

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name	Dissolvine® E-39
Chemical Name	Ethylenediaminetetraacetic acid, tetrasodium salt (39% aqueous solution)
Synonym(s)	Tetrasodium EDTA
Product Use	Chelating agent
Manufacturer / Supplier	Akzo Nobel Functional Chemicals LLC Chelates Americas 525 West Van Buren St., Chicago, IL 60607 Tel. 1-800-906-7979 or 1-312-544-7000 www.dissolvine.com
Emergency Telephone Numbers	
CHEMICAL	CHEMTREC (800) 424-9300 (Toll-free in the U.S., Canada, and the U.S. Virgin Islands)
EMERGENCY (Spill, Leak, Fire, Exposure or Accident)	(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	<i>This material is considered hazardous by the OSHA Hazard Communication Standard [29 CFR 1910.1200]</i>
WARNING !	<ul style="list-style-type: none">▪ Harmful if inhaled.▪ May be harmful if swallowed.▪ Causes eye irritation.▪ May cause skin and respiratory tract irritation.▪ Corrosive to aluminum.▪ Contains material which may cause kidney damage and cancer, based on animal data.
Appearance and odor	Clear 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	Inhalation: Exposure to an excessive concentration of vapors, mist, fumes or aerosols may cause respiratory tract discomfort and/or mild irritation. Skin Contact: May cause skin irritation. Eye Contact: Eye contact causes irritation. Ingestion: This product may be harmful if swallowed.
Carcinogenicity	This product and its components are not listed as known carcinogens or potential carcinogens by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists), NTP (National Toxicology Program), OSHA (U.S. Occupational Safety & Health Administration) and EPA (U.S. Environmental protection Agency). However, Nitriolotriacetic 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 carcinogen” by NTP and a “select carcinogen” by OSHA.

2. HAZARDS IDENTIFICATION (CONTINUED)

Chronic Effect / Developmental Toxicity EDTA and its sodium salts caused birth defects in some animal studies in the presence of maternal toxicity.

Medical Conditions Aggravated by Exposure Zinc deficiency may be aggravated by systemic exposure to EDTA and its sodium salts.

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 with related materials.

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS	CAS Number	% (w/w)
Tetrasodium EDTA	64-02-8	37 – 41
Sodium hydroxide	1310-73-2	0.5 – 1.9
Trisodium NTA	5064-31-3	0.5 – 2
Ethylenediaminetriacetic acid, trisodium salt (ED3ANa3)	19019-43-3	< 0.8
Water	7732-18-5	53 – 59 (balance)

4. FIRST AID MEASURES

Inhalation Remove victim to fresh air. If irritation occurs or if breathing becomes difficult, get medical attention.

Skin Contact Remove contaminated clothing, shoes and equipment. Wash all affected areas with soap and plenty of water. 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.

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 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.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	All personnel involved in spill cleanup should avoid skin and eye contact by wearing appropriate personal protective equipment.
Methods for Containment	Safely stop source of spill. Dike area to prevent spill from spreading. Restrict non-essential personnel from area.
Environmental Precautions	Collect as much as possible in a clean container for reuse (if not contaminated) or disposal (if contaminated).
Methods for Clean-up	Soak up liquid residue with a suitable absorbent such as clay, sawdust or kitty litter. Sweep up absorbed material and place in a chemical waste container for disposal. Then flush area with water. CAUTION – The spill area may be slippery.
Other Information	See also Section 13 for disposal information.

7. HANDLING AND STORAGE

Handling	Avoid inhalation of vapors or fumes as well as prolonged and/or repeated skin and eye contact. Wash hands and contaminated skin thoroughly after handling. Do not eat, drink or smoke when handling this product.
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, nickel and zinc.
Recommended Storage Temperature	Store in sealed or original containers in a cool and dry place at ambient temperatures (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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

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)
Tetrasodium EDTA	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Sodium hydroxide	2.0	N/D	N/D	2.0 (C)	N/D	2.0 (C)	N/D	N/D
Trisodium NTA	N/D	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Trisodium ED3A	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, 2011 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

8. EXPOSURE CONTROLS / PERSONAL PROTECTION (CONTINUED)

Immediately Dangerous to Life or Health Concentrations (IDLH / NIOSH): Sodium hydroxide = 10 mg/m³

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 vapors in the air.

