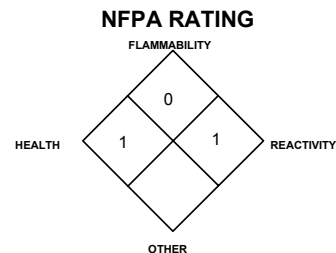


MATERIAL SAFETY DATA SHEET

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



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

1. PRODUCT IDENTIFICATION

PRODUCT NAME: **CALCIUM CHLORIDE, ANHYDROUS (CaCl₂)**
 Document Number: 001087

CHEMICAL NAME/CLASS: Calcium Salt

SYNONYMS: Calcium Chlorides Hydrates; Calcium Dichloride; Calplus; Caltac; Dowflake; Liquidow; Peladow; Snowmelt; Superflake, Anhydrous

PRODUCT USE: Drying Agent

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 Chloride, Anhydrous Exposure limits given are for "Particulates, Not Otherwise Classified (PNO)"	10043-52-4	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 Chloride is a white to off-white, odorless, granular, hygroscopic solid. The main health hazard is the potential for irritation or burns of eyes, skin and respiratory system, depending on duration and concentration of contact. Strong solutions of Calcium Chloride are corrosive. Calcium Chloride is non-flammable. Hazardous products of thermal decomposition include hydrogen chloride. Calcium Chloride will react with water, generating significant heat upon contact. Calcium Chloride is not reactive. 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 Chloride 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 dusts or particulates of this product are inhaled, symptoms of exposure may include breathing difficulty, irritation of the mucus membranes, coughing, nasal congestion, sore throat, burning sensation, pain in nasal cavities and nose bleeds. Damage to the tissues of the respiratory system may also occur, especially after prolonged exposures or exposures to high concentrations of this product. Cases of perforation of the nasal septum have been reported. 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, pain, reddening, watering, or burns from heat of hydrolysis, and tissue damage. Depending on the duration of skin contact, skin overexposures may cause reddening, discomfort, severe irritation, and or burns, especially if skin is moist. Repeated skin-overexposures to low concentrations can result in dermatitis (inflammation and reddening of the skin).

SKIN ABSORPTION: Calcium Chloride 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 Chloride 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 and possible seizures.



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. If a significant quantity has been accidentally injected, slowing of the heart rate, heart block, ventricular fibrillation and sinus arrhythmia, can occur.

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

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 Chloride 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 may result in tissue damage. Ingestion overexposure may cause adverse effects on the heart.

CHRONIC: Chronic skin exposure to Calcium Chloride can cause dermatitis.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH		(BLUE)	1
FLAMMABILITY		(RED)	0
REACTIVITY		(YELLOW)	1
PROTECTIVE EQUIPMENT			C/F
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 Chloride contaminates the skin, immediately begin decontamination with 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 Chloride 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 Chloride 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.

4. FIRST-AID MEASURES (Continued)

INHALATION: If dusts or particulates of Calcium Chloride 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 Chloride 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. If ingested, administer by mouth, a neutralizer and demulcent such as milk of magnesia. Bicarbonates or carbonates should not be used. If necessary, initiate intravenous line with isotonic saline, KVO. Administer morphine 2 to 10 mg, IM or IV, or meperidine hydrochloride (Demerol, 50-100 mg:" IM) for relief of pain. 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 applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %):

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

FIRE EXTINGUISHING MATERIALS:

Water Spray: YES (for cooling)

Halon: YES

Dry Chemical: YES

Carbon Dioxide: YES

Foam: YES

Other: Any "B" Class.

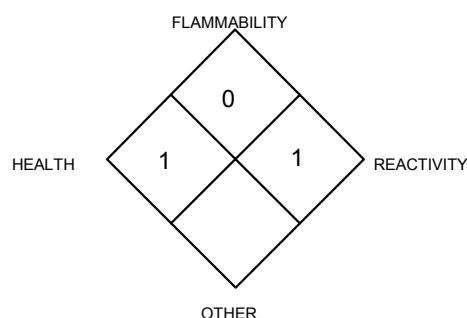
UNUSUAL FIRE AND EXPLOSION HAZARDS: Calcium Chloride is not flammable. During a fire, irritating and toxic gases (e.g., hydrogen chloride) may be generated. Calcium Chloride will react with water to generate significant heat.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Water should be used with care in response to a fire that involves this product as it will react with water to produce significant heat. Cool fire-exposed containers of this compound to avoid rupture. 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: 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. 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.**

Monitor the area for dusts of Calcium Chloride 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. 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. Wipe-down area routinely to avoid the accumulation of dusts of this product. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Keep container tightly closed when not in use. Store containers in a cool, dry location, away from direct sunlight, or sources of intense heat. 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). Storage areas should be made of corrosion resistant materials. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate.

