MATERIAL SAFETY DATA SHEET | MSDS

This MSDS is prepared to meet the requirements of GHS & CLP (EC) No 1272/2008 regulations.

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

1.1 PRODUCT IDENTIFIER

SUBSTANCE NAME	Calcium Chloride Flakes ≥ 77%
SUBSTANCE SYNONYMS	Calcium Chloride Dihydrate.
CAS-NO	10043-52-4
HTS Code	2827.20.0000
EC-NO	233-140-8

1.2 RELEVANT IDENTIFIED USES OF SUBSTANCE OR MIXTURE & USES ADVISED AGAINST

IDENTIFIED USES	Oil Drilling, Concrete Accelerator, Ice Melting, Dust Control, Road Base Stabilization.
USES ADVISED AGAINST	Not for food, feed, or pharmaceutical applications.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

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SECTION 2 HAZARDS IDENTIFICATION

2.1 CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

Classification according to Regulation (EC) No 1272/2008

INTERNATIONAL CHEMICAL IDENTIFICATION	EC NO	CAS NO	CLASSIFICATION		LABELING	SPECIFIC CONC. LIMITS, M- FACTORS
			HAZARD CLASS AND CATEGORY CODE(S)	HAZARD STATEMENT CODE(S)	PICTOGRAM SIGNAL WORD CODE(S)	
Calcium Chloride	233-140-8	10043-52-4	Eye irritation	H319	GHS07	10

2.2 SYMBOLS

According to Regulation (EC) No 1272/2008

PICTOGRAM	PICTOGRAM SIGNAL WORD CODE(S)	HAZARD CLASS & CATEGORY	HAZARD STATEMENT CODE(S)
	GHS07	Causes serious eye irritation. Cat. 2	H319 Causes severe eye irritation.

2.3 SIGNAL WORD

Warning

2.4 EMERGENCY OVERVIEW

P264	Wash face, hands, and any exposed skin thoroughly after handling.
P280	Wear protective gloves, clothing, eye protection, and face protection.
P305+ P351+ P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present, and do so easily. Continue rinsing.
P337+P313	If eye irritation persists, seek medical advice or attention.

2.5 POTENTIAL CHRONIC HEALTH EFFECTS

Human health effects

- Serious damage to eyes.
- Irritating skin and mucous membranes

Inhalation	▪ Product Dust may irritate the respiratory tract. ▪ Irritating to mucous membranes ▪ Repeated or prolonged exposure: Risk of sore throat and nose bleeds. (In case of higher concentration): Cough.
Eye contact	▪ Product Dust may irritate the eye tract.
Skin contact	▪ Product Dust may irritate the skin. ▪ Itching ▪ Repeated exposure may cause skin dryness or cracking.
Ingestion	▪ Irritation of the mouth and throat ▪ Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhea.
Carcinogenic Effects	Not Carcinogenic.
Mutagenic Effects	No information available
Reproduction Toxicity	No information available

2.6 LABEL

See Table 2.2.

2.7 OTHER HAZARDS

Omission: Calcium Chloride is hygroscopic and generates vigorous exothermic heat upon contact with water; large spills can alter soil and water salinity.

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

SUBSTANCE NAME	Calcium Chloride, Dihydrate (Flake)
CAS - NO.	10043-52-4
EC - NO.	233-140-8
MOL. WT.	110.98 g/mol
EMPIRICAL FORMULA	$CaCl_2$
CONCENTRATION	≥ 77%

SECTION 4 FIRST-AID MEASURES

General Advice	• Move out of dangerous areas.

	• Don't leave the victim unattended. • Show this safety data sheet to the doctor in attendance.
Eye Exposure	• Rinse immediately with plenty of water under the eyelids for at least 15 minutes. • Remove contact lenses. • Protect unaffected eyes. • Continue rinsing during transport. Get immediate medical advice/attention.
Skin Exposure	• Rinse skin with plenty of water for at least 15 minutes, then wash with soap. • Take off contaminated clothing and shoes immediately. • Seek medical attention if irritation persists or develops.
Inhalation	• Move to fresh air. Keep in a position that is comfortable for breathing. • If unconscious, place in a recovery position and seek medical attention. • If symptoms (cough, irritation) persist, get medical advice/attention.
Ingestion	• Rinse mouth with water. • If conscious, slowly give 1–2 glasses of water to dilute the material. • Do **NOT** induce vomiting. • If vomiting occurs spontaneously, keep head low to avoid aspiration. • Provide artificial respiration **only if breathing has stopped and by trained personnel**.
Additional notes	• Dust mixes with moisture to form a hot solution that can aggravate burns; symptoms of inhalation exposure may be delayed.

