SAFETY DATA SHEET

DOWFLAKE ™ XTRA 83-87% CALCIUM CHLORIDE FLAKES

SDS No.: M48006 **Rev. Date:** 29-Nov-2021
North America EN

SECTION 1. CHEMICAL PRODUCT / COMPANY IDENTIFICATION

Company Identification:	Occidental Chemical Corporation 14555 Dallas Parkway, Suite 400 Dallas, Texas 75254-4300
24 Hour Emergency Telephone Number:	1-800-733-3665 (USA); CANUTEC (Canada): 1-613-996-6666; CHEMTREC (within USA and Canada): 1-800-424-9300; CHEMTREC (outside USA and Canada): +1 703-527-3887; CHEMTREC Contract No: CCN16186
To Request an SDS:	MSDS@oxy.com or 1-972-404-3245
Customer Service:	1-800-752-5151 or 1-972-404-3700
Product Identifier:	**DOWFLAKE ™ XTRA 83-87% CALCIUM CHLORIDE FLAKES**
Synonyms:	Calcium Dichloride; Calcium Chloride; Calcium Chloride Flake; DOWFLAKE
Product Use:	Concrete Acceleration; Ice Melting; Dust Control; Road Base Stabilization
Uses Advised Against:	Not approved for use in food or animal feed Potable Water Treatment
Other Global Restrictions on Use:	Other restrictions on use based on local, regional, state, or national regulations may exist and must be determined on a case-by-case basis.
Chemical Family:	Inorganic Salt
Additional Information:	CONSUMER PRODUCTS: When packaged in quantities of 50 lbs. or less, and used in a manner and frequency typical of consumer use, Occidental Chemical Corporation considers this product a consumer use product which is regulated by the Consumer Product Safety Commission (CPSC). Because CPSC labeling requirements differ from the Occupational Safety and Health Administration (OSHA) GHS requirements for safety data sheets (SDS), slight differences in

hazard information between the product label and SDS may be observed.

SECTION 2. HAZARDS IDENTIFICATION

OSHA REGULATORY STATUS: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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EMERGENCY OVERVIEW:

Color: White
Physical State: Solid
Appearance: Briquettes
Odor: Odorless

Signal Word: **WARNING**

MAJOR HEALTH HAZARDS: CAUSES SERIOUS EYE IRRITATION. HARMFUL IF SWALLOWED.

PHYSICAL HAZARDS: Heat is generated when mixed with water or aqueous acid solutions.

PRECAUTIONARY STATEMENTS: Wash thoroughly after handling. Do not eat, drink, or smoke when using this product. Wear eye protection.

ADDITIONAL HAZARD INFORMATION: Good hygiene practices include but are not limited to wearing chemical resistant gloves and eye protection; washing hands and affected skin immediately after handling, before breaks, and at the end of the workday; regularly cleaning work area and clothing; etc.

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HAZARD CLASSIFICATION:

GHS: CONTACT HAZARD - EYE:	Category 2A - Causes serious eye irritation
GHS: ACUTE TOXICITY - ORAL:	Category 4 - Harmful if swallowed

Unknown Acute Inhalation Toxicity:
There is no acute inhalation toxicity data available for this material.

GHS SYMBOL: Exclamation mark

GHS SIGNAL WORD: **WARNING**

GHS HAZARD STATEMENTS:

GHS - Health Hazard Statement(s)
• Harmful if swallowed
• Causes serious eye irritation

GHS - Precautionary Statement(s) - Prevention
• Wash thoroughly after handling
• Do not eat, drink or smoke when using this product
• Wear eye protection

GHS - Precautionary Statement(s) - Response
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
• If eye irritation persists: Get medical advice/attention
• IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
• Rinse mouth

GHS - Precautionary Statement(s) - Storage
• There are no Precautionary-Storage phrases assigned

GHS - Precautionary Statement(s) - Disposal
• Dispose of contents and container in accordance with applicable local, regional, national, and/or international regulations

Physical Hazards of Significance Not Mentioned in GHS Classification
• Calcium chloride is hygroscopic and is capable of absorbing moisture from the air to become liquid. Chlorides in the presence of water and oxygen are associated with the accelerated corrosion of common metals, such as steel, copper and brass
• Calcium chloride has an exothermic heat of solution and solid products release a large amount of heat when dissolved in water
• Calcium chloride brines are electrically conductive. There is a risk of electric shock if energized electrical equipment is handled with hands or fabric gloves that are wet with brine

See Section 11: TOXICOLOGICAL INFORMATION

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS Number	Percent [%]
Calcium chloride	10043-52-4	> 83 - < 87
Water	7732-18-5	> 8 - < 14
Potassium Chloride	7447-40-7	> 2 - < 3
Sodium Chloride	7647-14-5	> 1 - < 2

Notes: *Potassium chloride and sodium chloride are impurities from the naturally-occurring source material, brine solution.*

SECTION 4. FIRST AID MEASURES

INHALATION: If inhalation of dust occurs and adverse effects result, remove to uncontaminated area. Call a POISON CENTER or doctor/physician if you feel unwell.

