1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION & THE COMPANY NAME

Product name: Carbon Dioxide

Product code: 02654, 02658, 04012 and 04015

Use of substance / preparation: Technical gas—industrial use

Company name:
SIP (Industrial Products) Ltd
Gelders Hall Road
Shepshed
Leicestershire
LE12 9NH
United Kingdom
Tel: +44 (0) 1509 500300
Fax: +44 (0) 1509 503154
Email: technical@sip-group.com

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Classification under (EC) Regulation no. 1272/2008: GAS UNDER PRESSURE – PRESSURIZED GAS – WARNING
Classification under Directive no. 67/548/CEE: Product not classified among the dangerous ones

Free from the recording obligation according to the enclosures IV and V of the (EC) regulation nr. 1907/2006 (REACH)

2.2 Label elements

GHS Danger symbols:

Attention:
Danger information
Suggestion—Conservation

Warning:
H280: It contains gas under pressure; may explode if heated
P410+P403: Gas based containers cannot be directly exposed to UV rays.
Ensure proper ventilation (natural or forced)

Advice – Reaction
Advice – Conservation
P410 + P403: Gas-based containers cannot be directly exposed to sunshine rays.
Ensure proper ventilation (natural or forced)

Danger symbols under the Directive no.67/578/CEE
“R” Phrases
“S” Phrases

None
None

ADR labels for transport

Label No 2.2: Carbon dioxide is non flammable and toxic gas

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substance

<table>
<thead>
<tr>
<th>IUPAC name</th>
<th>Substance number</th>
<th>CAS number</th>
<th>EINECS number</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon dioxide</td>
<td>--</td>
<td>124-38-9</td>
<td>204-696-9</td>
<td>99,99%</td>
</tr>
</tbody>
</table>

Contains no other components or impurities which will influence the classification of this product
4. FIRST AID MEASURES

4.1 Description of first aid measures
Immediately seek medical advice.
Wearing breathing apparatus, move the exposed individual from the exposure to fresh air and keep warm expanses.
If unconscious, loosen clothes and lay down on one side. If the patient is not breathing, give artificial respiration.
If the patient is breathing difficulties, give oxygen under low pressure. In case of cardiac arrest, carry out a heart massage.

4.2 Most important symptoms and effects, both acute and delayed
SKIN CONTACT: In case of lesions due to low temperature, please refer to the here below instructions: Immediately remove the contaminated clothes. Do not rub the skin burn or break blisters. Put the burned body parts in the lukewarm water (40°C). In case of burn of your fingers and/or hands, if it is possible, separate them with strips of gauze or clean clothes.
EYE CONTACT: Immediately wash down for at least 15 minutes. Immediately seek medical advice.
INHALATION: In case of indisposition or suffocation symptoms, move the injured person away from the accident site to a fresh and ventilated place. Immediately call a doctor. In high concentrations may cause asphyxiation. Symptoms may be loss of mobility and consciousness. Victims may not be aware of. At low concentrations may cause narcotic effects, symptoms may include dizziness, headache, nausea and loss of coordination. The use of masks with filters is ineffective.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media
All known fire extinguishers can be used.

5.2 Special hazards arising from the substance or mixture.
Fire exposure can cause containers to rupture/explode

5.3 Special protective equipment for fire fighters
In confined space use self-contained breathing apparatus

5.4 Advice for fire-fighters
Move away from the container and cool with water from a protected position. If possible, stop flow of products.
Equipment: Wear complete equipment with eye shield helmet and neck protection, pressure or demand breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use the breathing apparatus to enter the concerned area. Evacuate the area and ensure proper ventilation.
Wear protective equipment to avoid skin, eyes contact and inhalation and personal clothes.
If the loss is in a little area with poor ventilation, it could be possible the suffocation. Wear breathing apparatus.

6.2 Environmental precautions
Try to stop release. Prevent from entering sewers, basements and work pits, or any place where its accumulation can be dangerous.

6.3 Methods and material for containment and cleaning up
The loss is in confined area with poor ventilation, it could cause the suffocation. No other procedures are necessary.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid direct contact with the product. Do not eat, drink or smoke in the working areas or plants. For container handling, use proper personal protective equipment such as safety shoes and gloves. Carefully handle the containers, thus avoiding violent collisions between them or against other surfaces, as well as falls and other mechanical strains susceptible to damage their integrity / resistance. Do not allow back feed into the cylinder. Do not completely empty the cylinder. Suck back of water into the cylinder must be prevented. For any doubt, please contact your supplier.

7.2 Conditions for safe storage, including any incompatibilities
Gas-based containers cannot be directly exposed to sunshine rays, nor be closed to heat sources or in places where Temperature can reach 50°C or more. Ensure proper ventilation (natural or forced) where carbon dioxide is stored and/or used.
8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
Carbon dioxide: threshold values:
- TLV-TWA: 5000 ppm - [ACGIH 2003]
- ILV (EU) 8h: 5000 ppm

8.2 Exposure controls

8.2.1 Ensure proper ventilation.
Can form sub-oxygen atmospheres (O2 less than 18%). In closed spaces, please check the percentage of oxygen in the air. Under oxygenated areas, use a breathing apparatus. Assess the opportunity to check the concentration in air.

