



Safety Data Sheet

Miller Boro Zinc® 10-10

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03
Canadian Workplace Hazardous Material Information System (WHMIS) 2015
Mexico NOM-018-STPS-2000; NOM-018-STPS-2015
GHS (Globally Harmonized System)

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name Miller Boro Zinc® 10-10
Pure substance/mixture Mixture

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use Soluble Fertilizer.
Uses advised against None known

1.3. Details of the supplier of the safety data sheet

Manufacturer Miller Chemical and Fertilizer, LLC
120 Radio Rd
Hanover, PA 17331
Tel.: 717-632-8921
Fax.: 717-646-1104

Internet <http://www.millerchemical.com>

E-mail info@millerchemical.com

1.4. Emergency telephone number CHEMTREC: +1 800 424 9300 or International 1+703-527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

OSHA Regulatory Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

GHS Classification Considered a hazardous substance or mixture according to the Globally Harmonized System (GHS)

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Physical Hazards

Not classified.

Health Hazards

Acute tox. Oral, Cat. 4; H302
Eye Damage Category 1; H318
Repr. Tox. Cat. 1B; H360

Environmental Hazard

Aquatic Acute Category 1; H400
Aquatic Chronic Category 1; H410

2.2. Label elements**Symbols/Pictograms****Signal Word**

Danger

Hazard Statements

H302 - Harmful if swallowed
H318 - Causes serious eye damage
H360 - May damage fertility or the unborn child
H410 - Very toxic to aquatic life with long lasting effects

Precautionary Statements**Prevention**

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Wear protective gloves/protective clothing/eye protection/face protection
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid release to the environment

Response

IF exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
Collect spillage

Storage

Store locked up

Disposal

Dispose of contents/containers in accordance with local regulations

Additional information

Not applicable

Hazards not otherwise

None known

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classified (HNOC)

SECTION 3: Composition/information on ingredients

Pure substance/mixture Mixture

Chemical Name	CAS NUMBER:	Weight-%
Boric acid	10043-35-3	45 - 70
Zinc Sulfate	7446-19-7	10 - 30
Mixture of Carboxylic Acids	MIXTURE	5 - 10

Additional information *The exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4: First aid measures**4.1. Description of first aid measures**

General Advice	When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.
Eye Contact	Immediately flush eyes with plenty of water for at least 15 minutes, while holding eyelids apart to ensure flushing of entire surface. Call a physician.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and wash before reuse. Get medical attention.
Ingestion	DO NOT INDUCE VOMITING. If vomiting occurs naturally, reduce the risk of aspiration by leaning their body forward. Clean mouth with water and afterwards drink plenty of water. Never give anything by mouth to an unconscious person. Get medical attention.
Inhalation	Remove to fresh air. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

4.2. Most important symptoms and effects, both acute and delayed For Acute Exposure: May cause skin and eye damage. May cause corneal burn. May cause gastrointestinal disturbance. May cause nose and throat irritation. For Chronic Exposure: May cause dermatitis or irritation in some individuals upon prolonged contact. May cause conjunctivitis. May cause inhalation reflex bronchial constriction.

4.3. Indication of any immediate medical attention and special treatment needed Treatment should be symptomatic and supportive. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

SECTION 5: Firefighting measures**5.1. Extinguishing media****Suitable Extinguishing Media**Alcohol-resistant foam. Carbon dioxide (CO₂). Water spray (fog). Dry chemical. Halon.

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Unsuitable Extinguishing Media
None known.

5.2. Special hazards arising from the substance or mixture Dust in sufficient concentration can result in an explosive mixture in air. Minimize dust and open flame.

Dust in sufficient concentration can result in an explosive mixture in air. Minimize dust and open flame.

5.3. Advice for firefighters

Special protective equipment for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing.

Fire-fighting measures

Water mist may be used to cool closed containers. No special fire protection measures are necessary. Standard procedure for chemical fires.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate non-essential personnel, eliminate ignition sources, and wear protective equipment (See Section VIII). Shut off source of leak only if safe to do so. Wear respiratory equipment if exposure limits are exceeded.

For non-emergency personnel Keep unauthorized personnel away.

For emergency responders Keep unauthorized personnel away. Use personal protection recommended in Section 8.

