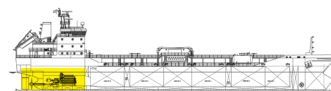


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POWDERED ACID DESCALER

PHYSICAL DATA

Appearance: Pink powder.
pH in 1%h solution in water: 1
Apparent specific gravity: 1,2
Solubility in water: 10% maximum

DESCRIPTION

Water soluble acid powder compound containing descaling accelerators, corrosion inhibitors and indicator dye.

- Dissolves water scale and rust scale
- Suitable for use with most heating and cooling systems
- Improves heat transfer
- Non toxic, non explosive

APPLICATIONS

- Descaling of diesel engine cooling water systems.
- Cleaning and scale removal from air coolers sea water side.
- Water scale and rust scale removal from boilers, condensers, evaporators, heat exchangers, etc.

ADVANTAGES

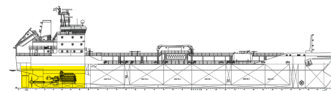
- Fast and effective scale removal.
- Leaves rust free surface.
- Contains descaling accelerator to increase product action.
- Inhibited against corrosive attacks.
- Contains pH sensitive indicator.
- Rapidly rinsed.
- Powder product -Handling and storage safer and easier.

DIRECTIONS FOR USE

Descaling can be accomplished by circulation, for large components and systems, by in-situ soaking, or by soaking in an immersion bath for small components.

The most effective method is by circulation as it ensures renewal of acid film in contact with the scale.

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Circulation method

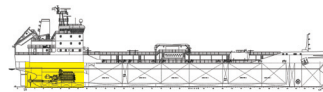
1. If deposits to be removed are covered with an oil or grease film, a degreasing treatment with a solution of 2% to 8% of ALKACLEAN, CARBON REMOVER, SEACLEAN with water should be used prior to descaling, by circulating for 4 to 6 hours up to a temperature of 60°C.
2. After degreasing (where necessary) a descaling treatment of a solution of 5% to 10% by weight of SAFE DESCALER with water should be circulated for between 24 to 36 hours for hardness scale, and 1 to 4 hours for de-rusting, depending on nature and state of deposits. To avoid saturating the solution, do not exceed a solution strength of 10%.
3. Ensure circuit is vented at the highest point to release gases produced during the descaling operations.
4. Product solution may be heated to increase the descaling process rate up to a maximum of 60°C. Over 35°C slight corrosive action may occur on light alloys and galvanised surfaces.
5. Check the acid concentration of the solution regularly by observing its state and colour. Initial colour is pink and if the colour turns yellow, or if effervescence disappears, regenerate the solution by adding more SAFE DESCALER until solution regains initial colour. To avoid the possibility of a saturated solution, no more than 2 additions should be made. If further treatment is necessary the circuit should be drained and a fresh charge introduced.
6. By placing scale samples in easily observed positions, a check on the progress of the descaling operation may be made. When the samples are completely dissolved and effervescence has stopped, circulate for one more hour then drain system thoroughly.
7. Rinse system thoroughly with water then drain.
8. To neutralise any remaining traces of acid and to passivate the circuit, circulate a 1% to 2% by weight solution of ALKALINITY CONTROL for 2 to 6 hours.
9. Neutralise acidic effluents drained from the descaling solutions by using ALKALINITY CONTROL until an acceptable pH value is obtained.

Soaking Method

- Procedure is similar to that for circulation, i. e. Degreasing, Descaling (ensuring venting), Rinsing and Neutralising.
- The same solution strength should be used.
- If agitation of the descaling solution can be practised, this will help to renew the acid film coming into contact with the scale.

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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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
R phrases: 35-52/53

2.2 Danger Identification

CAUSES SEVERE BURNS.

HARMFUL TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT.

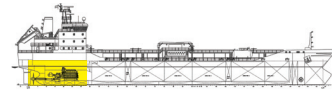
3. Composition / Information on ingredients

Contains:

Name	Concentration % (C)	Classification
SULPHAMIC ACID	90 <= C < 94	R52/53
CAS No 5329-14-6		Xi R36/38
CE No 226-218-8		
Index No 016-026-00-0		
CITRIC ACID	10 <= C < 11,5	Xi R37/38
CAS No 77-92-9		Xi R41
CE No 201-069-1		

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

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4. First aid measures

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

SKIN: Wash immediately with plenty of water. Remove contaminated clothing. If irritation persists, seek medical attention. Wash contaminated clothing before using them again.

INHALATION: Remove to open air. If breathing is irregular, seek medical advice.

INGESTION: Obtain immediate medical attention. Induce vomiting only if indicated by the doctor. Never give anything by mouth to an unconscious person.