Personal Protective Equipment (PPE)

Respiratory Use of respiratory protection is generally not required. However, if use conditions generate vapors, aerosols or fumes and adequate ventilation (e.g., outdoor or well-ventilated area) is not available, use a NIOSH-approved organic vapor respirator with HEPA (High Efficiency Particulate Air) filters to reduce potential for inhalation exposure. Where exposure potential necessitates a higher level of protection, use a NIOSH-approved, positive-pressure/pressure-demand, air-supplied respirator. 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 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% Viton gloves are recommended.

Eyes/Face Since eye contact may cause irritation, chemical goggles and/or a face shield should be worn when handling this product.

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	clear liquid
Color	yellow
Odor	slight ammonia odor
Boiling Point	224.6°F (107°C)
Bulk Density	not applicable
Evaporation Rate (Butyl Acetate=1)	not determined
Melting Point	< 0°F (-18°C) / freezing point
Odor Threshold	not determined
pH	~ 11.5 (1% solution)
Partition Coefficient (n-octanol/water)	Log P _{ow} < 0
Solubility in Water	miscible
Solubility in Other Solvents	not determined
Specific Gravity	1.25 – 1.33
Vapor Density (Air = 1)	same as water
Vapor Pressure	same as water
Viscosity	~ 19 mPa.s (@ 20°C)
Volatiles (% by weight)	not determined

9. PHYSICAL AND CHEMICAL PROPERTIES (CONTINUED)

Other	decomposition temperature : > 392°F / > 200°C (solid) ; >224.6°F / >107°C (water loss)
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

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.
Incompatible Materials	This product is incompatible with strong oxidizers.
Conditions to Avoid	Avoid contact with aluminum, nickel, zinc, copper and copper alloys. Aqueous solution in contact with aluminum evolves hydrogen. Do not expose product to elevated temperatures for extended periods of time.
Hazardous Decomposition Products	Under fire conditions the product may support combustion and decomposes to give off carbon oxides fumes (CO, CO ₂), nitrogen 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)	Tetrasodium EDTA Oral : LD ₅₀ = 1780 mg/kg Dermal : LD ₅₀ : no data available Related product Disodium EDTA Inhalation : 4h LC ₅₀ = 1000-5000 mg/m ³ (maximum attainable concentration) Trisodium NTA Component Inhalation : 4h LC ₅₀ > 5 mg/L
Irritation (Skin / Eyes / Respiratory)	This product is not irritating to skin and respiratory tract but is irritating to eyes. Sodium hydroxide component is corrosive to skin and severely irritating to eyes and respiratory tract. Severity of the effects will depend on the concentration.
Chronic Toxicity (Oral / Dermal / Inhalation)	No data available for this product. The following read-across data is available: NOAEL = 500 mg/kg (90-day oral study with Disodium EDTA). NOAEL ≥ 500 mg/kg (104-week oral study with Trisodium HEDTA). LOAEC = 30 mg/m ³ (5-day inhalation test with Disodium EDTA). Chronic ingestion of NTA and its trisodium salt has been shown to cause kidney toxicity.
Sensitization	This substance is not considered a dermal sensitizer based on data with a related product (Disodium EDTA).
Carcinogenicity	This product does not contain any carcinogens or potential carcinogens as listed by IARC, NTP, ACGIH or OSHA. However, Nitrotriacetic 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 carcinogen" by NTP and a "select carcinogen" by OSHA.

11. TOXICOLOGICAL INFORMATION (CONTINUED)

Mutagenicity	<p>Tetrasodium EDTA component is not mutagenic in a series of tests, including the Ames Assay, the Chromosomal Aberration and the Mouse Lymphoma.</p> <p>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. However, trisodium NTA has been shown to be positive in the BALB/c3T3 transformation assay when tested up to 7.8 mM.</p> <p>A related substance (Trisodium HEDTA) gave a negative response in the Ames Assay, the Chromosome Aberration Test, the Mouse Lymphoma Assay and the <i>in vivo</i> Micronucleus Test.</p>
Reproductive Toxicity	<p>No data available for the mixture.</p> <p>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.</p> <p>Based on data with a related substance (Calcium-disodium EDTA), the NOAEL is expected to be greater than 250 mg/kg.</p> <p>Trisodium NTA is not teratogenic and did not induce reproductive toxicity.</p>
Cytotoxicity	<p>Tetrasodium EDTA did not damage normal rat kidney cells at doses of 0.1 to 20 µM. Long-term exposure to 0.1 or 5.0 µM was not toxic and did not inhibit DNA synthesis.</p>
Other Effects	<p>None known.</p>
Target Organs	<p>Eyes and reproductive system (in presence of maternal toxicity).</p>

