

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Dissolvine® E-Mn-13  
**Chemical Name:** Ethylenediaminetetraacetic acid, manganese disodium salt  
**Synonym:** Manganese disodium EDTA  
**C.A.S. Registry No.:** 15375-84-5  
**Chemical Formula:**  $C_{10}H_{12}N_2O_8MnNa_2 / [(COO - CH_2)_2 - N - CH_2 - CH_2 - N - (CH_2 - COO)_2] \cdot MnNa_2$   
**Product Use:** Chelating agent, plant nutrient

### Manufacturer / Supplier

Akzo Nobel Functional Chemicals LLC  
Chelates Americas  
525 West Van Buren St., Chicago, IL 60607  
Tel. 1-800-906-7979

### Emergency Telephone Numbers

**FOR CHEMICAL EMERGENCY** (Spill, Leak, Fire, Exposure or Accident)

- **CHEMTREC (24-hr):** (800) 424-9300 (Toll-free in the U.S., Canada, and the U.S. Virgin Islands)  
(703) 527-3887 (For calls originating elsewhere / collect calls are accepted)
- **CANUTEC (Canada):** (613) 996-6666

**FOR MEDICAL / HANDLING EMERGENCIES:** 1-914-693-6946 [AkzoNobel - USA]

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## 2. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

*This material is considered hazardous by the OSHA Hazard Communication Standard [29 CFR 1910.1200].*

#### **WARNING !**

- **May cause mild eye and respiratory tract irritation.**
- **Contains an impurity that may cause kidney damage and cancer in laboratory animals.**
- **Iron deficiency and liver dysfunction are risk factors associated with the excessive accumulation of manganese (see Section 11).**

**Appearance and odor:** off white to light beige, odorless, micro-granular powder.

### POTENTIAL HEALTH EFFECTS [See section 11 for additional information]

**Primary Route(s) of Exposure:** Skin contact, eye contact and inhalation.

#### **Acute Exposure**

- **Inhalation:** Inhalation of dust may cause discomfort and/or irritation of the respiratory system.
- **Skin Contact:** This product is not irritating to rabbit skin.
- **Eye Contact:** This product may cause mild physical irritation.
- **Ingestion:** This product has a low order of acute toxicity.

**Chronic Effects:** EDTA and its sodium salts have been reported to cause birth defects in some animal studies in the presence of maternal toxicity.

## 2. HAZARDS IDENTIFICATION (CONTINUED)

**Carcinogenicity:** IARC, NTP, ACGIH and OSHA do not classify this material as a carcinogen or suspect carcinogen. However, nitrilotriacetic acid (NTA) and its salts were determined to be “possibly carcinogenic to humans” (Group 2B) by IARC, a compound which “may reasonably be anticipated to be a human carcinogen” by NTP and a “select carcinogen” by OSHA. Nitrilotriacetic acid is listed on California’s Proposition 65 as a chemical known to cause cancer.

**Medical conditions aggravated:** There are no data available that address medical conditions that are generally recognized as being aggravated by exposure to this product.

## 3. COMPOSITION / INFORMATION ON INGREDIENTS

<b>INGREDIENTS</b> [See section 8 for exposure limits]	<b>% (w/w)</b>	<b>CAS Number</b>
Manganese disodium EDTA	89 – 93	15375-84-5
Disodium EDTA	≈ 1.0	139-33-3
Nitrilotriacetic acid (NTA)	≈ 1.2	139-13-9
Water	0 – 10 (balance)	7732-18-5

## 4. FIRST AID MEASURES

**Inhalation:** Inhalation of dust may affect respiratory system and cause symptoms of bronchitis. Remove victim to fresh air. If symptoms persist, get medical attention.

**Skin Contact:** Remove contaminated clothing, shoes and equipment. Wash all affected areas with soap and plenty of water for at least 15 minutes. Wash contaminated clothing and shoes before reuse. Get medical attention if irritation occurs or persists.

