

SAFETY DATA SHEET (SDS) CLASS 2.3 – TOXIC GASES

1. CHEMICAL PRODUCT IDENTIFICATION

1.1 PRODUCT IDENTIFIER:

This data sheet is about substances and mixtures that are characterized as toxic gases which are included in Class 2.3, according UNITED NATIONS Committee of Experts on the Transport of Dangerous Goods (UN). A gas (Class 2) is a substance which:

- At 50 °C has a vapour pressure greater than 300 kPa. or
- Is completely gaseous at 20 °C at a standard pressure of 101.3 kPa.

The class comprises compressed gases, liquefied gases, dissolved gases, refrigerated liquefied gases, mixtures of one or more gases with one or more vapours of substances of other classes, articles charged with a gas and aerosols.

A toxic gas (Class 2.3) means a gas which:

- is known to be so toxic or corrosive to humans as to pose a hazard to health; or
- is presumed to be toxic or corrosive to humans because it has a LC50 value equal to or less than 5,000 ml/m³ (ppm).

The following products have been recorded in the present MSDS: Chlorine, Hydrogen sulfide

1.2 RELEVANT IDENTIFIED USES:

Industrial and professional. Perform risk assessment prior to use.

Emergency telephone number:



National Emergency Centre: 166
National Poison Centre: (+30) 2107793777

2. HAZARDS IDENTIFICATION

2.1 CLASSIFICATION OF HAZARDS

2.1.1 According to GHS (EC Regulation 1272/2008)



GHS06

_ **Skin Irritation (Skin Irrit.):** H315

H315: Causes skin irritation

_ **Eye Irritation (Eye Irrit.):** H319

H319: Causes serious eye irritation.

_ **Acute toxicity (Acute Tox.):** H330

H330: Fatal if inhaled.

_ **Specific target organ toxicity - single exposure (STOT SE):** H335

H335: May cause respiratory irritation.

(at least a subset):



GHS04

_ **Gas under pressure (Press. Gas):** H280

H280: Contains gas cylinder under pressure; may explode if heated



GHS03

_ **Oxidiser:** H270

H270: May cause or intensify fire; oxidiser.



GHS02

_ **Flammable Gas (Flam. Gas):** H220

H220: Extremely flammable gas



GHS09

_ **Environmental Hazards (Env. Haz.):** H400

H400: Very toxic to aquatic life

2.1.2 According to DSD-DPD (Directive 67/548/EEC)



_ **Toxic (T):** R23 or R26

R23: Toxic if inhaled, R26: Very toxic by inhalation.



_ **Dangerous for the environment (N):** R50

R50: Very toxic to aquatic organisms.

(May be):



_ **Flammable (F):** R12

R12: extremely flammable

(May be):

R36/37/38: Irritating to eyes, respiratory system and skin

2.2 LABELLING:

- According to GHS (EC Regulation 1272/2008)

Signal word: **D a n g e r**

Hazard pictograms (at least a subset): GHS06, GHS04, GHS09, GHS02, GHS03

Hazard statements (H) (at least a subset): H315, H319, H330, H335, H280, H270, H220, H400 (For full text of H-statements: see SECTION 2.1)

Precautionary statements (P) (at least a subset):

P201: Do not breathe gas, vapours.

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

P210: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P244: Keep valves and fittings free from oil and grease

P220: Keep/Store away from clothing/.../combustible materials.

P273: Avoid release to the environment.

P304+P340+P315: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice / attention.

P305+P351+P338+P315: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice / attention.

P332+P313: If skin irritation occurs: Get medical advice/attention.

P370+P376: In case of fire: Stop leak if safe to do so.

P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P381: Eliminate all ignition sources if safe to do so.

P405: Store locked up.

P403: Store in a well-ventilated place.

Supplemental Hazard Information (EU) may be: EUH071 : Corrosive to the respiratory tract.

- According to DSD-DPD (Directive 67/548/EEC)

Symbol(s) and indication(s) of danger (at least a subset): T Toxic
N Dangerous for the Environment
F Flammable

Risk Phrases (R) (at least a subset): R23 or R26, R50, R12, R36/37/38 (For full text of R-phrases: see SECTION 2.1)

Safety phrases (S) (at least a subset): S9 : Keep container in a well-ventilated place.
S16 : Keep away from sources of ignition - No smoking.
S28 : After contact with skin, wash immediately with with plenty of ... (to be specified by the manufacturer)
S36/37 : Wear suitable protective clothing and gloves.
S45 : In case of accident or if you feel unwell, seek medical advice immediately (show the label when possible).
S61 : Avoid release to the environment. Refer to special instructions/Safety data sheets

Particular hazards to man and environment: -

2.3 OTHER HAZARDS (may be): None
PBT and vPvB assessment: -

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 MIXTURE: Composition is referred to [ANNEX-ADDITIONAL INFORMATION.xlsx](#)
Hazardous ingredients may be: Contains no other components or impurities which will influence the classification of the product.

