



Material Safety Data Sheet

UN# 2037 GAS CARTRIDGES

Section 1. Chemical product and company identification

Product Details	
Trade Name	Carbon Dioxide
Application of the Substance / the preparation	Small receptacles for sport purpose
Manufacturer / Supplier	BANZA STAMPING INDUSTRY CORP. #131, Section 3, Changhsing Road, LuChu, Taoyuan County 338 Taiwan, Republic of China
Further information	msds@banza.com.tw
Information in case of Emergency	+886 3 324 7601 (during business hours only)


Section 2. Composition, Information on Ingredients

NAME	CAS #	EINECS #	% VOLUME	EXPOSURE LIMITS
Carbon Dioxide	124-38-9	204-696-9	100	<p>ACGIH TLV (United States, 9/2004). STEL: 54000 mg/m³ 15 minute(s). Form: All forms STEL: 30000 ppm 15 minute(s). Form: All forms TWA: 9000 mg/m³ 8 hour(s). Form: All forms TWA: 5000 ppm 8 hour(s). Form: All forms</p> <p>NIOSH REL (United States, 6/2001). STEL: 54000 mg/m³ 15 minute(s). Form: All forms STEL: 30000 ppm 15 minute(s). Form: All forms TWA: 9000 mg/m³ 10 hour(s). Form: All forms TWA: 5000 ppm 10 hour(s). Form: All forms</p> <p>OSHA PEL (United States, 6/1993). TWA: 9000 mg/m³ 8 hour(s). Form: All forms TWA: 5000 ppm 8 hour(s). Form: All forms</p>

Section 3. Hazards identification

- Hazard description: Not applicable.
- Information concerning particular hazards for human and environment:

Physical State	Gas
Emergency Overview	<p>Warning! CONTENTS UNDER PRESSURE. CAUSES DAMAGE TO THE FOLLOWING ORGANS: LUNGS, CARDIOVASCULAR SYSTEM, SKIN, EYES, CENTRAL NERVOUS SYSTEM, EYE, LENS OR CORNEA. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION.</p> <p>Avoid contact with skin and clothing. Avoid breathing gas. Do not puncture or incinerate container. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.</p> <p>Contact with rapidly expanding gas, liquid, or solid can cause frostbite.</p>
Routes of Entry	Inhalation, Dermal, Eyes
Potential acute health effects	
Eyes	Moderately irritating to the eyes.
Skin	Moderately irritating to the skin.

Inhalation	Moderately irritating to the respiratory system.
Ingestion	Ingestion is not a normal route of exposure for gases
Potential chronic health effects	CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECT : Not available.
Medical conditions aggravated by overexposure	Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.
See toxicological information (section 11)	
GHS label elements	 <p style="text-align: center;">Warning</p>
H280 - Contains gas under pressure; may explode if heated.	
Storage	P410+P403 Protect from sunlight. Store in a well-ventilated place.

Section 4. First aid measures

General information	No special measures required
After inhalation	Supply fresh air; consult doctor in case of complaints
After skin contact	Generally the product does not irritate the skin. In case of frostbite: Try to warm up frozen tissues and seek medical attention.
After eye contact	Rinse opened eye for several minutes under running water.
After swallowing	If symptoms persist, consult doctor.

Section 5. Fire fighting measures

Flammability of the product	Non-Flammable
Fire fighting media and instructions	Use an extinguishing agent suitable for surrounding fires. If involved in fire, shut off flow immediately if it can be done without risk. Apply water from a safe distance to cool container and protect surrounding area. No specific hazard.
Special Protective equipment for fire-fighters	Fire fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Person-related safety precautions	Not Required.
Measures for environmental protection	Dilute with plenty of water.
Measures for cleaning/collecting	Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Additional information	No dangerous substances are released.

Section 7. Handling and Storage

Handling	
Information for safe handling	No special measure required
Information about fire and explosion protection	Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Storage	
Requirements to be met by storeroom and receptacles	Keep container tightly closed. Keep container in a cool well ventilated area. Container temperatures should not exceed 52°C
Information about storage in one common storage facility	Keep container tightly closed Keep container in a cool, well-ventilated area

Further information about storage conditions	Keep container tightly sealed
----------------------------------------------	-------------------------------

Section 8. Exposure Controls, Personal Protection

Engineering control	Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep airboarn levels below recommended exposure limits
Personal protection	
Eyes	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. When working with crogenic liquids, wear a full face shield.
Skin	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Hands	Chemical-resistant, impervious gloves or gauntlets complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Insulated gloves suitable for low temperature.
Personal protection in case of a large spill	A self-contained breathing apparatus should be used to avoid inhalation of the product.

*Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight	44.01 g/mole
Molecular formula	CO ₂
Boiling/condensation point	-78.55°C (-109.4°F)
Flash point	Not Applicable
Melting/freezing point	Sublimation temperature : -78.5°C (-109.3°F)
Critical temperature	30.9°C (87.6°F)
Vapor pressure at 20°C	830 psig (57300 hPa)
Vapor density at 20°C	1.53 (Air = 1) (0.00197 g/cm ³)
Specific Volume (ft ³ /lb)	8.77193
Gas Density (lb/ft ³)	0.114
Physical chemical comments	Product does not present an explosion hazard

Section 10. Stability and reactivity

Thermal decomposition / conditions to be avoided	No decomposition if used according to specification
Materials to be avoided	none
Dangerous reactions	No dangerous reactions known
Dangerous decomposition products	No dangerous decomposition products known

Section 11. Toxicological information

Toxicity data	
IDLH	40000 ppm
Chronic effects on humans	Causes damage to the following organs: lungs, cardiovascular system, skin, eyes, central nervous system (CNS), eye, lens or cornea.
Other toxic effects on humans	No specific information is available in our database regarding the other toxic effects of this material for humans.
Specific Effects	
Carcinogenic effects	No known significant effects or critical hazards.
Mutagenic effects	No known significant effects or critical hazards.
Reproduction toxicity	No known significant effects or critical hazards.

*The substance is not subject to classification according to the latest version of the EU lists.


Section 12. Ecological information


General notes	Generally not hazardous for water
---------------	-----------------------------------


Section 13. Disposal consideration


Product	
Recommendation	Small quantities can be disposed of with household waste.
Uncleaned packaging	
Recommendation	Disposal must be made according to official regulations
Recommended cleansing agent	Water, if necessary together with cleansing agents

Section 14. Transportation information

Land transport DOT (USA)		
	DOT Class	ORM-D (Limited Quantity)
	UN Number	2037
	Packaging group	-
	Hazard label	2.2
	Description of goods	UN 2037 Receptacles small, containing gas (Gas cartridges)
	Remarks	According to CFR Title 49, 173.306, exempt from all hazardous material markings and labeling, and Do not need to be recorded in hazardous material book

Land transport ADR/RID (Europe, cross-border)		
	ADR/RID Class	2 5A Gasses
	UN Number	2037
	Packaging group	-
	Hazard label	2.2
	Description of goods	UN 2037 Receptacles small, containing gas (Gas cartridges)
	Remarks	LQ 2

Maritime transport IMDG		
	IMDG Class	2.2
	UN Number	2037
	Label	2.2
	Packaging group	-
	EMS Number	F-C, S-V
	Marine pollutant	No
	Proper shipping name	Receptacles, small, containing gas (Gas cartridges)
	Special Provision 191 (IMDG Code 34-08)	Receptacles with a capacity not exceeding 50 ml containing only non-toxic constituents are not subject to the provisions of this Code.

Air transport IACO-TI and IATA-DGR		
	ICAO/IATA Class	2.2
	UN/ID Number	2037
	Label	2.2
	Packing group	-
	Proper shipping name	Receptacles, small, containing gas (Gas cartridges)
	Special Provision A98	Aerosols, gas cartridges and receptacles, small, containing gas with a capacity not exceeding 50 mL, containing no constituents subject to these Regulations other than a Division 2.2 gas , are not subject to these Regulations unless their release could cause extreme annoyance or discomfort to crew members so as to prevent the correct performance of duties. The words "Not Restricted " and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued.

*UN "Model Regulation": UN 2037, Receptacles, small, containing gas (gas cartridges)

Section 15. Regulatory information

- Labeling according to EU guidelines:

Observe the general safety regulations when handling chemicals.

The substance is not subject to classification according to EU lists and other sources of literature known to us.

- Safety phrases:

3/7 Keep container tightly closed in a cool place.

Section 16. Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

- Sources

DRY ICE TECHNOLOGY CO., LTD.

No. 45, Chaipu Rd., Shueishang Tsuen,

Shueishang Shiang, Chiayi County 608,

Taiwan (R.O.C.)

+886 5 2600963


October 12, 2010
2011.03.03