SECTION 5 FIREFIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

Suitable Extinguishing Media	• Use extinguishing measures that are appropriate to the local circumstances and the surrounding environment.
Unsuitable Extinguishing Media	• High-volume water jet.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Specific Hazards During Firefighting	• When strongly heated in a fire, the product may decompose to hydrogen chloride and trace chlorine fumes. • Dissolution in water is highly exothermic and produces a hot, mildly acidic solution; localized 'steam' may carry HCl mist. • Solutions in contact with aluminum, zinc, or similar metals may release small amounts of flammable hydrogen gas.

5.3 ADVICE FOR FIREFIGHTERS

Special protective equipment for Firefighters	• Gloves, helmets, eye protection (safety glasses or face guard), protective clothing, protective boots, and compressed air/oxygen apparatus.
Further Advice	• No specific firefighting instructions are required.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions	• If dust is present, reduce it by sweeping or applying water. • Wear a dust mask/respirator approved for nuisance particulates if the airborne concentration exceeds OELs or causes irritation. • Flakes become extremely slippery when wet—use anti-slip footwear. • Protective equipment for non-emergency personnel; refer to Section 8. • Protective equipment for emergency responders, such as gloves, safety glasses, and protective clothing. • If a dust cloud is present: compressed air/oxygen apparatus, refer to Section 8.
Environmental Precautions	• Prevent large quantities from entering soil, surface water, or storm drains. High salinity can damage vegetation and aquatic organisms.
Methods & Materials for containment and cleaning up	• Avoid wetting the product if you intend to recover it. Vacuum or sweep gently to minimize dust. • If water is used for final wash-down, expect an exothermic reaction and possible steam release; cool the area before personnel re-enter. • Collect wash-water for disposal; do not allow contact with aluminum or zinc equipment (risk of hydrogen formation); refer to Section 13. • Flush residues to drain only if permitted by local regulations; otherwise, absorb with inert material and dispose of as non-hazardous salt waste.
Further Information	See section 13.

SECTION 7 HANDLING AND STORAGE

Advice on Safe Handling	• Flakes are hygroscopic; wet products become incredibly slippery. • Air conveying/mechanical systems are used for bulk transfer to storage. • Provide local exhaust or dust extraction. If dust cannot be controlled, wear a particulate respirator (EN 149 FFP2/NIOSH N95); refer to Section 8 for PPE Selection.

	• When preparing brine, add flakes slowly into water with stirring; never pour water onto a pile of salt — a powerful exotherm can cause boiling and splatter. • Keep separate from concentrated mineral acids. Avoid prolonged contact of solutions with aluminum, zinc, or tin (risk of hydrogen gas evolution).
Requirements for Storage Areas and Containers	• Keep bags tightly closed in moisture-proof packaging. • Store under the roof; avoid condensation. • Keep/Store away from extremely high temperatures, direct sunlight, heat, ignition sources, and incompatible materials. • Suitable Packaging material: High-density polyethylene (HDPE), Low-density polyethylene (LDPE).
Advice on Protection against Fire and Explosion	• The product is not flammable. Standard measures for preventive fire protection.
Further Information on Storage Conditions	• Avoid dust formation. • Refer to the protective measures listed in section 8.
Shelf Life	Under dry, sealed conditions, the product's chemical quality is stable for 36 months; exposure to humidity may cause caking and quality defects.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETERS

OSHA (PEL/TWA) 15 mg/m^3 Total Dust

8.2 ENGINEERING CONTROLS

Technical Measures

- Avoid raising dust.
- Carry out operations in the open, under local exhaust or ventilation, or with respiratory protection.
- Apply technical measures to comply with occupational exposure limits.

