

**MATERIAL SAFETY DATA SHEET**

It is issued pursuant to "Regulation on Safety Data Sheets Regarding Hazardous Substances and Mixtures" (EU) No 1272/2008 CLP (dated 13.12.2014 and numbered 29204).

**LIQUID CARBON DIOXIDE**

<b>Created:</b>	08.08.2014	<b>Version:</b>	1
<b>Last Updated:</b>	23.01.2018	<b>MSDS No:</b>	GBF-BRT-00001
<b>Printing Date:</b>	23.01.2018	<b>Page:</b>	1 / 8

**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****1.1 Product Identifier**

**Trade Name** : LIQUID CARBON DIOXIDE  
**Product Code** : 422001  
**Packaging Types** : -

**1.2 Relevant Identified Uses of the Substance**

Industrial and professional use. Acidity regülatör in food sector, heat stabilizers; In the Industrial sector, under welding gas and cleaning of equipments. Perform risk assessment prior to use. Contact supplier for more information on uses.

**1.3 Details of the Supplier of the Safety Data Sheet**

**Company Name** : BARİT MADEN TÜRK A.Ş.  
**Address** : Harbiye Mahallesi, Cumhuriyet Caddesi, Park Apt. No:30/13 Şişli/İSTANBUL  
**Phone** : 0212 234 12 06  
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**Email** : <http://www.baritmaden.com>  
**Web** : [merkez@baritmaden.com](mailto:merkez@baritmaden.com)

**1.4 Providing Information About The Safety Data Sheet**

HÜMEYRA KARAKAŞ - [hkarakas@baritmaden.com](mailto:hkarakas@baritmaden.com) - 0212 234 12 06

**1.5 Information in Emergency Situations**

**Emergency Telephone Number** : 0212 234 12 06  
**Emergency First Aid Center** : 112  
**National Poison Information Centre** : 114  
**Fire-fighting** : 110

**2. HAZARD IDENTIFICATION****2.1 Classification of the Substance or Mixture**

*Hazard classification according to Regulation (EC) No. 1272/2008 and category codes:*

**Physical Disorders:** Press. Gas (Liquid); H281

**2.2 Label Elements****2.2.1 Labeling according to CLP****2.2.1.1 Hazard Pictograms**

**GHS04**

**Signal Word**

WARNING

**2.2.1.2 Hazard Statements**

**H281** :Contains refrigerated gas; may cause cryogenic burns or injury  
**EIGA-As** :Asphyxiant in high concentrations.

**2.2.1.3 Precautionary Statements**

**P282** :Wear cold insulating gloves/face shield/eye protection.  
**P336+P315** :Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.  
**P403** :Store in a well ventilated place.

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### 2.3 Other Hazards

In high concentrations may cause asphyxiation(suffocation).  
 Contact with liquid may cause cold burns/frost bite.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1 Chemical Characterisation

Substance or Mixture	(%)	CAS No	EC No	Classification
CARBON DIOXIDE (LIQUID)	>99	124-38-9	204-696-9	Press Gas (Liquid); H281

See section 16 for explanation of H- and P-phrases listed above.

## 4. FIRST AID MEASURES

### 4.1 Description of First Aid Measures

**4.1.1 General Warnings:** Get medical attention immediately if you feel unwell.

**4.1.2 After respiratory:** In high concentrations may cause suffocation. Symptoms may include loss of mobility/consciousness. Low concentrations of CO<sub>2</sub> caused respiration and headache. Remove victim to air-ventilated area wearing self contained breathing apparatus. Keep victim warm and rested. Apply artificial respiration if breathing stopped. Obtain medical assistance.

**4.1.3 Skin Contact:** In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

**4.1.4 Eyes Contact:** Immediately flush eyes thoroughly with water for at least 15 minutes. Obtain medical assistance.

**4.1.5 Swallowing:** Ingestion is not considered a potential route of exposure.

**Long Term Effects:** No other important information is available.

**4.2 Most important symptoms / effects, acute & delayed:** In high concentrations may cause loss of consciousness, In low concentrations may cause headache.

### 4.3 Indication of any Immediate Medical Attention and Special Treatment Needed

There is no special treatment. Treatment is given according to the indication and clinical situation of the patient.



