Safety Data Sheet

ZMC Express

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)

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

1.1. Product identifier

Product name ZMC Express

Pure substance/mixture Mixture

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

Recommended use Micro-nutrient

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)

Physical Hazards Not classified.

Health Hazards Reproductive Toxicity, Category 1B

Environmental Hazard Not classified.

2.2. Label elements

Symbols/Pictograms

Signal Word Danger

Hazard Statements H360 - May damage fertility or the unborn child

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

Response IF exposed or concerned: Get medical advice/attention

Storage Store locked up

Disposal Dispose of contents/containers in accordance with local regulations

Additional information Not applicable

Hazards not otherwise classified (HNOC) None known

SECTION 3: Composition/information on ingredients

Pure substance/mixture Mixture

Chemical Name	CAS NUMBER:	Weight-%
Pentaboron Sodium Octaoxide	12631-71-9	1 - 5
Boric acid	10043-35-3	1 - 5
Borates, tetra sodium salts, pen-tahydrate	12179-04-3	1 - 5

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 Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

Eye Contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.

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	Symptoms: The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known. Risks: May damage fertility or the unborn child.
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
Use extinguishing measures that are appropriate to local cir-cumstances and the surrounding environment.

Unsuitable Extinguishing Media
None known.

5.2. Special hazards arising from the substance or mixture
Specific hazards during fire-fighting: Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products: Fire will produce smoke containing hazardous combustion products (see section 10).

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	Keep unauthorized personnel away. Avoid dust formation. Ensure adequate ventilation. Use personal protection recommended in Section 8. In case of fire:

emergency procedures Stop leak if safe to do so.

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 Do not flush into surface water or sanitary sewer system. Discharge into the environment must be avoided.

6.3. Methods and material for containment and cleaning up Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

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 Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Do not breathe dust. Ensure adequate ventilation. Wear appropriate personal protective clothing to prevent skin contact.

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 in a dry, cool and well-ventilated place. 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

Boric acid - 10043-35-3

OSHA	Not established
ACGIH	6 mg/m³
Canada - British Columbia - OEL-STELs	6 mg/m³
Canada - Ontario - OEL - STEVs	6 mg/m³ STEL
Canada - Ontario - OEL - TWA EVs	2 mg/m³

Biological Limit Values No information available

8.2. Exposure controls

Engineering Measures Provide a good standard of controlled ventilation (5 to 10 air changes per hour). Use exhaust ventilation to keep airborne concentrations below exposure limits. In case of insufficient ventilation, wear suitable respiratory equipment.

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	Use suitable protective clothing, gloves and footwear, selected with regard for use conditions and exposure.
Hand Protection	For operations where prolonged or repeated skin contact may occur, impervious gloves should be worn.
Respiratory Protection	In case of inadequate ventilation wear respiratory protection.
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	Light yellow
Odor	Odorless
pH	6.5 - 8.5 (Concentration: 1 %)
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 flammable
Vapor Pressure	Not determined
Vapor Density	Not determined
Density	No data available
Bulk Density	750 - 950 kg/m^3
Water Solubility	Soluble
Partition coefficient	No information available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	Not applicable.
Kinematic viscosity	No data available
Oxidizing Properties	Not applicable
Particle Size	0.2 - 1.2 mm
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	None known
10.5. Incompatible materials	None
10.6. Hazardous decomposition products	Carbon oxides Nitrogen oxides (NOx)

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	Avoid inhalation of the product
Skin	May cause mild irritation. Not classifiable
Eyes	May cause mild irritation. Not classifiable
Ingestion	Ingestion is not a likely route of exposure

11.1. Information on toxicological effects

Pentaboron Sodium Octaoxide

Reproductive Toxicity	Some evidence of adverse effects on development, based on animal experiments.

Boric acid

LD50s and LC50s	2120 mg/m^3 Inhalation LC50 Rat 4 h 2.12 mg/L Inhalation LC50 Rat 4 h
Group 2A - Probably Carcinogenic to Humans	Monograph 53 [1991]
NTP (National Toxicology Program)	Male Rat - Not Tested;Female Rat - Not Tested;Male Mice - No Evidence;Female Mice - No Evidence
Serious eye damage/eye irritation	Not classified.
Skin Sensitization	Not classified.
Reproductive Toxicity	Presumed human reproductive toxicant, Category 1B

Borates, tetra sodium salts, pen-tahydrate

Reproductive Toxicity	Suspected of damaging fertility or the unborn child
Acute Toxicity	No data available
Respiratory Sensitization	No data available
Serious eye damage/eye irritation	No data available
Skin Corrosion/Irritation	No data available
Skin Sensitization	No data available
Mutagenicity	No data available

Reproductive Toxicity Suspected of damaging fertility or the unborn child

Carcinogenicity No data available

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties No endocrine disruptors present in concentrations >= 0.1%

11.2.2. Other information Not applicable

SECTION 12: Ecological information

12.1. Toxicity Not considered to be harmful to aquatic life

Boric acid

WGK Classification (AwSV) 315 WGK: 1

12.2. Persistence and degradability Biodegradable

12.3. Bioaccumulative potential Bioaccumulation is unlikely.

12.4. Mobility in soil Adsorption to solid soil phase is not expected.

12.5. Results of PBT and vPvB assessment This substance does not meet the criteria for classification as PBT or vPvB

12.6. Endocrine disrupting properties No endocrine disruptors present in concentrations >= 0.1%

12.7. Other Adverse Effects None known

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 extend 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
DOT Not regulated

ADR	Not regulated
RID	Not regulated
ADN	Not regulated
IATA	Not regulated
IMDG/IMO	Not regulated
ICAO	Not regulated

14.1. UN number or ID number None

14.2. UN proper shipping name None

14.3. Transport hazard class(es) None

14.4. Packing group None

14.5. Environmental hazards No

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
Pentaboron Sodium Octaoxide	12631-71-9	N	N	N
Boric acid	10043-35-3	Y	Y	A
Borates, tetra sodium salts, pen-tahydrate	12179-04-3	N	N	

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

EPA

SARA 313
Not listed

SARA 302
Not listed

SARA 304
Not listed

Boric acid

SARA 302	This material does not contain any components with a section 302 EHS TPQ.
SARA 313	This material does not contain any chemical components with known CAS numbers thatexceed the threshold (De Minimis) reporting levels established by SARA Title III, Section313.

CWA (Clean Water Act)
Not regulated

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
Pentaboron Sodium Octaoxide	12631-71-9	N	N	N	N	N
Boric acid	10043-35-3	N	N	N	N	N
Borates, tetra sodium salts, pen-tahydrate	12179-04-3	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

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Reason for Version
New Format. 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)

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet