

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Dissolvine[®] E-Ca-10
Chemical Name: Ethylenediaminetetraacetic acid, calcium disodium complex
Synonym: Calcium disodium EDTA
C.A.S. Registry No.: 62-33-9
Chemical Formula: C₁₀H₁₂N₂O₈CaNa₂·2H₂O
Product Use: Chelating agent

- *Use of this product in any food, medicinal and/or drug application must follow FDA-approved uses only.*
- *Meets the chemical test requirements of USP, EP, FCC and European Directive 96/77/EC.*

Manufacturer / Supplier

Akzo Nobel Functional Chemicals LLC
Chelates Americas
525 West Van Buren St., Chicago, IL, USA 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]

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

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

CAUTION: *Contact with dust may cause discomfort and/or mild irritation.*

Appearance and odor: Odorless, white, free-flowing powder

Fire and explosion hazards: Although this product is not defined as flammable or combustible, potential for dust explosion may exist. Depending upon conditions, dust may be sensitive to static discharge. Avoid possibility of dry powder and friction causing static electricity in presence of flammable materials (See NFPA-77, Chap.6).

POTENTIAL HEALTH EFFECTS [See Section 11 for additional information]

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

Acute Exposure

- **Inhalation:** Exposure to an excessive concentration of dust may cause respiratory tract discomfort and/or mild irritation.
- **Skin Contact:** Skin contact is not expected to cause irritation.
- **Eye Contact:** Eye contact with dust may cause mild physical irritation.
- **Ingestion:** This product has a low order of acute toxicity.

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

2. HAZARDS IDENTIFICATION (CONTINUED)

Medical conditions aggravated: Zinc deficiency may be aggravated by systemic exposure to calcium disodium EDTA.

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>
EDTA, calcium disodium complex	87.0 – 91.0	62-33-9
Water	9.0 – 13.0	7732-18-5

The anhydrous substance (CAS # 62-33-9) covers all hydrated forms of this product [such as the commercially available dihydrate substance, CAS # 23411-34-9].

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.

Inhalation: Dust may be irritating to the respiratory tract and cause symptoms of bronchitis. 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 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 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 eye irritation occurs.

Ingestion: ONLY induce vomiting at the instructions of a physician. If victim is conscious, rinse mouth and give water to drink. If vomiting occurs, keep head below hips to reduce risk of aspiration. Give fluids again. Never give anything by mouth to an unconscious person or convulsing. Get medical attention if health effects occur.

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:	>200°C (> 392°F) / glowing temperature of 5 mm product layer

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.

5. FIRE FIGHTING MEASURES (CONTINUED)

Fire & Explosion Hazards: Although this product is not defined as flammable or combustible, potential for dust explosion may exist. Depending upon conditions, dust may be sensitive to static discharge. Avoid possibility of dry powder and friction causing static electricity in presence of flammable materials (See NFPA-77, Chap.6).

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

NFPA 704 Hazard Rating – Health: 1 **Fire: 1** **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 follow good industrial hygiene practices and 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 local, state or federal regulations. Flush remainder with water.

7. HANDLING AND STORAGE

Handling: Avoid inhalation and prolonged and/or repeated skin and eye contact. Minimize generation of dust.

Storage: Keep containers closed and dry. This material is suitable for any general chemical storage area. Isolate from strong oxidizing agents. 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 advised to re-test the material after 3 years of storage.

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/m³ (total dust) ; 5 mg/m³ (respirable fraction)

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)
Calcium disodium EDTA complex	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, 2009 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)

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

- **Respiratory Protection:** 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. 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 and footwear selected according to use condition exposure potential. 100% nitrile gloves are recommended for permanent (> 8 hours) and/or full contact use.
- **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

Physical State / Appearance / Odor:	odorless, white, free-flowing powder
Boiling Point:	not applicable
Bulk Density:	700-800 kg/m ³ (untapped)
Cloud Point:	not determined
Evaporation Rate (Butyl Acetate=1):	not determined
Melting Point:	348°C (658.4°F) / decomposes prior to melting
Odor Threshold:	not determined
pH:	≈ 7 (1% solution)
Partition Coefficient (n-Octanol/water)	log Pow < 0
Pour Point:	not determined
Solubility in water:	≈ 800 g/L (at 20°C / 68°F) ; > 1500 g/L (at 80°C / 176°F)
Solubility in other solvents:	practically insoluble in alcohol
Specific Gravity (H₂O = 1):	not determined
Vapor Density (Air = 1):	not determined
Vapor Pressure:	not applicable
Viscosity:	not determined
Volatiles (% by weight):	not determined
Other – Decomposition Temperature:	348°C (658.4°F)
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:	>200°C (> 392°F) / glowing temperature 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: Aqueous solution in contact with aluminum evolves hydrogen. This product is incompatible with strong oxidizers. Avoid contact with aluminum, copper, copper alloys and nickel.

