

MATERIAL SAFETY DATA SHEET**CALCIUM CHLORIDE, SOLID**

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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WHMIS Number: 00060096
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EMERGENCY TELEPHONE NUMBERS (FOR EMERGENCIES INVOLVING CHEMICAL SPILLS OR RELEASE)

Toronto, ON (416) 226-6117	Montreal, QC (514) 861-1211	Winnipeg, MB (204) 943-8827
Edmonton, AB (780) 424-1754	Calgary, AB (403) 263-8660	Vancouver, BC (604) 685-5036

PRODUCT IDENTIFICATION

Product Name: Calcium Chloride, Solid.
Chemical Name: Calcium Chloride.
Synonyms: Anco Brand Inhibited; Calcium Chloride Dihydrate; Flake Calcium Chloride; Powdered Calcium Chloride; Hi Test Calcium Chloride; Peladow Mini-Pellets;
Common Trade Names include: Calplus, Dowflake, Snomelt, Superflake Anhydrous.
Chemical Family: Inorganic salt.
Molecular Formula: CaCl_2 ; $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$.
Product Use: Chemical intermediate. Pharmaceutical. Deicer. Dust Control for roads.
Drying agent.
CAS #: 10043-52-4 (Anhydrous); 10035-04-8 (Dihydrate).
WHMIS Classification / Symbol: D-2B: Toxic (Skin and Eye Irritant).



READ THE ENTIRE MSDS FOR THE COMPLETE HAZARD EVALUATION OF THIS PRODUCT.

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Causes skin and eye irritation. Dust is irritating to respiratory tract. See "Other Health Effects" Section. Can decompose at high temperatures forming toxic gases. Sealed containers may rupture from the pressure of water vapours released from crystals by intense heat.

POTENTIAL HEALTH EFFECTS

- Inhalation: Product may cause severe irritation of the nose, throat and respiratory tract. Repeated and/or prolonged exposures may cause productive cough, running nose, bronchopneumonia, pulmonary oedema (fluid build-up in lungs), and reduction of pulmonary function. Excessive contact with powder may cause drying of mucous membranes of nose and throat due to absorption of moisture and oils. See "Other Health Effects" Section.
- Skin Contact: This product may cause irritation due to abrasive action. Avoid handling when the skin is moist, wet or abraded. Dry Calcium Chloride can produce considerable amounts of heat when dissolving into water. (3) In the presence of moisture (perspiration, humidity, tears), the dust dissolves to form a solution which may cause burns. Prolonged, confined (especially under the finger nails, under rings or watch bands)

or repeated exposure may cause skin irritation and possibly lead to (chemical) burns.

- . Skin Absorption: A single, prolonged skin exposure is not likely to result in the absorption of toxic amounts of the material.
- . Eye Contact: This product may cause irritation, redness and possible damage due to abrasiveness. Contact can cause eye burns. May cause corneal damage and conjunctivitis.
- . Ingestion: Single dose oral toxicity is considered to be low, and it is unlikely that accidental ingestion could cause any toxic effects in the body. Large doses of this product causes severe burning and pain in the mouth, throat and abdomen. Vomiting, diarrhea and perforation of the esophagus and stomach lining may occur.

Other Health Effects: Effects (irritancy) on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures following any exposure is essential.

May cause perforated nasal septum, gastrointestinal irritation or ulceration, cardiac arrhythmia. Calcium Chloride may sensitize heart muscle causing cardiac arrhythmia, in rare cases. (4)

3. COMPOSITION, INFORMATION ON INGREDIENTS (Not Intended As Specifications)

Hazardous Ingredients	CAS No.	ACGIH TLV	%
Calcium Chloride	010043-52-4	Not Listed.	70 - 99
Potassium Chloride	007447-40-7	Not Listed.	1 - 5
Sodium Chloride	007647-14-5	Not Listed.	1 - 5
Strontium Chloride	010476-85-4	Not Listed.	0 - 1

4. FIRST AID MEASURES

FIRST AID PROCEDURES

- . Inhalation: Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical attention IMMEDIATELY.
- . Skin Contact: Flush skin with running water and wash affected areas thoroughly with soap and water. Start flushing while removing contaminated clothing. Obtain medical attention IMMEDIATELY. If burn is present treat as a thermal burn, after decontamination.
- . Eye Contact: Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.
- . Ingestion: Do not attempt to give anything by mouth to an unconscious person. If victim is alert and not convulsing, rinse mouth out and give 1/2 to 1 glass of water to dilute material. IMMEDIATELY contact local Poison Control Centre. Vomiting should only be induced under the direction of a physician or a poison control centre. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility.

