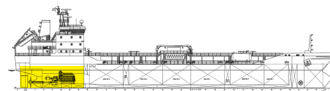


HIDRAZINE



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VOLATILE OXIGEN SCAVENGER IN LIQUID FORM WHICH DOES NOT ADD DISSOLVED SOLIDS TO THE TREATED WATER

APPROVED BY



PHYSICAL DATA

Appearance: Colourless liquid
Specific gravity: 1 at 20°C.
Ph 1°h solution: 9
Flash Point: None
Compatibility: Avoid aluminium and copper

DESCRIPTION

Liquid compound containing catalysed HIDRAZINE.

APPLICATIONS

HIDRAZINE is for use in boiler feed water and condensate systems to scavenge oxygen and maintain passive metal surfaces. HIDRAZINE reacts with the oxide film on steel surfaces in a boiler system to form a magnetite layer which gives metal protection. This "passivation" technique is useful for pretreatment of new boiler plant and for protection of boilers during idle and storage periods. HIDRAZINE may be used in all sizes and types of boilers but is particularly suited for use at high pressures where oxygen corrosion becomes rapid and where metallic corrosion products can quickly lead to overheating and failure of generating tubes.

DOSAGE AND CONTROL

The amount of HIDRAZINE required will depend on the amount of dissolved oxygen present in the feedwater. Your UNISERVICE Representative will give advice on the most economical dosage for any particular application.

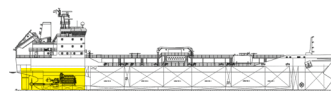
HIDRAZINE must be added continuously by means of a chemical pump at the earliest practicable point in the feed system e.g. the deaerator storage or condenser extraction pump discharge. For low pressure auxiliary boiler HIDRAZINE can be injected in the water feed line after recirculation point, or directly into the hot well.

HIDRAZINE can be fed neat or in any convenient dilution. Dilution should be carried out using condensate or deaerated water. Initial dosage for untreated system is 100 mls per tonn. of water. Dosage will be increased or reduced in accordance with result of HIDRAZINE test.

Generally daily dosage of 1 litre for a boiler 10 tons of water capacity will keep the recommended value.

Control of HIDRAZINE level is made by a simple test. Consult our water treatment manual.

HIDRAZINE



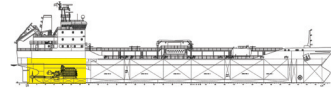
NATURE OF SPECIAL RISKS

Toxic and caustic product. Avoid contact with eyes and skin, in case rinse immediately with fresh water, and seek immediately medical attention.

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: T-N
R phrases: 23/24/25-34-43-45-50/53

2.2 Danger Identification

TOXIC BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
CAUSES BURNS.

MAY CAUSE SENSITISATION BY SKIN CONTACT.

MAY CAUSE CANCER.

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

3. Composition / Information on ingredients

Contains:

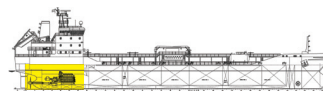
Name	Concentration % (C)	Classification
HYDRAZINE	96 <= C < 100	R10
CAS No 302-01-2		T R23/24/25
CE No 206-114-9		T R45
Index No 007-008-00-3		Carc. Cat. 2
		C R34
		Xi R43
		N R50/53
		Note E

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.

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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.

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 and the remains of the fire according to applicable regulations.

SUITABLE EXTINGUISHING MEDIA

The extinction equipment should contain carbon dioxide, foam or chemical powders. For product leaks and spills that have not caught fire, nebulised water can be used to dispel flammable fumes and protect the individuals taking part in stemming the leak.

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

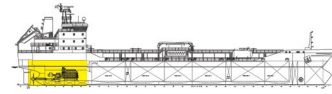
Hardhat with visor, fireproof clothing (fireproof jacket and trousers with ties around arms, legs and waist) work gloves (fireproof, cut proof and dielectric), self-respirator (self-protector).