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. 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 10 pounds 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): Not applicable.

SPECIFIC GRAVITY (water = 1): 2.152

SOLUBILITY IN WATER @ 15°C: 74.5 g/100 cc water

VAPOR PRESSURE, mm Hg @ 24°C: Not applicable.

ODOR THRESHOLD: Not applicable.

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

APPEARANCE, ODOR AND COLOR: Calcium Chloride is a white to off-white, odorless solid.

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

EVAPORATION RATE (nBuAc = 1): Not applicable.

FREEZING/MELTING POINT: 772°C (1421.6°F)

BOILING POINT: 1670°C (3038°F)

pH: 6.1-7.5 (aqueous solution)

MOLECULAR WEIGHT: 110.98

10. STABILITY and REACTIVITY

STABILITY: Stable under normal conditions and temperatures. Calcium Chloride will absorb moisture readily from air to form solution. Contact with water will cause an exothermic reaction.

DECOMPOSITION PRODUCTS: None other than Hydrogen chloride, by thermal decomposition.

10. STABILITY and REACTIVITY (Continued)

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Calcium chloride will react exothermically with water. Strong solutions of Calcium Chloride react with zinc (as in galvanized iron), releasing hydrogen gas. Calcium Chloride catalyzes with exothermic polymerization with methyl vinyl ether. Calcium Chloride is incompatible with bromine trifluoride, barium chloride, 2-furan percarboxylic acid. Calcium Chloride will attack aluminum, aluminum alloys and yellow brass. Solutions of Calcium Chloride will corrode most metals.

HAZARDOUS POLYMERIZATION: Can occur if mixed with methyl vinyl ether.

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: The following toxicological data are available for Calcium Chloride.

TDLo (Intravenous-Woman) 20 mg/kg/1 hour-continuous: Skin and Appendages: dermatitis, other (after systemic exposure); Nutritional and Gross Metabolic: changes in calcium	LD ₅₀ (Intravenous-Mouse) 42 mg/kg	LDLo (Subcutaneous-Cat) 249 mg/kg
LD ₅₀ (Oral-Rat) 1 gm/kg	TDLo (Oral-Rat) 2016 mg/kg/30 days-intermittent: Brain and Coverings: recordings from specific areas of CNS; Cardiac: pulse rate Blood: changes in leukocyte (WBC) count	LDLo (Subcutaneous-Rabbit) 472 mg/kg
LD ₅₀ (Oral-Mouse) 1940 mg/kg	TDLo (Oral-Rat) 112 gm/kg/20 weeks-continuous: Tumorigenic: equivocal tumorigenic agent by RTECS criteria Endocrine: thyroid tumors	LDLo (Subcutaneous-Frog) 666 mg/kg
LD ₅₀ (Intraperitoneal-Rat) 264 mg/kg	LDLo (Oral-Rabbit) 1384 mg/kg	LDLo (Intraarterial-Guinea Pig) 300 mg/kg
LD ₅₀ (Intraperitoneal-Mouse) 210 mg/kg: Behavioral: somnolence (general depressed activity), convulsions or effect on seizure threshold, changes in motor activity (specific assay)	LDLo (Intravenous-Dog) 274 mg/kg	TCLo (Inhalation-Species Unspecified) 43 mg/m ³ /4 hours/17 weeks-intermittent: Blood: change in clotting factors, changes in serum composition (e.g. TP, bilirubin, cholesterol); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: catalyses
LD ₅₀ (Subcutaneous-Rat) 2630 mg/kg	LDLo (Intravenous-Rat) 161 mg/kg	Sex chromosome loss and nondisjunction (Saccharomyces cerevisiae) 200 mmol/L
LD ₅₀ (Subcutaneous-Mouse) 823 mg/kg	LDLo (Intravenous-Cat) 249 mg/kg	Unscheduled DNA synthesis (Intraperitoneal-Rat) 2500 μmol/kg
LD ₅₀ (Intramuscular-Rat) 25 mg/kg	LDLo (Intravenous-Rabbit) 274 mg/kg	Cytogenetic analysis (Rat-Ascites tumor) 3500 mg/kg
	LDLo (Intravenous-Guinea Pig) 150 mg/kg	
	LDLo (Subcutaneous-Dog) 274 mg/kg	

SUSPECTED CANCER AGENT: Calcium Chloride 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 mildly to moderately irritating to contaminated skin, eyes and respiratory system in solid form. Solutions of Calcium Chloride may be severely corrosive to contaminated tissue.

