


# SAFETY DATA SHEET

## 1. Identification

<b>Product identifier</b>	NutriRoot		
<b>Other means of identification</b>	None.		
<b>Recommended use</b>	Fertilizer		
<b>Recommended restrictions</b>	None known.		
<b>Manufacturer/Importer/Supplier/Distributor information</b>			
<b>Manufacturer</b>			
<b>Company name</b>	Arborjet Inc.		
<b>Address</b>	99 Blueberry Hill Road Woburn, MA 01801 United States		
<b>Telephone</b>	Phone:	781.935.9070	
	Fax:	781.935.9080	
<b>e-mail</b>	Not available.		
<b>Emergency phone number</b>	Emergency Phone:	1-800-255-3924	
<b>Supplier</b>	See above.		

## 2. Hazard identification

<b>Physical hazards</b>	Not classified.		
<b>Health hazards</b>	Serious eye damage/eye irritation	Category 2	
	Specific target organ toxicity following repeated exposure	Category 2	
<b>Environmental hazards</b>	Not classified.		
<b>Label elements</b>			
<b>Signal word</b>	Warning		
<b>Hazard statement</b>	Causes serious eye irritation. May cause damage to organs through prolonged or repeated exposure.		
<b>Precautionary statement</b>			
<b>Prevention</b>	Do not breathe mist or vapour. Wear eye protection. Wear face protection.		
<b>Response</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.		
<b>Storage</b>	Store away from incompatible materials.		
<b>Disposal</b>	Dispose of container in accordance with local, regional, national and international regulations.		
<b>Other hazards</b>	None known.		
<b>Supplemental information</b>	None.		

## 3. Composition/information on ingredients

### Mixtures

Chemical name	Common name and synonyms	CAS number	%
Manganese (II) sulfate		7785-87-7	1 - 5 *
Zinc sulfate, monohydrate		7446-19-7	1 - 5 *

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

**Composition comments** \*CANADA GHS: The exact percentage (concentration) of composition has been withheld as a trade secret.

## 4. First-aid measures

**Inhalation** If symptoms develop move victim to fresh air. If symptoms persist, obtain medical attention.

<b>Skin contact</b>	Flush with cool water. Wash with soap and water. Obtain medical attention if irritation persists.
<b>Eye contact</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
<b>Ingestion</b>	Rinse mouth. Do not induce vomiting. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Never give anything by mouth if victim is unconscious or is convulsing. Get medical attention if symptoms occur.
<b>Most important symptoms/effects, acute and delayed</b>	Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Prolonged exposure may cause chronic effects.
<b>Indication of immediate medical attention and special treatment needed</b>	Symptoms may be delayed.
<b>General information</b>	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Avoid contact with eyes and skin. Keep out of reach of children.

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## 5. Fire-fighting measures

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<b>Suitable extinguishing media</b>	Water fog. Foam. Dry chemical powder. Carbon dioxide.
<b>Unsuitable extinguishing media</b>	Not available.
<b>Specific hazards arising from the chemical</b>	During fire, gases hazardous to health may be formed.
<b>Hazardous combustion products</b>	May include and are not limited to: Oxides of carbon. Oxides of nitrogen. Oxides of phosphorus. Oxides of sulphur.
<b>Special protective equipment and precautions for firefighters</b>	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
<b>Fire fighting equipment/instructions</b>	Move containers from fire area if you can do so without risk.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.
<b>General fire hazards</b>	No unusual fire or explosion hazards noted.

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## 6. Accidental release measures

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<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapour. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
<b>Methods and materials for containment and cleaning up</b>	Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Clean surface thoroughly to remove residual contamination. Prevent entry into waterways, sewer, basements or confined areas. For waste disposal, see section 13 of the SDS.
<b>Environmental precautions</b>	Do not discharge into lakes, streams, ponds or public waters.

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## 7. Handling and storage

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<b>Precautions for safe handling</b>	Do not get this material in contact with eyes. Wear appropriate personal protective equipment. Do not breathe mist or vapour. Provide adequate ventilation. Observe good industrial hygiene practices. Wash thoroughly after handling. When using do not eat or drink.
<b>Conditions for safe storage, including any incompatibilities</b>	Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Keep out of reach of children.

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## 8. Exposure controls/Personal protection

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### Occupational exposure limits

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Manganese (II) sulfate (CAS 7785-87-7)	TWA	0.1 mg/m <sup>3</sup>	Inhalable fraction.
		0.02 mg/m <sup>3</sup>	Respirable fraction.

#### Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Manganese (II) sulfate (CAS 7785-87-7)	TWA	0.2 mg/m <sup>3</sup>

**Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)**

Components	Type	Value
Manganese (II) sulfate (CAS 7785-87-7)	TWA	0.2 mg/m <sup>3</sup>

**Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)**

Components	Type	Value	Form
Manganese (II) sulfate (CAS 7785-87-7)	TWA	0.1 mg/m <sup>3</sup>	Inhalable fraction.
		0.02 mg/m <sup>3</sup>	Respirable fraction.

**Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)**

Components	Type	Value
Manganese (II) sulfate (CAS 7785-87-7)	TWA	0.2 mg/m <sup>3</sup>

**Canada. Quebec OELs. (Ministry of Labour - Regulation Respecting the Quality of the Work Environment)**

Components	Type	Value	Form
Manganese (II) sulfate (CAS 7785-87-7)	TWA	5 mg/m <sup>3</sup>	Dust.

<b>Biological limit values</b>	No biological exposure limits noted for the ingredient(s).
<b>Appropriate engineering controls</b>	Ensure adequate ventilation.
<b>Individual protection measures, such as personal protective equipment</b>	
<b>Eye/face protection</b>	Safety goggles or glasses.
<b>Skin protection</b>	
<b>Hand protection</b>	Rubber gloves. Confirm with a reputable supplier first.
<b>Other</b>	As required by employer code.
<b>Respiratory protection</b>	Where exposure guideline levels may be exceeded, use an approved NIOSH respirator. Respirator should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134), CAN/CSA-Z94.4 and ANSI's standard for respiratory protection (Z88.2).
<b>Thermal hazards</b>	Not applicable.
<b>General hygiene considerations</b>	Handle in accordance with good industrial hygiene and safety practices. Wash hands before breaks and immediately after handling the product. When using do not eat or drink.

## 9. Physical and chemical properties

<b>Appearance</b>	Liquid
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>Colour</b>	Brown
<b>Odour</b>	Slight aromatic
<b>Odour threshold</b>	Not available.
<b>pH</b>	3.9
<b>Melting point/freezing point</b>	Not available.
<b>Initial boiling point and boiling range</b>	100 °C (212 °F)
<b>Flash point</b>	Not available.
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	Not available.
<b>Flammability limit - upper (%)</b>	Not available.
<b>Explosive limit - lower (%)</b>	Not available.
<b>Explosive limit - upper (%)</b>	Not available.
<b>Vapour pressure</b>	Not available.

Vapour density	Not available.
Relative density	Not available.
<b>Solubility(ies)</b>	
Solubility (Water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
<b>Other information</b>	
Explosive properties	Not explosive.
Oxidising properties	Not oxidising.

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## 10. Stability and reactivity

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<b>Reactivity</b>	The product is stable and non-reactive under normal conditions of use, storage and transport. This product may react with strong oxidising agents. May react with incompatible materials.
<b>Chemical stability</b>	Material is stable under normal conditions.
<b>Possibility of hazardous reactions</b>	Hazardous polymerisation does not occur.
<b>Conditions to avoid</b>	Do not mix with other chemicals.
<b>Incompatible materials</b>	Strong oxidising agents. Alkalies.
<b>Hazardous decomposition products</b>	May include and are not limited to: Oxides of carbon. Oxides of nitrogen. Oxides of sulphur. Oxides of phosphorus.

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## 11. Toxicological information

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### Information on likely routes of exposure

<b>Inhalation</b>	May cause damage to organs through prolonged or repeated exposure by inhalation.
<b>Skin contact</b>	No adverse effects due to skin contact are expected.
<b>Eye contact</b>	Causes serious eye irritation.
<b>Ingestion</b>	May cause stomach distress, nausea or vomiting.

**Symptoms related to the physical, chemical and toxicological characteristics** Causes eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

### Information on toxicological effects

#### Acute toxicity

Components	Species	Test results
Manganese (II) sulfate (CAS 7785-87-7)		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Not available	
<i>Inhalation</i>		
LC50	Rat	> 4.5 mg/L, 4 Hours, ECHA
<i>Oral</i>		
LD100	Mouse	305 mg/kg, HSDB
LD50	Mouse	2330 mg/kg, RTECS
	Rat	2150 mg/kg
		1470 mg/kg, ECHA
Zinc sulfate, monohydrate (CAS 7446-19-7)		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	> 2000 mg/kg, 24 Hours, ECHA
	Rat	> 2000 mg/kg, HSDB
<i>Inhalation</i>		
LC50	Not available	
<i>Oral</i>		
LD50	Mouse	1891 mg/kg, ECHA

