

Gypsum

SECTION 1. IDENTIFICATION

Product Identifier	Gypsum
Other Means of Identification	None
Other Identification	Calcium sulfate dihydrate
Product Family	Mineral
Recommended Use	Soil reclamation, drilling fluids, animal feed additive.
Restrictions on Use	None known.
Supplier Identifier	Secure Energy Services Suite 3600, 205 - 5 Avenue SW, Calgary, Alberta, T2P 2V7, www.secure-energy.com
Emergency Phone No.	CANUTEC, (613) 996-6666, 24/7
Date of Preparation	September 22, 2016

SECTION 2. HAZARD IDENTIFICATION

Classified according to Canada's Hazardous Products Regulations (WHMIS 2015) and the US Hazard Communication Standard (HCS 2012).

Classification

Carcinogenicity - Category 1A; Specific target organ toxicity (repeated exposure) - Category 1

Label Elements



Signal Word:

Danger

Hazard Statement(s):

H350 May cause cancer.

H372 Causes damage to organs through prolonged or repeated exposure.

Precautionary Statement(s):

Prevention:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe dust, mist, spray.

P264 Wash hands and skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves, protective clothing, eye protection.

Response:

P308 + P313 IF exposed or concerned: Get medical advice or attention.

P314 Get medical advice or attention if you feel unwell.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents and container in accordance with local, regional, national and international

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regulations.

Other Hazards

Not applicable.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	%	Other Identifiers
Silica, quartz	14808-60-7	1 - 2	None
Gypsum	13397-24-5	> 95	None

Notes

Silica/quartz concentration given represents the total amount of this ingredient in the product, including the respirable fraction.

Concentrations are expressed in % weight/weight.

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Move patient to fresh air. Monitor for respiratory distress. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis.

Skin Contact

Wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 5 minutes. Get medical advice or attention if you feel unwell or are concerned. Clean clothing, shoes and leather goods.

Eye Contact

Quickly and gently blot or brush chemical off the face. Rinse the contaminated eye(s) with lukewarm, gently flowing water for 5 minutes, while holding the eyelid(s) open. If eye irritation persists, get medical advice or attention.

Ingestion

If swallowed, have the conscious victim drink plenty of water. Never give anything by mouth to an unconscious victim. Get medical attention.

First-aid Comments

Get medical advice or attention if you feel unwell or are concerned.

Most Important Symptoms and Effects, Acute and Delayed

If on skin: may cause mild irritation. If in eyes: may cause mild irritation. May cause slight irritation as a "foreign object". Tearing, blinking and mild temporary pain may occur as particles are rinsed from the eye by tears. If inhaled: can irritate the nose and throat.

Immediate Medical Attention and Special Treatment

Target Organs

Eyes, skin, respiratory system.

Special Instructions

Monitor for respiratory distress. If cough or difficulty breathing develops, evaluate for respiratory tract irritation, bronchitis, or pneumonitis.

Medical Conditions Aggravated by Exposure

Eye conditions, skin conditions, respiratory conditions.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Not combustible. Use extinguishing agent suitable for surrounding fire. This product can be used as an extinguishing agent for small fires.

Unsuitable Extinguishing Media

Not applicable.

Specific Hazards Arising from the Product

Does not burn. This product presents no unusual hazards in a fire situation. Irritating or toxic substances may be emitted upon thermal decomposition. Sulphur oxides.

Special Protective Equipment and Precautions for Fire-fighters

This product will not act as a fuel to a fire. Gypsum will readily absorb water and may affect the flow of water from a fire location.

No special equipment is required. Wear equipment suitable for surrounding fire.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Evacuate downwind locations. Do not touch damaged containers or spilled product unless wearing appropriate protective equipment. Use the personal protective equipment recommended in Section 8 of this safety data sheet. Increase ventilation to area or move leaking container to a well-ventilated and secure area.

Environmental Precautions

It is good practice to prevent releases into the environment.

Methods and Materials for Containment and Cleaning Up

Review Section 7 (Handling) of this safety data sheet before proceeding with clean-up. Stop or reduce leak if safe to do so. Avoid generating dust. Avoid dry sweeping. If necessary, use a dust suppressant such as water. Do not use compressed air for clean-up. Use water fog or spray curtain to reduce amount of dust in air. Collect using shovel/scoop or approved HEPA vacuum and place in a suitable container for disposal. Store recovered product in suitable containers that are: tightly-covered.

Other Information

Report spills to local health, safety and environmental authorities, as required.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Handle in a manner that will minimize generation of dusts. Avoid breathing dusts. Ground containers during transfer of product. Compressed air should not be used for cleaning these dusts. Only use where there is adequate ventilation. Prevent uncontrolled release of product. Immediately report leaks, spills or failures of the safety equipment (e.g. ventilation system). Keep containers tightly closed when not in use or empty. Do NOT eat, drink or store food in work areas. Do not swallow. Remove contaminated clothing and protective equipment before entering eating areas or leaving work area. Wash hands thoroughly after handling this product and before eating, using the washroom or leaving work area. Thoroughly clean clothing, shoes and leather goods before reuse or dispose of safely. Do not take contaminated clothing home.

