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

1.1 Product identifier

IUPAC Nomenclature	CARBON DIOXIDE 02654 04012 04015 02658
Chemical formula	CO_2
CAS number	See paragraph 3.1
EINECS number	See paragraph 3.1
Index number	See paragraph 3.1
Registration number	Indicated in the list of substances of Annex IV / V of REACH, exempt from the registration obligation.

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

Relevant identified uses	Technical gas Industrial use: shielding gas in welding processes. Hobby applications: aquariology.
Uses advised against	All those not identified as relevant.

1.3 Details of the supplier of the safety data sheet

Supplier	SIP industrial Products Ltd
Street address	Gelders Hall Road
Country	Shepshed Leicestershire LE129NH
Telephone number	+44 1509 500400
Fax	+44 1509 500456
e-mail address	technical@sip-group.com

1.4 Emergency telephone number

+44 1509 500400 (working hours)

Section 2: Hazards identification

2.1 Classification of the substance or mixture

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

Physical hazards: Gas under pressure: Compressed gas H280

2.2 Label elements

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

Hazard pictogram(s)

GHS04

Signal word	Warning	
Hazard statement(s)	H280:	Contains gas under pressure; may explode if heated
Precautionary statements - storage	P410 + P403:	Protect from sunlight. Store in a well-ventilated place

2.3 Other hazards

Asphyxiant in high concentrations.
Do no expose to temperatures exceeding 50°C/ 122°F

Section 3: composition/information on ingredients

3.1 Substances

CARBON DIOXIDE

Quantity	C.A.S	EC n.	Hazard class	Pictogram	Danger codes	Registration N°
100%	124-38-9	204-696-9	Press. Gas (Comp.)		H280	exempt to ex annex IV REACH

Contains no other components or impurities which will influence the classification of the product

Section 4: First aid measures

4.1 Description of first aid measures

	Move the victim from the place of exposure to a ventiled area. Do not give hands anything orally to an unconscious person.
Inhalation	Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform artificial respiration if breathing stopped.
Eyes contact	Contact with liquid or cold vapor can cause freezing of tissue. Immediately wash down for at least 15 minutes
Ingestion	Is not considered a potential route of exposure

	Skin contact	In case of liquid leakage, wash with water for at least 15 minutes. In case of injury caused by low temperature, do the following indications: - Remove clothing around the affected area. - Do not rub burned skin or break blisters. - Immerse the burned parts of the body in lukewarm water (40 ° C). - In case of burns of the toes and / or hands, if possible, keep them separated with gauze strips or clean cloths.
4.2	Most important symptoms and effects, both acute and delayed	
		In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victims may not be aware of asphyxiation. Refer to section 11.
4.3	Indication of any immediate medical attention and special treatment needed	
		For any doubt or persistent symptoms, call a doctor.

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:	Exposure to fire may cause cylinder (s) to rupture or explode.
	Hazardous Combustion Products	None (a).
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 cylinders to rupture. Cool endangered cylinders 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.
	Special protective equipment for fire fighters:	Use self Contained Breathing Apparatus Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters. Standard EN137 – 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	
		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.
6.2	Environmental precautions	
		Try to stop release.
6.3	Methods and material for containment and cleaning up	
		Ventilate the area. Take the cylinder outdoors to an isolated area and empty it into the atmosphere.
6.4	Reference to other sections	
		See section 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. Only experienced and properly instructed persons should handle gases under pressure. 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. Avoid release of product into work area.
Safe handling of the gas cylinder:	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. If user experiences any difficulty operating valve discontinue use and contact supplier. Never attempt to repair or modify container valves. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants particularly oil and water. Never attempt to transfer gases from one cylinder 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 content of the container. Containers should be stored in the vertical position and properly secured to prevent them from falling over.

7.2 Conditions for safe storage, including any incompatibilities

Observe all regulations and local requirements regarding storage of containers.
Cylinders should not be stored in conditions likely to encourage corrosion.
Store cylinders in location free from fire risk and away from sources of heat and ignition.
Keep cylinders below 50°C in a well ventilated place.
Keep away from combustible materials.

7.3 Specific end use(s).

No additional information.

Section 8: Exposure controls/personal protection

8.1 Control parameters

Carbon Dioxide (124-38-9)		
OEL (Occupational Exposure Limits)		
UE	ILV (EU) – 8H – [mg/m3]	9000 mg/m³
	ILV (EU) – 8H – [ppm]	5000 ppm
ACGIH	ACGIH TWA (ppm)	5000 ppm
	ACGIH STEL (ppm)	30000 ppm
	Notes (ACGIH)	Asphyxia
	Regulatory reference	ACGIH 2017

DNEL (Derived No Effect Level) — No data available
PNECs (Predicted No Effect Concentrations) — No data available

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Provide adequate general and local exhaust ventilation.
Systems under pressure should be regularly checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Oxygen detectors should be used when asphyxiating gases may be released.

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

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:	No special respiratory protection equipment is recommended under normal conditions of use with adequate ventilation. 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 protection	Not necessary

Limitation and control of environmental exposure.
Refer to local legislation for restrictions on atmospheric emissions. See section 13 for specific gas treatment / disposal methods.

