

Safety Data Sheet

A safety data sheet is not required for this product under Article 31 of REACH. This Product Safety Information Sheet has been created on a voluntary basis

Carbon dioxide (solid)

Issue date: 03/06/2016

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Version: 2.2

SDS reference: LIT-CO2-018C

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name : Carbon dioxide (solid) Dry ice
 SDS no : LIT-CO2-018C
 Chemical description : Carbon dioxide (solid)
 CAS-No. : 124-38-9
 EC-No. : 204-696-9
 EC Index-No. : ---
 Registration-No. : Listed in Annex IV / V REACH, exempted from registration.
 Chemical formula : CO₂

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : Industrial and professional uses. Perform risk assessment prior to use.
 Cooling (Food additive E290).
 Blast cleaning.
 Metal cooling.
 Contact supplier for more information on uses.
 Consumer use.
 Uses advised against : In beverage for fogging effect, because of the risk of ingestion.

1.3. Details of the supplier of the safety data sheet

Company identification : Elme Messer Lit
 Ateities g.10 B-1
 LT-08303 Vilnius - Lietuva
www.elmemesser.lv
vilnius@elmemesser.lv

1.4. Emergency telephone number

Emergency telephone number : Apsinuodijimų tarnybos pagalbos telefonas – +370 5 236 20 52, 24 valandas per parą

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not regulated.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Not applicable

2.3. Other hazards

: Asphyxiant in high concentrations.
 Refrigerated solidified gas. Contact with product may cause cold burns or frostbite.
 In high concentrations CO₂ causes rapid circulatory insufficiency even at normal levels of oxygen concentration. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness and death.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]

Carbon dioxide (solid)	(CAS-No.) 124-38-9 (EC-No.) 204-696-9 (EC Index-No.) --- (Registration-No.) *1	100	Not classified
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Contains no other components or impurities which will influence the classification of the product.

*1: Listed in Annex IV / V REACH, exempted from registration.

*3: Registration not required: Substance manufactured or imported < 1t/y.

3.2. Mixtures : Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact : In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
- Eye contact : Adverse effects not expected from this product.
Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion : Get immediate medical attention.

4.2. Most important symptoms and effects, both acute and delayed

- : In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.
Low concentrations of CO2 cause increased respiration and headache.
Refer to section 11.

4.3. Indication of any immediate medical attention and special treatment needed

- : None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
Not applicable.
- Unsuitable extinguishing media : Do not use water jet to extinguish.
Not applicable.

5.2. Special hazards arising from the substance or mixture

- Hazardous combustion products : None.

5.3. Advice for firefighters

- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.

Use water spray or fog to knock down fire fumes if possible.
Use fire control measures appropriate for the surrounding fire.

- Special protective equipment for fire fighters : Use self-contained breathing apparatus.
In confined space use self-contained breathing apparatus.
Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- : Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Evacuate area.
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Use protective clothing.
Ensure adequate air ventilation.
Act in accordance with local emergency plan.
Stay upwind.

6.2. Environmental precautions

- : Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
None.

6.3. Methods and material for containment and cleaning up

- : Sweep up and collect in a suitable container .
Ventilate area.

6.4. Reference to other sections

- : See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Safe use of the product : Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Do not breathe gas.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Do not smoke while handling product.
Refer to supplier's container handling instructions.
For more guidance on safe use, refer to the EIGA Doc.150 "Code of practice Dry Ice" downloadable at <http://www.eiga.eu>. and consult your supplier.

7.2. Conditions for safe storage, including any incompatibilities

- : Keep only in the original container.
Observe all regulations and local requirements regarding storage of containers.
Keep container below 50°C in a well ventilated place.
Store containers in location free from fire risk and away from sources of heat and ignition.
Keep away from combustible materials.

7.3. Specific end use(s)

: None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Carbon dioxide (solid) (124-38-9)

Lithuania - Occupational Exposure Limits

IPRV (mg/m ³)	9000 mg/m ³
IPRV (ppm)	5000 ppm

DNEL (Derived-No Effect Level) : None available.