8.2.2 Eyes and face protection: Use safety glasses and face shield in accordance with EN 166
Skin protection: Use gauntlet according to EN 388
Respiratory protection: No other protection devices are necessary in normal use condition or well ventilated working areas. In case of release, please refer to the point 6.1

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
- Molecular weight: 44 g/mole
- Melting point: -78.5°C (1,013 bar)
- Boiling point: -56.6°C (1,013 bar)
- Critical temperature: 31°C
- Relative density, gas (air=1): 1,52
- Relative density, liquid (water =1): 1.03
- Solubility in water (mg/l): 2000 (15 °C; 1,013 bar)
- Colour: Colourless
- Odour: No odour warning properties
- Auto-ignition temperature: Not applicable

9.2 Other information
Carbon dioxide (CO2) in gas is about 1.5 times heavier than the air and it tends to stratify down with the possibility to accumulate itself in pits, cellars and holes in the ground. In slackness conditions or CO2 similar accumulations can persists for many hours.

10. STABILITY AND REACTIVITY

10.1 Reactivity:
The product is reactive with some substances, for example: ammonia

10.2 Chemical stability:
Stable under normal conditions

10.3 Possibility of hazardous reactions:
CO2 dissolved in water forms carbonic acid (H2CO3).

10.4 Conditions to avoid:
Avoid storage in confined areas

10.5 Incompatible materials:
None

10.6 Hazardous decomposition products:
None

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects
No known toxicological effects from this product. The substance forms under-oxygenated atmospheres. You can have health problems for more than 8 hours breathing air containing more than 5000 ppm (0.5%) of CO2. If the concentration increases up to 15000 ppm (1.5%) has problems after just 10 minutes. At 2% of concentration, it is already experiencing a headache and loss of concentration. At higher levels, around 10%, the CO2 can cause asphyxiation and paralysis of the respiratory centres, although the amount of oxygen in the air is still above 19% and then just for breathing. Breathe an even richer in carbon dioxide can cause immediate loss of consciousness and death. Some symptoms of asphyxiation may include: rapid breathing, fatigue, nausea, vomiting and cyanosis.
12. ECOLOGICAL INFORMATION

12.1 Toxicity

<table>
<thead>
<tr>
<th>Test</th>
<th>Area</th>
<th>Organism test</th>
<th>Taxonomic group</th>
<th>Toxicological Endpoint</th>
<th>Vale</th>
<th>Test time</th>
<th>Method</th>
<th>GLP</th>
<th>Year</th>
<th>Substance test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute/</td>
<td>Water</td>
<td>Trout</td>
<td>Fish</td>
<td>LC0</td>
<td>240mg/l</td>
<td>1 h</td>
<td>-</td>
<td>No</td>
<td>1984</td>
<td>Substance according to par. 1.1-1.4 of IUCLID dossier</td>
</tr>
<tr>
<td>Protract</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Acute/</td>
<td>Water</td>
<td>Trout</td>
<td>Fish</td>
<td>LC0</td>
<td>60-240mg/l</td>
<td>12 h</td>
<td>-</td>
<td>No</td>
<td>1984</td>
<td>Substance according to par. 1.1-1.4 of IUCLID dossier</td>
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<tr>
<td>Protract</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Acute/</td>
<td>Water</td>
<td>Trout</td>
<td>Fish</td>
<td>LC0</td>
<td>35 mg/l</td>
<td>96 h</td>
<td>-</td>
<td>No</td>
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<tr>
<td>Protract</td>
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</tr>
</tbody>
</table>

12.2 Persistence and degradability: No data available

12.3 Bi-accumulative potential: Low

12.4 Mobility in soil: No data available

12.5 Results of PBT and vPvB assessment: It is not requested a chemical safety report

12.6 Other adverse effects: Large quantities of Carbon Dioxide (CO2) is the main cause of the accelerated green house effect

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

The waste treatment methods have to be verified every time with reference to the waste composition, National and EC standards in force. The handling and precautions in case of accidental waste, please refer to the a/m points 6 and 7. Actions or precautions must be verified accordingly to the waste composition.

14. TRANSPORT INFORMATION

14.1 UN Number: UN 1013

14.2 UN proper shipping name: CARBON DIOXIDE

14.3 Transport hazard class: 2

14.4 Label: 2.2

14.5 Packing group: Not applicable

14.6 Proper Shipping name: Carbon dioxide

14.7 Environmental hazards: No available data

14.8 Special precautions for users: Avoid transports on vehicle where the loading area is not separated from the cabin. Assure that the drivers knows the potential dangers of the loading and he is able to operate in case of emergency.

14.9 Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not applicable

15. CLP REGULATORY INFORMATION

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

Ensure all National/local regulations are observed. Seveso regulation 96/82/EC: not covered.

15.2 Chemical safety assessment

It is not requested for a chemical safety report.
16. OTHER INFORMATION

GENERAL BIBLIOGRAPHY:
1. (EC) Regulation no. 1907/2006 of the European Parliament (REACH)
2. (EC) Regulation no. 1272/2008 of the European Parliament (CLP)
3. The Merck Index. Ed. 10
4. Handling Chemical Safety
5. Niosh - Registry of Toxic Effects of Chemical Substances
6. INRS - Fiche Toxicologique
7. Patty - Industrial Hygiene and Toxicology

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