SKIN CONTACT: If on skin, wash with plenty of water. If skin irritation occurs: Get medical advice/ attention. Take off contaminated clothing and wash before reuse.

EYE CONTACT: If in eyes, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

INGESTION: If swallowed, rinse mouth. Contact a poison center or doctor/physician if you feel unwell.

Most Important Symptoms/Effects (Acute and Delayed):

Acute Symptoms/Effects:
Inhalation (Breathing): Inhaling dust may cause irritation to upper respiratory tract (nose and throat). No reliable animal data on acute inhalation toxicity are available; however, human data suggest that calcium chloride is not acutely toxic by inhalation.
Skin: Direct contact with abraded skin may cause erythema and burns. Prolonged contact and occlusion may cause more severe symptoms. Damage is localized to contact areas.
Eye: Eye Irritation. Direct abrasion of cornea from solid, erythema and burn from reaction with water, conjunctival swelling and cornea opacification from hypertonic solution and heat.
Ingestion (Swallowing): Consumption of solids or hypertonic solutions causes nausea, vomiting, and increased thirst. Symptoms of oral toxicity are not expected to be observed at lower levels (200 – 400 mg/kg). However, at the higher levels (800 – 1600 mg/kg), in male rat studies, there was some indication of gastric irritation, characterized by thickened and ulcerated areas within the stomach.

Delayed Symptoms/Effects:
- Chronic exposures to skin and mucus membranes that cause irritation may cause a chronic dermatitis or mucosal membrane problem

Protection of First-Aiders: At minimum, treating personnel should utilize PPE sufficient for prevention of bloodborne pathogen transmission. If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Notes to Physician: Due to irritant properties, resulting from heat created as solid material dissolves in water,

swallowing may result in burns/ulceration of mucus membranes. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Interaction with Other Chemicals Which Enhance Toxicity: Because of its additive effect, calcium should be administered very cautiously to a patient who is digitalized or who is taking effective doses of digitalis or digitalis-like preparations.

Medical Conditions Aggravated by Exposure: Any skin condition that disrupts the skin, such as abrasions, cuts, psoriasis, fungal infections, etc. Any upper respiratory conditions that compromise mucosa can increase local damage from dust contact. Any eye condition that compromises tear production, conjunctiva, or normal corneal homeostasis.

SECTION 5. FIRE-FIGHTING MEASURES

Fire Hazard: This material does not burn.

Explosive properties: Prolonged action of calcium chloride solution upon the zinc coating of a galvanized iron vessel causes slow evolution of hydrogen, which may ignite and explode. The exotherm produced by adding solid calcium chloride to hot water causes violent boiling. Calcium chloride catalyzes exothermic polymerization of methyl vinyl ether.

Extinguishing Media: Use water, dry chemical, carbon dioxide or foam to extinguish. Do not extinguish fire unless release can be stopped. Use water to cool containers but avoid getting water into containers.

Specific Hazards: Avoid direct contact of this product with water as this can cause an exothermic reaction.

Fire Fighting: Keep unnecessary people away, isolate hazard area and deny entry. This material does not burn. Fight fire for other material that is burning. Water should be applied in large quantities as fine spray. Wear NIOSH approved positive-pressure self-contained breathing apparatus operated in pressure demand mode. Wear protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

Hazardous Combustion Products: Formed under fire conditions: hydrogen chloride gas, calcium oxide

Products Formed During Combustion and Thermal Degradation: When heated to decomposition emits toxic fumes of hydrogen chloride

Sensitivity to Mechanical Impact: Not sensitive.

Sensitivity to Static Discharge: Not sensitive.

Lower Flammability Level (air): Not applicable

Upper Flammability Level (air): Not applicable

Flash point: Not applicable

Auto-ignition Temperature: Not applicable

Physical Hazards of Significance Not Mentioned in GHS Classification
- Calcium chloride is hygroscopic and is capable of absorbing moisture from the air to become liquid. Chlorides in the presence of water and oxygen are associated with the accelerated corrosion of common metals, such as steel, copper and brass
- Calcium chloride has an exothermic heat of solution and solid products release a large amount of heat when dissolved in water
- Calcium chloride brines are electrically conductive. There is a risk of electric shock if energized electrical equipment is handled with hands or fabric gloves that are wet with brine

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Isolate area. Keep unnecessary and unprotected personnel from entering the area. Spilled material may cause a slipping hazard on some surfaces. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to Section 7, Handling, for additional precautionary measures.

