

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name	Dissolvine® E-FE-13
Chemical Name	Ethylenediaminetetraacetic acid, ferric sodium complex
Synonym(s)	Ferric sodium EDTA
Product Use	Chelating agent ; Plant nutrient
Manufacturer / Supplier	Akzo Nobel Functional Chemicals LLC Chelates Americas 525 West Van Buren St., Chicago, IL, USA 60607 Tel. 1-800-906-7979 www.dissolvine.com

Emergency Telephone Numbers

CHEMICAL EMERGENCY (Spill, Leak, Fire, Exposure or Accident)	CHEMTREC (800) 424-9300 (Toll-free in the U.S., Canada, and the U.S. Virgin Islands) (24-hr) (703) 527-3887 (For calls originating elsewhere / collect calls are accepted)
	CANUTEC (613) 996-6666 (Canada)
MEDICAL / HANDLING EMERGENCIES	(914) 693-6946 [AkzoNobel – USA]

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW	This material is not considered hazardous by the OSHA Hazard Communication Standard (29CFR 1910.1200) Contact with dust may cause discomfort and/or mild irritation to eyes and respiratory tract.
Appearance and odor	Odorless yellow-green powder at 25°C (77°F).

POTENTIAL HEALTH EFFECTS [See Section 11 for additional information]

Primary Route(s) of Exposure	Eye contact, skin 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 is expected to have a low order of acute toxicity.
Carcinogenicity	IARC, NTP, ACGIH and OSHA do not classify this material as a carcinogen or suspect carcinogen.
Reproduction	EDTA and its sodium salts caused birth defects in some animal studies in the presence of maternal toxicity.
Medical conditions aggravated by exposure	There are no data available that address medical conditions that are generally recognized as being aggravated by exposure to this product.

POTENTIAL ENVIRONMENTAL EFFECTS [See Section 12 for additional information]

Aquatic Toxicity	This product is not expected to be harmful to aquatic life, based on available data.
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3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS	CAS Number	% (w/w)
EDTA, ferric sodium complex	15708-41-5	87 – 89
Water	7732-18-5	Balance

4. FIRST AID MEASURES

- General Information** Although this product is not considered a hazardous material, the following measures are generally recommended following human exposure to chemical products.
- Inhalation** Dust may be irritating to the respiratory tract and cause symptoms of bronchitis. Move to fresh air. If symptoms persist, seek medical advice.
- Skin Contact** No special measures required. Wash all affected areas with soap and plenty of water. Get medical attention if irritation occurs or persists.
- Eye Contact** Flush eyes with large quantities of running water. 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 or persists.
- 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

- Flammable Properties** Not flammable or combustible
- Extinguishing Media** 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. Under fire conditions, it does not contribute any unusual hazards. However, potential for dust explosion may exist. Depending upon conditions, dusts may be sensitive to static discharge. Avoid possibility of dry powder with friction causing static electricity in presence of flammables. (See NFPA-77, Chap. 6).
- Hazardous Combustion Products** Thermal decomposition products may release toxic and/or hazardous fumes and gases, including nitrogen oxides, carbon oxides and metal oxide fumes.

6. ACCIDENTAL RELEASE MEASURES

- Personal Precautions** All personnel involved in spill cleanup should avoid skin and eye contact by wearing appropriate personal protective equipment (See Section 8).
- Methods for Containment** Safely stop source of spill. Restrict non-essential personnel from area.
- Environmental Precautions** Sweep up spilled solid material, being careful not to create dust. Collect as much as possible in a clean container for reuse (if not contaminated) or disposal (if contaminated).

6. ACCIDENTAL RELEASE MEASURES (CONTINUED)

- Methods for Clean-up** Flush spill area with water. Absorb the remainder with vermiculite or similar material. Dispose according to regulations. CAUTION – The spill area may be slippery.
- Other Information** See also Section 13 for disposal information.

