

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Dissolvine® E-Zn-9
Chemical Name: Ethylenediaminetetraacetic acid, zinc diammonium complex
Synonym: Zinc-diammonium EDTA ; Ammonium zinc edetate
C.A.S. Registry No.: 67859-51-2
Chemical Formula: C₁₀ H₁₂ N₂ O₈ Zn(NH₄)₂
Product Use: Plant micronutrient

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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Revision Date: November 24, 2008	Changes: Sections 1, 2, 16 / Logo / Format

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

This material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

No significant immediate hazards for emergency response are known.

Appearance and odor: Clear pale yellow liquid with a slight ammonia odor

POTENTIAL HEALTH EFFECTS (see section 11 for additional information)

Primary Route(s) of Exposure: Eye contact, skin contact and inhalation.

Acute Exposure

- **Eye Contact:** Eye contact may cause mild irritation.
- **Skin Contact:** Skin contact may cause slight irritation.
- **Inhalation:** Exposure to an excessive concentration of vapor, mist or aerosol may cause respiratory tract discomfort and/or irritation.
- **Ingestion:** This product has a low order of acute toxicity.

Carcinogenicity: This product does not contain any carcinogens or potential carcinogens as listed by IARC, NTP, ACGIH or OSHA.

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)

Medical conditions aggravated: No data available.

POTENTIAL ENVIRONMENTAL EFFECTS (See Section 12 for additional information)

This product is not considered to be harmful to aquatic life, based on available data.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>INGREDIENTS</u> [See section 8 for exposure limits]	<u>% (w/w)</u>	<u>CAS Number</u>
Zinc-diammonium EDTA complex	50.0 – 60.0	67859-51-2
Water	40.0 – 50.0	7732-18-5
Triammonium EDTA	0.2 – 2.0	15934-01-7

4. FIRST AID MEASURES

Although this product is not considered a hazardous material, the following measures are generally recommended following human exposure to chemical products.

Eye Contact: Flush eyes with plenty of water. If easy to do, remove contact lenses, if worn. 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 irritation occurs.

Skin Contact: Remove contaminated clothing, shoes and equipment. Flush skin with plenty of water. Wash contaminated clothing and shoes before reuse. Get medical attention if irritation occurs.

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

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. Seek medical advice.

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

5. FIRE FIGHTING MEASURES

Conditions of Flammability:	not flammable or combustible
Flash Point (Method):	not applicable
Upper Flammable Limit (% by volume):	not determined
Lower Flammable Limit (% by volume):	not determined
Auto-Ignition Temperature:	not determined

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 and should not be a fire hazard. Under fire conditions, it does not contribute any unusual hazards.

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

5. FIRE FIGHTING MEASURES (CONTINUED)

NFPA 704 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: Wear appropriate personal protective equipment. Safely stop source of spill. Dike area to prevent large spills from spreading. Restrict non-essential personnel from area.

Cleanup: Soak up liquid with a suitable absorbent such as clay, sawdust or kitty litter. Sweep up absorbed material and place in a chemical waste container for disposal according to local, state or federal regulations. Flush remainder with water.

7. HANDLING AND STORAGE

Handling: The usual precautionary measures for handling chemicals should be observed. Wear appropriate protective clothing and wash hands after handling.

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

Storage Temperature: Store in a cool and dry place at room temperature (below 25°C / 77°F). **To avoid crystallization, this product must be stored above 0°C (32°F).**

General Comments: Containers should not be opened until ready for use. It is recommended that products be retested if stored for more than 2 years. Under ideal storage conditions, the shelf-life is almost indefinite.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits: There are no known exposure limits applicable to this product or its components.

Chemical Name	OSHA – PELs (mg / m ³)		ACGIH – TLVs (mg / m ³)		NIOSH – RELs (mg / m ³)		AIHA – WEELs (mg / m ³)	
	TWA	STEL / CEIL(C)	TWA	STEL / CEIL(C)	TWA	STEL / CEIL(C)	TWA	STEL / CEIL(C)
Zinc-diammonium 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
Triammonium EDTA	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 Level
 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

Engineering Controls – Ventilation: Special ventilation is usually not required under normal use conditions. However, ensure that existing ventilation is sufficient to prevent the circulation and/or accumulation of vapor in the air.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION (CONTINUED)

Personal Protective Equipment (PPE)

- **Respiratory Protection:** Use of respiratory protection is generally not required. However, if use conditions generate vapor, mist or aerosol and adequate ventilation (e.g., outdoor or well-ventilated area) is not available, use a NIOSH-approved organic vapor respirator with mist and fume filters to reduce potential for inhalation exposure.
- **Skin Protection:** Skin contact with the product should be minimized through the use of suitable protective clothing, gloves and footwear selected according to use condition exposure potential. Nitrile gloves are recommended for permanent (>480 minutes) full contact use.
- **Eye Protection:** Chemical goggles and/or a face shield 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