Personal Protective Equipment: See Section 8 for information on personal protective equipment.

Emergency Procedures: Restrict access to spill site, call fire department and notify manufacturer, stop the flow and contain spill if safe to do so, keep contaminated water from entering sewers or water courses, and avoid contact with liquid and solid.

Environmental Precautions: Prevent large spills from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and Materials for Clean-up

Recovery: When solid calcium chloride is spilled on land, shovel into appropriate containers (avoid dusting) for recovery or disposal. The recovered product must be transferred to an appropriate and compatible container (stainless steel, PVC, Fiberglass or similar).
Neutralization: Flush spill area with water, if appropriate.
Final Disposal: For waste disposal, see section 13.

SECTION 7. HANDLING AND STORAGE

Handling:

Precautions for Safe Handling: Wash skin and contaminated clothing thoroughly after handling. Do not eat, drink, or smoke when using this product.

Technical measures/precautions: Heat developed during diluting or dissolving is very high. Use cool water when diluting or dissolving (temperature less than 80°F, 27°C). Keep container tightly closed. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Prevention of contact: Wear protective gloves, protective clothing, eye, and face protection. See Section 8, Exposure Controls and Personal Protection, for additional information.

Storage:

Safe Storage Conditions: Store in a dry place. Protect from atmospheric moisture. Keep container tightly closed. Keep separated from incompatible substances (see below or Section 10 of the Safety Data Sheet).

Technical measures: Solid calcium chloride is both hygroscopic and deliquescent. This means that the product can absorb moisture from the air, even to the point of converting to liquid brine. For this reason, solid calcium chloride should be protected from atmospheric moisture to maintain product quality while in storage. Store in a dry area. Opened packages should be tightly resealed after each use. If storing outdoors, cover with waterproof tarps.

Incompatible Substances:
• Heat is generated when mixed with water or aqueous acids. Spattering and boiling can occur. Avoid contact with: bromide trifluoride, 2-furan percarboxylic acid because calcium chloride is incompatible with those substances. Contact with zinc forms flammable hydrogen gas, which can be explosive. Catalyzes exothermic polymerization of methyl vinyl ether. Attacks metals in the presence of moisture and may release flammable hydrogen gas. Reaction of bromide impurity with oxidizing materials may generate trace levels of impurities such as bromates.

Packaging or Materials of Construction: Dry bulk calcium chloride can be stored in bins fabricated from most construction-grade steel materials. Care should be taken to minimize moisture. Venting should be limited to times of filling and discharging calcium chloride from the storage bin. Liquid calcium chloride can be stored in either horizontal or vertical cylindrical tanks constructed of steel. Fiberglass and plastic may also be used within limits of strength and temperature. The preferred material of construction for large, liquid-storage tanks is carbon steel with an epoxy based interior lining and epoxy-based exterior paint. Common stainless steels should not be used for liquid calcium chloride storage because they are subject to chloride stress cracking, even at temperatures as low as100°F (38°C). Nonmetallic materials, such as fiberglass or plastic, work well for smaller tanks at near ambient temperatures; however, the puncture resistance and structural strength of these materials, relative to carbon steel, should be evaluated.

Additional Information:

Physical Hazards of Significance Not Mentioned in GHS Classification
- Calcium chloride is hygroscopic and is capable of absorbing moisture from the air to become liquid. Chlorides in the presence of water and oxygen are associated with the accelerated corrosion of common metals, such as steel, copper and brass
- Calcium chloride has an exothermic heat of solution and solid products release a large amount of heat when dissolved in water
- Calcium chloride brines are electrically conductive. There is a risk of electric shock if energized electrical equipment is handled with hands or fabric gloves that are wet with brine

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

REGULATORY EXPOSURE LIMIT(S):
Listed below for the product components that have regulatory occupational exposure limits (OEL's) established.

Component	OSHA Final PEL TWA	OSHA Final PEL STEL	OSHA Final PEL Ceiling
Particulates Not Otherwise Specified (PNOS) Not Assigned	15 mg/m³(Total) 5 mg/m³(Respirable)	-----	-----

Component	Canada - TWAs	Canada - STELs	Canada - Ceilings
Particles Not Otherwise Regulated (PNOR) 00-00-001	10 mg/m³(Total) 5 mg/m³(Respirable)	-----	-----
Particulates Not Otherwise Specified (PNOS) Not Assigned	10 mg/m³ (inhalable) 3 mg/m³ (respirable)	-----	-----
Calcium chloride 10043-52-4	Ontario - 5 mg/m³ (TWA)	-----	-----

NON-REGULATORY EXPOSURE LIMIT(S):
Listed below are the product components that have advisory (non-regulatory) occupational exposure limits (OEL's) established.