7. HANDLING AND STORAGE

- Handling** Avoid dust generation. Avoid inhalation of dust as well as prolonged and/or repeated skin and eye contact. Use in well-ventilated areas to prevent formation of explosive dust-air mixture.
- Storage** Keep containers closed and dry. Protect product from moisture and wet air. This material is suitable for any general chemical storage area. Isolate from incompatible materials such as strong oxidizing agents.
- Recommended Storage Temperature** Store in original packing and in a cool and dry place at ambient temperature (below 77°F / 25°C).
- General Comments** Containers should not be opened until ready for use. It is recommended that products be retested if stored for more than 3 years. Under ideal storage conditions, the shelf-life is almost indefinite.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

- Exposure Guidelines** There are no known exposure limits applicable to this product or its components. Exposure to this product should be controlled below the limits established for "Particulates Not Otherwise Classified (PNOC)": **OSHA** – 15 mg/m³ (total dust) ; 5 mg/m³ (respirable fraction)
- 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. If ventilation is inadequate based on conditions of use, personal protective equipment is needed.
- Personal Protective Equipment (PPE)**
- Skin** Skin contact with the product should be minimized or prevented through the use of suitable protective clothing, gloves and footwear selected according to use condition exposure potential. For permanent (>8 hours) full contact use, 100% nitrile gloves are recommended.
- Eyes/Face** Dust-tight goggles should be worn when handling this product.
- Respiratory** Use of respiratory protection is generally not required. However, if use conditions generate dust and adequate ventilation (e.g., outdoor or well-ventilated area) is not available, use a NIOSH-approved organic vapor respirator with dust, mist and fume filters to reduce potential for inhalation exposure.
- Hygiene Measures** 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

Appearance

- Form** powder
- Color** yellow-green
- Odor** odorless

9. PHYSICAL AND CHEMICAL PROPERTIES (CONTINUED)

Boiling Point	not applicable
Bulk Density	~ 950 kg/m ³
Evaporation Rate (Butyl Acetate=1)	not determined
Melting Point	decomposes prior to melting
Odor Threshold	not determined
pH	4.0 – 5.5 (1% solution)
Partition Coefficient (n-octanol/water)	Log P _{ow} < 0
Solubility in water	90 g/L (68°F / 20°C) ; 300 g/L (176°F / 80°C)
Solubility in other solvents	not determined
Specific Gravity	not applicable
Vapor Density (Air = 1)	not applicable
Vapor Pressure	not applicable
Viscosity	not determined
Volatiles (% by weight)	not determined
Other	not applicable
Flammability	not flammable or combustible
Flash Point (Method)	not applicable
Upper Flammable Limit (% by volume)	not applicable
Lower Flammable Limit (% by volume)	not applicable
Auto-Ignition Temperature	> 392°F (200°C) / glowing of 5 mm product layer

< : less than > : greater than ~ : approximately

10. STABILITY AND REACTIVITY

Chemical stability	This product is stable under recommended storage and handling conditions (see section 7). It is not self-reactive and is not sensitive to physical impact.
Conditions to avoid	Avoid prolonged storage at elevated temperatures. Avoid humid conditions as product is hygroscopic. Product layer on hot surface might cause glowing or autoignition.
Incompatible materials	This product is incompatible with strong oxidizers.
Hazardous decomposition products	Thermal decomposition products may release toxic and/or hazardous fumes and gases, including nitrogen oxides, carbon oxides, metal oxides and water vapor.
Possibility of hazardous reactions	Hazardous polymerization is not expected to occur under normal temperatures and pressures.

11. TOXICOLOGICAL INFORMATION

Acute toxicity (Oral / Dermal / Inhalation)	Ferric sodium EDTA Oral : LD ₅₀ > 2000 mg/kg Dermal : LD ₅₀ > 2000 mg/kg Inhalation : 4h LC ₅₀ > 2.75 mg/kg (maximum attainable concentration)
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11. TOXICOLOGICAL INFORMATION (CONTINUED)

Irritation (Skin / Eyes / Respiratory)	This product is not irritating to skin, eyes and respiratory system.
Chronic toxicity (Oral / Dermal / Inhalation)	In a repeated 31/61-day oral study on rats with Ferric-sodium EDTA, the NOAEL \geq 84 mg/kg.
Sensitization	This substance is not considered a dermal sensitizer.
Carcinogenicity	IARC, NTP, ACGIH and OSHA do not classify this material as a carcinogen or suspect carcinogen.
Mutagenicity	Ferric sodium EDTA, when tested as a pure substance, gave a negative response in the Ames Assay and the E. Coli bacterial reversion assay, but a positive response in the Mouse Lymphoma Assay (in vitro) with and without metabolic activation at concentrations which were cytotoxic. The positive response was attributed to a possible sensitivity of the cells to abnormal iron concentrations.
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. Based on data with a related substance (manganese-disodium EDTA), the NOAEL is expected to be 500 mg/kg.
Other Effects	None known.
Target Organs	Skin and eyes.

