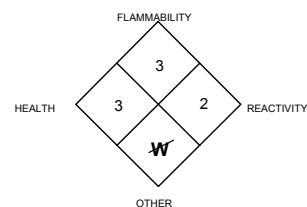


MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

NFPA RATING



PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

PRODUCT NAME: **CALCIUM CARBIDE (Ca C₂)**
 Document Number: 001086

CHEMICAL NAME/CLASS: Inorganic Calcium Compound
SYNONYMS: Acetylenogen; Calcium Acetylide; Calcium Dicarbide
PRODUCT USE: Generation of Acetylene

SUPPLIER'S NAME: AIRGAS INC.
ADDRESS: 259 N. Radnor-Chester Road
 Suite 100
 Radnor, PA 19087-5283

EMERGENCY PHONE: CHEMTREC: 1-800-424-9300
 International: 703-527-3887 (Call Collect)

BUSINESS PHONE: 1-610-687-5253
DATE OF PREPARATION: June 30, 1999

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL			OTHER
			TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	IDLH mg/m ³	
Calcium Carbide Exposure limits given are for "Particulates, Not Otherwise Classified (PNOC)"	75-20-7	100	10 (Inhalable) 3 (Respirable)	NE	15 (Total dust) 5 (Respirable fraction)	NE	NE	DFG MAKs: TWA = 4; or 1.5 (Measured as the Respirable Fraction of the Aerosol)

NE = Not Established See Section 16 for Definitions of Terms Used.

NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-1998 format.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Calcium Carbide is grayish-black, water-reactive, lumpy or crystalline (sugar or sand-like) solid, with a garlic-like odor. The main health hazard is the potential for irritation or burns of eyes, skin and respiratory system, depending on duration and concentration of contact. Calcium Carbide is non-flammable in a dry state. Calcium Carbide will react with water, or moisture generating flammable acetylene, which may ignite spontaneously. Hazardous products of thermal decomposition include carbon monoxide and carbon dioxide. Emergency responders must wear the proper personal protective equipment suitable for the situation to which they are responding.

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE:

Calcium Carbide is toxic by ingestion and is a poison by intravenous, intramuscular, intraperitoneal and subcutaneous routes. The effect of exposure, by route of exposure, are described below.

INHALATION: If the dusts or particulates of this product are inhaled, symptoms of exposure may include breathing difficulty, irritation of the mucus membranes, coughing, nasal congestion, and sore throat. Burns may occur as Calcium Carbide will react with moisture in the respiratory system, forming caustic lime. Severe inhalation over-exposures can lead to chemical pneumonitis, pulmonary edema, and death.

CONTACT WITH SKIN or EYES: Contact with the eyes will cause mechanical irritation or severe irritation, pain, reddening, watering, or burns from heat of hydrolysis, and tissue damage. Chronic, low level exposure to the eyes can result in lesions with pronounced pooling of blood in the eyelids, conjunctiva accompanied by infected secretions. In serious chronic eye exposure, sensitivity of the conjunctiva and cornea is strongly reduced. Inflammation of the cornea and conjunctiva may develop with later degeneration into corneal opacities. Depending on the duration of skin contact, skin overexposures may cause reddening, discomfort, severe irritation, or burns, especially if skin is moist. Ulceration and scarring can occur from burns. Repeated skin-overexposures to low concentrations can result in dermatitis (inflammation and reddening of the skin). Skin contact can also cause an increased amount of melanin in skin, which results in hyperpigmentation.

SKIN ABSORPTION: Calcium Carbide is not known to absorb through intact skin.

INGESTION: Ingestion is not anticipated to be a route of occupational exposure for this product. If Calcium Carbide is ingested, irritation of the gastrointestinal tract can occur, or burns, due to the heat of hydrolysis. Ingestion can cause gastrointestinal upset, nausea, vomiting and abdominal pain. Ingestion can also result in slow heartbeat, severe systemic acidosis, possible seizures, or may be fatal.

INJECTION: Though not a likely route of occupational exposure for this product, injection of this product (via punctures or lacerations in the skin) may cause local reddening, tissue swelling, and discomfort.



OTHER HEALTH EFFECTS: Persons frequently exposed to low levels of Calcium Carbide can suffer from dryness, swelling and pooling of blood in the lips. Other symptoms include shedding of skin, nail lesions, deep radial skin fissures, and erosive lesions with tendency to infect, to areas around the mouth.