4. FIRST AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES:

WARNING BEFORE PREVENTION: The isolation of the area from all possible sources of ignition is necessary. - The area where the casualty is transferred, has to be well ventilated.

FOLLOWING INHALATION: Very toxic by inhalation.
- Remove victim to uncontaminated area wearing self contained breathing apparatus.
- Keep victim warm and rested.
- Call a doctor.
- Apply artificial respiration if breathing stopped.

FOLLOWING SKIN CONTACT: May cause chemical burns to skin and cornea (with temporary disturbance to vision). - Remove contaminated clothing. - Drench affected area with water for at least 15 minutes. - If the skin is just dry, carefully spread lanolin ointment. Immediate medical assistance call. - Obtain medical assistance. - Treatment as in the case of thermal burns.

FOLLOWING EYE CONTACT: Immediately flush eyes thoroughly with water for at least 15 minutes. - Obtain medical assistance. - Refer to the specialist if the pain or irritation persists after washing. - Do not administer eye drops or other liquid without medical approval.

FOLLOWING INGESTION: Ingestion is not considered a potential route of exposure

NOTES FOR THE DOCTOR: -

4.2 MOST IMPORTANT SYMPTOMS AND EFFECT, BOTH ACUTE AND DELAYED: - May cause damaging effects to central nervous system, metabolism and gastrointestinal tract.
- Prolonged exposure to small concentrations may result in pulmonary oedema

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED: -

5. FIRE-FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA:

Suitable extinguishing media: All known extinguishants can be used.
Unsuitable extinguishing media: Use of water only for cooling of fire exposed tanks and vessels.

If possible, stop flow of product. - Move away from the container and cool with water from a protected position. - Use self-contained breathing apparatus and chemically protective clothing in confined areas. - Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. - Escape routes should be free.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE:

Specific hazards arising from the chemical: Supports combustion. - Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products: (Ref. to HYDROGEN sulfide): If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition : Sulphur dioxide.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTION, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:

6.1.1 For non-emergency personnel: Evacuate area. - Ensure adequate air ventilation. - Eliminate ignition sources. - Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.

6.1.2 For emergency responders: -

6.2 ENVIRONMENTAL PRECAUTIONS AND METHODS FOR CONTAINMENT AND CLEANING UP:

Land spillage: Try to stop release. - Reduce vapour with fog or fine water spray. -Use water as spray for dispensing the gases and protecting the personnel who attempt to stop the leak. - Keep non-involved personnel away from the area of spillage. In case of large leakage, alert emergency personnel and the neighbourhoods. - The personnel, who is involved in encountering the incident indoors, should carry self-contained breathing apparatus

Spillages in water or at sea: Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. The leakage from a ship at sea is treated according to the Annex of the 1978 Protocol of International Convention 1973 "Prevention of Sea Pollution from Ships" (MARPOL 73/78) and its amendments. - Isolation of leakage from all sources of ignition. - Updating the nearest port, local authorities and the ownership of the ship for the incident

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP:

6.3.1 For containment: -

6.3.2 For cleaning up: -

6.3.3 Other information: -

Ventilate area. - Wash contaminated equipment or sites of leaks with copious quantities of water. - Hose down area with water. - Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING:

7.1.1 Protective measures:

Information on safe handling and measures to prevent fire/explosion: Use no oil or grease. - Open valve slowly to avoid pressure shock. - Suck back of water into the container must be prevented. - Do not allow backfeed into the container. - Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. - Contact your gas supplier in doubt. - Take precautionary measures against static discharge. - Purge air from system before introducing gas. - Keep away from ignition sources (including static discharges). - Refer to supplier's container handling instructions.

Measures to protect the environment: -

7.1.2 Advice on general occupational hygiene:

Do not smoke while handling product.

7.2 CONDITIONS FOR SAFE STORAGE:

Technical measures and storage conditions:

Segregate from flammable gases and other flammable materials in store. - Segregate from oxidant gases and other oxidants in store. - Keep container below 50°C in a well ventilated place. - Proper labelling and maintenance of closed containers should be necessary. - Keep away from children. - Grounding of storage and transport systems as well as preventive controls for accidental leaks should be necessary.

