

**Carbon dioxide (solid)**

SDS reference: 018C

Revision date: 31/08/2016

Supersedes: 24/04/2015

Version: 5.0

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Trade name : Carbon dioxide (solid)  
SDS no : 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 : CO<sub>2</sub>

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

Relevant identified uses : Industrial and professional. Perform risk assessment prior to use  
Cooling (Food additive E290)  
Blast cleaning  
Metal cooling  
Contact supplier for more information on uses

**1.3. Details of the supplier of the safety data sheet**

Company identification : SOL Kohlensäure GmbH & Co. KG  
Brohltalstraße, 26  
D-56659 Burgbrohl Deutschland  
02636 510936  
sks.solgroup.com

**1.4. Emergency telephone number**

Emergency telephone number : 0800 2626 777

**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]

**2.3. Other hazards**

: Asphyxiant in high concentrations  
Refrigerated solidified gas. Contact with product may cause cold burns or frostbite

**SECTION 3: Composition/information on ingredients****3.1. Substance**

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

\*2: Registration deadline not expired.

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

Full text of H-statements see section 16.

**3.2. Mixture** : 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. Apply artificial respiration 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
- 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 CO<sub>2</sub> cause increased respiration and headache

### 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
- Unsuitable extinguishing media : Do not use water jet to extinguish

### 5.2. Special hazards arising from the substance or mixture

- Specific hazards : None
- 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

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Special protective equipment for fire fighters : 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

: 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

#### 6.3. Methods and material for containment and cleaning up

: 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 : The product must be handled in accordance with good industrial hygiene and safety procedures  
 Refer to supplier's container handling instructions  
 Do not smoke while handling 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.

#### 7.2. Conditions for safe storage, including any incompatibilities

: Observe all regulations and local requirements regarding storage of containers  
 Keep container below 50°C in a well ventilated place.

#### 7.3. Specific end use(s)

: None.

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

Carbon dioxide (solid) (124-38-9)		
OEL : Occupational Exposure Limits		
Germany	TWA (DE) OEL 8h [mg/m <sup>3</sup> ] TRGS 900	9100 mg/m <sup>3</sup>
	TWA (DE) OEL 8h [ppm] TRGS 900	5000 ppm
	Peak exposure limitation factor (DE) OEL TRGS 900	2

DNEL (Derived-No Effect Level) : No data available.

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PNEC (Predicted No-Effect Concentration) : No data 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

### 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 working gloves when handling gas containers  
Standard EN 388 - Protective gloves against mechanical risk

- 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

- Thermal hazards

- : 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 at 20°C / 101.3kPa

: Gas.

Physical state

: Refrigerated solidified gas

Colour

: White.

Odour

: No odour warning properties.

Odour threshold

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

pH value

: Not applicable.

Molar mass

: 44 g/mol

Melting point

: 78,5 °C

Boiling point

: 56,6 °C (s)

Flash point

: Not applicable for gases and gas mixtures.

Critical temperature [°C]

: 30 °C

Evaporation rate (ether=1)

: Not applicable for gases and gas mixtures.

Flammability range

: Non flammable.

Vapour pressure [20°C]

: 57,3 bar(a)

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Vapour pressure [50°C]	: Not applicable.
Relative density, gas (air=1)	: 1,52
Relative density, liquid (water=1)	: 1,03
Solubility in water	: 2000 mg/l Completely soluble.
Partition coefficient n-octanol/water [log Kow]	: 0,83
Auto-ignition temperature	: Not applicable.
Viscosity [20°C]	: Not applicable.
Explosive Properties	: Not applicable
Oxidising Properties	: None

## 9.2. Other information

Other data	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level
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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

: None

### 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)

### 10.5. Incompatible materials

: For additional information on compatibility refer to ISO 11114

### 10.6. Hazardous decomposition products

: 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 cause rapid circulatory insufficiency. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness  
Unlike simple asphyxiants, carbon dioxide has the ability to cause death even when normal oxygen levels (20-21%) are maintained. 5% CO<sub>2</sub> has been found to act synergistically to increase the toxicity of certain other gases (CO, NO<sub>2</sub>). CO<sub>2</sub> 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

#### 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

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Aspiration hazard : Not applicable for gases and gas mixtures

**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**

: Can cause frost damage to vegetation.  
Effect on the ozone layer : None  
Global warming potential [CO<sub>2</sub>=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**

Consult supplier for specific recommendations  
Discharge to atmosphere in large quantities should be avoided  
Do not discharge into any place where its accumulation could be dangerous  
List of hazardous waste codes (from Commission Decision 2001/118/EC) : 16 05 05: Gases in pressure containers other than those mentioned in 16 05 04

**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

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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) : P003Special transport precautions : 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  
Before transporting product containers:  
- Ensure there is adequate ventilation  
- Ensure that containers are firmly secured.**14.7. Transport in bulk according to Annex II of MARPOL 73/78 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**

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Restrictions on use : None  
Seveso directive : 2012/18/EU (Seveso III) : Not covered

**National regulations**

National legislation : Ensure all national/local regulations are observed.  
Water hazard class (WGK) : nwg - Non-hazardous to water  
Kenn-Nr. : 256

**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.  
Training advice : The hazard of asphyxiation is often overlooked and must be stressed during operator training.  
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

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