1. Chemical Product and Company Identification

Product Name	**Dissolvine® 220-S**
Chemical Name	Ethylenediaminetetraacetic acid, tetrasodium salt, tetrahydrate
Synonym(s)	Tetrasodium EDTA, tetrahydrate
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 www.dissolvine.com

Emergency Telephone Numbers

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
MEDICAL / HANDLING EMERGENCIES	(914) 693-6946 [AkzoNobel – USA]	

2. Hazards Identification

EMERGENCY OVERVIEW	*This material is considered hazardous by the OSHA Hazard Communication Standard [29 CFR 1910.1200]*
WARNING !	▪ **Causes eye irritation.** ▪ **Harmful if inhaled.** ▪ **May be harmful if swallowed.** ▪ **Potential for dust explosion may exist.**
Appearance and odor	White odorless powder.

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 respiratory tract discomfort and/or mild irritation.
Skin Contact	Not expected to cause skin irritation.
Eye Contact	Eye contact causes severe irritation.
Ingestion	This product is expected to have a low order of acute toxicity.
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).
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.

2. HAZARDS IDENTIFICATION (CONTINUED)

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	83 – 85
Water	7732-18-5	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 immediately.

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.

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, Chapter 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.

Methods for Containment Safely stop source of spill. Restrict non-essential personnel from area.

6. ACCIDENTAL RELEASE MEASURES (CONTINUED)

Environmental Precautions	Collect as much as possible in a clean container for reuse (if not contaminated) or disposal (if contaminated).
Methods for Clean-up	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 local, state or federal regulations. Flush remainder with water.
Other Information	See also Section 13 for disposal information.

7. HANDLING AND STORAGE

Handling	Avoid inhalation of dust as well as prolonged and/or repeated skin and eye contact. Minimize the generation of dust when handling this product. In certain concentrations, the product may form an explosive dust-air mixture.
Storage	Keep containers closed and dry. This material is suitable for any general chemical storage area.
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. Under ideal storage conditions, the shelf-life is almost indefinite. Protect product from moisture and wet air.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits	Exposure to this product should be controlled below limits established for "Particulates Not Otherwise Classified (PNOC)" : OSHA – 15 mg/m^3 (total dust) ; 5 mg/m^3 (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.

Personal Protective Equipment (PPE)

Respiratory	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	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 causes irritation, indirect-vented dust-tight 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	powder
Color	white
Odor	odorless
Boiling Point	not applicable
Bulk Density	~ 850 kg/m^3
Evaporation Rate *(Butyl Acetate=1)*	not determined
Melting Point	decomposes prior to melting
Odor Threshold	not determined
pH	~ 10.5 - 11.5 (1% solution)
Partition Coefficient *(n-octanol/water)*	Log P_{ow} < 0
Solubility in Water	~ 1100 g/L
Solubility in Other Solvents	not determined
Specific Gravity	not determined
Vapor Density *(Air = 1)*	not applicable
Vapor Pressure	not applicable
Viscosity	not determined
Volatiles *(% by weight)*	not determined
Other	decomposition temperature : > 392°F / > 200°C
Flammability	not flammable or combustible
Flash Point *(Method)*	not applicable
Upper Flammable Limit *(% by volume)*	not applicable
Lower Flammable Limit *(% by volume)*	not applicable
Lower Explosion Limit	≥ 40 g/m^3
Auto-Ignition Temperature	> 392°F / > 200°C (glowing temperature of 5 mm product layer)

< : less than > : greater than ~ : approximately ≥ : equal to or greater than

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	None known.
Conditions to Avoid	Avoid contact with strong oxidizing agents. Do not expose product to elevated temperatures for extended periods of time. Product layer on hot surface might cause glowing or auto-ignition.
Hazardous Decomposition Products	Under fire conditions the product may support combustion and decomposes to give off carbon oxides fumes (CO, CO_2) and nitrogen oxides.
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)

Irritation
(Skin / Eyes / Respiratory)

This product is not irritating to skin and respiratory tract but is irritating to eyes.

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).

Sensitization

Not expected to be a skin sensitizer based on tests with a similar product (Disodium EDTA).

Carcinogenicity

IARC, NTP, ACGIH and OSHA do not classify this material as a carcinogen or suspect carcinogen.

Mutagenicity

Tetrasodium EDTA component is not mutagenic in a series of tests, including the Ames Assay, the Chromosomal Aberration and the Mouse Lymphoma.

A related substance (Trisodium HEDTA) gave a negative response in the Ames Assay, the Chromosome Aberration Test, the Mouse Lymphoma Assay and the *in vivo* Micronucleus Test.

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 (Calcium-disodium EDTA), the NOAEL is expected to be greater than 250 mg/kg.

Other Effects

Tetrasodium EDTA, administered to mice in drinking water at a dose of 25 mM, caused a reduction of calcium in bone, liver and muscle. Zinc was reduced in kidneys, muscle and liver. Magnesium was reduced in bones and liver but was increased in the kidneys.

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.

Target Organs

Eyes and reproductive system (in presence of maternal toxicity).

12. ECOLOGICAL INFORMATION

Ecotoxicity

No experimental ecological data are available on the preparation as such. It is not expected to be harmful to aquatic organisms. Experiments on several EDTA salts yielded the following data:
Rainbow trout: 96h LC50 > 1000 mg/L ; 35-day NOEC ≥ 25.7 mg/L
Daphnia magna: 48h EC50 = 140 mg/L ; 21-day NOEC = 25 mg/L
Algae: 72h EC50 > 300 mg/L
Bacteria: 30-min EC_{20} > 500 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.

Photodegradable with a half-life of 20 days.

12. ECOLOGICAL INFORMATION (CONTINUED)

Bioaccumulation

Log P_{ow} = - 13.17 (calculated by EPIWIN/KOWWIN model)

Bio-Concentration Factor (BCF) = 1 – 2 (Flow-through study, 28-day, *Lepomis macrochirus*)

Chemical Fate

Tetrasodium EDTA is not expected to undergo hydrolysis. The substance is not expected to enter the atmosphere significantly due to its high water solubility.

Other Information

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.

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 Regulations

This product is **not regulated** as hazardous for transport.

Emergency Response Guidebook (2008 ERG)

Not applicable

Environmentally Hazardous Substances
[49 CFR 172.101, Appendix A]

None.

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
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							
Tetrasodium EDTA	X	X		X	X	X	X	X	X	X
Water	X	X		X	X	X	X	X	X	X

CANADA – WHMIS
(**W**orkplace **H**azardous **M**aterials **I**nformation **S**ystem)

Class D2B [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.

15. REGULATORY INFORMATION (CONTINUED)

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 220-S (Tetrasodium EDTA) as a direct or 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]

Trademark

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

Date of Issue / Revision

October 5, 2011

Revision #

10.0

Changes

Sections 2, 10, 11, 12, 16

Prepared by

Akzo Nobel Services Inc. (Regulatory Affairs Americas, HSE Dept.)

Technical Information Contact

Akzo Nobel Functional Chemicals, Chelates Americas, 1-800-906-7979

Legend / Acronyms

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 (American Coatings Association)
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
NOEC	No Observed Effect Concentration
N/R	Non Regulated
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 (US EPA)
TSCA	Toxic Substances Control Act – USA
X	Listed and/or Regulated

Disclaimer

[00707_061108]