Section 9: Physical and chemical properties

9.1	Information on basic physical and chemical properties	
a)	Appearance	
	Physical state at 20°C / 101.3kPa	Gas
	Colour	Colorless
b)	Odour	Odorless
c)	Odour threshold	Odour threshold is subjective and is inadequate to warn of overexposure.
d)	pH	Not applicable for gas
e)	Melting point / freezing point	Sublimation point -78,5 °C (109,3 F)
f)	Initial boiling point and boiling range	Sublimation point -78,5 °C (109,3 F)
g)	Flash point	Not applicable to gases
h)	Evaporation rate	Not applicable to gases
i)	Flammability (solid, gas)	Not flammable
j)	Explosive limits	Not flammable
k)	Vapour pressure	Not applicable
l)	Vapour density	762 Kg/m^3 (liquid density)
m)	Relative density (air=1)	1,52
n)	Partition coefficient: n-octanol/water	Not applicable for gas mixtures
o)	Auto-ignition temperature	Not flammable
q)	Viscosity	No available
r)	Explosive properties	No explosive
s)	Oxidising properties	Not applicable
t)	Idrosolubility	20 mg/l
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. In slackness conditions or CO2 similar accumulations can persists for many hours

Section 10: Stability and reactivity

10.1	Reactivity	
		Inert gas. No reactivity hazard other than the effects described in sub-section below.
10.2	Chemical stability	
		Stable under normal conditions
10.3	Possibility of hazardous reactions	
		None
10.4	Conditions to avoid	
		Keep away from heat/sparks/open flames/hot surfaces – No smoking
10.5	Incompatible materials	
		None. 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

a)	Acute toxicity	Unlike simple asphyxiants, carbon dioxide has the ability to cause death even when normal oxygen levels (20-21%) are maintained. Has been found that 5% of CO2 contributes synergistically to the increase in toxicity of other gases (CO, NO2). CO2 has been shown to increase the production of carboxy or meta hemoglobin by these gases, probably due to its stimulatory effects on the respiratory and circulatory systems. For more information refer to the document 'EIGA Safety Info 24: Carbon Dioxide, Physiological Hazards' available at www.eiga.eu.
b)	Skin corrosion/irritation	Based on available data, the classification criteria are not met.
c)	Serious eye damage/irritation	Based on available data, the classification criteria are not met.
d)	Respiratory or skin sensitisation	Based on available data, the classification criteria are not met.
e)	Germ cell mutagenicity	Based on available data, the classification criteria are not met.
f)	Carcinogenicity	Based on available data, the classification criteria are not met.
g)	Reproductive toxicity	Based on available data, the classification criteria are not met.
h)	STOT-single exposure	Based on available data, the classification criteria are not met.
i)	STOT-repeated exposure	Based on available data, the classification criteria are not met.
j)	Aspiration hazard	Not applicable to gases and gas mixtures.

Section 12: Ecological information

12.1 Toxicity

Assessment	This product does not cause ecological damage
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

This product does not cause ecological damage

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6 Other adverse effects

Effect on the ozone layer	None
Effect on global warming	None

Section 13: Disposal considerations

13.1 Waste treatment methods

The gas can be discharged to the atmosphere in a well-ventilated area. Do not dump where the build-up can be dangerous.
Cylinders are not refillable containers. In case the cylinder needs to be placed outside use, ask the manufacturer and / or distributor for information for correct disposal.
The waste treatment method must always be verified by referring to composition of the waste itself, with the existing community and national standards. Contact the supplier if disposal instructions are considered necessary.

13.2 Additional information

None

Section 14: Transport information

14.1 UN number

In accordance with ADR / RID / IMDG / IATA / ADN UN-No.
UN 1013

14.2 UN proper shipping name

Transport by road/rail (ADR/RID)	CARBON DIOXIDE
Transport by air (ICAO-TI / IATA-DGR)	Transport by air not provided
Transport by sea (IMDG)	CARBON DIOXIDE

14.3 Transport hazard class(es)

	Labelling	
		2.2 : Non- flammable, non-toxic gases
	Transport by road/rail (ADR/RID)	
	Class	2
	Classification code	1A
	Hazard identification number	20
	Tunnel restriction	E – Passage forbidden trough tunnels of category E
	Transport by air (ICAO-TI / IATA-DGR)	
		Transport by air not provided
	Transport by sea (IMDG)	
	Class / Div. (Sub.risk(s))	2.2
	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)	Transport by air not provided
	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	
	Transport by road/rail (ADR/RID)	P200
	Transport by air (ICAO-TI / IATA-DGR)	Transport by air not provided
	Transport by sea (IMDG)	P200
	Special 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 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

Other information, restriction and prohibition regulations:	Ensure all national/local regulations are observed
Seveso directive 2012/18/UE:	Not covered.

National Regulations

None

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.
Further information	This Safety Data Sheet has been established in accordance with the applicable European Union legislation. Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).
Abbreviations and acronyms	
	ATE - Acute Toxicity Estimate

CLP - Classification Labelling Packaging - Regolamento (CE) N. 1272/2008
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals - Regolamento (CE) N. 1907/2006
EINECS - European Inventory of Existing Commercial Chemical Substances
n. CAS - Chemical Abstract Service number
LC50 - Lethal Concentration 50
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
ONU - Organizzazione delle Nazioni Unite
ADR - Accord européen relatif au transport international des marchandises Dangereuses par Route
IATA - International Air Transport Association
IMDG code - International Maritime Dangerous Goods code
RID - Règlement concernant le trasport International ferroviaire des merchandises Dangereuses
WGK - Wassergefährdungsklassen
STOT-RE: Specific Target Organ Toxicity-Repeated Exposure

DISCLAIMER OF LIABILITY

Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
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