**Eye Contact:** Flush eyes with large quantities of running water for a minimum of 15 minutes. If the victim is wearing contact lenses, remove them. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eye and lids with water. Get medical attention if eye irritation occurs.

**Ingestion:** ONLY induce vomiting at the instructions of a physician. If victim is conscious, rinse mouth and give water to drink. Never give anything by mouth to an unconscious person. Get medical attention if health effects occur.

**Note to Physician:** Attending physician should treat exposed patients symptomatically.

## 5. FIRE FIGHTING MEASURES

<b>Conditions of Flammability:</b>	not flammable or combustible
<b>Flash Point (Method):</b>	not applicable
<b>Upper Flammable Limit (% by volume):</b>	not determined
<b>Lower Flammable Limit (% by volume):</b>	not determined
<b>Auto-Ignition Temperature:</b>	> 500°F (260°C)

**Extinguishing Media:** This product is not flammable or combustible. If involved in a fire, use water fog or spray, dry chemical, foam or carbon dioxide extinguishing agents.

**Fire Fighting Procedures:** As in any fire, prevent human exposure to fire, smoke, fumes or products of combustion. Evacuate all non-essential personnel from the fire area. Fire fighters should wear full-face, self-contained breathing apparatus and impervious protective clothing.

**Fire & Explosion Hazards:** This product is not defined as flammable or combustible and should not be a fire hazard. Under fire conditions, it does not contribute any unusual hazards.

## 5. FIRE FIGHTING MEASURES (CONTINUED)

**Hazardous Combustion Products:** Thermal decomposition products may release toxic and/or hazardous fumes and gases, including nitrogen oxides and carbon oxides.

**NFPA Hazard Rating – Health:** 1      **Fire:** 0      **Instability:** 0      **Other:** None  
[ 0 – Minimal      1 - Slight      2 - Moderate      3 - High      4 - Extreme]

## 6. ACCIDENTAL RELEASE MEASURES

**Spill / Leak:** Safely stop source of spill. Restrict non-essential personnel from area. All personnel involved in spill cleanup should avoid skin and eye contact by wearing appropriate personal protective equipment.

**Cleanup:** Sweep up spilled solid material, being careful not to create dust. Return sweepings to stock or, if contaminated, place into a chemical waste container for disposal according to regulations. Flush remainder with water.

## 7. HANDLING AND STORAGE

**Handling:** Avoid inhalation and prolonged and/or repeated skin and eye contact. Avoid dust generation. In certain concentrations, the product may form an explosive dust-air mixture.

**Storage:** Keep containers closed and dry as product is hygroscopic. This material is suitable for any general chemical storage area. Isolate from strong oxidizers. Store in PVC, PE, stainless steel or bituminized tanks. Avoid contact with aluminum, copper, copper alloys and nickel.

**Maximum Storage Temperature:** Store in a cool and dry place at ambient temperature (below 25°C / 77°F).

**General Comments:** Containers should not be opened until ready for use. It is recommended to re-test the product after three years in storage.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Applicable Exposure Limits:** In addition to any exposure limits displayed below, exposures to this product should be controlled below limits established for “Particulates Not Otherwise Classified (PNOC)”:

- OSHA – 15 mg/m<sup>3</sup> (total dust) ; 5 mg/m<sup>3</sup> (respirable fraction)

Chemical Name	OSHA – PELs (mg / m <sup>3</sup> )		ACGIH – TLVs (mg / m <sup>3</sup> )		NIOSH – RELs (mg / m <sup>3</sup> )		AIHA – WEELs (mg / m <sup>3</sup> )	
	TWA	STEL / CEIL(C)	TWA	STEL / CEIL(C)	TWA	STEL / CEIL(C)	TWA	STEL / CEIL(C)
Manganese disodium EDTA	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
NTA	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Disodium EDTA	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Water	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D

[Ref: ACGIH Guide to Occupational Exposure Values, 2008 Edition]