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

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

Mutagenicity: Calcium Chloride is not reported to produce mutagenic effects in humans. There are mutation data in microorganisms and experimental test animals for Calcium Chloride.

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

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

Reproductive Toxicity: Calcium Chloride 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) established for Calcium Chloride.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ENVIRONMENTAL STABILITY: Calcium Chloride is relatively stable in the environment. Calcium Chloride does not biodegrade and will not bioaccumulate. Calcium Chloride will persist in a dissolved state indefinitely in an aquatic environment.

EFFECT OF MATERIAL ON PLANTS or ANIMALS: Calcium Chloride may be harmful or fatal to contaminated plant and animal-life (especially if large quantities are released). Refer to Section 11 (Toxicological Information) for additional information on effects on animals.

12. ECOLOGICAL INFORMATION (Continued)

EFFECT OF CHEMICAL ON AQUATIC LIFE: Calcium Chloride can be harmful or fatal to contaminated aquatic plant and animal life. The following aquatic toxicity data are available for Calcium Chloride:

TLm (bluegill) 24 hours = 8,400 mg/L

Lethal (rock bass) 168 hours = 555 ppm (tap water)

TLm (marine fish) 48 hours = 2,400 mg/L

LD₅₀ (sunfish) 96 hours = 10,650

LC₅₀ (*Nitzschia linearia*) 120 hours = 3,130 mg/L (static water)

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: Not applicable to wastes consisting only of Calcium Chloride. Waste solutions of Calcium Chloride may be corrosive and should be tested to determine if they meet definition of D002 (Characteristic/Corrosivity).

14. TRANSPORTATION INFORMATION

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

PROPER SHIPPING NAME: Not applicable.

HAZARD CLASS NUMBER and DESCRIPTION: Not applicable.

UN IDENTIFICATION NUMBER: Not applicable.

PACKING GROUP: Not applicable

DOT LABEL(S) REQUIRED: Not applicable.

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

MARINE POLLUTANT: Calcium Chloride 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 NOT CONSIDERED AS DANGEROUS GOODS.

15. REGULATORY INFORMATION

ADDITIONAL UNITED STATES REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: Calcium Chloride is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for Calcium Chloride. 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 Chloride is listed on the TSCA Inventory.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

U.S. STATE REGULATORY INFORMATION: Calcium Chloride is not 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: No.

Illinois - Toxic Substance List: No.

Kansas - Section 302/313: No.

Massachusetts - Substance List: No.

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: No.

North Dakota - List of Hazardous Chemicals, Reportable Quantities: No.

Pennsylvania - Hazardous Substance List: No.

Rhode Island - Hazardous Substance List: No.

Texas - Hazardous Substance List: No.

West Virginia - Hazardous Substance List: No.

Wisconsin - Toxic and Hazardous Substances: No.

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

LABELING (Precautionary Statements): **CAUTION!** MAY BE IRRITATING TO EYES, SKIN AND RESPIRATORY SYSTEM. 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. 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 water fog, dry chemical, CO₂, or "alcohol" foam. **IN CASE OF SPILL:** Sweep-up or vacuum spilled solid. Place residue in suitable container. Consult Material Safety Data Sheet for additional information.

15. REGULATORY INFORMATION (Continued)

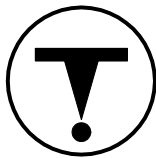
CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: Calcium Chloride is listed on the DSL Inventory.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: Calcium Chloride is not on the CEPA Priorities Substances Lists, as follows:

CANADIAN WHMIS SYMBOL: **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 compound.

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 over-exposure can result in permanent injury and may be fatal); **4** (extreme acute exposure hazard; onetime over-exposure 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. Superfund Amendments and Reauthorization Act (SARA); the Canadian Domestic Substances List (DSL); the U.S. 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 materials package label.