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.

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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.

7. Handling and storage

Store in a well ventilated place, keeping the containers closed when not used. Do not smoke while handling. Keep far away from sources of heat, bright flames and sparks and other sources of ignition.

8. Exposure control / personal protection.

8.1 Exposure limit values

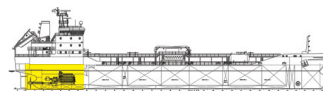
Name	Type	Country	TWA/8h		STEL/15min		
			mg/m3	ppm	mg/m3	ppm	
HYDRAZINE							
	TLV-ACGIH		0,013				Skin
	WEL	UK		0,02		0,1	Skin

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

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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).

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.

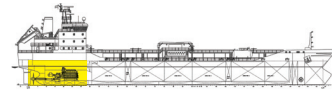
If the substance in question is odourless or its olfactory threshold is higher than the relative exposure limit and in the event of an emergency, or when exposure levels are unknown or the concentration of oxygen in the workplace is less than 17% volume, wear self-contained, open-circuit compressed air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

The product must be used in a closed cycle, in well-aired environments fitted with strong localised aspiration systems (capture speed > 1.5 m/s), otherwise it is compulsory to use the personal protection equipment indicated and always in well-aired environments fitted with strong localised aspiration systems (capture speed > 1.5 m/s).

In the presence of risks of exposure to splashes or squirts during work, adequate mouth, nose and eye protection should be used to prevent accidental absorption.

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9. Physical and chemical properties

Colour	Not available
Odour	ammoniacal
Appearance	liquid
Vapour density	Not available
Evaporation speed	Not available
Comburent properties	Not available
Partition coefficient: n-octanol/water	Not available
pH	10,6
Boiling point	Not available
Flash point	Not available
Lower explosive limit	4,7% (v/v)
Upper explosive limit	100% (v/v)
Vapour pressure	20-15hPa
Specific gravity	1,000Kg/l

10. Stability and reactivity

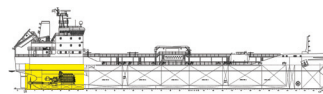
The product can decompose and/or violently react.

Hydrazine can cause explosive reactions with air when heated or on contact with oxidizing agents and/or with finely subdivided metals producing nitrogen, hydrogen and ammonia. In solution, it reacts as a strong base and corrodes metals such as aluminium and zinc.

11. Toxicological information

Acute effects: this product is toxic and causes poisoning by inhalation, cutaneous absorption and ingestion. Poisoning by inhalation may give rise to a series of symptoms, which may include: stinging and irritated eyes, mouth, throat; cough, respiratory disorders, dizziness, headache, nausea and sickness. In the most serious cases, inhalation of this product may cause larynx and bronchial tube edema, chemical pneumonia and pulmonary edema, reduction or increase of heart-beat, copious salivation, blood sputum, loss of consciousness, behavioral disorders (depression or euphoria). Poisoning by cutaneous absorption may give rise to symptoms, which may include: increase of skin temperature, swelling, itchiness, headache, respiratory disorders and sometimes even burns and cauterizations. Ingestion of even small amounts of product may cause serious health problems and symptoms such as mouth and throat burns or lesions, nausea,

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stomach pain, sickness, diarrhoea, sudoresis, convulsions, loss of consciousness.

This product is corrosive and causes abrasions of skin surface, accompanied by rubefaction, warmth and sting. In the most serious cases, small vesicles appear, which cause strong sting and pain. 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 gastro-intestinal tract is also possible.

Upon contact with skin, this product causes sensitisation (dermatitis). Dermatitis derives from skin irritation on the areas which repeatedly come into contact with the sensitising agent. Cutaneous lesions may include: erythemas, edemas, papules, vesicles, pustules, scurvies, ulcerations and exudative phenomena, whose intensity varies according to illness seriousness and affected areas. Erythemas, edemas and exudative phenomena prevail during the acute phase. Scurfy skin, dryness, ulcerations and skin thickening prevail during the chronic phase.

