Conforms to EU Directive 91/155/EEC, as amended by 2001/58/EC - United Kingdom (UK)

SAFETY DATA SHEET

LIQUID CARBON DIOXIDE

1. Identification of the substance/preparation and of the company/undertaking

Identification of the substance or preparation

Product name : LIQUID CARBON DIOXIDE

Chemical name : carbon dioxide

Synonyms : Carbonic acid gas; carbonic anhydride; dry ice

Chemical formula : CO_2

Company/undertaking identification

Manufacturer / Supplier : Yara Industrial
Immingham
North East Lincolnshire
DN40 2NS
United Kingdom

2. Composition/information on ingredients

Substance/preparation : Substance

Ingredient name	CAS number	%	EC number	Classification: Ingredient
carbon dioxide **See section 15 for the full text of the R-phrases declared above.**	124-38-9	100	204-696-9	Not classified.

Occupational exposure limits, if available, are listed in section 8..

3. Hazards identification

The substance is not classified as dangerous according to Directive 67/548/EEC and its amendments.

Additional hazards : Liquefied gas
Acts as a simple asphyxiant. Can displace the normal air and cause suffocation from lack of oxygen. The vapour/gas is heavier than air and will spread along the ground. Extremely cold material. Can cause burns similar to frostbite.

See section 11 for more detailed information on health effects and symptoms.

4. First-aid measures

Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. In all cases of doubt, or when symptoms persist, seek medical attention.

Ingestion : Not applicable

Skin Contact : In case of contact with liquid, warm frozen tissues with water and get medical attention.

Eye contact : Immediately flush eyes with plenty of water for at least 15 minutes, keeping eyelids open. Get medical attention immediately.

See section 11 for more detailed information on health effects and symptoms.

5. Fire-fighting measures

Extinguishing media : The product itself has fire-extinguishing properties. Extinguish fire using an agent suitable for surrounding the fire.

Special exposure hazards : Container explosion may occur under fire conditions or when heated.

Fire-fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear.

Hazardous thermal decomposition products : These products are carbon oxides (CO, CO_2).

6. Accidental release measures

Personal precautions : Use suitable protective equipment (section 8). Follow all fire-fighting procedures (section 5).

Environmental precautions and clean-up methods : Stop leak if without risk. Prevent entry into sewers, basements or confined areas. Watch for accumulation in low confined areas. Can displace the normal air and cause suffocation from lack of oxygen.

Note: see section 8 for personal protective equipment and section 13 for waste disposal.

7. Handling and storage

Handling : Avoid contact with eyes, skin and clothing. Acts as a simple asphyxiant. Can displace the normal air and cause suffocation from lack of oxygen. Inhalation may cause headaches, dizziness, drowsiness, and nausea. See section 11 for more detailed information on health effects and symptoms.

Storage : Storage should be in a defined, ventilated, segregated and approved area designed for the purpose. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapours below their respective occupational exposure limits.

Specific uses : Liquid carbon dioxide (also valid for compressed carbon dioxide) must never be used to rinse tanks, containers or equipment containing flammable liquids/gases, particulates or dust. Risk of explosion in presence of static discharge. If carbon dioxide gas is used to rinse equipment, tanks or containers, take precautionary measures against static discharges.

8. Exposure controls/personal protection

Ingredient name	Occupational exposure limits
carbon dioxide	**EH40-WEL (United Kingdom (UK), 1/2005).** STEL: 27400 mg/m³ 15 minute(s). Form: All forms STEL: 15000 ppm 15 minute(s). Form: All forms TWA: 9150 mg/m³ 8 hour(s). Form: All forms TWA: 5000 ppm 8 hour(s). Form: All forms

Recommended monitoring procedures : Recommended monitoring procedures

Exposure controls

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Recommended: Use safety eyewear designed to protect against splash of liquids.

Skin protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Ensure that eyewash stations and safety showers are close to the workstation location.

9. Physical and chemical properties

General information

Appearance

Physical state	:	Gas. (Liquefied gas)
Colour	:	Colourless.
Odour	:	Odourless.

Important health, safety and environmental information

Melting/freezing point	:	Sublimation temperature: -78.5°C (-109.3°F)
Density g/cm³	:	1.03 g/cm³ (-20°C / -4°F)
Solubility	:	Very slightly soluble in cold water
Solubility (at 20°C)	:	1.688g/l (in water)
Vapour density	:	1.53 (Air = 1)
Critical temperature	:	30.9°C (87.6°F)

10. Stability and reactivity

Stability	:	Stable under recommended storage and handling conditions (see section 7).
Hazardous decomposition products	:	These products are carbon oxides (CO, CO_2).

11. Toxicological information

Potential acute health effects

Adverse health effects are considered unlikely, when the product is used according to directions.

Over-exposure signs/symptoms

Target organs	:	Causes damage to the following organs: lungs, cardiovascular system, skin, eyes, central nervous system (CNS).
Other adverse effects	:	Extremely cold material. Can cause burns similar to frostbite.
Additional information	:	Acts as a simple asphyxiant: Symptoms and signs include headache, dizziness, fatigue, drowsiness (between 4 and 5 vol%) and in extreme cases, loss of consciousness (between 6 and 8%). Potential suffocation hazard.

12. Ecological information

Adverse effects	:	The product is not expected to harm the environment when used properly according to directions.

13. Disposal considerations

Methods of disposal	:	With adequate ventilation and otherwise under conditions where the low temperature will not present a hazard or problem, the liquid may be allowed to evaporate. A cold "fog", heavier than air, will be formed. Do not puncture or incinerate container. Dispose of in accordance with all applicable local and national regulations
Hazardous waste	:	Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC..

14. Regulatory information

EU regulations

Risk phrases	:	This product is not classified according to EU legislation.
Product use	:	Industrial applications.
		Classification and labelling have been performed according to EU Directives 67/548/EEC and 1999/45/EC (including amendments) and the intended use.
Additional warning phrases	:	Safety data sheet available for professional user on request.

15. Other information

History

Date of issue	:	**2006-03-23.**
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Version	:	**1.02**

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information provided in this Safety Data Sheet is accurate as at the date of its issue. The information it contains is being given for safety guidance purposes and relates only to the specific material and uses described in it. This information does not necessarily apply to that material when combined with other material(s) or when used otherwise than as described herein. Final determination of the suitability of any material is the sole responsibility of the user. All materials may represent unknown hazards and should be used with caution. Yara International ASA disclaims any liability for loss or damage resulting from the use of any data, information or recommendations set out in this Safety Data Sheet.