



Safety Data Sheet

1. Identification

Product identifier Tachline™
Other means of identification Micronutrient fertilizer.
Synonyms Not available.
Recommended use Fertilizer product – See product label for full directions for use.
Recommended restrictions None known.

Manufacturer / Importer / Supplier / Distributor Information

Company name CHS Inc
Address 5500 Cenex Drive
 Inver Grove Heights, MN 55077 US

Telephone 1-651-355-60
Website www.chsinc.com
Contact person EH&S/Regulatory Department
Emergency phone number CHEMTREC (24 hours): 1-800-424-9300

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards

Toxic to reproduction	Category 2
Skin Corrosion/Irritation	Category 2
Eye Damage/Irritation	Category 1

OSHA defined hazards Not classified.

Label elements

Hazard symbol



Signal word

Danger.

Hazard statement

Causes skin irritation. Causes serious eye damage. Suspected of damaging fertility or the unborn child .

Precautionary statement

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Wear eye/face protection.

Response

If on skin: Wash with plenty of water. 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 advice/attention. Take off contaminated clothing and wash before reuse. Collect spillage.

Storage

Store away from incompatible material.

Disposal

Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC)

None known.

Supplemental information

Not applicable.



Safety Data Sheet

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Water	7732-18-5	40 – 50
Zinc sulfate	7446-19-7	10 – 15
Organic acid	*Proprietary	10 – 15
Manganese sulfate	10034-96-5	5 – 10
Boric acid	10043-35-3	0.1 – 5

*Proprietary indicates that the chemical identity of this component is claimed as a trade secret per the HCS 29CFR 1910.1200

Composition comments

All concentrations are in weight unless ingredient is a gas. Gas concentrations are in percent by volume.
This Safety Data Sheet is not a guarantee of product specification or NPK value(s). NPK content is on specified sales orders, customer invoices, or product specification sheets obtained from supplier.

4. First-aid measures

Eye contact

Check for and remove contact lenses. Flush immediately with copious amounts of water or normal saline (minimum of 15 minutes), holding eyelids apart to ensure complete irrigation of the eye and eyelid tissue. Take exposed individual to a health care professional, preferably an ophthalmologist, for further evaluation.

Skin contact

Remove contaminated clothing, shoes and equipment. Wash exposed area with plenty of soap and water. Repeat washing. If redness or irritation occurs, seek medical attention. Wash contaminated clothing before reuse.

Inhalation

No adverse effects anticipated. If necessary, remove victim to fresh air and loosen clothing. Get medical attention.

Ingestion

Rinse mouth thoroughly. Drink 1 or 2 glasses of water. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention.

Most important symptoms/effects, acute and delayed

Symptoms may include stinging, tearing, redness, swelling and blurred vision. May cause redness and pain. Severe eye irritation. Permanent eye damage including blindness could result.

Indication of immediate medical attention and special treatment needed

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed.



Safety Data Sheet

Special protective equipment and precautions for firefighters

Self-contained breathing apparatus and full protective clothing should be worn when fighting chemical fires. Selection of respiratory protection for firefighting follow the general fire precautions indicated in the workplace.

Fire-fighting equipment/instructions

Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from the fire area if you can do so without risk.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid inhalation of vapors and spray mist and contact with skin and eyes. Wear suitable protective clothing. For personal protection see Section 8 of the SDS.

Methods and materials for containment and cleaning up

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb with vermiculite, dry sand or earth and place into containers. After removal flush contaminated area thoroughly with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water. Do not allow to enter drains, sewers or watercourses.

7. Handling and storage

Precautions for safe handling

Avoid inhalation of vapors/spray and contact with skin and eyes. Use only with adequate ventilation. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities

Keep container tightly closed. Store in a cool, dry well-ventilated place. Store away from incompatible materials.

Transfer Equipment

Transfer product using chemical-resistant plastic or stainless steel tanks, pumps, valves, etc.