Component	ACGIH TWA	ACGIH STEL	ACGIH Ceiling	Skin Absorption - ACGIH	OSHA TWA (Vacated)	OSHA STEL (Vacated)	OSHA Ceiling (Vacated)
Particulates Not Otherwise Specified (PNOS) Not Assigned	10 mg/m³ (inhalable) 3 mg/m³ (respirable)	-----	-----	-----	-----	-----	-----

- The American Conference of Governmental Industrial Hygienists (ACGIH) is a voluntary organization of professional industrial hygiene personnel in government or educational institutions in the United States. The ACGIH develops and publishes recommended occupational exposure limits each year called Threshold Limit Values (TLVs) for hundreds of chemicals, physical agents, and biological exposure indices.

Additional Advice: Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

ENGINEERING CONTROLS: Use closed systems when possible. Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

PERSONAL PROTECTIVE EQUIPMENT:

Eye Protection: For dusty operations or when handling solutions of the material, wear chemical goggles. Where splashing or spraying is possible, use a face-shield in addition to chemical protective goggles.

Skin and Body Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly.

Hand Protection: Wear appropriate chemical resistant gloves. If contact with forearms is likely, wear gauntlet style gloves. Consult a glove supplier for assistance in selecting an appropriate chemical resistant glove.

Protective Material Types: Neoprene, Polyvinyl chloride (PVC), Nitrile rubber gloves

Respiratory Protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In dusty or misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: High efficiency particulate air (HEPA) N95. A respiratory protection program that meets 29 CFR 1910.134 must be followed whenever workplace conditions warrant use of a respirator.

Other Protective Equipment: An emergency eyewash fountain and quick drench shower should be provided in the immediate work area.

HYGIENE MEASURES: Do not breathe dust or spray mist. Do not get in eyes, on skin, or on clothing. Wear protective gloves, protective clothing, eye, and face protection. For environmental protection remove and wash all contaminated protective equipment before re-use. Keep separated from incompatible substances.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Appearance:	Flakes
Color:	White
Odor:	Odorless
Molecular Weight:	111 g/mole
Molecular Formula:	CaCl2
Chemical Family:	Inorganic Salt
pH:	Not applicable to solids
Melting Point/Range:	772 °C (1,422 °F)
Freezing Point/Range:	Not applicable to solids
Boiling Point °C	1935°C (3,515°F)
Flash point:	Not applicable
Vapor Pressure:	Negligible at ambient temperature
Vapor Density (air=1):	Not applicable
Relative Density/Specific Gravity (water=1):	Not applicable to solids
Bulk Density:	51 - 61 lb/ft3
Water Solubility:	Readily soluble
Partition Coefficient (n-octanol/water):	No data available
Auto-ignition Temperature:	Not applicable

Decomposition Temperature:	Not applicable
Odor Threshold [ppm]:	No data available
Evaporation Rate (ether=1):	Not applicable
Volatility:	Not applicable
Flammability (solid, gas):	Not applicable
Lower Flammability Level (air):	Not applicable
Upper Flammability Level (air):	Not applicable
Viscosity:	Not applicable
Hygroscopic:	Yes
Particle Size Distribution:	5% through 30 (0.6 mm) sieve 80% through 4 (4.76 mm) sieve 100% through 9.5 mm sieve

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability: Stable at normal temperatures and pressures.

Reactivity: Hygroscopic. Liberates large amounts of heat when dissolving in water or aqueous acids.

Possibility of Hazardous Reactions: Avoid moisture.

Conditions to Avoid (e.g., static discharge, shock, or vibration): None known.

Incompatible Substances: Heat is generated when mixed with water or aqueous acids. Spattering and boiling can occur. Avoid contact with: bromide trifluoride, 2-furan percarboxylic acid because calcium chloride is incompatible with those substances. Contact with zinc forms flammable hydrogen gas, which can be explosive. Catalyzes exothermic polymerization of methyl vinyl ether. Attacks metals in the presence of moisture and may release flammable hydrogen gas. Reaction of bromide impurity with oxidizing materials may generate trace levels of impurities such as bromates.

Hazardous Decomposition Products: Formed under fire conditions: hydrogen chloride gas, calcium oxide.

Hazardous Polymerization: Polymerization will not normally occur; however, violent polymerization occurs when mixed with Methyl Vinyl Ether.