TARGET ORGANS: Acute: Eyes, skin, respiratory system. Chronic: Skin, eyes, respiratory system.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. Symptoms associated with overexposure to this product are as follows:

ACUTE: Acute skin, eye, ingestion or inhalation exposure of low levels of Calcium Carbide can cause irritation. Exposure to higher levels, by all routes and in the presence of moisture may result in severe irritation and/or burns and will result in tissue damage. Scarring may occur. Ingestion overexposure will cause irritation and/or burns, or may be fatal. High level inhalation exposure may result in burns to respiratory system and potentially fatal pulmonary edema.

CHRONIC: Chronic skin exposure to Calcium Carbide can cause dermatitis, skin lesions, fissures in skin, and increased skin pigmentation. Chronic eye exposure can result in conjunctivitis, eye lesions, and corneal opacity. Chronic inhalation exposure may result in respiratory disorders.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH		(BLUE)	3
FLAMMABILITY		(RED)	3
REACTIVITY		(YELLOW)	2
PROTECTIVE EQUIPMENT			D
EYES	RESPIRATORY	HANDS	BODY
	See Section 8		See Section 8
For routine industrial applications			

See Section 16 for Definition of Ratings

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

SKIN EXPOSURE: If Calcium Carbide contaminates the skin, immediately begin decontamination with large quantities of running water. Minimum flushing is for 15 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention.

EYE EXPOSURE: If Calcium Carbide enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek immediate medical attention.

INHALATION: If dusts or particulates of Calcium Carbide are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

INGESTION: If Calcium Carbide is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING. Have victim rinse mouth with water, if conscious. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. Victims of chemical exposure must be taken for medical attention, if continuing adverse health effects occur. Rescuers should be taken for medical attention if necessary. Take copy of label and MSDS to health professional with victim.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Respiratory conditions, skin conditions, or conditions involving the Target Organs of this compound (see Section 3, Hazard Identification).

RECOMMENDATIONS TO PHYSICIANS: Emetics should be avoided. For eye contamination, apply a topical anesthetic, butacaine sulfate (2%) or tetracaine hydrochloride (0.5%) to relieve eyelid spasm during irrigation.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not flammable in dry state; forms flammable and explosive acetylene gas on exposure to moisture.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS:

Water Spray: NO

Carbon Dioxide: NO

Halon: NO

Foam: NO

Dry Chemical: Yes (small fires) Other: "D" Class, soda ash, lime, sand

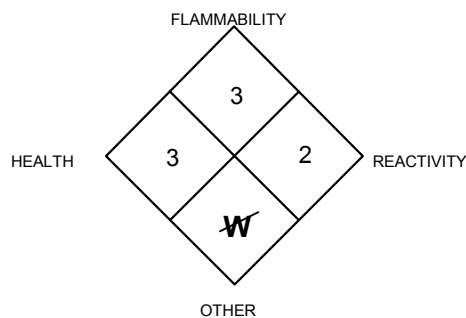
UNUSUAL FIRE AND EXPLOSION HAZARDS: In a dry form, Calcium Carbide is not flammable; however, contact with moisture or water will result in the evolution of extremely flammable acetylene gas. During a fire, irritating and toxic gases (e.g., carbon monoxide, carbon dioxide) may be generated.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Water and foam should not be used on fires involving Calcium Carbide. Cool fire-exposed containers of this compound with fine water spray to avoid rupture, only if Calcium Carbide will not be exposed to water. Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING



**See Section 16 for
Definition of Ratings**

6. ACCIDENTAL RELEASE MEASURES

RELEASE RESPONSE: CAUTION! Water-reactive material - water must not be used in spill response procedures. If moisture contacts Calcium Carbide, explosive acetylene gas will be released. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people.

For small releases, clean-up spilled solid wearing gloves, goggles, and suitable body protection. Sweep-up or vacuum spilled solid, with explosion-proof vacuum. The minimum Personal Protective Equipment recommended for response to non-incident releases should be **Level B: triple-gloves (neoprene gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard-hat, and Self-Contained Breathing Apparatus**. Fire protection should be available for responders in event of accidental contact with moisture and generation of acetylene gas.

6. ACCIDENTAL RELEASE MEASURES (Continued)

Monitor the area for dusts of Calcium Carbide, acetylene and the level of oxygen. Monitoring must indicate that exposure levels are below those provided in Section 2 (Composition and Information on Ingredients) and that oxygen levels are above 19.5% before anyone is permitted in the area without Self-Contained Breathing Apparatus. Sweep-up or vacuum spilled solid, avoiding generation of dusts. Decontaminate the area thoroughly. Place all spill residue in a suitable container. Dispose of in accordance with applicable U.S. Federal, State, or local procedures, or appropriate Canadian standards (see Section 13, Disposal Considerations).