## 5. FIRE FIGHTING MEASURES

### 5.1 Suitable Extinguishing Agents

Carbon dioxide is not combustible. All known extinguishants can be used. Dry chemicals powder, spray water or alcohol foam etc.

### 5.2 Unsuitable Extinguishing Agents

There is no dangerous substance.

### 5.3 Hazardous Decomposition / Combustion Products

There are no known hazardous decomposition products. Containers can explode under high temperature and pressure. Protect the containers from heat and heat. In case of a fire, remove the containers from the area.

### 5.4 Special protective equipment for fire-fighters

Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask,  
 Standard EN 469 - Protective clothing resistant to heat and chemical substances.  
 Standard - EN 659: Protective gloves resistant to heat and chemical substances.

### 5.5 Other Information

In case of fire, take staff out of dangerous zone.

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## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Immediately evacuate area. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Act in accordance with local emergency plan.

### 6.2 Environmental Precautions

Make sure that the wastes do not mix with the surface waters and the sewer. If there is a leak, intervene immediately. If water sources and sewers are mixed, inform authorities.

### 6.3 Methods and Material for Containment and Cleaning up

Ensure there is sufficient ventilation of the area.

### 6.4 Reference to Other Sections

See Section 7 for information on safe handling.

See Section 13 for disposal information.

## 7. HANDLING AND STORAGE

### 7.1 Precautions for Safe Handling

The substance must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularly) checked for leaks before use. 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. Avoid suck back of water, acid and alkalis. Do not breathe gas. Avoid release of product into atmosphere. In the event of danger, keeping warning signs indicating the aggregation area. Prevent direct contact with substance. Ensure adequate air ventilation. Keep away from combustible materials. Store containers in location free from fire risk and away from sources of heat and ignition. Refer to supplier's container handling instructions. Protect packaging from physical damage. Even for short distances, use a cart (hand truck, etc.) designed to transport cylinders. Do not open the valve protection caps before use is ready. Damaged valves should be reported immediately to the supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer products from one cylinder/container to another.

### 7.2 Conditions for Safe Storage, Including Any Incompatibilities

Store in an original package, dry, cool place. Do not smoke in area. Ensure adequate air ventilation. Observe local requirements regarding about storage. Containers should be stored in the vertical position and properly secured to prevent them from falling over. Keep container below 50°C in a well ventilated place. Keep away from combustible materials.

### 7.3 Specific End Use(s)

Industrial and professional use. Acidity regülator in food sector, heat stabilizers; In the Industrial sector, under welding gas and cleaning of equipments. Perform risk assessment prior to use. Contact supplier for more information on uses.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control Parameters

#### Carbondioxide (124-38-9)

<b>Belgium</b>	Limit value	9131 mg/ m <sup>3</sup>	5000 ppm
<b>Belgium</b>	Short time value	54784 mg/ m <sup>3</sup>	30000 ppm
<b>France</b>	VME (mg/m <sup>3</sup> )	-mg/ m <sup>3</sup>	5000 ppm
<b>Germany</b>	TRGS 900 Occupational exposure limit value	9100 mg/ m <sup>3</sup>	5000 ppm
<b>Italy-Portugal-USA ACGIH</b>	ACGIH TWA (mg/m <sup>3</sup> )	-mg/ m <sup>3</sup>	5000 ppm
<b>Italy-Portugal-USA ACGIH</b>	ACGIH STEL (mg/m <sup>3</sup> )	-mg/ m <sup>3</sup>	30000 ppm
<b>The Netherlands</b>	MAC TGG 8H	9000 mg/m <sup>3</sup>	- ppm
<b>Australia</b>	STEL	-mg/ m <sup>3</sup>	10000 ppm

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### 8.2 Exposure Controls

Provide adequate ventilation. Install the air filtration system in accordance with NIOSH3 and CEN4 systems. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits. (TWA: 5000 ppm / 9000 mg/m<sup>3</sup>). Oxygen detectors should be used when asphyxiating gases may be released.

#### 8.2.1 Personal protective precautions

**8.2.1.1 Respiratory:** When oxygen is insufficient use respiratory equipment and devices that have been tested and approved in accordance with official regulations such as (SCBA) or NIOSH<sup>3</sup> / CEN<sup>4</sup>. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.



