HALLIBURTON

SAFETY DATA SHEET

Product Trade Name: **CARBON DIOXIDE, LIQUIFIED**

Revision Date: 19-May-2015 **Revision Number:** 10

1. Identification

1.1. Product Identifier

Product Trade Name: CARBON DIOXIDE, LIQUIFIED
Synonyms: None
Chemical Family: Not applicable
Internal ID Code HM000152

1.2 Recommended use and restrictions on use

Application: Fluid
Uses Advised Against No information available

1.3 Manufacturer's Name and Contact Details

Manufacturer/Supplier Halliburton Energy Services Inc.
P.O. Box 1431
Duncan, Oklahoma 73536-0431
Emergency Telephone: (281) 575-5000

Prepared By Chemical Stewardship
Telephone: 1-580-251-4335
e-mail: fdunexchem@halliburton.com

1.4. Emergency telephone number

Emergency Telephone Number (281) 575-5000

2. Hazard(s) Identification

2.1 Classification in accordance with paragraph (d) of §1910.1200

Gases Under Pressure	Liquefied gas - H280

2.2. Label Elements

Hazard Pictograms

Signal Word Warning

Hazard Statements H280 - Contains gas under pressure; may explode if heated

Precautionary Statements

Prevention	None
Response	None
Storage	P410 + P403 - Protect from sunlight. Store in a well-ventilated place
Disposal	None

Contains

Substances	**CAS Number**
Carbon dioxide	124-38-9

2.3 Hazards not otherwise classified
None known

3. Composition/information on Ingredients

Substances	CAS Number	PERCENT (w/w)	GHS Classification - US
Carbon dioxide	124-38-9	60 - 100%	Refrigerated Liquefied Gas Compressed Gas (H280)

The exact percentage (concentration) of the composition has been withheld as proprietary.

4. First-Aid Measures

4.1. Description of first aid measures

Inhalation If inhaled, move victim to fresh air and seek medical attention.

Eyes In case of contact, or suspected contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention immediately after flushing.

Skin For exposure to liquid, immediately warm frostbite area with warm water (not to exceed 105 F or 41 C). In case of massive exposure, remove clothing while showering with warm water. Get medical attention.

Ingestion Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.

4.2 Most important symptoms/effects, acute and delayed
May cause freeze burns. Reduces oxygen available for breathing.

4.3. Indication of any immediate medical attention and special treatment needed
Notes to Physician Treat symptomatically.

5. Fire-fighting measures

5.1. Extinguishing media
Suitable Extinguishing Media
All standard fire fighting media
Extinguishing media which must not be used for safety reasons
None known.

5.2 Specific hazards arising from the substance or mixture
Special Exposure Hazards
None anticipated

5.3 Special protective equipment and precautions for fire-fighters

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use appropriate protective equipment. Evacuate all persons from the area.
See Section 8 for additional information

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Ventilate area.

7. Handling and storage

7.1. Precautions for Safe Handling

Handling Precautions

Avoid contact with eyes, skin, or clothing.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Storage Information

Store in a well ventilated area.

8. Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Substances	CAS Number	OSHA PEL-TWA	ACGIH TLV-TWA
Carbon dioxide	124-38-9	5000 ppm	TWA: 5000 ppm STEL: 30000 ppm

8.2 Appropriate engineering controls

Engineering Controls Use in a well ventilated area.

8.3 Individual protection measures, such as personal protective equipment

Personal Protective Equipment If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection Not normally necessary.
In high concentrations, supplied air respirator or a self-contained breathing apparatus.

Hand Protection Use gloves which are suitable for the chemicals present in this product as well as other environmental factors in the workplace.

Skin Protection Wear impervious protective clothing, including boots, gloves, lab coat, apron, rain jacket, pants or coverall, as appropriate, to prevent skin contact.

Eye Protection Safety glasses with side-shields. If splashes are likely to occur, wear: Goggles, Face-shield.

Other Precautions None known.

9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid
Odor: Odorless
Color: Colorless
Odor Threshold: No information available

Property Remarks/ - Method	Values
pH:	No data available
Freezing Point/Range	No information available.
Melting Point/Range	No data available
Boiling Point/Range	No data available
Flash Point	No data available
Flammability (solid, gas)	No data available
upper flammability limit	No data available
lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Vapor Density	No data available
Specific Gravity	1.01
Water Solubility	Soluble in water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

Molecular Weight	44.01 g/mol
VOC Content (%)	No data available

10. Stability and Reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical Stability

Stable

10.3. Possibility of Hazardous Reactions

Will Not Occur

10.4. Conditions to Avoid

None anticipated

10.5. Incompatible Materials

None known.

10.6. Hazardous Decomposition Products

None known.

11. Toxicological Information

11.1 Information on likely routes of exposure

Principle Route of Exposure Eye or skin contact, inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Acute Toxicity

Inhalation Reduces oxygen available for breathing. May cause increase in respiration rate.

Eye Contact Contact with liquid causes frostbite.

Skin Contact Contact of material on skin may result in frostbite.

Ingestion Causes burns of the mouth, throat and stomach.

