FlameStop

SAFETY DATA SHEET

REVISED EDITION NO: **2**
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SECTION 1 - IDENTIFICATION: PRODUCT IDENTIFIER AND CHEMICAL IDENTITY

PRODUCT IDENTIFIER:

CARBON DIOXIDE

OTHER MEANS OF IDENTIFICATION:

CO_2

RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST:

Relevant identified uses: Fire extinguishing agent for use on electrical and flammable liquids.

DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET:

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PREPARED IN ACCORDANCE WITH THE NATIONAL CODE OF PRACTICE FOR THE PREPARATION OF MATERIAL SAFETY DATA SHEETS 2ND EDITION [NOHSC:2011(2003)]

SECTION 2 - HAZARD(S) IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE:

Classification according to the the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia

Classidied as dangerous - Gases under Pressure - Liquefied gas

Classification according to the the Australian Code for the Transport of Dangerous Goods by Road and Rail (7th Edition)

Classified as Dangerous Goods

LABEL ELEMENTS:

Hazard pictograms	
Pictogram name	GHS04 Gas Cylinder
Signal word	**WARNING**
Hazard statements	
Physical Hazards	**H280** Contains gas under pressure; may explode if heated.
Health Hazards	
Environmental Hazards	
Combinations	
Precautionary statements	
General	
Prevention	
Response	
Storage	**P410+P403** Protect from sunlight. Store in a well ventilated space.

OTHER HAZARDS:

Contact with product may cause cold burns or frost bite.

Asphyxiant in high concentrations.

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

SUBSTANCE:

Carbon Dioxide CO_2 - This product is a gas / liquefied gas. Contains no other components or impurities which will influence the classification of the product.

Substance name	CAS No.	Contents	Classification according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS)
Carbon dioxide	124-38-9	100%	**H280** Press. Gas (lLiq)

SECTION 4: FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES:

Afer inhalation

Call doctor if victim unconscious, move to uncontaminated area and give assisted respiration. Low concentrations of CO2 cause increased respiration and headache. Remove victim to uncontaminated area to breathe fresh air. Keep warm and quiet. Continued treatment should be symptomatic and supportive.

After skin contact

Wash material off skin with copious amounts of water and soap for at least 15 minutes. If redness, itching or burning occurs get medical attention.

After eye contact

Immediately flush eyes with plenty of water for 15 minutes whilst holding lids open. If redness, itching or burning occurs get medical attention.

After ingestion

Not expected to present a significant ingestion hazard under anticipated conditions of normal use.

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE, DELAYED AND AGGREVATED

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. See section 11 for toxological information.

INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

None.

SECTION 5: FIREFIGHTING MEASURES

EXTINGUISHING MEDIA

Suitable extinguishing media: water spray or fog. Do not use water jet to extinguish.

SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Exposure to fire may cause containers to rupture/explode.. No hazardous combustion products expected.

ADVICE FOR FIREFIGHTERS

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. If possible, stop flow of product. Use water spray or fog to knock down fire fumes if possible. Move containers away from the fire area if this can be done without risk.

Appropriate personal protective equipment for fire fighters:

Rescuers should not enter oxygen depleted room without the use of self-contained full face breathing equipment.

Hazchem code:

2T

SECTION 6 - ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:

Try to stop release. Evacuate area. Monitor concentration of released product. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Act in accordance with local emergency plan. Stay upwind.

ENVIRONMENTAL PRECAUTIONS

Try to stop release.

Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

None.

Ventilate area.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING

Advice on safe use of product:

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 regularily) 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.

Advice on safe handling of gas receptacle:

Refer to supplier's container handling instructions. Do not allow backfeed into the container. Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer gases from one cylinder/container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATABILITIES

Technical measures and storage conditions:

Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Container valve guards or caps should be in place. Containers should be stored in the vertical position and properly secured to prevent them from falling over. Stored containers should be periodically checked for general condition and leakage.

Requirements for storage rooms and containers:

Store in cool, dry place out of direct sunlight and 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. Full cylinders stored separately from empties.

CONTROL PARAMETERS / OCCUPATIONAL EXPOSURE LIMIT VALUES

Safe Work, Australia Exposure Standards:

Substance:	TWA	STEL
Carbon Dioxide	ppm - 5000, mg/m^3 - 9000	ppm - 30000, mg/m^3 - 54000

*TWA (Time Weighted Average): The average airborne concentration of a particular substance when calculated over a normal eight-hour working day, for a five-day week.

**STEL (Short Term Exposure Limit): The average airborne concentration over a minute period which should not be exceeded at any time during a normal eight-hour workday.