8. Exposure controls/personal protection

Occupational exposure limits

US OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Manganese Sulfate, monohydrate (CAS 10034-96-5)	Ceiling	5 mg/m ³

US ACGIH Threshold Limit Values

Components	Type	Value	Form
Manganese Sulfate, monohydrate (CAS 10034-96-5)	TWA	0.1 mg/m ³	Inhalable fraction.
Boric acid (CAS 10043-35-3)	TWA	2 mg/m ³	Inhalable fraction.
	STEL	6 mg/m ³	Inhalable fraction.

US Niosh: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
Manganese Sulfate, monohydrate (CAS 10034-96-5)	STEL	3 mg/m ³	Fume.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

Follow standard monitoring procedures.

Appropriate engineering controls

Provide adequate general and local exhaust ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of vapors and mists.



Safety Data Sheet

Individual protection measures such as personal protective equipment

Eye/face protection	Wear approved safety glasses or goggles.
Skin Protection	
Hand protection	Chemical resistant gloves are recommended. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier.
Other	Wear appropriate clothing to prevent repeated or prolonged skin contact.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Wear air supplied respiratory protection if exposure concentrations are unknown. In case of inadequate ventilation or risk of inhalation of vapors, use suitable respiratory equipment. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR 1910.134 and ANSI Z88.2.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene consideration	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance	
Physical State	Liquid.
Form	Liquid.
Color	Light pink.
Odor	Bland
Odor threshold	Not available.
pH	5.2 (1% Solution)
Melting point/freezing point	<10°F (-12°C)
Initial boiling point and boiling range	1562°F (850°C) estimated
Flash point	Not available.
Evaporation Rate	Not available.
Flammability (solid, gas)	Not available.
Vapor pressure	Not available.
Vapor Density (Air=1)	Not available.
Relative density	1.270 @ 15°C
Solubility	100%
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Viscosity	Not available.
Other information	
Percent volatile	Not available.

10. Stability and reactivity

Reactivity	Reacts violently with strong alkaline substances. This product may react with reducing agents.
Chemical stability	Stable under normal temperature conditions and recommended use.
Possibility of hazardous Reactions	Hazardous polymerization does not occur.



Safety Data Sheet

Conditions to avoid Contact with incompatible materials. Heat, sparks, flames, elevated temperatures.

Incompatible materials Bases. Reducing agents.

Hazardous decomposition products Carbon oxides. Metal oxide fumes. Sulfur oxides and water vapor.

11. Toxicological information

Information on likely routes of exposure

Ingestion Ingestion may cause irritation and malaise.
Inhalation Vapors and spray mist may irritate throat and respiratory system and cause coughing.
Skin contact Prolonged or repeated skin contact may cause irritation.
Eye contact Causes serious eye damage on direct contact.

Symptoms related to the physical, chemical and toxicological characteristics Symptoms can include irritation, redness, scratching of the cornea, and tearing. Skin irritation.

Information on toxicological effects

Acute toxicity May cause discomfort if swallowed.

<u>Components</u>	<u>Species</u>	<u>Test Results</u>
Boric acid (CAS 10043-35-3)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	2,000 mg/kg
<i>Oral</i>		
LD50	Rat	3,500 – 4,100 mg/kg
Manganese Sulfate, monohydrate (CAS 10034-96-5)		
Acute		
<i>Oral</i>		
LD100	Mouse	305 mg/kg
<i>Other</i>		
LD100	Mouse	146 mg/kg
LD50	Mouse	64 mg/kg
Zinc Sulfate (CAS 7733-02-0)		
Acute		
<i>Dermal</i>		
LD50	Rat	>2,000 mg/kg
<i>Oral</i>		
LD50	Rat	623 mg/kg

Skin corrosion/irritation Prolonged exposure may cause skin irritation.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory sensitization Not classified.

Skin sensitization Not classified.

Germ cell mutagenicity Not classified.

Carcinogenicity This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

Reproductive toxicity Suspected of damaging fertility.

Specific target organ toxicity-single exposure Not classified.



Safety Data Sheet

Specific target organ toxicity-repeated exposure	Not classified.
Aspiration hazard	Not classified.
Chronic effects	Prolonged exposure may cause chronic effects.
Further information	No other specific acute or chronic health impact noted.