10. STABILITY AND REACTIVITY (CONTINUED)

Avoid prolonged storage at elevated temperatures. Product layer on hot surface might cause glowing or autoignition.

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) and nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

INHALATION

Acute exposure: The acute LC₅₀ is greater than 1.13 mg/L (7-hour test in rats).

Chronic exposure: No known effects for this product.

SKIN

Acute contact: Dermal toxicity for this product is not available. It is not considered to be irritating to skin based on tests with structurally related products.

Chronic contact: No known effects for this product.

EYES: This mixture may be minimally irritating to the eyes (based on tests with structurally related products).

INGESTION

Acute exposure: The oral LD₅₀ is greater than 2,000 mg/kg in rats (10% solution).

Chronic exposure: Calcium disodium EDTA showed no adverse effects in various chronic ingestion toxicity tests in rats and dogs, with test duration ranging from 31 days to 2 years.

SENSITIZATION: Three of fifty subjects (normal patients and patients with various dermatoses) had positive reactions when patch-tested with Calcium disodium EDTA from 0.01% to 10%. Two of the three patients cross-reacted to ethylenediamine.

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

MUTAGENICITY: Calcium disodium EDTA was not genotoxic to *B. subtilis* or to *S. typhimurium* in the rec-assay.

TERATOGENICITY / REPRODUCTIVE TOXICITY:

- In a 2-year study in rats, covering 4 generations, the NOAEL (No Observed Adverse Effect Level) was 250 mg/kg/day which was the highest dose tested for parental and subsequent generations.
- Calcium disodium EDTA, dosed by oral gavage in rats at a dose of 1340 mg/kg per day during the period of organogenesis, did not result in an increase in fetal malformations. A study which used subcutaneous administration of Calcium disodium EDTA, a route which is not directly relevant to the workplace, reported fetal malformations with signs of maternal toxicity increasing at higher doses. Zinc depletion in the dam is the likely mechanism of EDTA-related malformations.

OTHER TOXICOLOGICAL EFFECTS: None known.

TARGET ORGANS: Eyes

There are extensive toxicological data available on Calcium disodium EDTA. An adequate representation of all these data is beyond the scope of this document. Please contact AkzoNobel's Regulatory Toxicology Department for additional information [Tel. 312-544-7000].

12. ECOLOGICAL INFORMATION

Ecotoxicity: LC₅₀ (96-h / bluegill) = 2340 mg/L.

Biodegradation: This product is not readily biodegradable (based on tests with structurally related products).

Other information: Bioaccumulation is not expected due to the substance's high water solubility.
Log Pow = -10.42 (as calculated by EPIWIN/WOWWIN models).

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

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

Regulatory Lists:

Substance Name	CAA	CERCLA	IARC	US STATE RIGHT-TO-KNOW LISTS	CA PROP 65	SARA
EDTA, calcium disodium 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, calcium disodium complex	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

NOTE: For the above inventory reporting purposes, listing of the anhydrous Calcium disodium EDTA under CAS # 62-33-9 covers all hydrated forms of this product such as the commercially available dihydrate substance with the CAS # 23411-34-9.

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): 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.

Other Regulatory Information

- The Cosmetic Ingredient Review (CIR) Expert Panel determined that EDTA and its salts are safe as used in cosmetic formulations.
- Contact Akzo Nobel for additional information regarding the use and approval of Dissolvine E-Ca-10 (Calcium Disodium EDTA) as an indirect food additive.
- This product is safe to use when added directly to certain designated foods in accordance with FDA Regulations, 21CFR §172.120. See label for food list and maximum levels permitted.

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.

Changes: Section 1

Prepared by: Akzo Nobel Services Inc. [Technology & Engineering / Regulatory Toxicology]
Tel. 613.273.8095

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