EMORY DRY ICE SAFETY DATA SHEET

PRODUCT: Carbon Dioxide, Solid or Dry Ice

SECTION 1: IDENTIFICATION

CHEMICAL NAME: Carbon Dioxide, solid	**OTHER MEANS OF IDENTIFICATION:** Dry Ice, Carbon Dioxide

SUPPLIER DETAILS: Emory Dry Ice, Inc. and its affiliates
1423 East Richey Road, Houston, TX 77073 USA
1-832-688-4550

24-HOUR EMERGENCY TELEPHONE NUMBER: 1-832-688-4550

SECTION 2: HAZARDS IDENTIFICATION

OSHA/HCS STATUS: Not classified

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE: Not classified by Globally Harmonized System of Classification and Labeling (GHS)

GHS LABEL ELEMENTS	
SIGNAL WORD:	Warning
HAZARD STATEMENTS:	May displace oxygen and cause rapid suffocation. May increase respiration and heart rate. May cause frostbite.

PRECAUTIONARY STATEMENTS	
GENERAL:	Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.
PREVENTION:	Not applicable
RESPONSE:	Not applicable
STORAGE:	Not applicable
DISPOSAL:	Not applicable
HAZARDS NOT OTHERWISE CLASSIFIED:	Contact with cryogenic liquid can cause frostbite and cryogenic burns.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE/MIXTURE:	Substance
CHEMICAL NAME:	Carbon dioxide, solid
OTHER MEANS OF IDENTIFICATION:	Dry ice; carbonic anhydride

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

PRODUCT CODE:	001091

CAS NUMBER/OTHER IDENTIFIERS

CAS NUMBER: 124-38-9

INGREDIENT NAME	%	CAS NUMBER
Carbon Dioxide	100	124-38-9

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and therefore require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: FIRST AID MEASURES

INHALATION: Immediately remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Seek medical attention if symptoms occur.

SKIN CONTACT: For exposure to solid carbon dioxide (dry ice), immediately warm frostbite area with warm water not to exceed 105° F (41 ° C). Remove contaminated clothing and shoes. Seek medical attention if symptoms occur.

EYE CONTACT: Immediately flush eyes thoroughly with warm water. Lift the upper and lower eyelids away from the eyeballs to ensure all surfaces are flushed thoroughly. Check for and remove any contact lenses. Seek medical attention if irritation occurs.

INGESTION: Wash out mouth with water. Remove to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed by a medical professional. Seek medical attention if symptoms occur.

MOST IMPORTANT SYMPTOMS/EFFECTS, ACCUTE AND DELAYED	
EYE CONTACT:	May cause eye irritation.
INHALATION:	May be harmful if inhaled. May cause respiratory irritation.
SKIN CONTACT:	Harmful if absorbed through the skin. May cause skin irritation.
FROSTBITE:	Try to warm up the frozen tissues and seek medical attention.
INGESTION:	May be harmful if swallowed and enters airways.

OVER-EXPOSURE SIGNS/SYMPTOMS	
EYE CONTACT:	No specific data.
INHALATION:	No specific data.
SKIN CONTACT:	No specific data.
INGESTION:	No specific data.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED, IF NECESSARY	
NOTE TO PHYSICIAN:	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been inhaled or ingested.
SPECIFIC TREATMENTS:	No specific treatment.
PROTECTION OF FIRST-AIDERS:	No action shall be taken involving any personal risk or without suitable training.

SECTION 5: FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

SUITABLE EXTINGUISHING MEDIA:	Use an extinguishing agent suitable for the surrounding fire.
UNSUITABLE EXTINGUISHING MEDIA:	None known.
SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:	No specific fire or explosion hazard.
HAZARDOUS THERMAL DECOMPOSITION PRODUCTS:	Decomposition products may include the following materials: Carbon dioxide Carbon monoxide
SPECIAL PROTECTIVE ACTIONS FOR FIREFIGHTERS:	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS:	Firefighters 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

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

FOR NON-EMERGENCY PERSONNEL: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Put on appropriate personal protective equipment.

FOR EMERGENCY RESPONDERS: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

ENVIRONMENTAL PRECAUTIONS: Avoid dispersal of spilled materials and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

METHODS AND MATERIALS FOR CONTAINMENT AND CLEAN UP

SMALL SPILL: Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

LARGE SPILL: Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor. NOTE: See Section 1 for emergency contact information and Section 13 for waste disposal.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN FOR SAFE HANDLING: Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Wash hands and face prior to eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See Section 8 for additional information on hygiene measures.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials.

SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTION

CONTROL PARAMETERS

OCCUPATIONAL EXPOSURE LIMITS

INGREDIENT NAME:	EXPOSURE LIMITS:
Carbon Dioxide	**ACGIH TLV (United States, 3/2017)** STEL: 54000 mg/m· 15 minutes STEL: 30000 ppm 15 minutes TWA: 9000 mg/m· 8 hours TWA: 5000 ppm 8 hours **NIOSH REL (United States, 10/2016)** STEL: 54000 mg/m· 15 minutes STEL: 30000 ppm 15 minutes TWA: 9000 mg/m· 10 hours TWA: 5000 ppm 10 hours **OSHA PEL (United States, 6/2016)** TWA: 9000 mg/m· 8 hours TWA: 5000 ppm 8 hours **OSHA PEL 1989 (United States, 3/1989)** STEL: 54000 mg/m· 15 minutes STEL: 30000 ppm 15 minutes TWA: 18000 mg/m· 8 hours TWA: 10000 ppm 8 hours

APPROPRIATE ENGINEERING CONTROLS: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

ENVIRONMENTAL EXPOSURE CONTROLS: Emissions from ventilation or work process equipment should be checked to ensure compliance with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

PERSONAL PROTECTIVE MEASURES

HYGIENE MEASURES: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure eyewash stations and safety showers are close to the workstation location.

FACE AND EYE PROTECTION: 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, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side shields.

HAND PROTECTION: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

BODY PROTECTION: 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.

OTHER SKIN PROTECTION: Appropriate footwear and any additional skin protection measures 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 PROTECTION: None required under normal use**.** An air-supplied respirator must be used in confined spaces. Respiratory protection must conform to OSHA rules as specified in 29 CFR 1910.134. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	
PHYSICAL STATE:	Solid. (White snow-like solid)
COLOR:	White
ODOR:	Not applicable
ODOR THRESHOLD:	Not applicable
pH:	Not applicable
MELTING POINT:	Sublimation temperature: -78.5°C (-109.3 to °F)
BOILING POINT:	Not applicable
CRITICAL TEMPERATURE:	31°C (87.8°F)
FLASH POINT:	Not applicable
EVAPORATION RATE:	Not applicable
FLAMMABILITY (SOLID, GAS):	Not applicable
LOWER AND UPPER EXPLOSIVE (FLAMMABLE) LIMITS:	Not applicable
VAPOR PRESSURE:	Not applicable
VAPOR DENSITY:	Not applicable
SPECIFIC VOLUME (FT 3 /LB):	0.6579
GAS DENSITY (LB/FT 3):	1.52
RELATIVE DENSITY:	Density Solid (Dry Ice) 97.5189 lb./ft.3 at -109.3° F
SOLUBILITY:	Not applicable
SOLUBILITY IN WATER:	Not applicable
PARTITION COEFFICIENT: n-octanol/water:	Not applicable
AUTO-IGNITION TEMPERATURE:	Not applicable
DECOMPOSITION TEMPERATURE:	Not applicable
VISCOSITY:	Not applicable
FLOW TIME (ISO 2431):	Not applicable
MOLECULAR WEIGHT:	44.01 g/mole
MOLECULAR FORMULA:	CO_2

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY:	☐ Reactive	☒ Non-Reactive
CHEMICAL STABILITY:	☐ Unstable	☒ Stable
POSSIBILITY OF HAZARDOUS REACTIONS:	☐ May Occur	☒ Will Not Occur

CONDITIONS TO AVOID: No specific data.

INCOMPATIBLE MATERIALS: No specific data.

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

HAZARDOUS POLYMERIZATION: Under normal conditions of storage and use, hazardous polymerization will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS	
ACUTE TOXICITY:	Not available
IRRITATION/CORROSION:	Not available
SENSITIZATION:	Not available
MUTAGENICITY:	Not available
CARCINOGENICITY:	Not available
REPRODUCTIVE TOXICITY:	Not available
TERATOGENICITY:	Not available
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE):	Not available
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE):	Not available
ASPIRATION HAZARD:	Not available
INFORMATION ON THE LIKLEY ROUTES OF EXPOSURE:	Not available

POTENTIAL ACUTE HEALTH EFFECTS

EYE CONTACT: May cause eye irritation.
INHALATION: May be harmful if inhaled. May cause respiratory irritation.
SKIN CONTACT: Harmful if absorbed through the skin. May cause skin irritation.
INGESTION: May be harmful if swallowed and enters airways.