SECTION 11. TOXICOLOGICAL INFORMATION

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POTENTIAL HEALTH EFFECTS:

ACUTE TOXICITY:

Eye contact: For solid: May cause slight eye irritation, mechanical injury only. Dust formation should be avoided, as dust can cause severe eye irritation with corneal injury.

Skin contact: Brief contact is essentially nonirritating to skin. Prolonged contact may cause skin irritation, even a

burn. Not classified as corrosive to the skin according to DOT guidelines. May cause more severe response if skin is damp, abraded (scratched or cut), or covered by clothing, gloves, or footwear.
Inhalation: Dust may cause irritation to upper respiratory tract (nose and throat).
Ingestion: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause local mucosal damage to esophagus and stomach. Swallowing may result in gastrointestinal irritation or ulceration.

CHRONIC TOXICITY:

Chronic Effects: Chronic exposures to calcium chloride that cause irritation may cause a chronic dermatitis or mucosal membrane problem. For the minor component(s): POTASSIUM CHLORIDE: In animals, effects have been reported on the following organs after ingestion: Gastrointestinal tract, heart, and kidney. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use. SODIUM CHLORIDE: Medical experience with sodium chloride has shown a strong association between elevated blood pressure and prolonged dietary overuse. Related effects could occur in the kidneys.

SIGNS AND SYMPTOMS OF EXPOSURE:

Solution and or solids may be visible on the skin and or eyes. Localized redness, warmth, and irritation consistent with mechanism of injury: abrasion, burn, hypertonic solution.

Inhalation (Breathing): Inhaling dust may cause irritation to upper respiratory tract (nose and throat). No reliable animal data on acute inhalation toxicity are available; however, human data suggest that calcium chloride is not acutely toxic by inhalation.
Skin: Direct contact with abraded skin may cause erythema and burns. Prolonged contact and occlusion may cause more severe symptoms. Damage is localized to contact areas.
Eye: Eye Irritation. Direct abrasion of cornea from solid, erythema and burn from reaction with water, conjunctival swelling and cornea opacification from hypertonic solution and heat.
Ingestion (Swallowing): Consumption of solids or hypertonic solutions causes nausea, vomiting, and increased thirst. Symptoms of oral toxicity are not expected to be observed at lower levels (200 – 400 mg/kg). However, at the higher levels (800 – 1600 mg/kg), in male rat studies, there was some indication of gastric irritation, characterized by thickened and ulcerated areas within the stomach.

Interaction with Other Chemicals Which Enhance Toxicity: Because of its additive effect, calcium should be administered very cautiously to a patient who is digitalized or who is taking effective doses of digitalis or digitalis-like preparations.

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GHS HEALTH HAZARDS:

GHS: CONTACT HAZARD - EYE: Category 2A - Causes serious eye irritation
GHS: ACUTE TOXICITY - ORAL: Category 4 - Harmful if swallowed

TOXICITY DATA:

PRODUCT TOXICITY DATA:

LD50 Oral:	LD50 Dermal:	LC50 Inhalation:
1126 mg/kg - Oral Acute Toxicity Estimate (ATE)	2637 mg/kg - Dermal Acute Toxicity Estimate (ATE)	No data is available

COMPONENT TOXICITY DATA:
The component toxicity data is populated by the LOLI database and may differ from the product toxicity data given.

Component	Oral LD50	Dermal LD50	Inhalation LC50
Calcium chloride	1000 mg/kg (Rat)	>5000 mg/kg (Rabbit)	
Potassium Chloride	2600 mg/kg (Rat)	No data available	
Sodium Chloride	3 g/kg (Rat)	>10000 mg/kg (Rabbit)	>42 mg/L (1-h Rat)

Eye Irritation/Corrosion: May cause sufficient injury to the eye to include damage to the cornea which heals or nearly heals in a week and/or considerable conjunctival irritation with edema.

Standard Draize (Skin): Score - 1.4 (Rabbit - 24 hours)

Skin Irritation/Corrosion: Calcium chloride was found not to be irritating to rabbit skin in a GLP-compliant study, performed according to OECD Guideline 404 (Koopman et al., 1986e). No effects were noted in any of three rabbits at any observation time points (1, 24, 48 and 72 hours) following an application of the anhydrous substance under occlusive dressing for 4 hours.

Skin Absorbent / Dermal Route: NO
Calcium chloride lacks the necessary lipophilicity that is required to allow penetration of the substance through the stratum corneum.

RESPIRATORY OR SKIN SENSITIZATION: Calcium chloride is not sensitizing to skin or respiratory tract. No evidence of skin or respiratory sensitization in humans have been reported despite long-term historical and wide dispersive use.

