# SAFETY DATA SHEET



Mn-jet Fe

### Section 1. Identification

**GHS** product identifier

Other means of identification

: Mn-jet Fe : Not available.

Product use : Fertilizer.

Supplier's details : Arboriet

> 99 Blueberry Hill Road Woburn, MA 01801, USA

1-781-935-9070

e-mail address of person

responsible for this SDS

: info@arborjet.com

**Emergency telephone** number (with hours of

operation)

: 1-800-255-3924 (CHEM-TEL)

### Section 2. Hazards identification

**OSHA/HCS** status : This material is considered hazardous by the OSHA Hazard Communication Standard

(29 CFR 1910.1200).

Classification of the : SKIN IRRITATION - Category 2 substance or mixture EYE IRRITATION - Category 2A

**GHS label elements** 

Hazard pictograms



Signal word : Warning

**Hazard statements** Causes serious eye irritation.

Causes skin irritation.

**Precautionary statements** 

Prevention : Wear protective gloves. Wear eye or face protection. Wash hands thoroughly after

handling.

: IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and Response

wash it before reuse.

If skin irritation occurs: Get medical attention.

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.

**Storage** : Not applicable. **Disposal** : Not applicable.

Hazards not otherwise classified

: None known.

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# Section 3. Composition/information on ingredients

Substance/mixture : Mixture
Other means of : Not available.
identification

Ingredient name	%	CAS number
manganese sulfate	≤3	7785-87-7
iron (II) sulfate	≤3	7720-78-7
potassium hydroxide	<3	1310-58-3
urea	≤3	57-13-6

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

### Section 4. First aid measures

### **Description of necessary first aid measures**

Eve contact : Immediately flu

: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10

minutes. Get medical attention.

Inhalation : Remove injured party to fresh air and keep at rest in a position comfortable for breathing.

If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical

surveillance for 48 hours.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and

shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing

before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and

the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### Most important symptoms/effects, acute and delayed

### Potential acute health effects

**Eye contact** : Causes serious eye irritation.

**Inhalation** : No known significant effects or critical hazards.

**Skin contact**: Causes skin irritation.

**Ingestion** : No known significant effects or critical hazards.

#### **Over-exposure signs/symptoms**

**Eye contact**: Adverse symptoms may include the following:

pain or irritation watering redness

### Section 4. First aid measures

: No specific data.

Skin contact : Adverse symptoms may include the following:

> irritation redness

: No specific data. Ingestion

### Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed.

The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may

be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

### See toxicological information (Section 11)

### Section 5. Fire-fighting measures

### **Extinguishing media**

Suitable extinguishing

media

: Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing

media

Remark

: None known.

Specific hazards arising from the chemical

: In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:

carbon monoxide nitrogen oxides sulfur oxides metal oxide/oxides

carbon dioxide

Special protective actions for fire-fighters

: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable

training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

: Non-flammable liquid.

### Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders: If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials.

See also the information in "For non-emergency personnel".

**Environmental precautions** 

: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### Methods and materials for containment and cleaning up

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### Section 6. Accidental release measures

### Small spill

: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

#### Large spill

: Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

# Section 7. Handling and storage

### Precautions for safe handling

#### **Protective measures**

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

# Advice on general occupational hygiene

: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

# Conditions for safe storage, : including any incompatibilities

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

### Section 8. Exposure controls/personal protection

### **Control parameters**

#### Occupational exposure limits

Ingredient name	Exposure limits
manganese sulphate	OSHA PEL (United States, 6/2016).  CEIL: 5 mg/m³, (as Mn)  NIOSH REL (United States, 10/2016).  TWA: 1 mg/m³, (as Mn) 10 hours. Form:  Fume  STEL: 3 mg/m³, (as Mn) 15 minutes. Form:  Fume  ACGIH TLV (United States, 3/2016).  TWA: 0.1 mg/m³, (as Mn) 8 hours. Form:  Inhalable fraction  TWA: 0.02 mg/m³, (as Mn) 8 hours. Form:  Respirable fraction
iron (II) sulfate	ACGIH TLV (United States, 3/2016).  TWA: 1 mg/m³, (as Fe) 8 hours.  NIOSH REL (United States, 10/2016).  TWA: 1 mg/m³, (as Fe) 10 hours.  OSHA PEL 1989 (United States, 3/1989).  TWA: 1 mg/m³, (as Fe) 8 hours. Form:  Soluble
potassium hydroxide	ACGIH TLV (United States, 3/2016).

urea

### Section 8. Exposure controls/personal protection

C: 2 mg/m<sup>3</sup>

NIOSH REL (United States, 10/2016).

TWA: 2 mg/m³ 10 hours.

