邦查工業股份有限公司
BANZA STAMPING INDUSTRY, CORP.

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Material Safety Data Sheet

UN# 1013 Carbon Dioxide

Section 1. Chemical product and company identification

Product Details	
Trade Name	Carbon Dioxide
Application of the Substance / the preparation	Mini CO2 cartridges used as propellant for airsoft, paintball, and fire extinguisher, also as tire inflation and aquarium water additive.
Manufacturer / Supplier	BANZA STAMPING INDUSTRY CORP. #2 Dingping Road, Su'ao Township Yilan County 270 Taiwan, Republic of China
Further information	msds@banza.com.tw
Information in case of Emergency	+886 3 990 7650 (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	**ACGIH TLV (United States, 9/2004).** STEL: 54000 mg/m^3 15 minute(s). Form: All forms STEL: 30000 ppm 15 minute(s). Form: All forms TWA: 9000 mg/m^3 8 hour(s). Form: All forms TWA: 5000 ppm 8 hour(s). Form: All forms **NIOSH REL (United States, 6/2001).** STEL: 54000 mg/m^3 15 minute(s). Form: All forms STEL: 30000 ppm 15 minute(s). Form: All forms TWA: 9000 mg/m^3 10 hour(s). Form: All forms TWA: 5000 ppm 10 hour(s). Form: All forms **OSHA PEL (United States, 6/1993).** TWA: 9000 mg/m^3 8 hour(s). Form: All forms TWA: 5000 ppm 8 hour(s). Form: All forms

Section 3. Hazards identification

· Hazard description: Not applicable.

· Information concerning particular hazards for human and environment:

Physical State	Gas
Emergency Overview	**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.** **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.** **Contact with rapidly expanding gas, liquid, or solid can cause frostbite.**
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 over-exposure	Acute or chronic respiratory conditions may be aggravated by overexposure to this gas.
See toxicological Information (section 11)	

GHS label elements		**Warning**
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: Tray 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. Cartridge might explode if exposed to fire. If involved in fire, remove from scene of fire. 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.
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 cryogenic 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	-78.55ºC (-109.4ºF)
Flash point	Not Applicable
Melting/freezing point	Sublimation temperature : -78.5ºC (-109.3ºF)
Critical temperature	30.9ºC (87.6ºF)
Vapor pressure at 20ºC	830 psig (57300 hPa)
Vapor density at 20ºC	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.

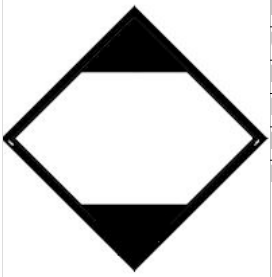
Section 12. Ecological information

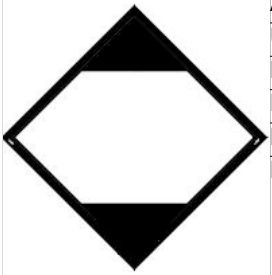
General notes	Generally not hazardous for water

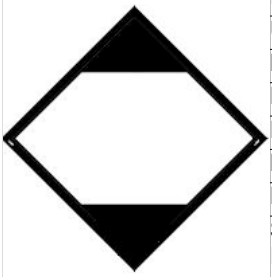
Section 13. Disposal consideration

Product	
Recommendation	Small quantities can be disposed of with household waste.
Uncleaned packaging	
Recommendation	Disposal most 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	1013
	Packaging group	-
	Hazard label	ORM-D / Limited Quantity
	Description of goods	UN 1013 Carbon Dioxide
	Remarks	Under 118ml (< 4 fl.oz.) See CFR 49 172 101 173 306 for exceptions of labeling

Land transport ADR/RID (Europe, cross-border)		
	ADR/RID Class	2 5A Gasses
	UN Number	1013
	Packaging group	-
	Hazard label	LTD QTY
	Description of goods	UN 1013 Carbon Dioxide
	Remarks	LQ 2

Maritime transport IMDG (IMDG Code Amdt 36-12)		
	IMDG Class	2.2
	UN Number	1013
	Label	LTD QTY
	Packaging group	-
	EMS Number	F-C, S-V
	Marine pollutant	No
	Proper shipping name	UN 1013 Carbon Dioxide
	Special Shipping Information	Limited Quantity. Non-refillable. No relief device. Capacity under 0.12 Liter

Air transport IACO-TI and IATA-DGR (DGR EN 2013 54th Edition)		
	ICAO/IATA Class	2.2
	UN/ID Number	1013
	Label	NONFLAMMABLE GAS
	Packing group	-
	Proper shipping name	UN 1013 Carbon Dioxide
	Remarks	Passenger Aircraft Max 75kg / Pkg Cargo Aircraft Max 150 kg / Pkg

Section 15. Regulatory information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, state, and local regulations.

U.S. FEDERAL REGULATIONS:

EPA (ENVIRONMENTAL PROTECTION AGENCY)

CERCLA: COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980 (40 CFR Parts 117 and 302):

Reportable Quantity (RQ): None

SARA: SUPERFUND AMENDMENT AND REAUTHORIZATION ACT:

SECTIONS 302/304: Require emergency planning based on Threshold Planning Quantity (TPQ) and release reporting based on Reportable Quantities (RQ) of extremely hazardous substances (40 CFR Part 355):

Threshold Planning Quantity (TPQ): None

Extremely Hazardous Substances (40 CFR 355): None

SECTIONS 311/312: Require submission of MSDSs and reporting of chemical inventories with identification of EPA hazard categories. The hazard categories for this product are as follows:

IMMEDIATE: Yes **PRESSURE:** Yes

DELAYED: No **REACTIVITY:** No

FIRE: No

SECTION 313: Requires submission of annual reports of release of toxic chemicals that appear in 40 CFR Part 372.

Carbon dioxide does not require reporting under Section 313.

40 CFR 68: RISK MANAGEMENT PROGRAM FOR CHEMICAL ACCIDENTAL RELEASE PREVENTION: Requires development and implementation of risk management programs at facilities that manufacture, use, store, or otherwise handle regulated substances in quantities that exceed specified thresholds.

Carbon dioxide is not listed as a regulated substance.

TSCA: TOXIC SUBSTANCES CONTROL ACT: Carbon dioxide is listed on the TSCA inventory.

OSHA: OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:

29 CFR 1910.119: PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS: Requires facilities to develop a process safety management program based on Threshold Quantities (TQ) of highly hazardous chemicals.

Carbon dioxide is not listed in Appendix A as a highly hazardous chemical.

STATE REGULATIONS:

CALIFORNIA: Carbon dioxide is not listed by California under the SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (Proposition 65).

PENNSYLVANIA: Carbon dioxide is subject to the PENNSYLVANIA WORKER AND COMMUNITY RIGHT-TO-KNOW ACT (35 P.S. Sections 7301-7320).

Section 16. Other information

HAZARD RATING SYSTEMS:

• NFPA RATINGS:		**HMIS RATINGS:**
HEALTH	= 1	HEALTH = 0
FLAMMABILITY	= 0	FLAMMABILITY = 0
REACTIVITY	= 0	REACTIVITY = 0
SPECIAL	= SA	(CGA recommends this to designate Simple Asphyxiant)

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**

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