Packaging materials:

The storage equipment (cylinder bottles) should be specifically designated for this product and properly grounded. - Prevent the entry of water into the equipment. - Do not allow the reverse flow to the interior.

Requirements for storage rooms and vessels:

Storing the product in well ventilated area, away from sources of heat or any other source that can cause inflammation.

Storage class:

2.3

7.3. SPECIFIC END USE(S):

-

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 CONTROL PARAMETERS:

8.1.1 Occupational Exposure/Biological Limit Values:

[Occupational Exposure/Biological Limit Values are referred to ANNEX-ADDITIONAL INFORMATION.xlsx](#)

8.1.2 Information on currently recommended monitoring procedures:

Article 5 of П. 338/2001. Article 10 of П. 338/2001.

8.1.3 Applicable occupational exposure limit values and/or biological limit values for air contaminants (if formed when using the substance/mixture as intended):

[Applicable occupational exposure limit values and/or biological limit values for air contaminants are referred to ANNEX-ADDITIONAL INFORMATION.xlsx](#)

8.1.4 DNEL / PNEC values:

-

8.2 EXPOSURE CONTROLS:

8.2.1 Appropriate engineering controls / Technical measures to prevent exposure:

Appropriate engineering controls:

Especially in confined spaces, before starting any work, the control of the atmosphere with special counters is needed in order to be ensured that there are no gases which can cause asphyxiation.

Organisational measures to prevent exposure:

The design of work processes and organizational measures should be complied with Article 5 of П. 338/2001. - Compliance with the rules for personal hygiene and health surveillance in accordance with Article 10 of П. 338/2001 should be necessary.

8.2.2 Personal protection equipment:

Respiratory protection:



Use of full face masks with combined filters in case of small leakages. In incidents of great release, use self-contained breathing apparatus and full suit (impermeable uniform, boots, gloves).
- CSN EN 136 - Respiratory protective devices - Full face masks - Requirements, testing, marking. - DIN EN 137 Respiratory protective devices - Self-contained open-circuit compressed air breathing apparatus with full face mask - Requirements, testing, marking. BS EN 141:2000 - Respiratory protective devices. Gas filters and combined filters. Requirements, testing, marking

Eye protection:



Use of goggles is necessary for the protection of the eyes. - Wear goggles with suitable filter lenses when use is cutting/welding.
- CSN EN 166 - Personal eye-protection - Specifications. - CR13464 - Guide to selection, use and maintenance of occupational eye and face protectors.

Hand protection:



In case of skin contact, the use of neoprene impermeable gloves is necessary.
- DIN EN 374-1 Protective gloves against chemicals and micro-organisms. - DIN EN 388 Protective gloves against mechanical risks. - DIN EN 407 Protective gloves against thermal risks (heat and/or fire). - DIN EN 420 Protective gloves - General requirements and test methods (includes Amendment A1:2009). Choose the glove material taking into consideration the penetration times, rates of diffusion and the degradation. Check if the gloves are in good condition before each use.

Skin and body (including hands) protection:



Wear suitable protective clothing and protective boots. During filling of cylinders or in case of contact with the liquid product, the use of impermeable gloves, of suitable protective clothing, goggles or face shields is necessary. Use of safety shoes during handling of propane cylinders. In case of large extent fire, use of fire-persistent uniforms and self-contained breathing equipment is required.
- CSN EN 340 Protective clothing - General requirements. - BS EN 465:1995 - Protective clothing. Protection against liquid chemicals. Performance requirements for chemical protective clothing with spray-tight connections between different parts of the clothing (type 4 equipment). - BS EN 466-1:1995 Protective clothing. Protection against liquid chemicals. Performance requirements for chemical protective clothing with liquid-tight connections between different parts of the clothing (type 3 equipment). - BS EN 467:1995 - Protective clothing. Protection against liquid chemicals. Performance requirements for garments providing protection to parts of the body. - CSN EN 345 Use safety footwear

8.2.3 Environmental exposure controls:

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9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES:

[Physical and chemical properties are referred to ANNEX-ADDITIONAL INFORMATION.xlsx](#)

10. STABILITY AND REACTIVITY

10.1 REACTIVITY:

-

10.2 CHEMICAL STABILITY:

-

10.3 POSSIBILITY OF HAZARDOUS REACTIONS:

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10.4 CONDITIONS TO AVOID:

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

10.5 INCOMPATIBLE MATERIALS:

May react violently with combustible materials. - May react violently with reducing agents. - Violently oxidises organic material. - Reacts with water to form corrosive acids. - May react violently with alkalis. - With water causes rapid corrosion of some metals. - Moisture. - Can form explosive mixture with air. - May react violently with oxidants. - Air, Oxidiser

10.6 HAZARDOUS DECOMPOSITION PRODUCTS:

None

11. TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS:

[Toxicological information is referred to ANNEX-ADDITIONAL INFORMATION.xlsx](#)

Acute toxicity:

Damage to central nervous system.