International Exposure Standards:

CAS No	Substance	Occupational Exposure Limits
124-38-9	Carbon Dioxide	Value 8h (CZ) [mg/m3] 9000 ILV (EU) - 8 H - [mg/m³] 9000 ILV (EU) - 8 H - [ppm] 5000 TLV© -TWA [ppm] 5000 TLV© -STEL [ppm] 30000 AGW (8h) - Germany [mg/m³] TRGS 900 9100 AGW (8h) - Germany [ppm] TRGS 900 5000 MAK (AU) Tagesmittelwert (ml/m³) 5000 MAK (AU) Tagesmittelwert (mg/m³) 9000 MAK (AU) Kurzzeitwerte (ml/m³) 10000 MAK (AU) Kurzzeitwerte (mg/m³) 18000 VLA-ED - Spain [ppm] 5000 VLA-ED - Spain [mg/m3] 9150 VLA-EC - Spain [ppm] 15000 VLA-EC - Spain [mg/m3] 27400 NGV - [ppm] 5000 NGV - [mg/m³] 9000 KTV - [ppm] 10 KTV - [mg/m³] 10 HTP-värden (FI) - 8 H - [ppm] 5000 HTP-värden (FI) - 8 H - [mg/m³] 9100 Grænserværdier (DK) (ppm) 5000 Grænserværdier (DK) (ppm) 9000 Grænserværdier (DK) 9000 GV Value Limit (Norway) [ppm] 5000 GV Value Limit (Norway) [mg/m³] 9000 8-Hour TWA (PL) (NDS) (mg/m³) 9000 15-Minute STEL (PL)(NDSCh) (mg/m³) 27000 Valori Limite di Soglia (IT) 8 ore [ppm] 5000 Valori Limite di Soglia (IT) 8 ore [mg/m3] : 9000 TLV-TWA (Belgium) (ppm) : 5000 TLV-STEL (Belgium) (ppm) : 30000 Value 15min. (CZ) [mg/m3] : 45000

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION (CONTINUED)

EXPOSURE CONTROLS

Appropriate engineering controls:

Provide adequate general and local exhaust ventilation. Systems under pressure should be regularily checked for leakages. Ensure exposure is below occupational exposure limits (where available). Oxygen detectors should be used when asphyxiating gases may be released. Consider work permit system e.g. for maintenance activities.

Individual protective measures, e.g. Personal Protective Equipment:

The following recommendations should be considered: Wear safety glasses with side shields. Wear leather safety gloves and safety shoes when handling cylinders. Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.

Environmental exposure controls

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for controls specific methods for waste gas treatment.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance **- Physical state at 20°C / 101.3kPa:** **- Colour:**	 Liquefied gas Colourless
Odour:	No odour warning properties
Odour threshold:	Odour threshold is subjective and inadequate to warn for overexposure.
pH:	Not applicable for gas-mixtures
Melting point (°C):	-56.6
Boiling point (°C):	-78.5 (s)
Molar mass:	44g/mol
Critical temperature (°C):	30
Flash point (°C):	Not applicable for gas-mixtures
Evaporation rate (ether=1):	Not applicable for gas-mixtures
Flammability range (vol% in air):	Non flammable.
Vapour pressure (at 20°C):	57.3bar(a)
Vapour density:	no information available
Relative density, gas (air=1):	1.52
Relative density, liquid (water =1):	1.03
Solubility in water (mg/l):	2000 (completely soluble)
Partition coefficient n-octanol/water:	0.83 [log Kow]
Viscosity at 20°C (mPa.s):	Not applicable
Explosive properties:	Not applicable
Other information:	Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10 - STABILITY AND REACTIVITY

REACTIVITY

No reactivity hazard other than the effects described in sub-sections below.

CHEMICAL STABILITY

Stable under normal conditions of storage and handling.

POSSIBILITY OF HAZARDOUS REACTIONS

None.

CONDITIONS TO AVOID

None under recommended storage and handling conditions.

INCOMPATIBLE MATERIALS

None.

HAZARDOUS DECOMPOSITION PRODUCTS

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11 - TOXILOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Acute toxicity:	In high concentrations cause rapid circulatory in sufficiency. Symptoms are headache, nausea and vomiting, which may lead to uconsciousness. 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.
Skin corrosion/irritation:	Not classified as a skin irritant. May cause frostbite injury or cold burns.
Serious eye damage/irritation:	Not classified as an eye irritant. Contact with dry ice powder may cause frostbite injury or cold burns.
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.
Reproductive toxicity:	No known effects from this product.
Specific Target Organ Toxicity (STOT) – single exposure:	No known effects from this product.
Specific Target Organ Toxicity (STOT) – repeated exposure:	No known effects from this product.
Aspiration hazard:	Not applicable for gases and gas-mixtures.

SECTION 11 - TOXILOGICAL INFORMATION (CONTINUED)

INFORMATION ON POSSIBLE ROUTES OF EXPOSURE

Ingestion (swallowing):	Although not an expected route of entry, If ingested, liquid can cause similar to frostbite.
Skin/eye exposure:	Evaporation of liquid from skin can produce chilling sensations. Frostbite can occur. Avoid carbon dioxide snow (dry ice).
Eye exposure	The liquid form of this material can produce chilling sensations, discomfort and also frostbite.
inhilation:	Carbon dioxide is an asphyxiate. Effects of oxygen deficiency (below 6 %) are as follows: convulsive movements, possible respiratory collapse and death.
Acute Overexposure	Contact can produce chilling sensations, light headedness, giddiness, shortness of breath, muscular tremors and weakness, and acrocyanosis. Also unconsciousness or even death.
Chronic Overexposure	Prolonged exposure to an oxygen deficient atmosphere (below 18 % oxygen) may affect the heart and nervous system.