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing dusts or particulates generated by this product. Use in a well-ventilated location. Calcium Carbide should not be used in a confined space due to the potential for generation of explosive acetylene gas. Wipe-down area routinely to avoid the accumulation of dusts of this product. Avoid all contact with moisture. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Calcium Carbide must always be kept dry and away from all forms of moisture. Keep away from heat, sparks, and other sources of ignition. Use non-sparking tools. Bond and ground containers during transfers of material. Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, or sources of intense heat and moisture. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Containers should be separated from oxidizing materials by a minimum distance of 20 ft. or by a barrier of non-combustible material at least 5 ft. high having a fire-resistance rating of at least 0.5 hours. Storage areas should be made of fire resistant materials. Storage and use areas should have explosion-proof electrical equipment and fittings. Storage areas should be made of fire-resistant materials. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Monitoring for acetylene gas should be considered for storage and use areas.

Equipment which may be a source of airborne Calcium Carbide dust should be fully enclosed and fitted with exhaust ventilation. Air ducts should be inclined to prevent accumulation of dust and dust-laden air should be cleaned in cyclones, and bag filters before release into the atmosphere. Before entry into an area in which Calcium Carbide is used or stored, especially if a confined space or area of poor ventilation, monitor for level of acetylene gas, which is a decomposition product of Calcium Carbide.

Empty containers may contain residual material and, empty containers should be handled with care. Never store food, feed, or drinking water in containers which held this product.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely, if necessary. Collect all rinsates and dispose of according to applicable U.S. Federal, State, or local procedures and appropriate Canadian standards.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in Section 2 (Composition and Information on Ingredients), if applicable. Ensure eyewash/safety shower stations are available near areas where this product is used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below exposure limits listed in Section 2 (Composition and Information on Ingredients), if applicable. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93. Use supplied air respiration protection for exposures to more than 50 mg/m³ Mineral Oil. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Splash goggles or safety glasses. A full face shield should be used when handling more than 1 pound of material.

HAND PROTECTION: Use rubber, neoprene, or polyvinyl chloride gloves. Use triple gloves for spill response, as stated in Section 6 (Accidental Release Measures) of this MSDS.

BODY PROTECTION: Use body protection appropriate for task. An apron, or other impermeable body protection is suggested. Full-body chemical protective clothing is recommended for emergency response procedures.

9. PHYSICAL and CHEMICAL PROPERTIES

RELATIVE VAPOR DENSITY (air = 1): 2.2

SPECIFIC GRAVITY (water = 1): 2.22

SOLUBILITY IN WATER: Reacts with water.

VAPOR PRESSURE: Not applicable.

ODOR THRESHOLD: Not applicable.

COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not determined.

APPEARANCE, ODOR AND COLOR: Calcium Carbide is grayish-black, lumpy solid, with a garlic-like odor.

HOW TO DETECT THIS SUBSTANCE (warning properties): The appearance and odor may act as a distinguishing characteristic of this product, if accidentally released.

EVAPORATION RATE (nBuAc = 1): Not applicable.

FREEZING/MELTING POINT: ~2300°C (~4200°F)

BOILING POINT: Not available.

pH: 8-9 (aqueous solution)

MOLECULAR WEIGHT: 64.10

10. STABILITY and REACTIVITY

STABILITY: Stable in dry form, and under normal temperatures. Calcium Carbide reacts with water and upon exposure to moist air.

DECOMPOSITION PRODUCTS: Thermal decomposition: carbon monoxide, carbon dioxide. Calcium Carbide decomposes on contact with water, to form calcium hydroxide and acetylene gas, posing a serious risk of fire and explosion.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Calcium Carbide reacts with water, generating acetylene gas. Calcium Carbide is flammable on contact with, acid or acid fumes. Mixtures of Calcium Carbide and iron (III) chloride, Iron (III) oxide, and tin (II) chloride are easily ignited and burn fiercely. Calcium Carbide will react vigorously with methanol after an induction period. Addition of Calcium Carbide to silver nitrate solutions and copper salt solutions precipitates dangerously explosive acetylides. Calcium Carbide will react with copper and brass to form explosive compounds. Calcium Carbide is incompatible with oxidizers, strong acids, combustible solids, lead fluoride, stannous chloride, sulfur, sodium peroxide, hydrogen chloride gas, selenium, magnesium, silver nitrate, and sodium peroxide.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID: Avoid exposing this product to incompatible materials, excessive heat and moisture.