Skin corrosion/irritation:

Severe corrosion to skin, eyes and respiratory tract at high concentrations. -Frequent or prolonged contact causes irritation, possible cold burn and dermatitis due to the removal of the protective fat layer of the skin.

Serious eye damage /irritation:

Severe corrosion to skin, eyes and respiratory tract at high concentrations.

Respiratory or skin sensitisation:

Severe corrosion to skin, eyes and respiratory tract at high concentrations. - May cause inflammation of the respiratory system and skin. - Inhalation of vapours causes irritation of the mucous membranes of the respiratory and cough. Exposure to high concentrations, even for a few minutes, causes dizziness, headache, nausea, dizziness. - Prolonged inhalation of very high concentrations may cause cardiac arrhythmia, fainting, narcosis even death from suffocation due to paralysis of the Central Nervous System (CNS) arising from the narcotic and asphyxiating effect of the vapours that tend to displace air, reducing the oxygen concentration.

Germ cell mutagenicity:

-

Carcinogenicity:

-

Toxicity to reproduction:

-

STOT - single exposure:

-

STOT - repeated exposure: -
Aspiration hazard: It cannot happen.

12. ECOLOGICAL INFORMATION

12.1 TOXICITY:

12.1.1 Aquatic toxicity: May cause pH changes in aqueous ecological systems. - Toxic to aquatic organisms. - Endangering to drinking water.
12.1.2 Sediment toxicity: -
12.1.3 Terrestrial Toxicity: In case of contact of soil with small amounts of the substance, the entire amount is evaporated.

Toxicity to birds: -

12.2 PERSISTENCE AND DEGRADABILITY:

12.2.1 Persistence Assessment: -

12.2.2 Stability:

Hydrolysis: -
Phototransformation in air: -
Phototransformation in water and soil: -

12.2.3 Biodegradation: -

12.3 BIOACCUMULATIVE POTENTIAL: -

12.4 MOBILITY IN SOIL: -

12.5 RESULTS OF PBT AND vPvB ASSESSMENT: -

13. DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS:

13.1.1 Product / Packaging disposal:

Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere. Do not discharge into areas where there is a risk of forming an explosive mixture with air. - Waste gas should be flared through a suitable burner with flash back arrestor

13.1.2 Waste treatment - relevant information:

Do not discharge into any place where its accumulation could be dangerous

13.1.3 Sewage disposal - relevant information:

Avoid discharge to atmosphere. - Contact supplier if guidance is required.

13.1.4 Other disposal recommendations:

13.2 ADDITIONAL INFORMATION:

14. TRANSPORT INFORMATION

Pictogram(s):



(May be):



LAND TRANSPORT (Road/Rail) according to ADR/RID 2003, ПД 104/99 and its amendments (ФЕК 509B/2000 and 1232B/2001), Directives 94/55/EEC and 96/49/EEC and their amendments:

Transport Hazard Class(es): 2

Packing group:

INLAND WATERWAY TRANSPORT (AND(R)):

Transport Hazard Class(es): 2.3

Packing group:

MARINE TRANSPORT according to IMDG – IMO Code 2002 and ПД 405/96:

Transport Hazard Class(es): 2.3

Packing group:

AIR TRANSPORT (ICAO-TI/IATA-DRG):

Transport Hazard Class(es): 2.3

Packing group:

[More details such as environmental hazards \(UN Model Regulations/2009\), limited quantities, packaging and IBCs, portable tanks and bulk containers special precautions for users about transport information are referred to ANNEX-ADDITIONAL INFORMATION.xls](#)

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazard: of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers :

- Ensure that containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.
- Ensure there is adequate ventilation.
- Compliance with applicable regulations.

15. REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE:

National Regulations: Ensure all national/local regulations are observed.

EU Regulations: -

15.2 CHEMICAL SAFETY ASSESSMENT: -

16. OTHER INFORMATION

KEY LITERATURE REFERENCES AND SOURCE OF DATA:

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

RELEVANT R-PHRASES AND/OR H-STATEMENTS MAY BE:

None

TRAINING ADVICE:

The information of the present generalized Material Safety Data Sheet can be used for training purposes. - Users of breathing apparatus must be trained. Ensure operators understand the toxicity hazard.