**8.2.1.2 Hand Protection:** Wear gloves when handling. Wear gloves when handling the package. Standard EN 388 - Protective gloves against mechanical risk. After use, gloves should be disposed of in accordance with local regulations



Full contact should be made with boutique rubber material, gloves should be used minimum layer thickness 0.3mm and duration of absorption is 480 minute.

Gloves should be used as half-midwest with chloroprene material, minimum layer thickness 0.6 mm and duration of absorption is 30 minute.



**8.2.1.3 Eyes Protection:** Wear safety glasses with side shields. (Standart EN 166 or NIOSH)

**8.2.1.4 Skin Protection:** Use appropriate protective work clothing and work shoes.

#### 8.2.3 Environmental Exposure Controls

Carbon dioxide gas is a greenhouse gas. Avoid uncontrolled and unnecessary release to the environment.

### 8.3 Other Information

Hygiene measures: Wash hands, arms and face at the end of the working period. Wash the dirty clothes before using again.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 General Properties

<b>Appearance</b>	Liquefied gas
<b>Color</b>	Colorless
<b>Odor</b>	Odorless

### 9.2 Information on Basic Physical and Chemical Properties

<b>Initial boiling point 760 mm Hg</b>	-78,5 °C
<b>Melting Point 760 mm Hg</b>	-56,6 °C
<b>Relative density (water=1)</b>	0,82
<b>Relative density (air=1)</b>	1,52
<b>Critical temperature</b>	30 °C
<b>pH</b>	3,7
<b>Molar mass</b>	44 g/mol
<b>Flash point</b>	No valid
<b>Vapour Density (Hava=1)</b>	1,52 g/cm <sup>3</sup>
<b>Vapour Pressure hPa (20 °C)</b>	57,3
<b>Density (25 °C)</b>	0,000015 Pa.s
<b>Explosive Properties</b>	Not applicable.
<b>Viscosity (20 °C)</b>	No data
<b>Water solubility (g/l) (20 °C)</b>	2000 mg/l
<b>Partition coefficient n-octanol/water [log Kow]</b>	0,83 logPow

\* Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level. Non-toxic, is an asphyxiant.

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**10. STABILITY AND REACTIVITY****10.1 Reactivity**

There is no danger of special reaction with other substances under normal use conditions. In the case of liquid contact, it causes the material to have a fragile structure. When heated above 1700 degrees Celsius, carbon monoxide and oxygen begin to decompose. When the amount of moisture increases, carbonic acid is released.

**10.2 Chemical Stability**

Stable under recommended use and storage conditions.

**10.3 Possibility of Hazardous Reactions**

Acid and alkali materials.

**10.4 Conditions to Avoid**

Keep away from open flames, high temperatures and ignition sources.

**10.5 Incompatible Materials**

Alkali metals, alkaline earth metals, metal acetylides, chromium, titanium above 550°C, uranium above 750°C, magnesium above 775°C.

**10.6 Hazardous Decomposition Products**

Carbon monoxide (CO).

**11. TOXICOLOGICAL INFORMATION****11.1 General Information**

Carbon dioxide is an asphyxiant. It initially stimulates respiration and then causes respiratory depression. High concentrations result in narcosis.

EFFECT	CONCENTRATION
Breathing rate increases slightly.	%1
Breathing rate increases to 50% above normal level. Prolonged exposure can cause headache, tiredness.	%2
Breathing increases to twice normal rate and becomes labored. Weak narcotic effect. Impaired hearing, headache, increased blood pressure and pulse rate.	%3
Breathing increases to approximately four times normal rate, symptoms of intoxication become evident, and slight choking may be felt.	%4-5
Characteristic sharp odor noticeable. Very labored breathing, headache, visual impairment, and ringing in the ears. Judgment may be impaired, followed within minutes by loss of consciousness.	%5-10
Unconsciousness occurs more rapidly above 10% level. Prolonged exposure to high concentrations may eventually result in death from asphyxiation.	%50-100

**11.2 Acute Toxicity**

In high concentrations cause rapid circulatory insufficiency. Symptoms are headache, nausea and vomiting, which may lead to unconsciousness.

**11.3 Corrosivity and irritation Influence (corrosivity and irritation)**

Longterm contact with liquid may cause cold burns/frost bite.

**11.4 Chronic Toxicity (Toxic Effect on Carcinogenic, Mutagenic and Uremia)**

There is no known effect.