CARCINOGENICITY: Calcium chloride is not genotoxic in- vitro with calcium and chloride being essential nutrients for humans. In addition, the safe use of calcium chloride as a food additive was recently re-evaluated by the EFSA Panel on Food Additives and Flavorings (Scientific opinion dated 6 June 2019, doi: 10.2903/j.efsa.2019.5751). The assessment confirmed that there is no concern with respect to carcinogenicity. Based on this information, it is concluded that the substance is not carcinogenic and the performance of a carcinogenicity study for calcium chloride is not indicated. Not classified as a carcinogen per GHS criteria. This product is not classified as a carcinogen by NTP, IARC or OSHA.

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure): There is limited evidence that calcium chloride may cause respiratory tract irritation; however, this evidence is concluded to not be sufficient for classification and labelling.

SPECIFIC TARGET ORGAN TOXICITY (Repeated or Prolonged Exposure): Calcium and chloride are essential nutrients for humans and with a known tolerable upper intake level for calcium set at 2500 mg per day, this equates to a tolerable level of approximately 6.9 g CaCl2 per day. Therefore, repeat exposure target organ toxicity is not expected in an occupational exposure setting.

INHALATION HAZARD: No reliable animal data on acute inhalation toxicity are available; however, human data suggest that calcium chloride is not acutely toxic by inhalation.

GERM CELL/IN-VITRO MUTAGENICITY: Calcium chloride is considered not to have a genotoxic potential based on the results of two bacterial mutation assays and an in-vitro chromosome aberration test in Chinese hamster lung fibroblasts.

REPRODUCTIVE TOXICITY: An oral developmental study was performed in three (3) species (mouse, rat, and rabbit). In all three species no maternal or teratogenic effects were noted, and NOAELs (169mg/kg bw/day) were above the highest dose given. In addition, calcium chloride will neither reach the fetus or male and female

reproductive organs, as it does not become systemically available, which indicates that there is no risk for developmental or reproductive toxicity.

TOXICOKINETICS: Calcium chloride is easily dissociated into calcium and chloride ions in water. The absorption, the distribution, and the excretion of the ions in animals are regulated separately. Calcium and chloride are essential constituents of the body of all animal species. Calcium is essential for the formation of skeletons and the regulation of neural transmission, muscle contraction and coagulation of the blood. Chloride is required for regulating intracellular osmotic pressure and buffering.

METABOLISM: Not considered relevant in view of the nutritional aspects and mechanisms of action of calcium and chloride ions.

ENDOCRINE DISRUPTOR: Potassium chloride is listed on The Endocrine Disruptors Exchange's (TEDX) List of Potential Endocrine Disruptors database of chemicals with the potential to affect the endocrine system. Every chemical on the TEDX List has one or more verified citations published, accessible, primary scientific research demonstrating effects on the endocrine system. Potassium chloride, sodium chloride, and calcium bromide are impurities from the naturally occurring source material, brine solution.

NEUROTOXICITY: No relevant information available.

IMMUNOTOXICITY: No relevant information available; however, calcium ions are essential in the correct gene expression of the immune system.

SECTION 12. ECOLOGICAL INFORMATION

ECOTOXICITY (EC, IC, and LC):

Aquatic Toxicity:
Material is practically non-toxic to aquatic organisms on an acute basis. (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Toxicity:
Fathead Minnow (Pimephales promelas) LC50 (96-hour) > 4630 mg/L
Bluegill Sunfish (Lepomis macrochirus) /Mosquitofish (Gambusia affinis) LC50 (96-hour) > 9500 - 13400 mg/L

Invertebrate Toxicity:
Daphnia magna EC50 (48 hour) = 2400 mg/L
Daphnia magna NOEC (21 days) = 230 mg/L

FATE AND TRANSPORT:

PERSISTENCE: Calcium chloride is believed not to persist in the environment because it is readily dissociated into calcium and chloride ions in water. Calcium chloride released into the environment is thus likely to be distributed into water in the form of calcium and chloride ions. Calcium ions may remain in soil by binding to soil particulate or by forming stable salts with other ions. Chloride ions are mobile and eventually drain into surface water. Both ions originally exist in nature, and their concentrations in surface water will depend on various factors, such as geological parameters, weathering, and human activities.

BIODEGRADATION: Calcium chloride is an inorganic substance which is not expected to undergo photolysis or

biodegradation.

BIOCONCENTRATION: No bioconcentration is expected because of the relatively high water solubility. Potential for mobility in soil is very high (Koc between 0 and 50). Partitioning from water to n-octanol is not applicable.

