



MSDS – Boron 10%

Revision July 28, 2011

Section 1. Product Identification

Trade Name: Boron 10% Maxi Granule

Chemical Name: Ulexite

Chemical Formula: $\text{NaCaB}_5\text{O}_9 \cdot 8\text{H}_2\text{O}$

CAS No: 1319-331

Product Use: Agricultural Fertilizer Micronutrient

Distributed by Pestell Minerals & Ingredients, New Hamburg, ON Canada
24 Hour Emergency Telephone (Canutec): 613-996-6666

Section 2. Hazard Identification

Overview

Ulexite is a white, odorless, granular substance that is not flammable, combustible or explosive, and it presents no unusual hazard if involved in a fire. Ulexite presents little or no hazard to humans and has low acute oral and dermal toxicities. Care should be taken to minimize the amount of Ulexite released to the environment to avoid ecological effects.

Potential Ecological Effects

Large amounts of Ulexite can be harmful to boron-sensitive plants and other ecological systems.

Potential Health Effects

Routes of Exposure: Inhalation is the most significant route of exposure in occupational and other settings. Dermal exposure is not a concern because Ulexite is not absorbed through intact skin.

Inhalation

Occasional mild irritation effects to nose and throat may occur from inhalation of Ulexite dusts at levels greater than 10mg/me).

Eye Contact

Ulexite is non-irritating to eyes in normal industrial use.

Skin Contact:

Ulexite does not cause irritation to intact skin.

Ingestion

Products containing Ulexite are not intended for ingestion. Ulexite has a relatively low acute toxicity. Small amounts (e.g. a teaspoonful) swallowed accidentally are not likely to cause effects; swallowing amounts larger than that may cause gastrointestinal symptoms.

Cancer

Ulexite did not cause cancer in long term animal studies and is not considered a carcinogen.

Reproductive

Long term high dose animal ingestion studies have demonstrated reproductive effects in male animals. A human study of occupational exposure to borate dust showed no adverse effects to reproduction.

Developmental: High dose animal ingestion studies have demonstrated developmental effects in fetuses of pregnant animals, including fetal weight loss.

Target Organs

No target has been identified in humans. High dose animal ingestion studies indicate the testes are the target organs in male animals, though human studies have not shown such results.

Signs and Symptoms of Exposure: Symptoms of accidental over exposure to Ulexite have been associated with ingestion or by absorption through large areas of damaged skin. These include nausea, vomiting and diarrhea with delayed effects of skin redness and peeling.

3. First Aid Measures

Inhalation

No specific treatment is necessary since Ulexite is not likely to be hazardous by inhalation. Prolonged exposure to dust levels in excess of regulatory limits should always be avoided.

Eye Contact

Use eyewash fountain or fresh water to cleanse eye. If irritation persists for more than 30 minutes, seek medical attention.

Skin Contact

Wash with soap and water

Ingestion

Swallowing less than one teaspoon will cause no harm to healthy adults. If large amounts are swallowed, give two glasses of water to drink and seek medical attention.

Note to Physician

Observation only is required for adult ingestion of less than 6 grams of Ulexite. For ingestion in excess of 6 grams, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Hemodialysis should be reserved for massive acute ingestion or patients with renal failure. Ulexite analysis for urine or blood are only useful for documenting exposure and should not be used to evaluate severity of poisoning or to guide treatment.

4. Fire Fighting Measures

General Hazard: None, because Ulexite is not flammable, combustible or explosive. The product is itself a flame retardant.

Extinguishing Media: Any fire extinguishing media may be used on nearby fires.

Flammability Classification: 29CFR 1910.1200: Non flammable solid.

5. Accidental Release Measures

Land Spills

Vacuum, shovel or sweep up Ulexite and place in containers for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during cleanup and disposal. No personal protective equipment is needed to clean up land spills.

Water Spills

Ulexite will cause localized contamination of surrounding waters depending on the quantity dissolved. At high concentrations some damage to local vegetation, fish and other aquatic life may be expected.

Ulexite is non hazardous waste when spilled or disposed of, as defined in the Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261).

6. Handling and Storage

Storage Temperature: Room temperature (72oF)

Storage Pressure: Atmospheric

Special Sensitivity: Moisture (Caking)

General: Though Ulexite does not require any special precautions, it is sensitive to moisture and will cake. Therefore, the bags should be kept tightly sealed and be stored indoors in a dry environment. Also, the bags should be rotated on a “first-in-first-out” basis. Good housekeeping procedures should be followed to minimize dust generation and accumulations.

7. Exposure Controls/Personal Protection

Engineering Controls: Use local exhaust ventilation to keep airborne concentrations of Ulexite dust below permissible exposure levels.