**Legend:**

CEIL: Ceiling Exposure Limit      PEL: Permissible Exposure Limit      REL: Recommended Exposure Limit  
STEL: Short Term Exposure Limit      TLV: Threshold Limit Value      TWA: Time-Weighted Average  
N/D: Not Determined      WEEL: Workplace Environmental Exposure Levels  
ACGIH: American Conference of Governmental Industrial Hygienists      AIHA: American Industrial Hygiene Association  
NIOSH: National Institute for Occupational Safety and Health      OSHA: Occupational Safety and Health Administration

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION (CONTINUED)

**Engineering Controls - Ventilation:** Special ventilation is usually not required under normal use conditions. Ensure that existing ventilation is sufficient to prevent the circulation and/or accumulation of dust in the air.

### **Personal Protective Equipment (PPE)**

- **Respiratory Protection:** If handling operations generate dust, wear a NIOSH-approved half-mask, air purifying respirator with dust, mist and fume filters to reduce potential for inhalation exposure. When using respirator cartridges or canisters, they must be changed frequently (following each use or at the end of the work shift) to assure breakthrough exposure does not occur.
- **Skin Protection:** Skin contact with the product should be minimized or prevented through the use of suitable protective clothing, gloves (100% nitrile gloves recommended for permanent or full contact use) and footwear selected according to use condition exposure potential.
- **Eye Protection:** Dust-tight goggles should be worn when handling this product.

**Other Protection - General Hygiene Considerations:** All food and smoking materials should be kept in a separate area away from the storage/use location. Eating, drinking and smoking should be prohibited in areas where there is a potential for significant exposure to this material. Before eating, drinking and smoking, hands and face should be thoroughly washed.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State / Appearance / Odor:</b>	off white to light beige, odorless, micro-granular powder
<b>Boiling Point:</b>	not applicable
<b>Bulk Density:</b>	675 – 775 kg/m <sup>3</sup> (untapped)
<b>Cloud Point:</b>	not determined
<b>Evaporation Rate (Butyl Acetate=1):</b>	not determined
<b>Melting Point:</b>	decomposes without melting
<b>Odor Threshold:</b>	not determined
<b>pH:</b>	≈ 6.5 (1% solution)
<b>Partition Coefficient (n-octanol/water):</b>	log P <sub>ow</sub> < 0
<b>Pour Point:</b>	not determined
<b>Solubility in water:</b>	800 g/L (68°F / 20°C) ; 1200 g/L (176°F / 80°C)
<b>Solubility in other solvents:</b>	not determined
<b>Specific Gravity (H<sub>2</sub>O = 1):</b>	not determined
<b>Vapor Density (Air = 1):</b>	not applicable
<b>Vapor Pressure:</b>	not applicable
<b>Viscosity:</b>	not determined
<b>Volatiles (% by weight):</b>	not determined
<b>Other – Decomposition temperature:</b>	> 500°F (260°C)
<b>Conditions of Flammability:</b>	not flammable or combustible
<b>Flash Point (Method):</b>	not applicable
<b>Upper Flammable Limit (% by volume):</b>	not applicable
<b>Lower Flammable Limit (% by volume):</b>	not applicable
<b>Auto-Ignition Temperature:</b>	> 500°F (260°C) [glowing of 5 mm product layer]

< : less than      > : greater than      ≈ : approximately

## 10. STABILITY AND REACTIVITY

**Stability:** This product is stable at ambient temperatures and atmospheric pressures. It is not self-reactive and is not sensitive to physical impact.

**Incompatibilities / Conditions to avoid:** This product is incompatible with strong oxidizers. Avoid contact with aluminum, copper, copper alloys and nickel. Avoid prolonged storage at elevated temperatures. Avoid humid conditions as product is hygroscopic. Product layer on hot surface might cause glowing or autoignition.