Note to Physicians: Due to the severely irritating or corrosive nature of the material, swallowing may lead to ulceration and inflammation of the upper alimentary tract with hemorrhage and fluid loss. Also, perforation of the esophagus or stomach may occur, leading to mediastinitis or peritonitis and the resultant complications. (3)

Treatment for thermal, surface burns:

1. Immerse the burned part immediately in ice water to relieve pain and to prevent swelling and blistering. Place cold packs, ice or wet cloths on the burned area if immersion is not possible.
2. Remove anything that is constrictive, such as rings, bracelets or footwear, before swelling begins.

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3. Cover the burn with a clean, preferably sterile, lint-free dressing.
 4. For severe burns, immediately seek medical attention and monitor breathing and treat for shock.

Medical conditions that may be aggravated by exposure to this product include diseases of the skin, eyes or respiratory tract, preexisting liver and kidney disorders.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

Flammability Class (WHMIS): Not regulated.
Flash Point (TCC, Deg. Celsius): Does not flash.
Autoignition Temperature (Deg. Celsius): Not applicable.
Flammability Limits in Air (%): LEL: Not applicable. UEL: Not applicable.

Hazardous Combustion Products: Thermal decomposition products are toxic and may include hydrochloric acid, oxides of chlorine, sodium, potassium and calcium.

Unusual Fire or Explosion Hazards: Dry Calcium Chloride can produce considerable amounts of heat when dissolving into water. (3) Not normally a fire or dust explosion hazard. Sealed containers may rupture from the pressure of water vapours released from crystals by intense heat. Minimize air borne spreading of dust. Spilled material may cause floors and contact surfaces to become slippery.

Sensitivity to Mechanical Impact: Not expected to be sensitive to mechanical impact.
Rate of Burning: Not available.
Explosive Power: Not available.
Sensitivity to Static Discharge: Not expected to be sensitive to static discharge.

EXTINGUISHING MEDIA

Fire Extinguishing Media: Use media appropriate for surrounding fire and/or materials.

FIRE FIGHTING INSTRUCTIONS

Instructions to the Fire Fighters: Fire-exposed containers should be kept cool by spraying with water to reduce pressure. Spilled material may cause floors and contact surfaces to become slippery.

Fire Fighting Protective Equipment: Use self-contained breathing apparatus and protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Information in this section is for responding to spills, leaks or releases in order to prevent or minimize the adverse effects on persons, property and the environment. There may be specific reporting requirements associated with spills, leaks or releases, which change from region to region. The responsibility of reporting lies directly with the handlers of the substance.

Containment and Clean-Up Procedures: Minimize air borne spreading of dust. Wear respirator, protective clothing and gloves. Avoid dry sweeping. Do not use compressed air to clean surfaces. Vacuuming or wet sweeping is preferred. Return all material possible to container for proper disposal. Do not allow to enter sewers or watercourses.

Any recovered product can be used for the usual purpose, depending on the extent and kind of contamination. Where a package (drum or bag) is damaged and / or leaking, repair it, or place it into an over-pack drum immediately so as to avoid or minimize material loss and contamination of surrounding environment.

For release to land, or storm water runoff, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Ventilate enclosed spaces. Notify applicable government authority if release is reportable or could adversely affect the environment.

7. HANDLING AND STORAGE

HANDLING

Handling Practices: Use normal "good" industrial hygiene and housekeeping practices. Dry Calcium Chloride can produce considerable amounts of heat when dissolving into water. (3) Use cool water when diluting or dissolving (temperature less than 27 degrees celsius).