PNEC (Predicted No-Effect Concentration) : None available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

- : Provide adequate general and local exhaust ventilation.
- Ensure exposure is below occupational exposure limits (where available).
- Oxygen detectors should be used when asphyxiating gases may be released.
- Consider the use of a work permit system e.g. for maintenance activities.
- CO2 detectors should be used when CO2 may be released.

8.2.2. Individual protection measures, e.g. personal protective equipment

- : A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered:
PPE compliant to the recommended EN/ISO standards should be selected.

• Eye/face protection : Wear safety glasses with side shields.
Standard EN 166 - Personal eye-protection - specifications.

• Skin protection
- Hand protection : Wear safety gloves.
Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risk.
Standard EN 511 - Cold insulating gloves.

- Other : Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

• Respiratory protection : Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
None necessary.

• Thermal hazards : None in addition to the above sections.
Wear cold insulating gloves.
Standard EN 511 - Cold insulating gloves.

8.2.3. Environmental exposure controls

: None necessary.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

- Physical state : Refrigerated solidified gas
- Physical state at 20°C / 101.3kPa : Gas
- Colour : White.

Odour : Odourless. No odour warning properties.

Odour threshold : Odour threshold is subjective and inadequate to warn of overexposure.

pH : Not applicable.

Melting point / Freezing point : 78.5 °C

Boiling point : 56.6 °C (s)

Flash point : Not applicable for gases and gas mixtures.

Evaporation rate : Not applicable for gases and gas mixtures.

Flammability (solid, gas) : Non flammable.

Explosive limits : Non flammable.

Vapour pressure [20°C] : 57.3 bar(a)

Vapour pressure [50°C] : Not applicable.

Vapour density : Not applicable.

Relative density, liquid (water=1) : 1.03

Relative density, gas (air=1) : 1.52

Water solubility : 2000 mg/l Completely soluble.

Partition coefficient n-octanol/water (Log Kow) : 0.83

Auto-ignition temperature : Not applicable.

Decomposition temperature : Not applicable.

Viscosity : Not applicable.

Explosive properties : Not applicable.

Oxidising properties : None. Not applicable.

9.2. Other information

Molar mass : 44 g/mol

Critical temperature [°C] : 30 °C

Other data : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

: None.
No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: None.

10.4. Conditions to avoid

: None under recommended storage and handling conditions (see section 7).
None.

10.5. Incompatible materials

: None.
For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

: None.
Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

: In high concentrations CO2 causes rapid circulatory insufficiency even at normal levels of oxygen concentration. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness and death.
Unlike simple asphyxiants, carbon dioxide has the ability to cause death even when normal oxygen levels (20-21%) are maintained. 5% CO2 has been found to act synergistically to increase the toxicity of certain other gases (CO, NO2). CO2 has been shown to enhance the production of carboxy- or met-hemoglobin by these gases possibly due to carbon dioxide's stimulatory effects on the respiratory and circulatory systems.
For more information, see 'EIGA Safety Info 24: Carbon Dioxide, Physiological Hazards' at www.eiga.eu.

Skin corrosion/irritation

: No known effects from this product.

Serious eye damage/irritation

: No known effects from this product.

Respiratory or skin sensitisation

: No known effects from this product.

Germ cell mutagenicity

: No known effects from this product.

Carcinogenicity

: No known effects from this product.

Toxic for reproduction : Fertility

: No known effects from this product.

Toxic for reproduction : unborn child

: No known effects from this product.

STOT-single exposure

: No known effects from this product.

STOT-repeated exposure

: No known effects from this product.

Aspiration hazard

: Not applicable for gases and gas mixtures.
Not applicable.

SECTION 12: Ecological information

12.1. Toxicity

Assessment : No ecological damage caused by this product.

EC50 48h - Daphnia magna [mg/l] : No data available.