**11.5 Other Toxicological Effects**

Toxicological classifications are based on available knowledge and information.

**12. ECOLOGICAL INFORMATION****12.1 Ecotoxicity**

There is no ecological damage caused by the product.

**12.1.1 Acute toxicity**

<b>Carbon dioxide (124-38-9)</b>	
LC50 Fish	35 mg/l ( <i>Salmo Gairdneri/Onchorhynchus Mykiss</i> )

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#### 12.2. Mobility

No data available.

#### 12.3 Degradation in Nature

No data available.

#### 12.4 Persistence and degradability

Soluble in water. It has no persistence.

#### 12.5 Bioaccumulation Potential

No data available.

#### 12.6 Other adverse effects

**PBT** : Not applicable.

**vPvB** : Not applicable.

When discharged in large quantities may contribute to the greenhouse effect. Contains greenhouse gas(es) not covered by Regulation (EC) 842/2006. Global Warming Potential (GWP). Can cause frost damage to vegetation.

### 13. DISPOSAL CONSIDERATIONS

#### 13.1 Waste Treatment Methods

Do not spill into sewer or waterways. Dispose of waste and empty containers according to local / national regulations. Comply with the provisions of Directive 2008/98 / EC on waste management. Discharge to atmosphere in large quantities should be avoided.

#### 13.2 Safe Disposal

The product must be disposed of in accordance with official regulations. Do not throw product into sewer.

#### 13.3 European Waste Catalogue and Hazardous Waste List Number

Hazardous waste identification number is made according to EWC8.

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.

#### 13.4 Uncleaned Packages


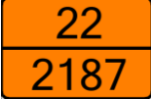
The product must be disposed of in accordance with official regulations.

#### 13.5 Recommended Cleansing Material:

Does not exist.

### 14. TRANSPORT INFORMATION

#### 14.1 General Information

<b>14.1 UN Number</b>  <b>ADR (HIGHWAY)</b> <b>ADNR (RIVER ROAD)</b> <b>IMDG (MARINE ROAD)</b> <b>IATA (AIR ROAD)</b>	  UN 2187
<b>14.2 UN Proper Shipping Name ADR, ADN, IMDG, IATA</b>	2187; CARBON DIOXIDE, REFRIGERATED, LIQUID
<b>14.3 Transport Hazard Class(es)</b> <b>ADR, ADN, IMDG, IATA</b>	  Class 2.2
<b>14.4 Danger Number</b>	22
<b>14.5 Tunnel Restriction Code</b>	(C/E)
<b>14.6 Labelling</b>	2.2 – Non-flammable liquefied gas
<b>14.7 Classification Code</b>	ADR : 3A
<b>14.8 Packing Group</b> <b>ADR, IMDG, IATA</b>	-
<b>14.9 Special Precautions for User</b>	EMS: FC; SV Limited quantity: 120 ml

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	Excepted quantity: E1 Packing instructions: P203 Mixed packing provisions: MP9 Portable tank and bulk container instructions: T75 Portable tank and bulk container special provisions: TP5 Tank codes for ADR tanks: R×BN Special provisions for ADR tanks: TU19 TA4 TT9 Special provisions for carriage: Operation: S20
<b>14.10 Environmental Hazards Marine Pollutant</b>	-

**15. REGULATORY INFORMATION****15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture**

See Section 2 for information on classification and labeling.

EEC EINECS: All components of this product are available in the European Inventory. It's been amended in line with the Council Directive on Chemical Substances (EINECS) no. 67/548/EEC.

*Regulation on Classification, Labeling and Packaging of Substances and Mixtures*

*Regulation on Safety Data Sheets Regarding Hazardous Substances and Mixtures*

*Regulation on Limitations Related to the Production, Placing on the Market and Use of Some Hazardous Substances, Preparations and Goods*

*Regulation on Occupational Health and Safety*

*Regulation of Health and Safety Measures for the Works with Carcinogenic and Mutagen Substances*

*Regulation of Health and Safety Measures for the Works with Chemical Substances*

*Regulation on the Use of Personal Protective Equipment at the Workplaces*

*Regulation on Controlling the Hazardous Wastes*

**15.2 Chemical Safety Assessment**

A Chemical Safety Assessment has not been carried out.