Physical State / Appearance / Odor:	clear pale yellow liquid with a slight ammonia odor
Boiling Point:	105-110 °C (221-230°F)
Bulk Density:	not applicable
Cloud Point:	not determined
Crystallization Point:	< 32°F (< 0°C) – do not store below this temperature
Melting Point:	not applicable
Evaporation Rate (Butyl Acetate=1):	not determined
Odor Threshold:	not determined
pH:	6 – 8 (1% solution)
Partition Coefficient (n-octanol/water):	Log P _{ow} < 0
Pour Point:	not determined
Solubility in water:	completely miscible
Solubility in other solvents:	not determined
Specific Gravity (H₂O = 1):	≈ 1.30 g/ml
Vapor Density (Air = 1):	same as water
Vapor Pressure:	same as water
Viscosity:	not determined
Volatiles (% by weight):	not determined
Other – Decomposition temperature:	> 392°F / > 200°C (solid) ; >212°F / >100C (water loss)
Conditions of 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:	not applicable

< : 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. Aqueous solution in contact with aluminum evolves hydrogen. Avoid contact with aluminum, zinc, copper, copper alloys and nickel. Avoid prolonged storage at elevated temperatures. **To avoid crystallization, this product must be stored above 0°C (32°F).**

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, CO₂), nitrogen oxides and water vapor.

11. TOXICOLOGICAL INFORMATION

INHALATION

Acute exposure: The acute LC₅₀ for this product is not available.

Chronic exposure: No information available.

SKIN

Acute contact: Dermal toxicity for this product is not available. A formulation containing 53% Zinc-diammonium EDTA was slightly irritating to rabbit skin.

Chronic contact: Repeated or prolonged contact may cause irritation.

EYES: A formulation containing 53% Zinc-diammonium EDTA was slightly irritating to rabbit eyes.

INGESTION

Acute exposure: The oral LD₅₀ was greater than 3980 mg/kg (rat) for a formulation containing 53% Zinc-diammonium EDTA.

Chronic exposure: No information available.

SENSITIZATION: No information available.

CARCINOGENICITY / MUTAGENICITY: This product does not contain any carcinogens or potential carcinogens as listed by IARC, NTP, ACGIH or OSHA. No mutagenicity data available.

REPRODUCTIVE TOXICITY: No data available for this product. 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.

OTHER TOXICOLOGICAL EFFECTS: None known

TARGET ORGANS: None

12. ECOLOGICAL INFORMATION

Ecotoxicity: The following data is available for a formulation containing 53% Zinc-diammonium EDTA:
Fish (*Bluegill / Lepomis macrochirus*): 96-h LC₅₀ = 685 mg/L

Chemical Fate: The test material (containing 53% Zinc-diammonium EDTA) was stable to hydrolysis. The substance is not expected to enter the atmosphere significantly due to its high water solubility.
Bioaccumulation – Log P_{ow} = - 4.121 (calculated by EPIWIN/KOWWIN model)

Biodegradation: The test material (containing 53% Zinc-diammonium EDTA) is not expected to be readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: The characteristic of corrosivity per RCRA would be exhibited by unused product if it becomes a waste material. 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

The components are subject to the following environmental regulatory lists:

Substance Name	CAA	CERCLA	IARC	US STATE RIGHT-TO-KNOW LISTS	CA PROP 65	SARA
Zinc-diammonium EDTA	N/R	N/R	N/R	CA / IL / NJ <i>(as Zinc Compounds)</i>	N/R	313 See note 1
Water	N/R	N/R	N/R	N/R	N/R	N/R
Triammonium EDTA	N/R	N/R	N/R	N/R	N/R	N/R

¹ The zinc compound in this product is subject to SARA Title III, Section 313 supplier notification/release reporting requirements under the “Zinc Compounds” category. This product contains approximately 9% zinc.

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							
Zinc-diammonium EDTA	X		X ²	X			X		X	X
Triammonium EDTA	X		X	X	X	X	X		X	X
Water	X	X		X	X	X	X	X	X	X

² Exempt from CEPA New Substances Notifications if registered as micronutrient under the Fertilizers Act in Canada and sold in Canada only for that use.

N/R = Non Regulated

X = Listed / Regulated

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

15. REGULATORY INFORMATION (CONTINUED)

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): 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.
- **Micronutrient Registration - Canadian Food Inspection Agency (CFIA):** Dissolvine E-ZN-9 is a registered micronutrient in Canada under the Fertilizers Act [Registration Number 990062B]

Other Regulatory Information: None

16. OTHER INFORMATION

HMIS RATING – Health: 1 **Flammability: 0** **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.

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

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Tel. 613.273.8095

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