Ventilation Requirements: Minimize air borne spreading of dust. Do not use in poorly ventilated or confined areas without proper respiratory protection. Ventilation should be corrosion proof.

Other Precautions: Use only with adequate ventilation and avoid breathing dusts. Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use.

STORAGE

Storage Temperature (Deg Celsius): See below.

Ventilation Requirements: Ventilation should be corrosion proof.

Storage Requirements: Store in a cool, dry and well-ventilated area. Keep away from heat, sparks and flames. Keep containers closed. Avoid moisture contamination. Prolonged storage may result in lumping or caking.

Special Materials to be Used for Packaging or Containers: Materials of construction for storing the product include: 304 stainless steel, titanium and polyethylene. Equipment for storage, handling or transportation should NOT be made of: brass, zinc, mild steel, aluminum and its alloys, iron and its alloys. Confirm suitability of any material before using.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Recommendations listed in this section indicate the type of equipment, which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

ENGINEERING CONTROLS

Engineering Controls: Local exhaust ventilation required. Ventilation should be corrosion proof. Make up air should be supplied to balance air that is removed by local or general exhaust ventilation. Ventilate low lying areas such as sumps or pits where dense dust may collect.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye Protection: Safety glasses with side shields are recommended to prevent eye contact. Use chemical safety goggles when there is potential for eye contact. Contact lenses should not be worn when working with this material.

Skin Protection: Gloves and protective clothing made from cotton, canvas, rubber or plastic should be impervious under conditions of use. Prior to use, user should confirm impermeability. Do not use gloves or protective clothing made from leather. Discard contaminated gloves.

Respiratory Protection: No specific guidelines available. A NIOSH/MSHA approved dust mask for concentrations of nuisance dust up to 100 mg/M3 particulate. An air-supplied respirator if concentrations are higher or unknown.

If while wearing a respiratory protection, you can smell, taste or otherwise detect anything unusual, or in the case of a full facepiece respirator you experience eye irritation, leave the area immediately. Check to make sure the respirator to face seal is still good. If it is, replace the filter, cartridge or canister. If the seal is no longer good, you may need a new respirator. (4)

Other Personal Protective Equipment: Wear an impermeable apron and boots. Locate safety shower and eyewash station close to chemical handling area. Take all precautions to avoid personal contact.

EXPOSURE GUIDELINES

Recommended Exposure Limit: 10 mg/M3, Manufacturer's Recommended Exposure Level. (3)

Particulate Not Otherwise Classified

ACGIH	OSHA
10 mg/M3 - Inhalable particulate	50 mppcf* or 15 mg/M3 - Total Dust
3 mg/M3 - Respirable particulate.	15 mppcf* or 5 mg/M3 - Respirable Fraction

* mppcf = million particles per cubic foot

9. PHYSICAL AND CHEMICAL PROPERTIES (Not intended as Specifications)

Physical State: Solid.

Appearance and Odour: Dry, white granules: fine sized, beads pucks, or powder. Odourless.

Odour Threshold (ppm): Not applicable.

Boiling Range (Deg Celsius): Above 815.

Melting/Freezing Point (Deg Celsius): Approximately 772.

Vapour Pressure (mm Hg at 20 Deg. Celsius): Below 0.005.

Vapour Density (Air = 1.0): Not applicable.

Relative Density (g/cc): 2.2 (Anhydrous); 1.85 (Dihydrate).

Bulk Density: Not applicable.

Viscosity: 5.81 cPs at 20 Degrees Celsius (35% Aqueous Solution).

Evaporation Rate (Butyl Acetate = 1.0): Not applicable.

Solubility: Soluble in water. Soluble in Ethyl Alcohol, Acetone and Acetic Acid. (4)

Hygroscopic (readily absorbs water).

% Volatile by Volume: Not applicable.

pH: 4.5 to 8.5 (5 % Aqueous Solution); 8.0 to 9.0 (35 % Aqueous Solution).

Coefficient of Water/Oil Distribution: Not available.

Volatile Organic Compounds (VOC): Not applicable.

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY

Under Normal Conditions: Stable.