**16. OTHER INFORMATION****16.1 Legal Instruments**

This document 91/155 / EEC, 2001/58 / EC, in accordance with ISO 11014-1, 13 December 2014 and 29204 No. "Regulation on Safety Data Sheets Regarding Hazardous Substances and Mixtures" prepared in accordance with and documented as prescribed in regulations made by qualified person accredited and approved.

**16.2 Safety Data Sheet by Prepared / Edited / Publisher**

**BARİT MADEN TÜRK A.Ş.** on behalf of

**Expert:** Aysel GÜLEN ([ayselkaya21@hotmail.com.tr](mailto:ayselkaya21@hotmail.com.tr))

**Expert Accreditation No:** TSE-GBF-2167 (30.12.2015)

**16.2.1 Contact Person:**

HÜMEYRA KARAKAŞ - [hkarakas@baritmaden.com](mailto:hkarakas@baritmaden.com) - 0212 234 12 06

**16.3 Date of Issue**

23.01.2018

**16.4 Safety Data Sheet No**

GBF-BRT-00001

**16.5 Regulation No**

1

**16.6 Comments**

The information about the product is taken from scratch according to the regulation dated 13.12.2014 and 29204 numbered.

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**16.7 Relevant Phrases**(Hazard and Precautionary Statements of Raw Materials listed in section 3)**16.7.1 Related H-phrases (Section 3)**

**H281** :Contains refrigerated gas; may cause cryogenic burns or injury  
**EIGA-As** :Asphyxiant in high concentrations.

**16.7.2 Related P-phrases(Section 2)**

**P282** :Wear cold insulating gloves/face shield/eye protection.  
**P336+P315** :Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice/attention.  
**P403** :Store in a well ventilated place.

**16.8 Other Information**

- For our training recommendations for the safe use of the product, please contact our sales department.
- For proposed restrictions and without not legal obligation advice about the use of the product , please contact our sales department.
- Key information sources used for issuing this safety data sheet;
  - ❖ *Safety Data Sheet related to the product issued by "Regulation on Safety Data Sheets Regarding Hazardous Substances and Mixtures" and annexes thereof,*
  - ❖ *"Regulation on Classification, Labelling and Packaging of Substances and Mixtures"and annexes thereof,*
  - ❖ *"Regulation of Health and Safety Measures for the Works with Carcinogenic and Mutagen Substances" and annexes thereof,*
  - ❖ *Other related regulations,*
  - ❖ *UN ADR, IMDG, IATA lists, ECHA and relevant EU directives,*
  - ❖ *Other supplementary resources.*

**16.9 Additional Information**

- The information provided in this Safety Data Sheet is prepared based on our best experience, knowledge and belief as of the date the information is prepared. The information given is designed for providing a guidance on safe handling, use, processing, storage, transportation, destruction and disposal.
- Unless otherwise stated in the document, this information only applies for the given substance and might not be valid if this substance is used with other substances or used in any other process.
- Please take the information provided in the Safety Data Sheet into account for use.
- This information is based on our existing knowledge.
- This Safety Data Sheet defines the product according to the suitable safety regulations, but does not guarantee the assurance of product specifications.
- It does not constitute any kind of guarantee and does not establish a legally valid agreement related to the product specifications.

**16.10 Abbreviations**

<b>ADR</b>	European Agreement on International Carriage of Dangerous Goods by Road
<b>IMDG</b>	International Maritime Dangerous Goods Code
<b>IATA</b>	International Air Transport Association
<b>GHS</b>	United Nations Global Harmonized System of Classification and Labeling of Chemicals Harmonized System
<b>EINECS</b>	European Inventory of Chemical Substances
<b>ELINCS</b>	List of Chemical Substances Made in Europe
<b>CAS</b>	Service register number of chemical substances
<b>LC50</b>	50% lethal concentration
<b>LD50</b>	50% lethal dose
<b>PBT</b>	Persia, bioaccumulative, toxic
<b>RID</b>	Implementing Regulation on the International Transport of Dangerous Goods by Railway
<b>NIOSH</b>	The National Institute for Occupational Safety and Health
<b>CEN</b>	Comite Europeen de Normalisation

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Güvenlik Bilgi Formu Hazırlayıcısı  
Sertifika No:GBF-2167