## **10. STABILITY AND REACTIVITY** (CONTINUED)

**Polymerization:** Hazardous polymerization is not expected to occur under normal temperatures and pressures.

**Decomposition Products:** Under fire conditions the product may support combustion and decomposes to give off carbon oxides fumes (CO, CO<sub>2</sub>), nitrogen oxides and water vapor.

## **11. TOXICOLOGICAL INFORMATION**

### **INHALATION**

**Acute exposure:** The acute LC<sub>50</sub> for this product is not available. Inhalation of dust may cause discomfort and/or irritation of the respiratory system.

**Chronic exposure:** No known effects for the mixture.

### **SKIN**

**Acute contact:** Dermal toxicity for this product is not available. However, it is not considered to be irritating to skin based on tests with chemically similar products.

**Chronic contact:** No known effects for the mixture.

**EYES:** While this product has not been tested, it is expected that it would be minimally irritating to eyes based on tests with similar products.

### **INGESTION**

**Acute exposure:** The oral LD<sub>50</sub> for this product is expected to be greater than 2000 mg/kg in rats based on data from chemically similar products.

**Chronic exposure:** No known effects for the mixture. Chronic ingestion of NTA has been shown to cause kidney toxicity.

**SENSITIZATION:** No known effects for the mixture.

**CARCINOGENICITY:** IARC, NTP, ACGIH and OSHA do not classify this material as a carcinogen or suspect carcinogen. However, nitrilotriacetic acid (NTA) and its salts were determined to be “possibly carcinogenic to humans” (Group 2B) by IARC, a compound which “may reasonably be anticipated to be a human carcinogen” by NTP and a “select carcinogen” by OSHA. Nitrilotriacetic acid is listed on California’s Proposition 65 as a chemical known to cause cancer.

**MUTAGENICITY:** No data available for the mixture. NTA and its sodium salts were not genotoxic in experimental systems in vivo. Neither the acid nor its salts were genotoxic in mammalian cells in vitro and they were not mutagenic to bacteria.

**REPRODUCTIVE TOXICITY:** No data available for the mixture. EDTA and its sodium salts have been reported, in some studies, to cause birth defects in laboratory animals only at exaggerated doses that were toxic to the mother. These effects are likely associated with zinc deficiency due to chelation. Exposures having no effect on the mother should have no effect on the fetus. NTA is not teratogenic and did not induce reproductive toxicity.

**OTHER TOXICOLOGICAL EFFECTS:** This product contains the metal manganese. Excessive exposure to manganese by ingestion or inhalation can lead to manganese accumulation in specific portions of the brain and a central nervous syndrome called “manganism”, which has clinical signs similar to those of Parkinson’s disease.

**TARGET ORGANS:** Eyes, kidney and bladder.

## **12. ECOLOGICAL INFORMATION**

**Ecotoxicity:** No data available on the mixture.

## 12. ECOLOGICAL INFORMATION (CONTINUED)

**Chemical Fate:** The substance is not expected to enter the atmosphere significantly due to its high water solubility.

**Biodegradation:** This product is not expected to be readily biodegradable based on tests with structurally related products.

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal:** In its unused condition, this product is not considered to be a RCRA-defined hazardous waste by characteristics or listings. It is the responsibility of the waste generator to evaluate whether his wastes are hazardous by characteristic or listing. Dispose in accordance with all local, state and federal regulations.

NOTE – State and local regulations may be more stringent than federal regulations.

**Container Disposal:** Containers should be cleaned of residual product before disposal or return. Since emptied containers retain product residue, follow label warnings even after container is emptied. Empty containers should be disposed of or shipped in accordance with all applicable laws and regulations.