6.2. Environmental precautions Avoid runoff to waterways and sewers.

6.3. Methods and material for containment and cleaning up

Recover free product. To clean up residue, flush sparingly with water or use an absorbent. Avoid runoff to waterways and sewers. It may be necessary to remove contaminated soil. If product is flammable or combustible, use non-sparking tools. If acidity (low pH) is a problem, neutralize with hydrated lime, soda ash, or sodium bicarbonate. If alkalinity (high pH) is a problem, neutralize with dilute acetic acid or dilute hydrochloric (muriatic) acid. If required, notify state and local authorities.

Disposal Method Solids must be disposed of in a permitted waste management facility. Recovered liquids may be reprocessed or incinerated. Incineration must be handled in a permitted facility. Dispose of material in accordance with all Federal, State and Local regulations. Local regulations may be more stringent than Federal or State.

6.4. Reference to other sections See Section 8 for exposure controls and personal protection. See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Wear protective equipment when handling. Wash thoroughly after handling. Do not get in eyes. Do not breathe vapor, mist, or dust. Avoid prolonged or repeated contact with skin. Do not swallow.

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7.2. Conditions for safe storage, including any incompatibilities For industrial use only. Keep container closed when not in use. Provide adequate ventilation when container are open. Keep out of reach of children.

7.3. Specific end use(s) See Section 1.2.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits No information available

Boric acid - 10043-35-3

OSHA	Not established
ACGIH	6 mg/m ³
Canada - British Columbia - OEL- STELs	6 mg/m ³
Canada - Ontario - OEL - STEVs	6 mg/m ³ STEL
Canada - Ontario - OEL - TWA EVs	2 mg/m ³

Zinc Sulfate - 7446-19-7

OSHA	15 mg/m ³ (total dust)
	5 mg/m ³ (respirable fraction)

Biological Limit Values No information available

8.2. Exposure controls

Engineering Measures Use mechanical ventilation (dilution and local exhaust) to control exposure.

Personal protective equipment

Eye/Face Protection Chemical goggles or face shield with safety glasses. Always wear eye protection when working with chemicals.

Skin and Body Protection Rubber gloves. Clean protective body covering, rubber apron, and rubber boots.
Hand Protection For operations where prolonged or repeated skin contact may occur, impervious gloves should be worn.

Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Respiratory protection programs must be in compliance with OSHA requirements in 29 CFR 1910.134.

Hygiene Measures Avoid contact with skin, eyes, and clothing. After handling this product, wash hands before eating, drinking or smoking. If contact occurs, remove contaminated clothing. If needed, take First Aid action shown in Section 4. Launder contaminated clothing before use.

Environmental Exposure Controls Dispose of in accordance with local regulations.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties****Appearance:**

Physical State	Crystalline Granules
Color	White, Lime Green and/or Blue
Odor	Slight to Moderate
pH:	4.0 - 7.0 @ 20 °C
Melting point / Freezing point	Not applicable
Boiling Point / Boiling Range	Not determined
Freezing Point	Not determined
Flash Point	Not determined
Evaporation Rate	Not determined
Flammability (solid, gas)	Not determined
Vapor Pressure	Not determined
Vapor Density	Not determined
Density	No data available
Bulk Density	Varies with different grades
Water Solubility	Soluble
Partition coefficient	No information available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No information available.
Kinematic viscosity	No data available
Oxidizing Properties	Not applicable
Particle Size	No information available
Percent Volatile	Not determined
VOC Content (%)	Not applicable

9.2. Other information**9.2.1. Information with regard to physical hazard classes**

No data available

9.2.2. Other safety characteristics

Not applicable

SECTION 10: Stability and reactivity

10.1. Reactivity	Stable under normal conditions
10.2. Chemical stability	Stable under normal conditions
10.3. Possibility of hazardous reactions	No specific hazard known
10.4. Conditions to avoid	Extreme temperatures and wet/humid conditions
10.5. Incompatible materials	Strong oxidizing agents Reducing agents Sodium hypochlorite Strong alkalis

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Page 7 of 12**10.6. Hazardous decomposition products** None known**SECTION 11: Toxicological information****General Information** Users are advised to consider national Occupational Exposure Limits or other equivalent values.**Information on Likely Routes of Exposure**

Inhalation	May cause irritation. Not classifiable
Skin	May cause irritation Not classifiable
Eyes	Avoid contact with eyes
Ingestion	Harmful if swallowed

11.1. Information on toxicological effects**Boric acid**

LD50s and LC50s	2120 mg/m ³ Inhalation LC50 Rat 4 h 2.12 mg/L Inhalation LC50 Rat 4 h
Oral LD50	LD50 - Route: Oral - Species: Rat (Male) > 2000 mg/kg bw - Notes: OECD 401 (UE B.1 Method)
Dermal LD50	LD50 - Route: Dermal - Species: Rabbit > 2000 mg/kg bw - Notes: FIFRA (40 CFR 163)
Group 2A - Probably Carcinogenic to Humans NTP (National Toxicology Program)	Monograph 53 [1991]
Serious eye damage/eye irritation	Male Rat - Not Tested; Female Rat - Not Tested; Male Mice - No Evidence; Female Mice - No Evidence
Skin Sensitization	Not classified.
Reproductive Toxicity	Not classified. Presumed human reproductive toxicant, Category 1B

Zinc Sulfate

Oral LD50	574 mg/kg (rat)
Dermal LD50	>2000 mg/kg (rat)
Inhalation LC50	Not determined
Mutagenicity	No data available for zinc sulfate, monohydrate. However the anhydrous and heptahydrate forms tested positive in several in vivo and in vitro tests. In vitro assays of human lymphocytes indicate that zinc salts may cause chromosomal aberrations. Mice were fed a diet containing 0.5% zinc salts. Chromosomal aberrations were noted in the bone marrow cells of the 50% of mice which survived 30 days.
Carcinogenicity	Not listed

Mixture of Carboxylic Acids

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Acute Toxicity	Harmful if swallowed
Respiratory Sensitization	No data available
Serious eye damage/eye irritation	Causes serious eye damage
Skin Corrosion/Irritation	No data available
Skin Sensitization	No data available
Mutagenicity	No data available
Reproductive Toxicity	Boric acid Presumed human reproductive toxicant, Category 1B
Carcinogenicity	No data available
Specific target organ toxicity - Single exposure	No data available
Specific target organ toxicity - Repeated exposure	No data available

Mixture versus substance information Mixture

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties	No endocrine disruptors present in concentrations $\geq 0.1\%$
11.2.2. Other information	Not applicable

SECTION 12: Ecological information

12.1. Toxicity	Very toxic to aquatic life with long lasting effects
<u>Boric acid</u>	
WGK Classification (AwSV)	315 WGK: 1
<u>Zinc Sulfate</u>	
Aquatic toxicity	Toxicity to fish: LC50= 13 ppm (cichlid, 96 h) Lethal= 0.3 mg/L (stickleback, 120 h, as Zn) LC50 = 4.76 mg/L (Sa/mo gairdneri (rainbow trout), 48 h, hard water, continuous flow) LC50 = 4.6 ppm (Sa/mo gairdneri (rainbow trout), 96 h, fresh water) LC50 = 300 mg/L (Lehistes reticulatus, male, 96 h) LC50 = 278 mg/L (Lehistes reticulatus, female, 96 h) LC50 = 65 mg/L (Labeo rohita, 96 h, freshwater, small fish, static renewal) LC50 = 77.5 mg/L (Laheo rohita, 96 h, freshwater, large fish, static renewal) Toxicity to crustaceans: LC50 = 741.3 ppm (Scylla serrata, 24 h, static bioassays) LC50= 645.7 ppm (Scylla serrata, 48 h, static bioassays) LC50= 489.8 ppm (Scylla serrata, 72 h, static bioassays) LC50 = 398.1 ppm (Scylla serrata, 96 h, static bioassays)

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Persistence / Degradability	Zinc compounds are persistent in aquatic environments.
Bioaccumulative potential:	Zinc compounds are accumulated by some organisms but are not considered to be bioconcentrative.
Mobility	Not determined

12.2. Persistence and degradability No data available

12.3. Bioaccumulative potential No data available

12.4. Mobility in soil No data available

12.5. Results of PBT and vPvB assessment No data available

12.6. Endocrine disrupting properties No endocrine disruptors present in concentrations $\geq 0.1\%$

12.7. Other Adverse Effects Ecotoxicity: Large spills could possibly damage vegetation. Contamination of waterways could possibly cause fish kills. Prevent spread and runoff into drains, storm sewers, and ditches that lead to waterways.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal Methods	If uncontaminated, recover and reuse as product. If contaminated with other materials, the nature and extent of contamination may require use of specialized disposal methods. Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated Packaging	Product residue may remain in empty containers. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: Transport information

Mode of Transportation (Road, Water, Air, Rail)