EARLY ONSET SYMPTOMS RELATING TO EXPOSURE

No information available

DELAYED HEALTH EFFECTS FROM EXPOSURE

No information available

EXPOSURE LEVELS AND HEALTH EFFECTS

No information available

INTERACTIVE EFFECTS

No information available

SECTION 12 - ECOLOGICAL INFORMATION

ECOTOXICITY

No data available.

PERSISTENCE AND DEGRADABILITY

No data available.

BIOACCUMULATIVE POTENTIAL

No data available.

MOBILITY IN SOIL

No data available.

SECTION 12 - ECOLOGICAL INFORMATION (CONTINUED)

OTHER ADVERSE EFFECTS

When discharged in large quantities may contribute to the greenhouse effect.

FURTHER INFORMATION

Contains greenhouse gas(es) not covered by 842/2006/EC.

Global warming potential [CO2=1]: 1

SECTION 13 - DISPOSABLE CONSIDERATIONS

DISPOSABLE METHODS

May be vented to atmosphere in a well ventilated place. Discharge to atmosphere in large quantities should be avoided. Do not discharge into any place where its accumulation could be dangerous. Dispose of waste according to local, state or Commonwealth regulations.

PHYSICAL/CHEMICAL PROPERTIES THAT MAY AFFECT DISPOSAL OPTIONS

Not determined

EFFECTS OF SEWAGE DISPOSAL

Not determined

SPECIAL PRECAUTIONS FOR INCINERATION OR LANDFILL

Not determined

FURTHER INFORMATION

Not further information.

SECTION 14 - TRANSPORT INFORMATION

Labelling ADG, IMO/IMDG, ICAO/IATA	 2.2 Non flammable, non toxic gas
Road and Rail Transport (ADG Code)	
Classification:	Classified as Dangerous Goods according to the Australian Code for the Transport of Dangerous Goods by Road & Rail (Seventh edition, 7.4, 2015)
UN number	1013
Proper shipping name:	CARBON DIOXIDE
Transport hazard class/division:	2.2
Packing group:	N/A
HAZCHEM - Emergency Action Code	No Hazchem Code issued to these articles. No HIN issued under RID and ADR.

SECTION 14 - TRANSPORT INFORMATION (CONTINUED)

Special Provisions:	225
Limited Quantities:	120mL
Packing Instruction:	P200
Special Packing Provisions:	
Placard load Incompatabilities:	**Division 1 - Explosives** **Division 2.1 - Flammable Gases** when the Division 2,2 gas has a subsidiary risk 5.1 except when all are packed in cylinders or pressure drums not exceeding 500L capacity. **Division 2.3 Toxic Gases** when the Division 2,2 gas has a subsidiary risk 5.1 except when all are packed in cylinders or pressure drums not exceeding 500L capacity. **Division 4.2 - Spontaneously Combustible Substances** **Division 5.2 - Organic Peroxides**
Marine transport (IMO/IMDG)	
Classification:	Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.
UN number:	1013
Proper shipping name:	CARBON DIOXIDE
Division:	2.2
Environmental hazards for Transport Purposes:	Not a known pollutant according to the International Maritime Dangerous Goods (IMDG) Code. Substance is not classified as having an acute aquatic toxicity hazard.
Emergency Schedule (EmS) - Fire:	F-C
Emergency Schedule (EmS) - Spillage:	S-V
Packing Group:	N/A
Packing Instructions:	P200
Air transport (ICAO/IATA)	
Classification:	Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.
UN number:	1013
Proper shipping name:	CARBON DIOXIDE
Division:	2.2
Packing instruction (Cargo Aircraft only):	200
Packing instruction (Passanger and Cargo Aircraft):	200
Special Provisions:	

SECTION 14 - TRANSPORT INFORMATION (CONTINUED)

SPECIAL PRECAUTIONS FOR USER

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.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

SECTION 15 - REGULATORY INFORMATION

SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE

Carbon dioxide is an approved gas which is listed in Australian Standard AS 4214. Ensure all national/local regulations are observed.

Classified as Hazardous according to the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Not Classified as a Scheduled Poison according to the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

CHEMICAL ASSESSMENT

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

SECTION 16 - OTHER INFORMATION

KEY LITERATURE REFERENCES AND SOURCES

Classification in accordance with the Globally Harmonised System of Classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC:2011(2003)].

This Safety Data Sheet where necessary has been established in accordance with the applicable European Union legislation and has used calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD.

Standard for the Uniform Scheduling of Medicines and Poisons.

Australian Inventory of Chemical Substances (AICS)

Australian Code for the Transport of Dangerous Goods by Road & Rail (2015, 7th Edition, 7.4)

Model Work Health and Safety Regulations, Schedule 10: Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

Workplace exposure standards for airborne contaminants, Safe work Australia.

International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

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Please refer to our internet website for more information: www.flamestop.com.au

SDS sheets are available to download in the downloads section of our website.

For contact information please go to page 1 of this SDS.

END OF SDS.