Person Protection: Where airborne concentrations are expected to exceed exposure limits, NIOSH/MSHA certified respirators must be used. Eye goggles and gloves are not required for normal industrial exposures but may be warranted if environment is excessively dusty.

Occupational Exposure Limits: Ulexite is listed/regulated by OSHA, Cal OSHA and ACGIH as “Particulate Not Otherwise Classified” or Nuisance Dust.

OSHA-PEL:	-15 mg/m ³ total dust
	-5 mg/m ³ respirable dust
ACGIH-TLV:	-10 mg/m ³
Cal OSHA-PEL:	-10 mg/m ³

8. Physical and Chemical Properties

Appearance: White, odorless, crystalline solid

Sol. In Water: 0.5% (20oC)

9. Stability and Reactivity

Ulexite is a stable product

Incompatible Materials: Reaction with strong reducing agents such as metal hydrides will generate hydrogen gas which could create an explosive hazard.

10. Toxicological Information

Ingestion (Acute Oral Toxicity): Low acute oral toxicity: LD50 in rats is 3200 mg/kg of body weight.

Skin (Acute Dermal Toxicity): Low acute dermal toxicity: LD50 in rabbits is greater than 2000 mg/kg of body weight. Ulexite is not absorbed through intact skin.

Primary Skin Irritation Index: 0 (zero). Ulexite is non-corrosive

Eye: Draize test in rabbits produced mild eye irritation effects. Fifty years of occupational exposure history show no indication of human eye injury from exposure to Ulexite.

Note: Ulexite is chemically and toxicologically related to Boric Acid, the majority of the borate chronic toxicology studies were conducted using Boric Acid. Ulexite is converted to Boric Acid in biological systems. The boric acid data discussed in this section can be converted to Ulexite equivalent data by dividing by a factor of 0.768.

Inhalation: Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposure to Boric Acid dust.

Carcinogenicity: A technical report issued by the National Toxicology program showed “no evidence of carcinogenicity” from a full 2 year bioassay on Boric Acid in mice at feed doses of 2500 and 5000 ppm in the diet. No mutagenic activity was observed for Boric Acid in a recent battery of four short-term Mutagenicity assays.

Reproductive Toxicity: Dietary Boric Acid levels of 6,700 ppm in chronic feeding studies in rats and dogs produced testicular atrophy, while dogs and cats receiving 2000ppm did not develop testicular changes. In chronic feeding studies of mice on diets containing 5000 ppm (550 mg/kg/d) boric acid, testicular atrophy was present, while mice fed 2500 ppm (275 mg/kg/d) boric acid showed no significant increase in testicular atrophy. In a reproduction study on rats, 2000 ppm of dietary boric acid had no adverse effect on lactation, litter size, weight and appearance. In a continuous breeding study in mice there was a reduction of fertility rates for males receiving 4500 ppm (636 mg/kg/d) boric acid but not for females receiving 4500 ppm boric acid.

Developmental Toxicity: Boric Acid at dietary levels of 1000 ppm (78 mg/kg/d) administered to pregnant female rats throughout gestation cause a slight reduction in fetal weight but was considered to be close to the NOAEL. Doses of 2000 ppm (163 mg/kg/d) and above caused fetal malformation and maternal toxicity. In mice to no effect level for fetal weight reduction and maternal toxicity was 1000 ppm (248 mg/kg/d) boric acid. Fetal weight loss was noted at dietary boric acid levels of 2000 ppm (452 mg/kg/d) and above.

11. Ecological Information

Phytotoxicity: Although Boron is an essential micronutrient for healthy growth of plants, it can be harmful to boron-sensitive plants in higher quantities. Care should be taken to minimize the amount of Ulexite released to the environment.

Fish Toxicity

Rainbow Trout (*S.gairdneri*) – 24 day LC50=150.0 mg/B/L 36 day NOEC-LOEC=0.75-1 mg/BL
Goldfish (*Carassius auratus*) – 7 day NOEC-LOEC=26.50 mg/BL 3 Day LC50=178 B/L

Persistence/Degradation: Boron is naturally occurring and ubiquitous in the environment.
Soil Mobility: Ulexite has very low solubility in water and will leach through the soil at very slow rate.

12. Disposal

Guidance: Small quantities of Ulexite can usually be disposed of at Municipal Landfill sites. No special disposal treatment is required, but refer to state and local regulations for applicable site-specific requirements. Tonnage quantities of product are not recommended to be sent to landfills. Such products should be re-used for an appropriate application.

13. Transportation Information

DOT Hazardous Material Classification: Ulexite is not a U.S. Department of Transportation Hazardous Material

DOT Hazardous Substances Classification: Ulexite is not a DOT Hazardous Substance

International Transportation: Ulexite has no U.N. number and is not regulated under any international rail, highway or air transport regulations.

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