Components	Species	Test results
		926 mg/kg, ECHA
		57 mg/kg, HSDB
	Rat	> 2500 mg/kg, ECHA
		1000 - 2000 mg/kg, ECHA
		2949 mg/kg, ECHA/HSDB
		2280 mg/kg, ECHA
		1710 mg/kg, ECHA
		920 mg/kg, ECHA/HSDB
		623 mg/kg, HSDB
<b>Skin corrosion/irritation</b>	Prolonged skin contact may cause temporary irritation.	
<b>Exposure minutes</b>	Not available.	
<b>Erythema value</b>	Not available.	
<b>Oedema value</b>	Not available.	
<b>Serious eye damage/eye irritation</b>	Causes serious eye irritation.	
<b>Corneal opacity value</b>	Not available.	
<b>Iris lesion value</b>	Not available.	
<b>Conjunctival reddening value</b>	Not available.	
<b>Conjunctival oedema value</b>	Not available.	
<b>Recover days</b>	Not available.	
<b>Respiratory or skin sensitisation</b>		
<b>Respiratory sensitisation</b>	Not a respiratory sensitizer.	
<b>Skin sensitisation</b>	This product is not expected to cause skin sensitisation.	
<b>Germ cell mutagenicity</b>	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
<b>Carcinogenicity</b>	See below.	
<b>ACGIH Carcinogens</b>		
Manganese (II) sulfate (CAS 7785-87-7)	A4 Not classifiable as a human carcinogen.	
<b>Canada - Manitoba OELs: carcinogenicity</b>		
MANGANESE ELEMENTAL AND INORGANIC COMPOUNDS, AS MN, INHALABLE FRACTION (CAS 7785-87-7)	Not classifiable as a human carcinogen.	
<b>Reproductive toxicity</b>	This product is not expected to cause reproductive or developmental effects.	
<b>Specific target organ toxicity - single exposure</b>	Not classified.	
<b>Specific target organ toxicity - repeated exposure</b>	May cause damage to organs through prolonged or repeated exposure.	
<b>Aspiration hazard</b>	Not an aspiration hazard.	
<b>Chronic effects</b>	May cause damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful.	
<b>Further information</b>	Not available.	

## 12. Ecological information

Ecotoxicity		See below	
Ecotoxicological data			
Components		Species	Test results
Manganese (II) sulfate (CAS 7785-87-7)			
<b>Aquatic</b>			
Crustacea	EC50	Water flea (Daphnia magna)	7.09 - 9.36 mg/L, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	24.3 - 38.9 mg/L, 96 hours
Zinc sulfate, monohydrate (CAS 7446-19-7)			
Algae	IC50	Algae	64.8 mg/L, 72 Hours
Crustacea	EC50	Daphnia	0.75 mg/L, 48 Hours

Components	Species	Test results
<b>Aquatic</b>		
Crustacea	EC50	Rotifer ( <i>Philodina acuticornis</i> )
Fish	LC50	Rainbow trout, donaldson trout ( <i>Oncorhynchus mykiss</i> )
<b>Persistence and degradability</b>	No data is available on the degradability of this product.	
<b>Bioaccumulative potential</b>		
<b>Mobility in soil</b>	No data available.	
<b>Mobility in general</b>	Not available.	
<b>Other adverse effects</b>	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.	

### 13. Disposal considerations

<b>Disposal instructions</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Local disposal regulations</b>	Dispose in accordance with all applicable regulations.
<b>Hazardous waste code</b>	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
<b>Waste from residues / unused products</b>	Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
<b>Contaminated packaging</b>	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

### 14. Transport information

<b>General</b>	Canada: TDG Proof of Classification: Classification Method: Classified as per Part 2, Sections 2.1 – 2.8 of the Transportation of Dangerous Goods Regulations. If applicable, the technical name and the classification of the product will appear below.
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#### Transportation of Dangerous Goods (TDG - Canada)

##### Basic shipping requirements:

<b>UN number</b>	UN3082
<b>Proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
<b>Technical name</b>	Manganese (II) sulfate
<b>Hazard class</b>	9
<b>Packing group</b>	III
<b>Marine pollutant</b>	Yes
<b>Special provisions</b>	16, 99

TDG



### 15. Regulatory information

<b>Canadian federal regulations</b>	This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.	
<b>Canada CEPA Schedule I: Listed substance</b>	Zinc sulfate, monohydrate (CAS 7446-19-7)	Listed.
<b>Canada Priority Substances List (Second List): Listed substance</b>	Zinc sulfate, monohydrate (CAS 7446-19-7)	Listed.
<b>Export Control List (CEPA 1999, Schedule 3)</b>	Not listed.	
<b>Greenhouse Gases</b>	Not listed.	
<b>Precursor Control Regulations</b>	Not regulated.	
<b>WHMIS status</b>	Controlled	

**International regulations**

**Inventory status**

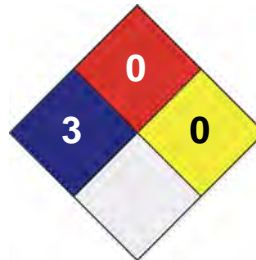
Country(s) or region	Inventory Name	On Inventory (Yes/No)*
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

**16. Other information**

LEGEND	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

<b>HEALTH</b>	/ 3
<b>FLAMMABILITY</b>	0
<b>PHYSICAL HAZARD</b>	0
<b>PERSONAL PROTECTION</b>	X



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**Other information** For an updated SDS, please contact the supplier/manufacturer listed on the first page of the document.

**Disclaimer** Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

**Prepared by** Dell Tech Laboratories Ltd. Phone: (519) 858-5021