Conditions for Safe Storage

Store in an area that is: dry, well-ventilated. Keep amount in storage to a minimum. Avoid bulk storage indoors. Keep containers closed. Empty containers may contain hazardous residue. Store separately. Keep closed. Follow all precautions given on this safety data sheet. Comply with all applicable health and safety regulations, fire and building codes.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Chemical Name	ACGIH TLV®		OSHA PEL		AIHA WEEL	
	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
Silica, quartz	0.025 mg/m ³ (R) A2	Not established	0.1 mg/m ³ (R)	Not established	Not established	Not established

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Gypsum	10 mg/m3	Not established	5 mg/m3 (R)	Not established	Not established	Not established
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R = Respirable fraction. A2 = Suspected human carcinogen.

Appropriate Engineering Controls

Do not allow product to accumulate in the air in work or storage areas, or in confined spaces. Use local exhaust ventilation, if general ventilation is not adequate to control amount in the air. Provide eyewash and safety shower if contact or splash hazard exists.

Individual Protection Measures

Eye/Face Protection

Chemical safety glasses with side shields.

Skin Protection

Wear clothing to prevent direct contact with skin. Wear gloves (leather) to prevent contact with powder.

Respiratory Protection

NIOSH RECOMMENDATIONS FOR SILICA (CRYSTALLINE (AS RESPIRABLE DUST)) CONCENTRATIONS IN AIR:

Up to 0.5 mg/m3:

(APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100.

Up to 1.25 mg/m3:

(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter. Any supplied-air respirator operated in a continuous-flow mode.

Up to 2.5 mg/m3:

(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter.

Up to 25 mg/m3:

(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	White powder.
Odour	Odourless
Odour Threshold	Not applicable
pH	6.0 - 7.6 (20% solution); Neutral
Melting Point/Freezing Point	1450 °C (2642 °F) (melting); Not available (freezing)
Initial Boiling Point/Range	Not applicable
Flash Point	Not applicable
Evaporation Rate	Not applicable
Flammability (solid, gas)	Will not burn.
Upper/Lower Flammability or Explosive Limit	Not applicable (upper); Not applicable (lower)
Vapour Pressure	Does not form a vapour.
Vapour Density (air = 1)	Not applicable
Relative Density (water = 1)	2.3 - 2.4
Solubility	0.240 g/100 mL (Slightly soluble) in water; Insoluble in common organic solvents.
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	Not applicable
Decomposition Temperature	1450 °C (2642 °F)
Viscosity	Not applicable (kinematic); Not applicable (dynamic)

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Other Information

Physical State	Solid
Molecular Formula	Ca-O4-S.2(H2O)
Molecular Weight	172.18

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None expected under normal conditions of storage and use. Will not polymerize.

Conditions to Avoid

Generation of dust. Incompatible materials.

Incompatible Materials

Avoid contact with strong oxidizing agents such as fluorine, chlorine trifluoride, diazomethane and oxygen difluoride may cause an exothermic reaction (heat). Several metal oxo-compounds and sulfides mixed with gypsum and aluminum can create a violent reaction.

Not corrosive to metals.

Hazardous Decomposition Products

Under fire conditions: sulfur oxides.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation; skin contact; eye contact.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Silica, quartz	Not available	500 mg/kg (rat)	Not available
Gypsum	Not available	Not available	Not available

Skin Corrosion/Irritation

Under normal conditions of intended use, this product does not pose a skin hazard. Pure gypsum is not irritating to the skin.

Serious Eye Damage/Irritation

Dust is not irritating except as a "foreign object", based on animal information relating to its hemi-hydrated form. Some tearing, blinking and mild temporary pain may occur as the solid material is rinsed from the eye by tears.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

The available information indicates that pure gypsum dust is practically non-toxic. High concentrations of dust may cause coughing and mild temporary irritation. Gypsum is considered a nuisance particulate but it will absorb moisture quickly causing clumps in the nasal passages and upper respiratory tract. May cause inflammation of mucous membranes and nosebleeds.

Skin Absorption

Not absorbed through the skin.

Ingestion

No human or animal information is available. Gypsum appears to have low toxicity by other routes of exposure. Other low toxicity dusts have caused mild, temporary discomfort. As gypsum absorbs moisture clumps may form and create blockages in the stomach.

Aspiration Hazard

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Not known to be an aspiration hazard.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

Long industrial experience with gypsum has shown that it causes only minor, reversible health effects on the lungs. In general, long-term exposures to high concentration of dust may cause increased mucous flow in the nose and respiratory system airways. This condition usually disappears after exposure stops.

Controversy exists as to the role exposure to dust has in the development of chronic bronchitis (inflammation of the air passages into the lungs). Other factors such as smoking and general air pollution are more important, but dust exposure may also contribute.

Prolonged or repeated exposure to fine airborne crystalline silica dust, like quartz dust, is known to be harmful to the respiratory system. The most important respiratory disease associated with crystalline silica exposure is silicosis, which can be complicated by the development of bacterial disease such as tuberculosis. Other respiratory effects include chronic obstructive pulmonary disease, and a rare condition known as pulmonary alveolar proteinosis.

Foreign-body reactions (granulomas) have been observed after crystalline silica has accidentally gotten lodged under the skin, as the result of a physical injury. Often this effect is delayed for weeks to years. Several human population studies have found significant associations between the inhalation exposure to airborne crystalline silica and kidney diseases. However, there is not enough evidence to conclude a causal link. There have been many published case reports that describe various autoimmune disorders in workers exposed to crystalline silica. These disorders include scleroderma (a disease involving thickening of the skin), lupus, rheumatoid arthritis, autoimmune hemolytic anemia, and connective tissues disorders. There have also been case reports of conditions that may be related to immunological abnormalities, including chronic kidney disease, and problems with the thyroid, nervous system and blood vessels. Some human population studies have reported a significant increase in deaths from autoimmune diseases in workers exposed to airborne crystalline silica.

Respiratory and/or Skin Sensitization

Not a skin sensitizer. Not a respiratory sensitizer.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Silica, quartz	Group 1	A2	Known carcinogen	Not Listed
Gypsum	Not Listed	Not designated	Not Listed	Not Listed

The International Agency for Research on Cancer (IARC) has concluded that crystalline silica in the form of quartz or cristobalite from occupational sources is carcinogenic to humans. This conclusion is based on a relatively large number of human population studies that together provide sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the form of quartz or cristobalite. In many (although not all) of these studies, lung cancer risks were elevated and could not be explained by other factors. More recent studies also support the causal association between lung cancer and inhalation exposure to crystalline silica. The question of whether the lung cancer is caused directly by exposure to crystalline silica or indirectly from the development of silicosis has not been resolved.

Key to Abbreviations

A2 = Suspected human carcinogen. Group 1 = Carcinogenic to humans.

Reproductive Toxicity

Development of Offspring

Does not cause harm to the unborn child.

Sexual Function and Fertility

Does not cause effects on sexual function or fertility.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

No specific information is available. Probably not mutagenic.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

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Ecotoxicity

The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Silica, quartz	Not available	Not available	Not available	Not available
Gypsum	> 1970 mg/L (Pimephales promelas (fathead minnow); 96-hour)	Not available	Not available	Not available

Persistence and Degradability

The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulative Potential

Bioaccumulation is not expected.

Mobility in Soil

No information was located.

Other Adverse Effects

There is no information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Recycle and reuse product, if possible. Contact local environmental authorities for approved disposal or recycling methods in your jurisdiction. The required hazard evaluation of the waste and compliance with the applicable hazardous waste laws are the responsibility of the user. Treat waste in an approved waste disposal facility. Store product for disposal as described under Storage in Section 7 of this safety data sheet. Empty containers retain product residue. Follow label warnings even if container appears to be empty. Dispose of or recycle empty containers through an approved waste management facility.

SECTION 14. TRANSPORT INFORMATION

Not regulated under Canadian TDG regulations. Not regulated under US DOT Regulations. Not regulated under IATA Regulations.

Environmental Hazards Not applicable

Special Precautions Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL/NDSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

Additional USA Regulatory Lists

CERCLA: Not listed. SARA Title III - Section 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302. SARA Title III - Section 311/312: chronic health hazard. SARA Title III -

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Section 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313. Massachusetts Right To Know: Listed. (Silica, quartz) Pennsylvania Right To Know: Listed. (Silica, quartz) New Jersey Right To Know: Listed. (Silica, quartz) California Proposition 65: WARNING! This product contains a chemical known to the State of California to cause cancer. (Silica, quartz).

SECTION 16. OTHER INFORMATION

SDS Prepared By Safety Committee

Phone No. 403-264-1588

Date of Preparation September 22, 2016

Date of Last Revision September 22, 2016

Revision Indicators Not applicable.

Key to Abbreviations ACGIH® = American Conference of Governmental Industrial Hygienists
AIHA® = AIHA® Guideline Foundation. HSDB® = Hazardous Substances Data Bank
IARC = International Agency for Research on Cancer
NFPA = National Fire Prevention Association
NIOSH = National Institute for Occupational Safety and Health
NTP = National Toxicology Program
OSHA = US Occupational Safety and Health Administration
RTECS® = Registry of Toxic Effects of Chemical Substances
TLV = Threshold Limit Value
STEL = Short Term Exposure Limit
TWA = Time Weighted Average
REL = Recommended Exposure Limit
PEL = Permissible Exposure Limit
IDLH = Immediately Dangerous to Life and Health
DSL = Domestic Substances List
NDSL = Non-Domestic Substances List
TSCA = Toxic Substances Control Act

References CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS).

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