Safety Data Sheet

Vitrient™

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 Vitrient™

Pure substance/mixture Mixture

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

Recommended use Micro-nutrient 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)

Physical Hazards Combustible dust

Health Hazards Repr. Tox. Cat. 1B; H360

Environmental Hazard Not classified

2.2. Label elements

Symbols/Pictograms

Signal Word Danger

Hazard Statements
H360 - May damage fertility or the unborn child
May form combustible dust concentrations in air

Precautionary Statements

Prevention
P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P280 - Wear protective gloves/protective clothing/eye protection/face protection

Response P318 - If exposed or concerned, get medical advice.

Storage P405 - Store locked up

Disposal P501 - Dispose of contents/ container to an approved waste disposal plant

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-%
Boric acid	10043-35-3	5-10
Citric Acid	77-92-9	1-5
Malic acid	6915-15-7	0.5-1.5
Iron Chelate	15708-41-5	0.5-1.5
Cobalt Chelate	15137-09-4	< 1

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 toensure flushing of entire surface. Call a physician.

Skin Contact Immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Thoroughly clean clothing and shoes before reuse. Call a physician.

Ingestion If swallowed, DO NOT induce vomiting. Rinse mouth with water. Dilute stomach contents by drinking water. If vomiting occurs spontaneously, keep head bellow hips to prevent breathing vomit into lungs. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. Call a physician immediately!.

Inhalation Remove to fresh air. If not breathing give artificial respiration, preferably mouth to mouth. If breathing is difficult give oxygen. Call a physician.

4.2. Most important symptoms and effects, both acute and delayed Treat symptomatically.

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 alcohol foam, carbon dioxide, water fog, dry chemical, or halon when fighting fires involving this material.

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.

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 Keep unauthorized personnel away. Avoid dust formation. Ensure adequate ventilation. Use personal protection recommended in Section 8. In case of fire: 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 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 required, notify state and local authorities.

Disposal MethodSolids must be disposed of in a permitted waste management facility. Recovered liquids may bereprocessed or incinerated. Incineration must be handled in a permitted facility. Dispose of material inaccordance with all Federal, State and Local regulations. Local regulations may be more stringent thanFederal 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 notget in eyes. Do not breathe vapor, mist, or dust. Avoid prolonged or repeated contactwith skin. Do not swallow.

7.2. Conditions for safe storage, including any incompatibilities For industrial use only. Keep container closed when not in use. Store at temperatures between. 41°F and 104°F (5°C and 40 °C). Keep in a dry, cool and well-ventilated place. Keep out of reach of children.

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

Iron Chelate - 15708-41-5

Canada - British Columbia - OEL-STELs	2 mg/m³
Canada - Ontario - OEL - TWA EVs	1 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. Never wear contact lenses when working withchemicals.

Skin and Body Protection Clean protective body covering, rubber apron, andrubber boots.
Hand Protection Wear suitable gloves. Rubber gloves

Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Refer to the most recent NIOSHA publications concerning chemicalhazards, or consult your safety equipment supplier. Respiratoryprotection programs must be in compliance with OSHA requirements in29 CFR 1910.134. For emergencies, a NIOSHA/MSHA approved positivepressure-breathing apparatus should be readily available.

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	Granular Powder
Color	White to tan.
Odor	Little to no Odor
pH	6.0 - 6.5
Melting point / Freezing point	Not available
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	0.7 – 0.9 g/cm3
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 Strong alkalis
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	Avoid inhalation of the product
Skin	Avoid contact with skin and clothing
Eyes	Avoid contact with eyes
Ingestion	Ingestion is not a likely route of exposure

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Boric acid

LD50s and LC50s	2000 mg/kg Dermal LD50 Rabbit 0.16 mg/L Inhalation LC50 Rat 4 h 2660 mg/kg Oral LD50 Rat 2120 mg/m^3 Inhalation LC50 Rat 4 h 3765 mg/kg Oral LD50 Rat
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

Malic acid

Oral LD50	1600 mg/kg (mouse)
Carcinogenicity	Not listed as a carcinogen by NTP. Not evaluated by IARC.

Iron Chelate

LD50s and LC50s	2.75 mg/L Inhalation LC50 Rat 4 h

Cobalt Chelate

Group 2B - Possibly Carcinogenic to Humans	Monograph 52 [1991]
Acute Toxicity	Not classified
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met
Skin Corrosion/Irritation	No information available
Skin Sensitization	No information available
Mutagenicity	No information available
Reproductive Toxicity	May damage fertility or the unborn child
Carcinogenicity	Cobalt Chelate - Carcinogenetic Category 2 ingredient makes up less than 1% in mixture. Warning label is optional under OSHA, but ingredient will be listed in Section 3 of SDS.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties	This product does not contain any known or suspected endocrine disruptors
11.2.2. Other information	Not applicable

SECTION 12: Ecological information

Citric Acid

96-Hour LC50	Lepomis macrochirus: 1516 mg/L [static]
72-Hour EC50	Daphnia magna: 120 mg/L
WGK Classification (AwSV)	57 WGK: 1

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 This product does not contain any known or suspected endocrine disruptors

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)

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
Boric acid	10043-35-3	Y	Y	A
Citric Acid	77-92-9	Y	Y	A
Malic acid	6915-15-7	Y	Y	A
Iron Chelate	15708-41-5	Y	Y	A
Cobalt Chelate	15137-09-4	N	N	N

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

EPA

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40n of the Code of Federal Regulations, Part 372.

SARA 302
This product does not contain any components regulated under Section 302 (40 CFR 355) as Extremely Hazardous Substances.

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
Boric acid	10043-35-3	N	N	N	N	N
Citric Acid	77-92-9	N	N	N	N	N
Malic acid	6915-15-7	N	N	N	N	N
Iron Chelate	15708-41-5	N	N	N	N	N
Cobalt Chelate	15137-09-4	N	N	N	N	N

Y: Listed ; N: Not Listed

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)
This product does not contain any Proposition 65 chemicals

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 regulatory.affairs@huber.com
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Revision Number	1.1 NA
Reason for Version	Revised in entirety. 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