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. 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 should be of the conventional kind: carbon dioxide, foam, powder and nebulised water.

EXTINGUISHING MEDIA WHICH SHALL NOT BE USED FOR SAFETY REASONS

None in particular.

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), a depressurised mask with facemask covering the whole of the operator's face or a self-respirator (self-protector) in the event of large quantities of fume.

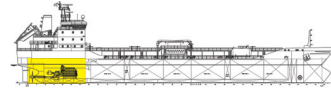
6. Accidental release measures

PERSONAL PRECAUTIONS

Wear appropriate protective equipment. Send away individuals who are not suitably equipped. 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, refer to the other sections of this sheet.

ENVIRONMENTAL PRECAUTIONS

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The product must not penetrate the sewers, surface water, ground water and neighbouring areas. Dilute the product well with water after collection.

METHODS FOR CLEANING UP

Suck the liquid into a suitable container (made of material not incompatible with the product) and soak up any leaked product with absorbent inert material (sand, vermiculite, diatomaceous earth, Kieselguhr, tripoli powder, universal cement, etc). Neutralise remaining material. Make sure the leakage site is well aired. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

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.

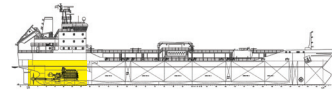
HAND PROTECTION

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)

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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 an FFP3 (ref. standard EN 141) type half mask.

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.

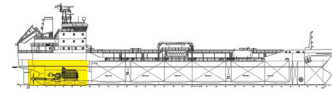
If the substance in question is odourless or its olfactory threshold is higher than the relative exposure limit and in the event of an emergency, or when exposure levels are unknown or the concentration of oxygen in the workplace is less than 17% volume, wear self-contained, open-circuit compressed air 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.

9. Physical and chemical properties

Colour	Not available
Odour	typical
Appearance	powder
Solubility	in water completely soluble
Vapour density	Not available
Evaporation speed	Not available
Comburent properties	Not available
Partition coefficient: n-octanol/water	Not available
pH	< 2
Boiling point	Not available
Flash point	Not available
Explosive properties	Not available
Vapour pressure	Not available
Specific gravity	2,069g/cm3

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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.

On thermal decomposition sulphamic acid can give off ammonia and toxic fumes of nitrogen and sulphur oxides. Store in the original containers and far from the bases.

11. Toxicological information

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.

SULPHAMIC ACID: oral LD50 (mg/kg) 1450 (RAT).

CITRIC ACID: oral LD50 (mg/kg) 3000 (RAT).

12. Ecological information

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

13. Disposal consideration

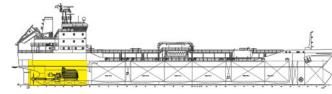
Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.

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:	2967
Packing Group:	III
Label:	8
Nr. Kemler:	80
Limited Quantity	LQ24
Tunnel restriction code	(E)
Proper Shipping Name:	Sulphamic acid mixture



Carriage by sea (shipping):

IMO Class:	8
UN:	2967
Packing Group:	III
Label:	8
EMS:	F-A, S-B
Marine Pollutant	NO
Proper Shipping Name:	SULPHAMIC ACID MIXTURE

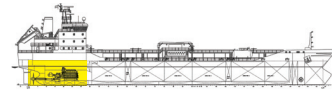


Transport by air:

IATA:	8
UN:	2967
Packing Group:	III
Label:	8
Cargo:	
Packaging instructions:	823
Maximum quantity:	100 Kg
Pass.:	
Packaging instructions:	822
Maximum quantity:	25 Kg
Proper Shipping Name:	SULPHAMIC ACID MIXTURE

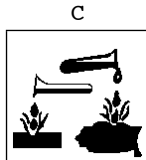


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15. Regulatory information



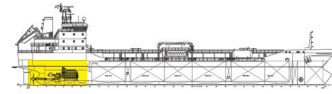
CORROSIVE

- R35 CAUSES SEVERE BURNS.
- R52/53 HARMFUL TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT.
- S26 IN CASE OF CONTACT WITH EYES, RINSE IMMEDIATELY WITH PLENTY OF WATER AND SEEK MEDICAL ADVICE.
- S28 AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF . . . (TO BE SPECIFIED BY THE MANUFACTURER).
- S36/37/39 WEAR SUITABLE PROTECTIVE CLOTHING, GLOVES AND EYE/FACE PROTECTION.
- S45 IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).

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.

R36/38	IRRITATING TO EYES AND SKIN.
R37/38	IRRITATING TO RESPIRATORY SYSTEM AND SKIN.
R41	RISK OF SERIOUS DAMAGE TO EYES.
R52/53	HARMFUL TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT.

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:

01 / 02 / 08 / 09 / 11 / 13 / 14