SAFETY DATA SHEET

according to the OSHA Hazard Communication Standard

Dissolvine E-Mn-13

Version	Revision Date:	US / Z8	Date of last issue: 07/18/2023
1.10	10/29/2024		Date of first issue: 04/24/2015

SECTION 1. IDENTIFICATION

Product name : Dissolvine E-Mn-13

Manufacturer or supplier's details

Company name of supplier : Nouryon Functional Chemicals LLC
100 Matsonford Road, Building 1, Suite 500
Radnor PA 19087
US

Telephone : (800) 906-7979
Telefax : (312) 544-7167
E-mail address : sds_chelates@nouryon.com
Emergency telephone : 24 hours:+31 57 06 79211, CHEMTREC-USA:1-800-424-9300, CHEMTREC outside USA +1-703-527-3887, CANUTEC-CANADA:1-613-996-6666, 化学事故应急咨询电话：国家化学事故应急响应中心 +86 532 8388 9090.

Recommended use of the chemical and restrictions on use

Recommended use : Plant nutrient
Fertilizers

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Combustible dust

GHS label elements

Signal Word : Warning

Hazard Statements : If small particles are generated during further processing, handling or by other means, may form combustible dust concentrations in air.

Other hazards

Dust can form an explosive mixture in air.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance
Substance name : Ethylenediaminetetraacetic acid, manganese disodium complex

CAS-No. : 15375-84-5

Synonyms : Ethylenediaminetetraacetic acid, manganese disodium complex

Components

Chemical name	CAS-No.	Concentration (% w/w)
Ethylenediaminetetraacetic acid, manganese disodium complex	15375-84-5	>= 90 - <= 100

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : No hazards which require special first aid measures.

If inhaled : Remove to fresh air.
Keep patient warm and at rest.
Rinse nose and mouth with water.

In case of skin contact : Remove contaminated clothing and shoes.
Rinse with water.

In case of eye contact : Rinse with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Notes to physician : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Specific hazards during fire fighting : Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges.

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

Further information : Standard procedure for chemical fires.

Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Avoid dust formation. Evacuate personnel to safe areas. Only qualified personnel equipped with suitable protective equipment may intervene. Prevent unauthorized persons entering the zone.
Environmental precautions	:	No special environmental precautions required.
Methods and materials for containment and cleaning up	:	Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Provide appropriate exhaust ventilation at places where dust is formed. No sparking tools should be used.
Advice on safe handling	:	For personal protection see section 8. Avoid creating dust. Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking. No special handling advice required.
Conditions for safe storage	:	Keep in a dry place. Store at room temperature in the original container. Keep container tightly closed.
Materials to avoid	:	No special restrictions on storage with other products.
Further information on storage stability	:	No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Ethylenediaminetetraacetic acid, manganese disodium complex	15375-84-5	C	5 mg/m3 (Manganese)	OSHA Z-1
		C	5 mg/m3 (Manganese)	OSHA P0
		TWA	1 mg/m3 (Manganese)	NIOSH REL
		ST	3 mg/m3	NIOSH REL

			(Manganese)	

Engineering measures : Provide appropriate exhaust ventilation at places where dust is formed.

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.
In the case of dust, vapor or aerosol formation use respirator with an approved filter.
Half mask with a particle filter P2 (EN 143)

Hand protection
Material : Nitrile rubber

Eye protection : Safety glasses
Hygiene measures : General industrial hygiene practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	granular
Color	:	off-white
Odor	:	odorless
Odor Threshold	:	Not applicable
pH	:	6 - 7 Concentration: 1 % In water
Melting point	:	Decomposes before melting.
Boiling point/boiling range	:	Not applicable
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	Not classified as a flammability hazard, May form combustible dust concentrations in air during processing, handling or other means.
Flammability (liquids)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	Not applicable
Lower explosion limit / Lower	:	>= 40 g/m3