SYMPTOMS RELATED TO THE PHYSICAL, CHEMICAL AND TOXICOLOGICAL CHARACTERISTICS

EYE CONTACT: No specific data.
INHALATION: No specific data.
SKIN CONTACT: No specific data.
INGESTION: No specific data.

DELAYED AND IMMEDIATE EFFECTS AND CHROIC EFFECTS FROM SHORT AND LONG TERM EXPOSURE

SHORT TERM EXPOSURE

POTENTIAL IMMEDIATE EFFECTS: Not available
POTENTIAL DELAYED EFFECTS: Not available

LONG TERM EXPOSURE

POTENTIAL IMMEDIATE EFFECTS: Not available
POTENTIAL DELAYED EFFECTS: Not available

POTENTIAL CHRONIC HEALTH EFFECTS

GENERAL: No known significant effects or critical hazards.
CARCINOGENICITY: No known significant effects or critical hazards
MUTAGENICITY: No known significant effects or critical hazards.
TERATOGENICITY: No known significant effects or critical hazards
DEVELOPMENTAL EFFECTS: No known significant effects or critical hazards.
FERTILITY EFFECTS: No known significant effects or critical hazards.

NUMERICAL MEASURES OF TOXICITY

ACUTE TOXICITY ESTIMATES: Not available

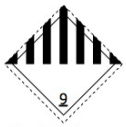
SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY:	Not available
PERSISTENCE AND DEGRADABILITY:	Not available
BIOACCUMULATIVE POTENTIAL:	Not available
MOBILITY IN SOIL **SOIL/WATER PARTITION COEFFICIENT (Koc):**	Not available
OTHER ADVERSE EFFECTS:	No adverse ecological effects expected

SECTION 13: DISPOSAL CONSIDERATIONS

DISPOSAL METHODS: Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. The generation of waste should be avoided or minimized when possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: TRANSPORT INFORMATION

UN NUMBER: UN1013	**PROPER SHIPPING NAME:** Carbon Dioxide, Solid or Dry Ice
TRANSPORT HAZARD CLASS(ES): 9 	**ENVIRONMENTAL HAZARDS:** No

ADDITIONAL INFORMATION

DOT CLASSIFICATION: Limited quantity No.
Quantity limitation Passenger Aircraft/Rail: 200 kg. Cargo Aircraft: 200 kg.

TDG CLASSIFICATION: Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9).
Explosive Limit and Limited Quantity Index 5
Passenger Carrying Ship Index 200
Special provisions 18

IATA: Quantity limitation Passenger and Cargo Aircraft: 200 kg. Cargo Aircraft Only: 200 kg.

SPECIAL PRECAUTIONS FOR USER: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS: TSCA 8(a) CDR Exempt/Partial exemption: This material is listed or exempted.

CLEAN AIR ACT SECTION 112: (b) HAZARDOUS AIR POLLUTANTS (HAPs)	Not listed
CLEAN AIR ACT SECTION 602: CLASS I SUBSTANCES	Not listed

SECTION 15: REGULATORY INFORMATION

CLEAN AIR ACT SECTION 602: CLASS II SUBSTANCES	Not listed
DEA LIST I CHEMICALS: (PRECURSOR CHEMICALS)	Not listed
DEA LIST II CHEMICALS: (ESSENTIAL CHEMICALS)	Not listed
SARA 302/304 COMPOSITION/INFORMATION ON INGREDIENTS:	No products were found.
SARA 304 RQ:	Not applicable
SARA 311/312 CLASSIFICATION:	Refer to Section 2: Hazards Identification of this SDS for classification of this substance.

STATE REGULATIONS

MASSACHUSETTS: This material is listed.
NEW YORK: This material is not listed.
NEW JERSEY: This material is listed.
PENNSYLVANIA: This material is listed.

SECTION 16: OTHER INFORMATION

HAZARDOUS MATERIAL INFORMATION SYSTEM (HMIS) RATINGS:

HEALTH = 3
FLAMMABILITY = 0
PHYSICAL HAZARD = 0

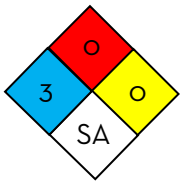
HEALTH	3
FLAMMABILITY	0
PHYSICAL HAZARDS	0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) RATINGS:

HEALTH = 3
FLAMMABILITY = 0
INSTABILITY = 0
SPECIAL = SA (CGA recommends this to designate Simple Asphyxiant).



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