PART III *How can I prevent hazardous situations from occurring?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: Currently, there are no toxicological data available for Calcium Carbide.

SUSPECTED CANCER AGENT: Calcium Carbide is not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, and therefore is neither considered to be nor suspected to be a cancer-causing agent by these agencies.

IRRITANCY OF PRODUCT: This product is moderately to severely irritating to contaminated skin, eyes and respiratory system. Solutions of Calcium Carbide may be severely corrosive to contaminated tissue.

SENSITIZATION TO THE PRODUCT: Calcium Carbide is not known to be a sensitizer upon repeated or prolonged contact.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of Calcium Carbide on the human reproductive system.

Mutagenicity: Calcium Carbide is not reported to produce mutagenic effects in humans.

Embryotoxicity: Calcium Carbide is not reported to produce embryotoxic effects in humans.

Teratogenicity: Calcium Carbide is not reported to cause teratogenic effects in humans.

Reproductive Toxicity: Calcium Carbide is not reported to cause adverse reproductive effects in humans.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

BIOLOGICAL EXPOSURE INDICES: Currently, there are no Biological Exposure Indices (BEIs) associated with Calcium Carbide.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: Calcium Carbide will react with moisture to produce calcium hydroxide and acetylene. Calcium Carbide does not biodegrade and will not bioaccumulate.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Calcium Carbide may be harmful or fatal to contaminated plant and animal-life (especially if large quantities are released).

EFFECT OF CHEMICAL ON AQUATIC LIFE: Calcium Carbide can be harmful or fatal to contaminated aquatic plant and animal life.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

EPA WASTE NUMBER: D003 (Characteristic/Reactivity)

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS NOT HAZARDOUS (Per 49 CFR 172.101) BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME: Calcium carbide

HAZARD CLASS NUMBER and DESCRIPTION: 4.3 (Dangerous When Wet)

UN IDENTIFICATION NUMBER: UN 1402

PACKING GROUP: I

DOT LABEL(S) REQUIRED: Dangerous When Wet

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER, 1996: Not applicable.

MARINE POLLUTANT: Calcium Carbide is not designated by the Department of Transportation to be a Marine Pollutant (49 CFR 172.101, Appendix B).

TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS.

PROPER SHIPPING NAME: Calcium carbide

HAZARD CLASS NUMBER and DESCRIPTION: 4.3 (Dangerous When Wet)
9.2 (Substance Hazardous to the Environment)

UN IDENTIFICATION NUMBER: UN 1402

PACKING GROUP: I

DOT LABEL(S) REQUIRED: Dangerous When Wet

SPECIAL PROVISIONS: 109

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER, 1996: 138

15. REGULATORY INFORMATION

ADDITIONAL UNITED STATES REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: Calcium Carbide is subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act, as follows:

CHEMICAL NAME	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CFR 372.65)
Calcium Carbide	NO	YES	NO

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for Calcium Carbide. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. TSCA INVENTORY STATUS: Calcium Carbide is listed on the TSCA Inventory.

U.S. CERCLA REPORTABLE QUANTITY (RQ): 10 lb (4.54 kg)

15. REGULATORY INFORMATION (Continued)

OTHER U.S. FEDERAL REGULATIONS: Calcium Carbide is designated as a hazardous substance under Section 311 (b), (2), (A), of the Federal Water Pollution Control Act and is further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance.

U.S. STATE REGULATORY INFORMATION: Calcium Carbide is covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: No.

California - Permissible Exposure Limits for Chemical Contaminants: No.

Florida - Substance List: Calcium Carbide.

Illinois - Toxic Substance List: Calcium Carbide.

Kansas - Section 302/313: No.

Massachusetts - Substance List: Calcium Carbide.

Michigan - Critical; Materials Register: No.
Minnesota - List of Hazardous Substances: No.

Missouri - Employer Information/Toxic Substance List: No.

New Jersey - Right to Know Hazardous Substance List: Calcium Carbide.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: Calcium Carbide.

Pennsylvania - Hazardous Substance List: Calcium Carbide.

Rhode Island - Hazardous Substance List: Calcium Carbide.

Texas - Hazardous Substance List: No.

West Virginia - Hazardous Substance List: No.

Wisconsin - Toxic and Hazardous Substances: No.

CALIFORNIA PROPOSITION 65: Calcium Carbide is not on the California Proposition 65 Lists.

