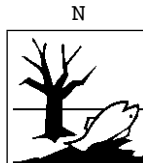


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## 15. Regulatory information



CORROSIVE



DANGEROUS FOR THE ENVIRONMENT

- R31 CONTACT WITH ACIDS LIBERATES TOXIC GAS.  
R35 CAUSES SEVERE BURNS.  
R50 VERY TOXIC TO AQUATIC ORGANISMS.  
S28 AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF . . . (TO BE SPECIFIED BY THE MANUFACTURER).  
S45 IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).  
S50 DO NOT MIX WITH . . . (TO BE SPECIFIED BY THE MANUFACTURER).  
S61 AVOID RELEASE TO THE ENVIRONMENT. REFER TO SPECIAL INSTRUCTIONS/SAFETY DATA SHEETS.

Warning. Do not use with other products. May release dangerous gases (chlorine).

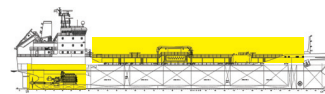
Contains:  
SODIUM HYPOCHLORITE

Label EC: 231-668-3

Danger labelling under directives 67/548/EEC and 1999/45/EC and following amendments and adjustments.

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.

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## 16. Other information

Text of (R) phrases quoted in section 3 of the sheet.

- R31 CONTACT WITH ACIDS LIBERATES TOXIC GAS.  
R34 CAUSES BURNS.  
R50 VERY TOXIC TO AQUATIC ORGANISMS.

### GENERAL BIBLIOGRAPHY

1. Directive 1999/45/EC and following amendments;
2. Directive 67/548/EEC and following amendments and adjustments (technical adjustment XXIX);
3. Regulation (EC) 1272/2008 (CLP) of the European Parliament;
4. Regulation (EC) 1907/2006 (REACH) of the European Parliament;
5. The Merck Index. - 10th Edition;
6. Handling Chemical Safety;
7. Niosh - Registry of Toxic Effects of Chemical Substances;
8. INRS - Fiche Toxicologique (toxicological sheet);
9. Patty - Industrial Hygiene and Toxicology;
10. N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition;

### 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.

### Changes to previous review

The following sections were modified:

08 / 13 / 14