BIOACCUMULATIVE POTENTIAL: Calcium chloride is easily dissociated into calcium and chloride ions and both ions are essential constituents of the body of all animals hence if a high amount would be taken up this is regulated by the body. Bioaccumulation of calcium chloride is consequently not expected.

MOBILITY IN SOIL: Calcium chloride is not expected to be absorbed in soil due to its dissociation properties and high water solubility. It is expected to dissociate into calcium and chloride free ions or it may form stable inorganic or organic salts with other counter ions, leading to different fates between calcium and chloride ions in soil and water components. Calcium ions may bind to soil particulate or may form stable inorganic salts with sulfate and carbonate ions. The chloride ion is mobile in soil and eventually drains into surface water because it is readily dissolved in water.

ADDITIONAL ECOLOGICAL INFORMATION: No information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste from material:
Reuse or reprocess, if possible. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Report spills if applicable. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN SDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Landfill and waste water treatment system.

Container Management:
Dispose of container in accordance with applicable local, regional, national, and/or international regulations. Container rinsate must be disposed of in compliance with applicable regulations.

Contaminated Material:
Contaminated packaging should be disposed of as unused product. Recycle any unused portion of the material for its approved use. Waste calcium chloride must never be discharged directly into sewers or surface waters.

SECTION 14. TRANSPORT INFORMATION

LAND TRANSPORT

U.S. DOT 49 CFR 172.101:
Status: Not Regulated
CANADIAN TRANSPORTATION OF DANGEROUS GOODS:
Status: Not Regulated

MARITIME TRANSPORT (IMO / IMDG)
Status - IMO / IMDG: Not Regulated.

AIR TRANSPORT (ICAO / IATA)
Special Instructions CAO: IATA Certificate for shipping personnel is required

SECTION 15. REGULATORY INFORMATION

U.S. REGULATIONS

OSHA REGULATORY STATUS:
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

CERCLA SECTIONS 102a/103 HAZARDOUS SUBSTANCES (40 CFR 302.4):
Not regulated.

SARA EHS Chemical (40 CFR 355.30)
Not regulated.

EPCRA SECTIONS 311/312 HAZARD CATEGORIES (40 CFR 370.10):
Acute Health Hazard

SARA HAZARD CATEGORIES ALIGNED WITH GHS (2018):
Health Hazard - Acute Toxin (any route of exposure)
Health Hazard - Serious eye damage or eye irritation

EPCRA SECTION 313 (40 CFR 372.65):
To the best of our knowledge, this product does not contain chemicals at levels that require reporting under this statute.

DEPARTMENT OF HOMELAND SECURITY (DHS)- Chemical Facility Anti-Terrorism Standards (6 CFR 27):
No components in this material are regulated under DHS

OSHA PROCESS SAFETY (PSM) (29 CFR 1910.119):
Not regulated.

EPA'S CLEAN WATER AND CLEAN AIR ACTS:
Component(s) not listed on impacted regulatory lists.

NATIONAL INVENTORY STATUS

DOWFLAKE ™ XTRA 83-87% CALCIUM CHLORIDE FLAKES

SDS No.: M48006 **Rev. Date:** 29-Nov-2021
Supersedes Date: 2016-03-August

U.S. INVENTORY STATUS: Toxic Substance Control Act (TSCA):

Component	TSCA Inventory	TSCA ACTIVE LIST	TSCA 12(b)	TSCA/Section 4	TSCA/Section 5	TSCA/Section 6	TSCA/Section 8
Calcium chloride 10043-52-4 (> 83 - < 87 %)	Listed	ACTIVE	Not Listed	Not listed	Not Listed	Not listed	Not listed
Potassium Chloride 7447-40-7 (> 2 - < 3 %)	Listed	ACTIVE	Not Listed	Not listed	Not Listed	Not listed	Not listed
Sodium Chloride 7647-14-5 (> 1 - < 2 %)	Listed	ACTIVE	Not Listed	Not listed	Not Listed	Not listed	Not listed

Canadian Chemical Inventory: All components of this product are listed on either the DSL or the NDSL.

Component	DSL	NDSL
Calcium chloride 10043-52-4 (> 83 - < 87)	Listed	Not Listed
Potassium Chloride 7447-40-7 (> 2 - < 3)	Listed	Not Listed
Sodium Chloride 7647-14-5 (> 1 - < 2)	Listed	Not Listed

STATE REGULATIONS

California Proposition 65:
This product is not listed on the California Governor's current list of Carcinogens, Reproductive Toxicants, and/or Candidate Carcinogens (Proposition 65), but it may contain trace amounts of impurities that are listed. For additional information, contact Occidental Chemical Corporation Customer Service (1-800-752-5151 or 1-972-404-3700). WARNING: This product (when used in aqueous formulations with a chemical oxidizer such as ozone) may react to form bromate, a chemical known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Component	California Proposition 65 Cancer WARNING:	California Proposition 65 CRT List - Male reproductive toxin:	California Proposition 65 CRT List - Female reproductive toxin:	Massachusetts Right to Know Hazardous Substance List	Rhode Island Right to Know Hazardous Substance List
Calcium chloride 10043-52-4 (> 83 - < 87 %)	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed
Potassium Chloride 7447-40-7 (> 2 - < 3 %)	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed
Sodium Chloride 7647-14-5 (> 1 - < 2 %)	Not Listed	Not Listed	Not Listed	Not Listed	Not Listed

CANADIAN REGULATIONS

This product has been classified in accordance with the hazard criteria of the Workplace Hazardous Materials Information System (WHMIS 2015) which includes the amended Hazardous Products Act (HPA) and the Hazardous Product Regulations (HPR).

Component	Canada - CEPA - Schedule I - List of Toxic Substances	Canada - NPRI	Canada - CEPA - 2010 Greenhouse Gases (GHG) Subject to Mandatory Reporting	Canadian Chemical Inventory:	NDSL:
Calcium chloride	Not listed	Not Listed	Not Listed	Listed	Not Listed

10043-52-4 (> 83 - < 87)					
Potassium Chloride 7447-40-7 (> 2 - < 3)	Not listed	Not Listed	Not Listed	Listed	Not Listed
Sodium Chloride 7647-14-5 (> 1 - < 2)	Not listed	Not Listed	Not Listed	Listed	Not Listed

SECTION 16. OTHER INFORMATION

Prepared by: Occidental Chemical Corporation - HES&S Product Stewardship Department

Rev. Date: 29-Nov-2021

Disclaimer:
We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

Reason for Revision:
• Change of company physical address: SEE SECTION 1
• Updated 24 Hour Emergency Telephone Number: SEE SECTION 1
• Updated Uses Advised Against information: SEE SECTION 1
• Added restrictions on use: See SECTION 1
• Modified the Emergency Overview information: SEE SECTION 2
• Changed GHS Classification: SEE SECTION 2
• Modified GHS Hazard and Precautionary Statements: SEE SECTION 2
• Added or revised Physical Hazards: SEE SECTION 2
• Updated First Aid Measures: SEE SECTION 4
• Modified Fire Fighting Measure Recommendations: SEE SECTION 5
• Revised Accidental Release Measures: SEE SECTION 6
• Revised Handling and Storage Recommendations: SEE SECTION 7
• Added Hygiene Measures SEE SECTION 8
• Revised Exposure Controls/Personal Protection information: SEE SECTION 8
• Stability and Reactivity recommendations: SEE SECTION 10
• Toxicological Information has been revised: SEE SECTION 11
• Ecological Information has been modified: SEE SECTION 12
• Updated Disposal Considerations. SEE SECTION 13
• Added air transport certificate requirements for shipping personnel: SEE SECTION 14
• Revised California Proposition 65 Statement: SEE SECTION 15
• Added SARA Hazard Categories Aligned with GHS (2018): SEE SECTION 15
• Added LOLI tables such as EPA'S Clean Water / Air Act, TSCA status, DHS, PSM, EPCRA, CERCLA, Federal Canadian: SEE SECTION 15
• Updated Canadian Regulatory information: SEE SECTION 15
• Modified statement on Canadian classification rule. SEE SECTION 15

IMPORTANT:
The information presented herein, while not guaranteed, was prepared by technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, OR WARRANTY OR GUARANTY OF ANY OTHER KIND, EXPRESSED OR IMPLIED, IS

DOWFLAKE ™ XTRA 83-87% CALCIUM CHLORIDE FLAKES

MADE REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY OR OTHERWISE. This information is not intended to be all-inclusive as to the manner and conditions of use, handling, storage, disposal and other factors that may involve other or additional legal, environmental, safety or performance considerations, and Occidental Chemical Corporation assumes no liability whatsoever for the use of or reliance upon this information. While our technical personnel will be happy to respond to questions, safe handling and use of the product remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as, a recommendation to infringe any existing patents or to violate any federal, state, local or foreign laws.

OSHA Standard 29 CFR 1910.1200 requires that information be provided to employees regarding the hazards of chemicals by means of a hazard communication program including labeling, safety data sheets, training and access to written records. We request that you, and it is your legal duty to, make all information in this Safety Data Sheet available to your employees.

End of Safety Data Sheet