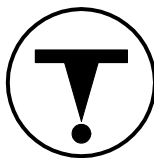
LABELING (Precautionary Statements): **DANGER! WATER REACTIVE. CONTACT WITH WATER OR MOISTURE WILL RESULT IN EVOLUTION OF EXTREMELY FLAMMABLE ACETYLENE GAS.** MAY BE IRRITATING OR CAUSE BURNS TO EYES, SKIN AND RESPIRATORY SYSTEM. MAY CAUSE INJURY TO THE EYES. HARMFUL IF INHALED. HARMFUL OR FATAL IF INGESTED. Do not taste or swallow. Do not get on skin or in eyes. Avoid breathing dusts or particulates. Keep container closed. Keep away from water, heat, spark or flame. Use only with adequate ventilation. Wash thoroughly after handling. Wear gloves, goggles, faceshields, suitable body protection, and NIOSH/MSHA-approved respiratory protection, as appropriate. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If inhaled, remove to fresh air. If ingested, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use "D" Class, soda ash, lime, sand extinguishing media. **IN CASE OF SPILL:** Place residue in suitable container. Consult Material Safety Data Sheet for additional information.

CANADIAN DSL INVENTORY STATUS: Calcium Carbide is listed on the DSL Inventory.

CANADIAN WHMIS SYMBOL:

Class F: Dangerously Reactive Material

Class D2B: Other Toxic Effects



16. OTHER INFORMATION

PREPARED BY:

CHEMICAL SAFETY ASSOCIATES, Inc.
9163 Chesapeake Drive, San Diego, CA 92123-1002
619/565-0302

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. AIRGAS, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, AIRGAS, Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which uniquely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN AIR:

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

TLV - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour **Time Weighted Average (TWA)**, the 15-minute **Short Term Exposure Limit**, and the instantaneous **Ceiling Level**. Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (**Federal Register**: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order.

IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

The DFG - MAK is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. **NIOSH** is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (**OSHA**). NIOSH issues exposure guidelines called **Recommended Exposure Levels (RELs)**. When no exposure guidelines are established, an entry of **NE** is made for reference.

HAZARD RATINGS:

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: Health Hazard: **0** (minimal acute or chronic exposure hazard); **1** (slight acute or chronic exposure hazard); **2** (moderate acute or significant chronic exposure hazard); **3** (severe acute exposure hazard; onetime overexposure can result in permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime overexposure can be fatal). Flammability Hazard: **0** (minimal hazard); **1** (materials that require substantial pre-heating before burning); **2** (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]); **3** (Class IB and IC flammable liquids with flash points below 38°C [100°F]); **4** (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]). Reactivity Hazard: **0** (normally stable); **1** (material that can become unstable at elevated temperatures or which can react slightly with water); **2** (materials that are unstable but do not detonate or which can react violently with water); **3** (materials that can detonate when initiated or which can react explosively with water); **4** (materials that can detonate at normal temperatures or pressures).

NATIONAL FIRE PROTECTION ASSOCIATION: Health Hazard: **0** (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); **1** (materials that on exposure under fire conditions could cause irritation or minor residual injury); **2** (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); **3** (materials that can on short exposure could cause serious temporary or residual injury); **4** (materials that under very short exposure could cause death or major residual injury). Flammability Hazard and Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the **National Fire Protection Association (NFPA)**. Flash Point - Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION:

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms used in this section are: **LD₅₀** - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; **LC₅₀** - Lethal Concentration (gases) which kills 50% of the exposed animals; **ppm** concentration expressed in parts of material per million parts of air or water; **mg/m³** concentration expressed in weight of substance per volume of air; **mg/kg** quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the cancer-causing potential of the material. The sources are: **IARC** - the International Agency for Research on Cancer; **NTP** - the National Toxicology Program, **RTECS** - the Registry of Toxic Effects of Chemical Substances, **OSHA** and **CAL/OSHA**. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include **TDLo**, the lowest dose to cause a symptom and **TCLo** the lowest concentration to cause a symptom; **TDo**, **LDLo**, and **LDo**, or **TC**, **TCo**, **LCLo**, and **LCo**, the lowest dose (or concentration) to cause death. **BEI** - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

REGULATORY INFORMATION:

This section explains the impact of various laws and regulations on the material. **EPA** is the U.S. Environmental Protection Agency. **WHMIS** is the Canadian Workplace Hazardous Materials Information System. **DOT** and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively. Other acronyms used are: **Superfund Amendments and Reauthorization Act (SARA)**; the **Canadian Designated Substances List (DSL)**; the **Toxic Substance Control Act (TSCA)**; Marine Pollutant status according to the **DOT**; California's Safe Drinking Water Act (**Proposition 65**); the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)**; and various state regulations. This section also includes information on the precautionary warnings which appear on the material's package label.