8.3 Personal Protective Equipment

Respiratory Protection	• Use personal respiratory protection that meets international and local standards if needed. • In case of insufficient ventilation, use a respirator with NIOSH-approved respiratory protection.
Hand Protection	Dry handling: lightweight nitrile or PVC gloves. If contact with hot brine is possible, use heat-insulated, chemical-resistant gloves. Replace if damaged or contaminated.
Eye Protection	Wear appropriate protective eyeglasses or chemical safety goggles and a face shield as described by OSHA's eye and face protection regulations in 29 CFR 1910.133.
Skin and Body Protection	• Wear long-sleeved clothing and slip-resistant safety boots. • Chemical splash suit where significant brine contact is likely. • Impervious gloves (made of rubber, PVC, or nitrile).
Hygiene Measures	• Use only in an area equipped with a safety shower. • Follow proper industrial hygiene and safety protocols.

	• Do not eat, drink, or smoke when interacting with the substance. • Wash your hands after every time you interact with the substance.
Environmental Exposure Controls	• Capture dust with a baghouse filtration system or a wet scrubber. • Minimize the discharge of saline wash water to drains; follow the disposal guidance in Section 13.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Solid Flakes
Color	White
Odor	Odorless
pH	7.5 – 10.5 @ 10%
Melting Point	772–775 °C
Volatility	Non-volatile
Specific Gravity	1.1 – 1.3
Relative Density	2.15 g/cm^3 (20 °C)
Solubility	• In water: 745 g/L @ 20 °C. • slightly soluble in methanol; practically insoluble in ethanol and most organic solvents.
Boiling point/decomposition	Not applicable – melts at 772 °C; decomposes above ~ 1600 °C (HCl/Cl_2 evolution).
Flash point, Flammability (solid)	Not flammable (non-combustible inorganic salt).
Vapor pressure	Negligible (< 0.01 Pa @ 25 °C).
Vapor density	Not applicable (non-volatile solid).
Viscosity	Not applicable (solid).
% Volatile / VOC	0 %.
Other information	Hygroscopic; dissolution in water is strongly exothermic.

SECTION 10 STABILITY AND REACTIVITY

Reactivity	• Stable salt; hygroscopic. Dissolution in water is strongly exothermic. • Dry Flakes absorb moisture from the air.
Chemical stability	Stable under recommended storage conditions.
Flammability	The non-combustible substance does not burn but may decompose upon heating to produce corrosive and toxic fumes.
Possibility of hazardous reactions	• Contact of aqueous solutions with aluminum, zinc, tin, or their alloys evolves flammable hydrogen gas.

	• Aqueous solutions corrode aluminum, zinc, magnesium, etc., releasing flammable hydrogen gas. • No known hazardous reaction with common oxidizing agents.
Conditions to avoid	• Minimize airborne dust where ignition sources or hot surfaces are present (hydrogen is possible from metal contact). • Avoid high humidity (the product cakes and releases heat upon wetting); also, avoid temperatures above 400 °C (which can cause decomposition). • Keep away from open flames and heat sources. • Avoid exposure to moisture over prolonged periods.
Thermal decomposition	Melts at around 772 °C; decomposes slowly above 1600 °C (releasing HCl/Cl_2).
Incompatible materials & materials to avoid	• Concentrated mineral acids (H_2SO_4, H_3PO_4) – form hot, acidic solutions and liberate HCl vapor. • Metals such as aluminum, zinc, tin – hydrogen evolution in brine. • Boric acid – forms insoluble calcium borate precipitate. • Calcium oxide – heat-producing reaction. • Keep water note as: "Contact with water generates heat (see § **Reactivity**)
Hazardous decomposition products	Hydrogen chloride vapor and trace chlorine are released when salt is molten / decomposed (> 800 °C).

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 TOXICOLOGICAL DATA

LD50 Oral	1000 mg/kg (rat)
LD50 Dermal	>500 mg/kg (rabbit)
LD50 Inhalation	Not acutely toxic by inhalation; no deaths at highest testable dust concentration (5 mg/L, 4 h)
Eye Contact	Irritating to the eyes
Skin Contact	May cause transient skin irritation, especially on abraded or moist skin — *not classified as a hazard*.
Non-irritating	Patch tests on human volunteers did not demonstrate sensitization properties.

11.2 INFORMATION ON TOXICOLOGICAL EFFECTS

Symptoms	No information available

11.3 DELAYED & IMMEDIATE EFFECTS AS WELL AS CHRONIC EFFECTS (SHORT AND LONG-TERM EXPOSURE)

Chronic toxicity	No known effect
Mutagenicity	No information available
Carcinogenicity	Not recognized as carcinogenic by Research Agencies (IARC, NTP, OSHA, ACGIH)

Reproductive Toxicity	No reproductive or developmental effects observed in animal studies (calcium salts are normal nutrients).
STOT- Single Exposure	Not classified; dust may irritate the upper airways.
STOT Repeated Exposure	Not classified; no target-organ toxicity in repeat-dose studies.
Aspiration hazard	Not an aspiration hazard (solid, non-hydrocarbon).