OSHA PEL 1989 (United States, 3/1989).

CEIL: 2 mg/m<sup>3</sup>

AIHA WEEL (United States, 10/2011).

TWA: 10 mg/m<sup>3</sup> 8 hours.

Appropriate engineering controls

**Environmental exposure** controls

 Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

#### **Individual protection measures**

Hygiene measures

: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period.

Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

**Skin protection** 

**Hand protection** 

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

**Body protection** 

: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection

: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection** 

: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Ensure an MSHA/NIOSH-approved respirator or equivalent is used.

# Section 9. Physical and chemical properties

### **Appearance**

Physical state : Liquid.

Color : Green. [Dark]
Odor : Sweetish. Metallic.
Odor threshold : Not available.

**pH** : 3.35

Melting point: Not available.Boiling point: Not available.Flash point: Not available.

# Section 9. Physical and chemical properties

**Evaporation rate** : Not available. Flammability (solid, gas) : Not applicable. Lower and upper explosive : Not available.

(flammable) limits Vapor pressure

: Not available. Vapor density : Not available. **Relative density** : 1.355 [20°C (68°F)]

**Density** : 1.35 g/cm<sup>3</sup> **Solubility** : Not available. Solubility in water : Not available. Partition coefficient: n-: Not available.

octanol/water

: Not available. **Auto-ignition temperature Decomposition temperature** : Not available.

**Viscosity** : Dynamic (room temperature): 4.5 mPa·s (4.5 cP)

### Section 10. Stability and reactivity

: No specific test data related to reactivity available for this product or its ingredients. Reactivity

**Chemical stability** : The product is stable.

Possibility of hazardous

reactions

: Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

**Hazardous decomposition** 

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

products

# **Section 11. Toxicological information**

### Information on toxicological effects

### **Acute toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
manganese sulphate	LD50 Oral	Rat	2150 mg/kg	-
iron (II) sulfate	LD50 Oral	Rat	319 mg/kg	-
potassium hydroxide	LD50 Oral	Rat	273 mg/kg	-
urea	LD50 Oral	Rat	8471 mg/kg	-

**Conclusion/Summary** 

: Based on available data, the classification criteria are not met.

**Irritation/Corrosion** 

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# Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
potassium hydroxide	Eyes - Moderate irritant	Rabbit	-	24 hours 1 milligrams	-
	Skin - Severe irritant	Guinea pig	-	24 hours 50 milligrams	-
	Skin - Severe irritant	Human	-	24 hours 50 milligrams	-
	Skin - Severe irritant	Rabbit	-	24 hours 50 milligrams	-
urea	Skin - Mild irritant	Human	-	72 hours 22 milligrams Intermittent	-
	Skin - Moderate irritant	Human	-	24 hours 20 Percent	-

**Conclusion/Summary** 

Skin : Causes skin irritation.

**Eyes** : Causes serious eye irritation.

**Sensitization** 

Conclusion/Summary : Not available.

**Mutagenicity** 

**Conclusion/Summary**: Not available.

Carcinogenicity

**Conclusion/Summary**: Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

**Teratogenicity** 

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

**Aspiration hazard** 

Not available.

Information on the likely routes of exposure

: Not available.

Potential acute health effects

**Eye contact** : Causes serious eye irritation.

**Inhalation** : No known significant effects or critical hazards.

**Skin contact** : Causes skin irritation.

**Ingestion** : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

**Eye contact** : Adverse symptoms may include the following:

pain or irritation watering

redness

Inhalation : No specific data.

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# Section 11. Toxicological information

Skin contact : Adverse symptoms may include the following:

irritation redness

**Ingestion** : No specific data.

### Delayed and immediate effects and also chronic effects from short and long term exposure

**Short term exposure** 

Potential immediate : Not available.

effects

Potential delayed effects : Not available.

Long term exposure

Potential immediate : Not available.

effects

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

**Conclusion/Summary**: Not available.

General : No known significant effects or critical hazards.
 Carcinogenicity : No known significant effects or critical hazards.
 Mutagenicity : No known significant effects or critical hazards.
 Teratogenicity : No known significant effects or critical hazards.
 Developmental effects : No known significant effects or critical hazards.
 Fertility effects : No known significant effects or critical hazards.