12. ECOLOGICAL INFORMATION

Ecotoxicity	<p>The following data is available for several related EDTA products:</p> <ul style="list-style-type: none">Fish (bluegill): 96h LC₅₀ > 1000 mg/L ;Fish (zebra fish) 35-day NOEC ≥ 25.7 mg/LDaphnia magna: 48h EC₅₀ = 140 mg/L ; 21-day NOEC = 25 mg/LAlgae: 72h EC₅₀ ≥ 300 mg/LBacteria: 30-min EC₂₀ > 500 mg/L <p>Sodium hydroxide: Fish (various species): 96h LC₅₀ = 33 to 189 mg/L</p>
Biodegradation	<p>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.</p> <p>Photodegradable with a half-life of 20 days.</p>
Bioaccumulation	<p>Bioaccumulation is not expected due to the substance's high water solubility. Log Pow < 0</p> <p>Bio-Concentration Factor (BCF) = 1 – 2 (Flow-through study, 28-day, <i>Lepomis macrochirus</i>)</p>
Chemical Fate	<p>The substance is not expected to enter the atmosphere significantly due to its high water solubility.</p> <p>C.O.D. is approximately 260 mg/g.</p>
Other Information	<p>No adsorption expected onto soil due to ionic structure. The test substance will preferably distribute into the water compartment and not evaporate from the water surface.</p>

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

Regulation	UN Number	Proper Shipping Name [Technical Name]	Hazard Class	PG	Label	Additional Information
US DOT (Land)	N/R	N/R	N/R	N/R	N/R	This product is not regulated as hazardous by DOT, per 49CFR §173.154 (d) exception for materials corrosive to metals (steel and/or aluminum).
US DOT (Air) Canada TDG IMDG (sea) IATA/ICAO (air)	UN3267	Corrosive liquid, basic, organic, n.o.s. (Ethylenediaminetetraacetic acid tetrasodium salt ; Sodium hydroxide)	8	III	Corrosive	

Emergency Response Guidebook (2008 ERG)

153

Environmentally Hazardous Substances

[49 CFR 172.101, Appendix A]

Sodium hydroxide: RQ = 1000 lbs (454 kg)

15. REGULATORY INFORMATION

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

Substance Name	CAA	CERCLA	IARC	US STATE RIGHT-TO-KNOW LISTS	CA PROP 65	SARA
Tetrasodium EDTA	N/R	N/R	N/R	N/R	N/R	N/R
Sodium hydroxide	N/R	X	N/R	CA / IL / MA / MN / NJ / PA / RI	N/R	N/R
Trisodium NTA	N/R	N/R	X	MA	X (See note 1)	N/R
Trisodium ED3A	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

1. A related product “Trisodium NTA monohydrate” [CAS #18662-53-8] is known to the State of California to cause cancer and is reportable under Proposition 65.

15. REGULATORY INFORMATION (CONTINUED)

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							
Tetrasodium EDTA	X	X		X	X	X	X	X	X	X
Water	X	X		X	X	X	X	X	X	X
Sodium hydroxide	X	X		X	X	X	X	X	X	X
Trisodium NTA	X	X		X	X	X	X	X	X	X
Trisodium ED3A	X	X				X			X	X

CANADA – WHMIS
(Workplace Hazardous
Materials Information System)

Class D2A [Other toxic effects]
Class E [Corrosive to metal]

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

The Cosmetic Ingredient Review (CIR) Expert Panel has determined that EDTA and its salts are safe as used in cosmetic formulations.

Contact AkzoNobel for additional information regarding the use and approval of Dissolvine E-39 (Tetrasodium EDTA) as a direct or indirect food additive.

16. OTHER INFORMATION

HMIS Hazard Rating

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

Trademark

Dissolvine® is a registered trademark of Akzo Nobel Chemicals B.V.

Date of Issue / Revision

September 29, 2011

Revision #

23.0

Changes

Sections 2, 5, 11, 12, 15, 16

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
LOAEC	Lowest Observed Adverse Effect Concentration
MA LIST	Massachusetts Right-To-Know Substance List
MN LIST	Minnesota – Hazardous Substance List
NDSL	Non-Domestic Substances List – Canada

16. OTHER INFORMATION (CONTINUED)

NFPA	National Fire Protection Association
NJ R-T-K	New Jersey Right-To-Know Hazard List
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
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.

[00707_061108]