SECTION 12 ECOLOGICAL INFORMATION

12.1 ECOTOXICITY

	Parameter	Method	Value	Units	Duration	Species
Acute toxicity fishes	LC50	Other	10650	mg/L	96 h	Lepomis macrochirus
Acute toxicity to invertebrates	EC50	Other	759 - 3005	mg/L	48 h	Ceriodaphnia sp.
Toxicity of algae and other aquatic plants	EC50		2900	mg/L	5 days	Algae

12.2 PERSISTENCE AND DEGRADABILITY

Persistence	Biodegradability does not pertain to inorganic substances.
Biodegradability	The methods for determining biodegradability do not apply to inorganic substances.

12.3 BIOACCUMULATE POTENTIAL

Bioaccumulation Does not bioaccumulate

12.4 MOBILITY IN SOIL

Mobility in soil Dissociates in water; the calcium ion may adsorb to clay or humic sites, while chlorine remains mobile.

12.5 RESULTS OF PBT AND VPVB ASSESSMENT

Result The criteria of PBT and vPvB, as listed in Annex XIII of Regulation (EC) No 1907/2006, do not apply to inorganic substances.

12.6 OTHER ADVERSE EFFECTS

REMARKS Significant releases to freshwater can raise salinity, potentially stressing aquatic life and vegetation.

SECTION 13 DISPOSAL CONSIDERATIONS

13.1 PROVISIONS RELATING TO WASTE

This product is not listed in 40 CFR 261 and does not exhibit characteristic hazards (ignitability, corrosivity, reactivity, toxicity). However, high-salinity brine may require discharge permits—check local water authority limits.

13.2 WASTE DISPOSAL METHOD

- This material, as supplied, is not a hazardous waste according to USA Federal regulations (40 CFR 261).
- Dispose of according to federal, state, and local regulations.

13.3 CONTAINER HANDLING AND DISPOSAL

- Rinse the empty containers and treat the effluent in the same way as waste.
- Dispose of it according to federal, state, and local regulations.
- Do not reuse empty containers.

SECTION 14 TRANSPORT INFORMATION

- Flatbed truck, jumbo Bags (17/20/24/26 Tons)

DOT	Not regulated as a hazardous material
IATA	Not regulated as a hazardous material
IMDG	Not regulated as a hazardous material

SECTION 15 REGULATORY INFORMATION

Safety, health, and environmental regulations/legislation specific to the substance or mixture:

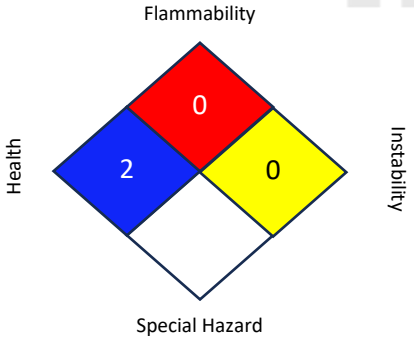
- RCJY: Royal Commissioning of Jubail and Yanbu – Saudi Arabia
- HCIS: The High Commission of Industrial Safety – Saudi Arabia
- WHMIS Classification: D2B Toxic material causing other toxic effects.

SECTION 16 OTHER INFORMATION

16.1 GENERAL INFORMATION

Training Advice Provide safety information, instruction, and training to operators.

NFPA:



HMIS III:

Health	2
Flammability	0
Physical Hazard	0

0 = Not Significant
1 = Slight
2 = Moderate
3 = High
4 = Extreme
*= Chronic

16.1 DISCLAIMER

To the best of InoChem's knowledge and belief, the information and recommendations contained herein are accurate and reliable as of the date issued. You can contact InoChem to ensure this document is the most current available from InoChem. The information and recommendations are offered for the user's consideration and examination. The user is responsible for ensuring that the

product is used in accordance with the customer's intended purpose. If the buyer repackages this product, the user must ensure that proper health, safety, and other necessary information is included with and on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users to ensure their safety and well-being. Any alteration to this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substance- es List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		