flammability limit		
Vapor pressure	:	Not applicable
Relative vapor density	:	Not applicable
Relative density	:	No data available
Bulk density	:	600 - 800 kg/m3
Solubility(ies)		
Water solubility	:	ca. 800 g/l
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	log Pow: < 0 GLP: no
Autoignition temperature	:	572 °F / 300 °C Method: Auto-ignition of a 5mm dust layer according to EN 50281-2-1
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	Not classified as oxidizing.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable under normal conditions.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	May form combustible dust concentrations in air. May form explosive dust-air mixture under confinement. If small particles are generated during further processing, handling or by other means, may form combustible dust concentrations in air.
Conditions to avoid	:	None known.
Incompatible materials	:	None known.
Hazardous decomposition products	:	No decomposition if stored and applied as directed.

Hazardous decomposition products	:	Carbon oxides nitrogen oxides (NOx)
Thermal decomposition	:	No data available

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 423 GLP: yes LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 423 GLP: yes
Acute inhalation toxicity	:	LD50: > 5.16 mg/l Exposure time: 4 h Test atmosphere: aerosol Method: OECD Test Guideline 436 Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	:	LD50: > 2,000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity Remarks: Information given is based on data obtained from similar substances.

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 423 GLP: yes

Skin corrosion/irritation

Product:

Result	:	No skin irritation

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Result : No skin irritation

Serious eye damage/eye irritation

Product:

Result : No eye irritation
Method : OECD Test Guideline 437

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Result : No eye irritation
Method : OECD Test Guideline 437

Respiratory or skin sensitization

Product:

Assessment : Does not cause skin sensitization.
Remarks : Read-across (Analogy)

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Assessment : Does not cause skin sensitization.
Remarks : Read-across (Analogy)

Germ cell mutagenicity

Product:

Genotoxicity in vitro : Test Type: Ames test
Method: OECD Test Guideline 471
Result: negative

Genotoxicity in vivo : Result: Not mutagenic.

Germ cell mutagenicity - Assessment : Weight of evidence does not support classification as a germ cell mutagen.

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Genotoxicity in vitro : Test Type: Ames test
Method: OECD Test Guideline 471

Result: negative

Genotoxicity in vivo : Result: Not mutagenic.

Carcinogenicity

Product:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Product:

Reproductive toxicity - Assessment : Weight of evidence does not support classification for reproductive toxicity
No effects on or via lactation

STOT-single exposure

Product:

Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Routes of exposure : Inhalation
Target Organs : Respiratory system
Assessment : The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT-repeated exposure

Product:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Routes of exposure	:	Ingestion
Assessment	:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

NOAEL	:	500 mg/kg
Application Route	:	Oral
Exposure time	:	728 d
Method	:	OECD Test Guideline 422

Aspiration toxicity

Product:

No aspiration toxicity classification

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

No aspiration toxicity classification

Further information

Product:

Remarks	:	No further data available.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): > 1,000 mg/l Exposure time: 96 h Test Type: static test Remarks: Information given is based on data obtained from similar substances.

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1,000 mg/l
Exposure time: 96 h
Test Type: static test
Remarks: Information given is based on data obtained from similar substances.

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 649.3 mg/l
Exposure time: 72 h
Test Type: Growth inhibition
Method: OECD Test Guideline 201
Remarks: Information given is based on data obtained from similar substances.

NOEC (Pseudokirchneriella subcapitata (green algae)): 15 mg/l
Exposure time: 72 h
Test Type: Growth inhibition
Method: OECD Test Guideline 201
Remarks: Information given is based on data obtained from similar substances.

Toxicity to fish (Chronic toxicity) : NOEC (Danio rerio (zebra fish)): 28.9 mg/l
Exposure time: 35 d
Test Type: flow-through test
Method: OECD Test Guideline 210
GLP: yes
Remarks: Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 156 mg/l
End point: reproduction rate
Exposure time: 21 d
Method: OECD Test Guideline 211
GLP: yes

Toxicity to microorganisms : NOEC (activated sludge): 640 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition
Method: Domestic OECD Guideline 209

Persistence and degradability

Product:

Biodegradability : Result: Not readily biodegradable.

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Biodegradability : Result: Not readily biodegradable.