This product should be considered carcinogenic for human beings. Currently available data suggest that human exposure to the substance contained in this product may give rise to cancer development.

Hydrazine: it is carcinogenic, Cat. 2.

12. Ecological information

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

HYDRAZINE

EC50 (48h): 0,16 mg/l/48h Daphnia pulex

IC50 (72h): 0,0008 mg/l/72h Dunaliella tertiolecta

LC50 (96h): 5,98 mg/l/96h Pimephales promelas

13. Disposal consideration

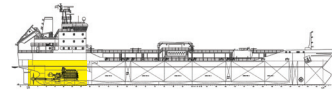
Reuse, when possible. Product residues should be considered special hazardous waste. The hazard level of waste containing this product should be evaluated according to applicable regulations.

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

Waste transportation may be subject to ADR restrictions.

CONTAMINATED PACKAGING

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

14. Transport information

These goods must be transported by vehicles authorised 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: 2030
Packing Group: II
Label: 8 (6.1)
Nr. Kemler: 86
Proper Shipping Name: Hydrazine aqueous solution



Carriage by sea (shipping):

IMO Class: 8
UN: 2030
Packing Group: II
Label: 8 (6.1)
Marine Pollutant: NO
Proper Shipping Name: HYDRAZINE AQUEOUS SOLUTION

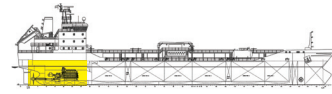


Transport by air:

IATA: 8
UN: 2030
Packing Group: II
Label: 8 (6.1)
Proper Shipping Name: HYDRAZINE AQUEOUS SOLUTION

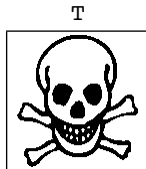


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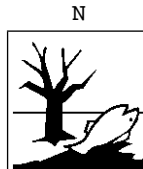


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15. Regulatory information



TOXIC



DANGEROUS FOR THE ENVIRONMENT

- R23/24/25 TOXIC BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
R34 CAUSES BURNS.
R43 MAY CAUSE SENSITIZATION BY SKIN CONTACT.
R45 MAY CAUSE CANCER.
R50/53 VERY TOXIC TO AQUATIC ORGANISMS, MAY CAUSE LONG-TERM ADVERSE EFFECTS IN THE AQUATIC ENVIRONMENT.
S45 IN CASE OF ACCIDENT OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE IMMEDIATELY (SHOW THE LABEL WHERE POSSIBLE).
S53 AVOID EXPOSURE - OBTAIN SPECIAL INSTRUCTIONS BEFORE USE.
S60 THIS MATERIAL AND ITS CONTAINER MUST BE DISPOSED OF AS HAZARDOUS WASTE.
S61 AVOID RELEASE TO THE ENVIRONMENT. REFER TO SPECIAL INSTRUCTIONS/SAFETY DATA SHEETS.

Restricted to professional users.

Contains:
HYDRAZINE

Label EC: 206-114-9

Restrictions:

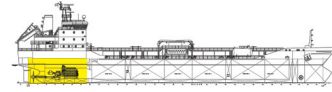
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substance subject to usage and/or market authorisation restrictions pursuant to the provisions set forth in Directive 76/769/EC.

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

Workers exposed to this health-dangerous chemical agent must undergo sanitary checks carried out in compliance with 2004/37/EC directive.

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16. Other information

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

R10	FLAMMABLE.
R23/24/25	TOXIC BY INHALATION, IN CONTACT WITH SKIN AND IF SWALLOWED.
R34	CAUSES BURNS.
R43	MAY CAUSE SENSITIZATION BY SKIN CONTACT.
R45	MAY CAUSE CANCER.
R50/53	VERY TOXIC 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:

02 / 13 / 14 / 15