12. Ecological information

Ecotoxicity The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Components	Species	Test Results
Manganese Sulfate, monohydrate (CAS 10034-96-5)		
Aquatic		
Crustacea EC50	Water flea (<i>Daphnia magna</i>)	7.09 - 9.36 mg/l, 48 hours
Fish LC50	Fathead minnow (<i>Pimephales promelas</i>)	29.7 - 52.7 mg/l, 192hours 24.3 - 38.9 mg/l, 96 hours
Zinc Sulfate (CAS 7733-02-0)		
Aquatic		
Algae LC50	Green algae (<i>Chlorella vulgaris</i>)	5 mg/l, 24 hours
Crustacea EC50	Amphipod (<i>Crangonyx pseudogracilis</i>)	15.1 - 24.5 mg/l, 96 hours
Fish LC50	Fathead minnow (<i>Pimephales promelas</i>) Fish (<i>Lepidocephalichthyes guntea</i>)	10.62 - 11.3.7 mg/l, 5 days 76 - 118.8 mg/l, 24 hours

Persistence and degradability	No data available.
Bioaccumulative potential	No data available.
Mobility in soil	This product is water soluble and may disperse in soil.
Other adverse effects	No data available.

13. Disposal considerations

Disposal instructions	Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT	UN3265, Corrosive liquid, acidic, organic, n.o.s. (carboxylic acid), 8, PG III.
IATA	UN3265, Corrosive liquid, acidic, organic, n.o.s. (carboxylic acid), 8, PG III.
IMDG	UN3265, Corrosive liquid, acidic, organic, n.o.s. (carboxylic acid), 8, PG III.
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established.



Safety Data Sheet

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Manganese Sulfate, monohydrate (CAS 10034-96-5)

Listed.

Zinc Sulfate, (CAS 7733-02-0)

Listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - Yes

Delayed Hazard - Yes

Fire Hazard - No

Pressure Hazard - No

Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical

No

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Manganese Sulfate, monohydrate	10034-96-5	5 - < 10
Zinc Sulfate	7733-02-0	10 - < 15

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA)

Not regulated.

Food and Drug Administration (FDA)

Not regulated.

US state regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US Massachusetts RTK - Substance List

Zinc Sulfate (CAS 7733-02-0)

US New Jersey Worker and Community Right-to-Know Act

Zinc Sulfate (CAS 7733-02-0)

Manganese Sulfate, monohydrate (CAS 10034-96-5)

US Pennsylvania RTK - Hazardous Substances

Zinc Sulfate (CAS 7733-02-0)

US Rhode Island RTK

Zinc Sulfate (CAS 7733-02-0)

Manganese Sulfate, monohydrate (CAS 10034-96-5)

US California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substances

Not listed.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).



Safety Data Sheet

16. Other information, including date of preparation or last revision

Issue date 16-August-2016

Revision date --

Version # v1.0 SDS

NFPA Ratings



List of abbreviations

EC50: Effective concentration, 50%.
LC50: Lethal concentration, 50%.

References

EPA: Acquire database
HSDB® – Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Value and Biological Exposure Indices

Preparation

The preparation of this MSDS was in accordance with ANSI Z400.1-2010.

Disclaimer

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Safety Data Sheet (SDS) and was prepared pursuant to Government regulation(s) that identify specific types of information to be provided. This SDS may not be used as a commercial specification sheet of manufacturer or seller, and no warranty or representation, expressed or implied, is made as to the accuracy or comprehensiveness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. Additional information may be needed to evaluate other uses of the product, including use of the product in combination with any materials or in any processes other than those specifically referenced. Information provided herein with respect to any hazards that may be associated with the product is not meant to suggest that use of the product in a given application will necessarily result in any exposure or risk to workers or the general public. No responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product. Purchasers and users assume all risk of use, storage and handling of the product in compliance with applicable federal, state and local laws and regulations. Purchasers and users of the product specifically should advise all of their employees, agents, contractors and customers who will use the product of this (M)SDS.