Biochemical Oxygen Demand (BOD) : Remarks: No data available

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Not expected considering the low log Pow value.

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Bioaccumulation : Remarks: Not expected considering the low log Pow value.

Partition coefficient: n-octanol/water : log Pow: -8.12
Method: Calculation method
GLP: no

Mobility in soil

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Mobility : Remarks: No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : None known.

Components:

Ethylenediaminetetraacetic acid, manganese disodium complex:

Results of PBT and vPvB assessment : This substance is not considered to be a PBT (Persistent, Bioaccumulation, Toxic) This substance is not considered to

be vPvB (very Persistent nor very Bioaccumulating)

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Contaminated packaging : Empty remaining contents.
Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

Domestic regulation

49 CFR
Not regulated as a dangerous good
Reportable Quantity : This product does not contain an environmentally hazardous substance per 49 CFR 172.101, Appendix A.

Special precautions for user

Remarks : Not classified as dangerous in the meaning of transport regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Combustible dust

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Ethylenediaminetetraacetic acid, manganese disodium complex	15375-84-5	>= 90 - <= 100 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

Ethylenediaminetetraacetic acid, manganese disodium complex	15375-84-5	>= 90 - <= 100 %

This product does not contain any chemicals subject to disclosure and listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307
This product does not contain any priority pollutants related to the U.S. Clean Water Act

US State Regulations

Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

Ethylenediaminetetraacetic acid, manganese disodium complex	15375-84-5
Water	7732-18-5

Maine Chemicals of High Concern

This product does not contain any chemicals that are listed as Maine Chemicals of High Concern.

California Prop. 65

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

California List of Hazardous Substances

Ethylenediaminetetraacetic acid, manganese disodium complex	15375-84-5

California Permissible Exposure Limits for Chemical Contaminants

Ethylenediaminetetraacetic acid, manganese disodium complex	15375-84-5

The ingredients of this product are reported in the following inventories:

TCSI	:	On the inventory, or in compliance with the inventory
TSCA	:	All substances listed as active on the TSCA inventory
AIIC	:	On the inventory, or in compliance with the inventory
DSL	:	All components of this product are on the Canadian DSL
ENCS	:	On the inventory, or in compliance with the inventory
ISHL	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	Not in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
NZIoC	:	On the inventory, or in compliance with the inventory
TECI	:	Not in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

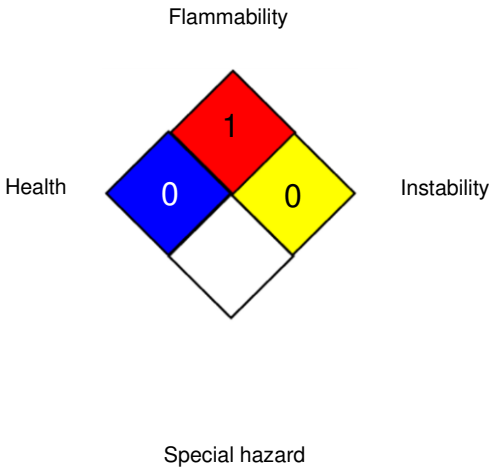
Further information

SAFETY DATA SHEET
according to the OSHA Hazard Communication Standard

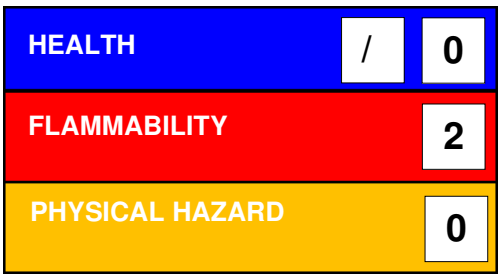
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Version	Revision Date:	US / Z8	Date of last issue: 07/18/2023
1.10	10/29/2024		Date of first issue: 04/24/2015

NFPA 704:



HMIS® IV:



HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations

NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA P0 / C	:	Ceiling limit
OSHA Z-1 / C	:	Ceiling

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemi-

cals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 10/29/2024

This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.

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.

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