TDG -Canada	Not regulated in non-bulk packages (<119 gal/<882 lb) UN3077, Environmentally hazardous substances, solid, n.o.s. (Zinc Sulfate), 9, PG III
DOT	Not regulated in non-bulk packages (<882 lb/400 kg), , UN3077, Environmentally hazardous substances, solid, n.o.s. (Zinc Sulfate), 9, PG III
ADR	UN3077, Environmentally hazardous substances, solid, n.o.s. (Zinc Sulfate), 9, PG III
RID	UN3077, Environmentally hazardous substances, solid, n.o.s. (Zinc Sulfate), 9, PG III
ADN	UN3077, Environmentally hazardous substances, solid, n.o.s. (Zinc Sulfate), 9, PG III
IATA	UN3077, Environmentally hazardous substances, solid, n.o.s. (Zinc Sulfate), 9, PG III
IMDG/IMO	UN3077, Environmentally hazardous substances, solid, n.o.s. (Zinc Sulfate), 9, PG III
ICAO	UN3077, Environmentally hazardous substances, solid, n.o.s. (Zinc Sulfate), 9, PG III

14.1. UN number or ID number UN3077

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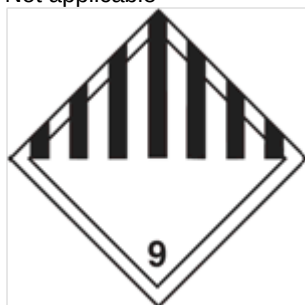
14.2. UN proper shipping name UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S (Zinc Sulfate)

14.3. Transport hazard class(es) 9

14.4. Packing group III

14.5. Environmental hazards Marine Pollutant

14.6. Special precautions for user Not applicable

14.7. Maritime transport in bulk according to IMO instruments
Not applicable**SECTION 15: Regulatory information****Global Inventories**

Pure substance/mixture

Mixture

Chemical Name	CAS Number	Canada (DSL)	Mexico	TSCA: United States
Boric acid	10043-35-3	Y	Y	A
Zinc Sulfate	7446-19-7	Present (DSL)	N	N
Mixture of Carboxylic Acids	PROPRIETARY	Y	Y	A

Y: Complies ; A: Active ; - / N: Exempt / Not Listed

Regulatory Restrictions / Status:

Not currently approved for food use in European Union.

EPA**Boric acid****SARA 302****SARA 304**This material does not contain any components with a section 302 EHS TPQ.
Not Listed

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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.

Zinc Sulfate**CERCLA****SARA 302****SARA 313**

Final RQ = 1000 pounds (454 kg) (related to Zinc sulfate)

There are no specific Threshold Planning Quantities for Zinc Sulfate Monohydrate.

Form R reporting required for 1.0% de minimus concentration (related to Zinc compounds)

CWA (Clean Water Act)

Zinc Sulfate (CAS 7446-19-7)

CAA (Clean Air Act)

Not regulated

U.S. State Right-to-Know Regulations

Chemical Name	CAS Number	California Proposition 65	Massachusetts	Minnesota	New Jersey	Pennsylvania
Boric acid	10043-35-3	N	N	N	N	N
Zinc Sulfate	7446-19-7	N	N	N	N	N
Mixture of Carboxylic Acids	PROPRIETARY	N	N	N	N	N

Y: Listed ; N: Not Listed

CANADA**WHMIS**

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR

Boric acid

H360

SECTION 16: Other information**Prepared by**

Miller Chemical and Fertilizer, A Huber Company, Global Regulatory Affairs
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Reason for Version

No changes to data.
OSHA (Occupational Safety and Health Administration of the US Department of Labor).

Abbreviations and acronyms

OSHA (Occupational Safety and Health Administration of the US Department of Labor)
WHMIS (Workplace Hazardous Materials Information System)
GHS (Globally Harmonized System)
IARC (International Agency for Research on Cancer)
PPE (Personal Protection Equipment)
TWA (Time-Weighted Average)
TLV® (Threshold Limit Value)
STEL (Short Term Exposure Limit)
RQ (Reportable Quantity) (RQ/% in mixture)
DOT (Department of Transportation)
TDG (Transport of Dangerous Goods) Canada
IATA (International Air Transport Association)
IMDG (International Maritime Dangerous Goods)
ICAO (International Civil Aviation Organization)

MILLER CHEMICAL

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Disclaimer

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End of Safety Data Sheet