Under Fire Conditions: Not flammable.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: High temperatures, sparks, open flames and all other sources of ignition. Minimize air borne spreading of dust. Sweep up immediately to eliminate slipping hazard.

Materials to Avoid: Strong oxidizers. Lewis or mineral acids. Aluminum and its alloys. Zinc. Alkali metals. Methyl Vinyl Ether. Boric Acid. Calcium Oxide. Bromine trifluoride. May react violently with metals such as sodium, potassium and barium particularly if they are finely divided. Hydrogen gas may be produced on prolonged contact with metals such as aluminum, tin, lead and zinc. (3) Dry Calcium Chloride can produce considerable amounts of heat when dissolving into water. (3)

Decomposition or Combustion Products: Thermal decomposition products are toxic and may include hydrochloric acid, oxides of chlorinesodium, potassium and calcium.

11. TOXICOLOGICAL INFORMATION

Toxicological Data:

Calcium Chloride	LD50 (Oral, Rat)	= 900 - 2,100 mg/Kg (1,3)
	LD50 (Dermal, Rabbit)	= Above 5,000 mg/Kg (3)

Carcinogenicity Data: The ingredient(s) of this product is (are) not classed as carcinogenic by ACGIH, IARC, OSHA or NTP.

Reproductive Data: No adverse reproductive effects are anticipated.

Mutagenicity Data: Mutagenicity tests have been negative or inconclusive. (3) See "Other Studies Relevant to Material".

Teratogenicity Data: No adverse teratogenic effects are anticipated.

Respiratory / Skin Sensitization Data: None known.

Synergistic Materials: None known.

Other Studies Relevant to Material: Calcium Chloride caused no permanent damage when 2 % to 10 % solution was tested in rabbit eyes. (4)

Calcium Chloride has caused both positive and negative results in mammalian in-vitro cell tests. (4)

12. ECOLOGICAL INFORMATION

Ecotoxicity: Based largely or completely on data for major component(s) the material is practically non-toxic to aquatic organisms on an acute bases (LC50/EC50 greater than 100 mg/L in most sensitive species).

Environmental Fate: This material is not expected to bioaccumulate. (3) Can be hazardous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

13. DISPOSAL CONSIDERATIONS

Deactivating Chemicals: Not available.

Waste Disposal Methods: This information applies to the material as manufactured. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations. Do not dispose of waste with normal garbage, or to sewer systems.

Safe Handling of Residues: See "Waste Disposal Methods".

Disposal of Packaging: Empty containers retain product residue and can be hazardous. Do not dispose of package until thoroughly washed out. Dispose of waste material at an approved landfill site.

14. TRANSPORTATION INFORMATION

CANADIAN TDG ACT / U.S. DOT CLASSIFICATION: Not regulated.

15. REGULATORY INFORMATION

CANADA

CEPA - NSNR: All constituents of this product are included on the DSL.

CEPA - NPRI: Not available.

Controlled Products Regulations Classification (WHMIS): D-2B: Toxic (Skin and Eye Irritant).

USA

Environmental Protection Act: All constituents of this product are included on the TSCA inventory.

OSHA Hazard Communication (29CFR 1910.1200) Classification: Skin and Eye Irritant.

HMIS: Not available.

INTERNATIONAL: The following component or components of this product appear on the European Inventory of Existing Commercial Chemical Substances: Calcium Chloride.

16. OTHER INFORMATION

ADDITIONAL INFORMATION AND SOURCES USED

1. RTECS-Registry of Toxic Effects of Chemical Substances, Canadian Centre for Occupational Health and Safety RTECS database.
 2. Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA,B,C, John Wiley and Sons, New York, 1981.
 3. Supplier's Material Safety Data Sheet(s).
 4. "CHEMINFO", through "CCINFODisc", Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
 5. Guide to Occupational Exposure Values, 2005, American Conference of Governmental Industrial Hygienists, Cincinnati, 2005.
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The information contained herein is offered only as a guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Brenntag Canada Inc. will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein. This Material Safety Data Sheet is valid for three years.

To obtain revised copies of this or other Material Safety Data Sheets, contact your nearest Brenntag Canada Regional office.

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