#### **Numerical measures of toxicity**

### **Acute toxicity estimates**

Route	ATE value
Oral	5811.2 mg/kg

## Section 12. Ecological information

### **Toxicity**

Product/ingredient name	Result	Species	Exposure
iron (II) sulfate	Acute EC50 143000 μg/l Fresh water	Crustaceans - Crangonyx pseudogracilis - Adult	48 hours
	Acute EC50 7200 μg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 410 μg/l Fresh water	Fish - Salvelinus fontinalis	96 hours
	Chronic NOEC 10.045 ppm Fresh water	Fish - Oreochromis mossambicus	90 days
potassium hydroxide	Acute LC50 80 ppm Fresh water	Fish - Gambusia affinis - Adult	96 hours
urea	Acute EC50 6573.1 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
	Acute EC50 3910000 μg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 22.5 ppt Fresh water	Fish - Oreochromis mossambicus - Young	96 hours
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# Section 12. Ecological information

Chronic NOEC 2 g/L Fresh water Fish - Heteropneustes fossilis 30 days

Conclusion/Summary : Not available.

Persistence and degradability

Conclusion/Summary : Not available.

#### **Bioaccumulative potential**

Product/ingredient name	LogPow	BCF	Potential
iron (II) sulfate	-	20	low
urea	<-1.73	-	low

**Mobility in soil** 

Soil/water partition coefficient (Koc)

: Not available.

Other adverse effects : No known significant effects or critical hazards.

### Section 13. Disposal considerations

**Disposal methods** 

: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

# **Section 14. Transport information**

	DOT Classification	TDG Classification	Mexico Classification	ADR/RID	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not determined.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-	-	-
Transport hazard class(es)	-	-	-	-	-	-
Label						
Packing group	-	-	-	-	-	-
Environmental hazards	No.	No.	No.	-	Marine Pollutant: No	No.

Mn-jet Fe **Section 14. Transport information Additional** <u>Reportable</u> information quantity 8928.6 lbs / 4053.6 kg [793. 22 gal / 3002.6 L] Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

Special precautions for user : Transport within user's premises: always transport in closed containers that are

upright and secure. Ensure that persons transporting the product know what to do in the

event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code

: Not available.

# Section 15. Regulatory information

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined

United States inventory (TSCA 8b): All components are listed or exempted.

Clean Water Act (CWA) 307: zinc; copper sulphate

Clean Water Act (CWA) 311: iron (II) sulfate; copper sulphate; potassium hydroxide

Clean Air Act Section 112

(b) Hazardous Air **Pollutants (HAPs)**  : Listed

Clean Air Act Section 602

Class I Substances

: Not listed

Clean Air Act Section 602

**Class II Substances** 

: Not listed

**DEA List I Chemicals** 

(Precursor Chemicals)

: Not listed

**DEA List II Chemicals** 

: Not listed

(Essential Chemicals)

**SARA 302/304** 

Composition/information on ingredients

No products were found.

**SARA 304 RQ** : Not applicable.

**SARA 311/312** 

Classification : Immediate (acute) health hazard

Composition/information on ingredients

# Section 15. Regulatory information

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
manganese sulfate iron (II) sulfate potassium hydroxide urea	<3	No. No. No. No.	No. No.	No. No. No. No.	No. Yes. Yes. Yes.	Yes. No. No. No.

#### **SARA 313**

	Product name	CAS number	%
Form R - Reporting requirements	manganese sulfate	7785-87-7	≤3
Supplier notification	manganese sulfate	7785-87-7	≤3

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

### State regulations

Massachusetts : The following components are listed: FERROUS SULFATE; POTASSIUM HYDROXIDE

New York : The following components are listed: Ferrous sulfate; Potassium hydroxide

New Jersey : The following components are listed: FERROUS SULFATE; SULFURIC ACID, IRON

(2+) SALT (1:1); POTASSIUM HYDROXIDE; CAUSTIC POTASH

Pennsylvania : The following components are listed: SULFURIC ACID, IRON(2+) SALT (1:1);

POTASSIUM HYDROXIDE; MANGANESE COMPOUNDS

### **International regulations**

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

**Stockholm Convention on Persistent Organic Pollutants** 

Not listed.

**Rotterdam Convention on Prior Informed Consent (PIC)** 

Not listed.

**UNECE Aarhus Protocol on POPs and Heavy Metals** 

Not listed.

**International lists** 

**National inventory** 

### Section 16. Other information

### National Fire Protection Association (U.S.A.)



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### Section 16. Other information

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

### Procedure used to derive the classification

Classification	Justification
3	Calculation method Calculation method

#### **History**

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**Key to abbreviations** : ATE = Acute Toxicity Estimate

BCF = Bioconcentration Factor

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

IATA = International Air Transport Association

IBC = Intermediate Bulk Container

IMDG = International Maritime Dangerous Goods

LogPow = logarithm of the octanol/water partition coefficient

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973

as modified by the Protocol of 1978. ("Marpol" = marine pollution)

UN = United Nations

References : Not available.

▼ Indicates information that has changed from previously issued version.

### **Notice to reader**

To the best of our knowledge, the information contained herein is accurate. However, neither the abovenamed supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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