## 14. TRANSPORT INFORMATION

**Shipping Information:** Not regulated for transport.

**Required Labels:** No transport label required

**Environmentally Hazardous Substances [49 CFR 172.101, Appendix A]:** None

## 15. REGULATORY INFORMATION

**Regulatory Lists:** The components are subject to the following regulatory lists and inventories:

Chemical Name	CAA	CERCLA	IARC	US STATE RIGHT-TO-KNOW LISTS	CA PROP 65	SARA
Manganese disodium EDTA	N/R	N/R	N/R	CA / IL / MN / NJ / RI <i>See note 1</i>	N/R	313 <i>See note 1</i>
Disodium EDTA	N/R	N/R	N/R	N/R	N/R	N/R
NTA	N/R	N/R	X (Gr. 2B)	CA / FL / IL / MA / MN / NJ / PA	X	X 313
Water	N/R	N/R	N/R	N/R	N/R	N/R

1. The manganese compound in this product is subject to the various State Right-to-Know lists above as well as the SARA Title III, Section 313 supplier notification/release reporting requirements under the "Manganese Compounds" category.

### National Chemical Inventories Status:

Substance Name	US TSCA	Canada		EU EINECS	Australia AICS	New Zealand NZIoC	Japan ENCS	Korea KECI	Philippines PICCS	China IECSC
		DSL	NDSL							
Manganese disodium EDTA	X	X		X	X	X				X
Disodium EDTA	X	X		X	X	X	X	X	X	X
NTA	X	X		X	X	X	X	X	X	X
Water	X	X		X	X	X	X	X	X	X

N/R = Non Regulated

X = Listed and/or Regulated

## 15. REGULATORY INFORMATION (CONTINUED)

### Legend

AICS	Australian Inventory of Chemical Substances
CA List	California – Directors List of Hazardous Substances
CA Prop 65	California Proposition 65
CAA	Clean Air Act, Section 112
CERCLA	CERCLA Hazardous Substances
DSL	Domestic Substances List – Canada
EINECS	European Inventory of Existing Commercial Chemical Substances
ENCS	Japan Existing and New Chemical Substances
FL List	Florida – Substance List
IARC	International Agency for Research on Cancer – Carcinogens – Groups 1, 2A or 2B
IECSC	China – Inventory of Existing Chemical Substances
IL List	Illinois Toxic Substances Disclosure to Employees Act
KECI	Korea Existing Chemicals Inventory
LA List	Louisiana Right-to-Know Reporting List
MA List	Massachusetts – R-T-K Substance List
MN List	Minnesota – Hazardous Substance List
NDSL	Non-Domestic Substances List – Canada
NJ R-T-K	New Jersey – R-T-K Hazard List
NZIoC	New Zealand Inventory of Chemicals
PA List	Pennsylvania Hazardous Substance List
PICCS	Philippines Inventory of Chemicals and Chemical Substances
RI List	Rhode Island – Hazardous Substance List
SARA	SARA Title III, Section 302 / 313
TSCA	Toxic Substances Control Act – USA

### Canada – WHMIS (Workplace Hazardous Materials Information System)

- **D2A** [Materials causing other toxic effects]

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations (CPR)* and the MSDS contains all the information required by the CPR.

### Other Regulatory Information:

- **California Proposition 65:** *WARNING!* This product contains Nitrilotriacetic acid which is known to the State of California to cause cancer.

### Micronutrient Approvals / Registrations

- **California Department of Food and Agriculture (CDFA):** Dissolvine E-Mn-13 is approved for sale and distribution in California.
- **Canadian Food Inspection Agency (CFIA):** Dissolvine E-Mn-13 is a registered micronutrient in Canada under the Fertilizers Act [Registration Number 980101B]

## 16. OTHER INFORMATION

**HMIS RATING – Health:** 1\*    **Flammability:** 1    **Physical Hazards:** 0    **Other:** none  
[ 0 – Minimal      1 - Slight      2 - Moderate      3 - High      4 - Extreme      \* - Chronic Health Hazard (see Section 11)]

**Other Information:** Dissolvine® is a registered trademark of Akzo Nobel Chemicals B.V.

**Prepared by:** AkzoNobel [Technology & Engineering, SHERA - Regulatory Toxicology]  
Tel. 613.273.8095

**Changes:** Sections 1, 2, 15, 16 / Logo / Format

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