12. ECOLOGICAL INFORMATION

Ecotoxicity	The following data is available for Ferric sodium EDTA: Fish (rainbow trout): 96h LC ₅₀ > 100 mg/L ; Fish (zebra fish) 35-day NOEC = 28.9 mg/L Daphnia magna: 48h EC ₅₀ = 100.9 mg/L ; 21-day NOEC = 31 mg/L Algae: 72h NOEC = 69.9 mg/L
Biodegradation	Inherently biodegradable - EDTA (acid form) and its salts are not readily biodegradable. Under special conditions like adaptation or slightly alkaline pH, which is realistic under environmental surface water conditions, the biodegradability of EDTA is considerably enhanced and as such EDTA is considered ultimately biodegradable. EDTA ferric-sodium complex is photodegradable with a half-life of 20 days.
Bioaccumulation	Bioaccumulation is not expected due to the substance's high water solubility. Log Pow < 0 [-10.6 based on EPIWIN model)
Chemical fate	The substance is not expected to enter the atmosphere significantly due to its high water solubility. C.O.D. is approximately 570 mg/g.
Other information	None available.

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.
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13. DISPOSAL CONSIDERATIONS (CONTINUED)

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

Emergency Response Guidebook (2008 ERG) Not applicable

Environmentally Hazardous Substances None

[49 CFR 172.101, Appendix A]

15. REGULATORY INFORMATION

Regulatory Lists:

Substance Name	CAA	CERCLA	IARC	US State Right-To-Know Lists	CA Prop 65	SARA
EDTA, ferric-sodium complex	N/R	N/R	N/R	N/R	N/R	N/R
Water	N/R	N/R	N/R	N/R	N/R	N/R

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							
EDTA, ferric-sodium complex	X	X		X	X	X	X	X	X	X
Water	X	X		X	X	X	X	X	X	X

CANADA – WHMIS
(Workplace Hazardous Materials Information System)

Not controlled
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.

CANADA – CFIA
(Canadian Food Inspection Agency)

Micronutrient Registration – Dissolvine E-FE-13 is a registered micronutrient in Canada under the Fertilizers Act [Registration Number 980018B].

California – CDFA
(California Department of Food and Agriculture)

Dissolvine E-FE-13 is approved for sale and distribution in California as a micronutrient.

Other Regulatory Information

Contact AkzoNobel for additional information regarding use and approval of Ferric sodium EDTA complex as indirect food additive.

16. OTHER INFORMATION

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

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

16. OTHER INFORMATION (CONTINUED)

Trademark	Dissolvine® is a registered trademark of Akzo Nobel Chemicals B.V.
Date of Issue / Revision	June 2, 2011
Revision #	14.0
Changes	Sections 1, 2, 8, 11, 12, 16 / Format
Prepared by	Akzo Nobel Services Inc. (Regulatory Affairs Americas / HSE Business Support)
Technical Information Contact	Akzo Nobel Functional Chemicals, Chelates Americas, 1-800-906-7979

Legend / Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
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
HMIS	Hazardous Materials Identification System
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
NFPA	National Fire Protection Association
NJ R-T-K	New Jersey – R-T-K Hazard List
NOAEL	No Observed Adverse Effect level
N/R	Non Regulated
NTP	National Toxicology Program (USA)
NZIoC	New Zealand Inventory of Chemicals
OSHA	Occupational Safety and Health Administration (USA)
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
X	Listed and/or Regulated

Disclaimer

The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. The user must determine the appropriate measures that need to be implemented for the use and handling of this product in the context of the user's operations and use of this product. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old, call to make certain that this sheet is current. No warranty is made as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. User must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. Nothing contained herein shall be construed as granting or extending any license under any patent.

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