Chronic Effects/Carcinogenicity No data available to indicate product or components present at greater than 0.1% are chronic health hazards.

11.3 Toxicity data

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Carbon dioxide	124-38-9	No data available	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Carbon dioxide	124-38-9	Not applicable.

Substances	CAS Number	Eye damage/irritation
Carbon dioxide	124-38-9	Not applicable.

Substances	CAS Number	Skin Sensitization
Carbon dioxide	124-38-9	Not applicable

Substances	CAS Number	Respiratory Sensitization
Carbon dioxide	124-38-9	Not applicable

Substances	CAS Number	Mutagenic Effects
Carbon dioxide	124-38-9	No information available

Substances	CAS Number	Carcinogenic Effects
Carbon dioxide	124-38-9	No information available.

Substances	CAS Number	Reproductive toxicity
Carbon dioxide	124-38-9	No data of sufficient quality are available.

Substances	CAS Number	STOT - single exposure
Carbon dioxide	124-38-9	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	STOT - repeated exposure
Carbon dioxide	124-38-9	No significant toxicity observed in animal studies at concentration requiring classification.

Substances	CAS Number	Aspiration hazard
Carbon dioxide	124-38-9	Not applicable

12. Ecological Information

12.1. Toxicity

Ecotoxicity Effects

Product Ecotoxicity Data

No data available

Substance Ecotoxicity Data

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Carbon dioxide	124-38-9	No information available	LC50 (1h) 240 mg/L (Trout) LC50 (96h) 35 mg/L (Oncorhynchus mykiss) LC51 (12h) 60-240 mg/L (Oncorhynchus mykiss)	No information available	Heart rate and pH changes (30m) 2% (Daphnia magna)

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Carbon dioxide	124-38-9	Not applicable

12.3. Bioaccumulative potential

Substances	CAS Number	Log Pow
Carbon dioxide	124-38-9	0.83 (calculated)

12.4. Mobility in soil

Substances	CAS Number	Mobility
Carbon dioxide	124-38-9	No information available

12.5 Other adverse effects

No information available

13. Disposal Considerations

13.1. Waste treatment methods

Disposal Method Disposal should be made in accordance with federal, state, and local regulations.

Contaminated Packaging Follow all applicable national or local regulations.

14. Transport Information

US DOT

UN Number: UN2187
UN Proper Shipping Name: Carbon Dioxide, Refrigerated Liquid
Transport Hazard Class(es): 2.2
Packing Group: Not applicable
Environmental Hazards: Not applicable
NAERG: NAERG 120

US DOT Bulk

DOT (Bulk) Not applicable

Canadian TDG

UN Number: UN2187
UN Proper Shipping Name: Carbon Dioxide, Refrigerated Liquid
Transport Hazard Class(es): 2.2
Packing Group: Not applicable
Environmental Hazards: Not applicable

IMDG/IMO

UN Number:	UN2187
UN Proper Shipping Name:	Carbon Dioxide, Refrigerated Liquid
Transport Hazard Class(es):	2.2
Packing Group:	Not applicable
Environmental Hazards:	Not applicable
EMS:	EmS F-C, S-V

IATA/ICAO

UN Number:	UN2187
UN Proper Shipping Name:	Carbon Dioxide, Refrigerated Liquid
Transport Hazard Class(es):	2.2
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable
Special Precautions for User: None

15. Regulatory Information

US Regulations

US TSCA Inventory	All components listed on inventory or are exempt.
EPA SARA Title III Extremely Hazardous Substances	Not applicable
EPA SARA (311,312) Hazard Class	Sudden Release of Pressure Hazard
EPA SARA (313) Chemicals	This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).
EPA CERCLA/Superfund Reportable Spill Quantity	Not applicable.
EPA RCRA Hazardous Waste Classification	If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.
California Proposition 65	All components listed do not apply to the California Proposition 65 Regulation.
MA Right-to-Know Law	One or more components listed.
NJ Right-to-Know Law	One or more components listed.
PA Right-to-Know Law	One or more components listed.

Canadian Regulations

Canadian DSL Inventory	All components listed on inventory or are exempt.

16. Other information

Preparation Information

Prepared By
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Revision Date: 19-May-2015

Reason for Revision
Update to Format
SECTION:
2

Additional information
For additional information on the use of this product, contact your local Halliburton representative.

For questions about the Safety Data Sheet for this or other Halliburton products, contact Chemical Stewardship at 1-580-251-4335.

Key or legend to abbreviations and acronyms
bw – body weight
CAS – Chemical Abstracts Service
EC50 – Effective Concentration 50%
ErC50 – Effective Concentration growth rate 50%
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL50 – Lethal Loading 50%
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PEL – Permissible Exposure Limit
ppm – parts per million
STEL – Short Term Exposure Limit
TWA – Time-Weighted Average
UN – United Nations
h - hour
mg/m^3 - milligram/cubic meter
mm - millimeter
mmHg - millimeter mercury
w/w - weight/weight
d - day

Key literature references and sources for data
www.ChemADVISOR.com/

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End of Safety Data Sheet