EC50 72h - Algae [mg/l] : No data available.

LC50 96 h - Fish [mg/l] : No data available.

12.2. Persistence and degradability

Assessment : No ecological damage caused by this product.

12.3. Bioaccumulative potential

Assessment : No ecological damage caused by this product.

12.4. Mobility in soil

Assessment : No ecological damage caused by this product.

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Other adverse effects

Other adverse effects : Can cause frost damage to vegetation.
 No known effects from this product.

Effect on the ozone layer : None.

Global warming potential [CO2=1] : 1

Effect on global warming : When discharged in large quantities may contribute to the greenhouse effect.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Discharge to atmosphere in large quantities should be avoided.
 Do not discharge into any place where its accumulation could be dangerous.
 Consult supplier for specific recommendations.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 05 : Gases in pressure containers other than those mentioned in 16 05 04.
 None.

13.2. Additional information

: None.

SECTION 14: Transport information

14.1. UN number

UN-No. : 1845

14.2. UN proper shipping name

Transport by road/rail (ADR/RID) : Not regulated.

Transport by air (ICAO-TI / IATA-DGR) : CARBON DIOXIDE, SOLID

Transport by sea (IMDG) : CARBON DIOXIDE, SOLID (DRY ICE)

14.3. Transport hazard class(es)

Transport by road/rail (ADR/RID)

Class : 9

Classification code : M11

Transport by air (ICAO-TI / IATA-DGR)

Class / Div. (Sub. risk(s)) : 9

Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 9

Emergency Schedule (EmS) - Fire : F-C

Emergency Schedule (EmS) - Spillage : S-V

14.4. Packing group

Transport by road/rail (ADR/RID) : Not applicable

Transport by air (ICAO-TI / IATA-DGR) : Not applicable

Transport by sea (IMDG) : Not applicable

14.5. Environmental hazards

Transport by road/rail (ADR/RID) : None.

Transport by air (ICAO-TI / IATA-DGR) : None.
 Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by air (ICAO-TI / IATA-DGR)
 Passenger and Cargo Aircraft : 954.
 Cargo Aircraft only : 954.
 Transport by sea (IMDG) : P003

Special transport precautions : Before transporting product containers:
 - Ensure there is adequate ventilation.
 - Ensure that containers are firmly secured.
 Avoid transport on vehicles where the load space is not separated from the driver's compartment.
 Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

: Not applicable.

SECTION 15: Regulatory information

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

EU-Regulations

Restrictions on use : None.
 Other information, restriction and prohibition regulations : Ensure all national/local regulations are observed.
 Seveso Directive : 2012/18/EU (Seveso III) : Not covered.

National regulations

No additional information available

15.2. Chemical safety assessment

: A CSA does not need to be carried out for this product.

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 2015/830.

- Abbreviations and acronyms : ATE - Acute Toxicity Estimate
 CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
 REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
 EINECS - European Inventory of Existing Commercial Chemical Substances
 CAS# - Chemical Abstract Service number
 PPE - Personal Protection Equipment
 LC50 - Lethal Concentration to 50 % of a test population
 RMM - Risk Management Measures
 PBT - Persistent, Bioaccumulative and Toxic
 vPvB - Very Persistent and Very Bioaccumulative
 STOT- SE : Specific Target Organ Toxicity - Single Exposure
 CSA - Chemical Safety Assessment
 EN - European Standard
 UN - United Nations
 ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
 IATA - International Air Transport Association
 IMDG code - International Maritime Dangerous Goods
 RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
 WGK - Water Hazard Class
- Training advice : The hazard of asphyxiation is often overlooked and must be stressed during operator training. For more guidance, refer to EIGA SL 01 "Dangers of Asphyxiation", downloadable at <http://www.eiga.eu..>
- Further information : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.
- DISCLAIMER OF LIABILITY : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
 Details given in this document are believed to be correct at the time of going to press.
 Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.