Safety Data Sheet

Martrex, Inc.

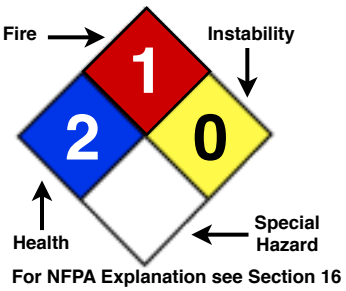
Section 1: Chemical Product and Company Information

Product name: EDTA Acid Chelating Agent
Reference Number: n/a
Web: www.martrexinc.com
Supplier/ Further Information: Martrex, Inc.

1107 Hazeltine Blvd,
Suite 535 MD 27,
Chaska, Minnesota 55318

Phone: 952/933-5000
Toll Free: 800/328-3627
FAX: 952/933-1889

EPA Registration Number: n/a
CAS#: 60-00-4
Chemical Name: Ethylenediamine tetraacetic acid
Synonyms: Acetic acid, (ethylenedinitrilo)tetra-; 3,6-Diazaoctanedioic acid, 3,6-bis(carboxymethyl)-; Edetic acid; EDTA; EDTA (chelating agent); EDTA acid; Endrate; N,N'-1,2-Ethanediylbis(N-(carboxymethyl)glycine); Ethylenediamine tetraacetic acid; Ethylenediamine
Chemical Family: Aminocarboxylic Acid Salt
Product Use: Only to be used for Agricultural or Industrial purposes.
SDS Number: n/a



For NFPA Explanation see Section 16

24 Hour Emergency Phone - Chemtrec Transport: 1-800-424-9300; Medical: 1-800-441-3637

Section 2: Hazards Identification

Emergency Overview

Warning! **Causes respiratory tract irritation. Causes eye and skin irritation.**

Note: This SDS applies only to EDTA use for Agricultural and Industrial purposes. This SDS does not apply to EDTA use for Medical Chelating purposes. *For ingestion and Medical Chelating, the additional hazards to human reproduction and organ damage apply: *Specific target organ toxicity, single exposure: Kidney Category 2 (H371).

GHS Classification (Global Harmonized Classification see Section 16):

Serious Eye damage/eye irritation	**Category 2A**	(H319)
Acute Toxicity, Oral	**Category 5**	(H303)
Hazardous to the aquatic environment, acute hazard	**Category 3**	(H402)

GHS Label, Hazards and Precautionary Statements

GHS Pictogram:

(GHS Pictogram Hazards Definitions See Section 16)

Label Signal Word: **Warning!**

Hazard Statements:

Causes serious eye irritation.	(H319)
May be harmful if swallowed.	(H303)
Harmful to aquatic life.	(H402)

Precautionary Statements:

Prevention:

Do not eat, drink or smoke when using this product. (P270)
Do not breathe dust/fumes/gas/mist/vapors/spray. (P260)
Wear protective gloves/protective clothing/eye protection/face protection. (P280)
(See Section 8: Personal Protective Equipment (Competent Authority to specify type of equipment)
Wash skin thoroughly after handling. (P264)
Avoid release to the environment if this is not the intended use. (P273)

Response:

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. (P305+P351+P338)
If eye irritation persists: Get medical advice/ attention. (P337+P313)
Call a POISON CENTER / doctor, if you feel unwell. (P312)

Disposal Considerations:

Dispose of this material and its container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation. (P501)

Target Organs: Kidneys, eyes, skin.

Potential Health Effects:

Eyes: Causes eye irritation. Causes redness and pain.
Skin: Causes skin irritation. Causes redness and pain.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. Ingestion of large amounts can cause hypocalcemic tetany due to formation of calcium complexes. Exposure may cause kidney injury, muscle cramps, bone-marrow depression, and a generalized allergic reaction. Ingestion of large quantities may cause appreciable systemic toxicity involving blood chemistry changes due to chelation properties.
Inhalation: Causes irritation of the mucous membrane and upper respiratory tract.

Potential Chronic Health Effects: **Laboratory experiments have resulted in **mutagenic effects**. Chronic exposure may cause kidney damage.

Carcinogenicity Data:

See Section 11 for more Toxicological information

Section 3: Composition/Information on Ingredients

Hazardous Component	CAS#	%	OSHA Limits	ACGIH Limits	OTHER Limits
Ethylenediaminetetraacetic acid	60-00-4	≥ 99%	none listed	none listed	none listed

Section 4: First Aid Measures

Eye Exposure: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. **Get immediate medical attention.**

Skin Exposure: Get medical attention. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. **Get medical attention.** Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Remove from exposure area and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. **Get Medical Attention.**

NOTE TO THE PHYSICIAN: Treat symptomatically and supportively.

Section 5: Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Dusts at sufficient concentrations can form explosive mixtures with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.
Flash Point: Not applicable.
Autoignition Temperature: Not applicable.
Explosion Limits:
Lower: no data
Upper: no data
NFPA Rating: (estimated) Health: **2**; Flammability: **1**; Reactivity: **0**

Section 6: Accidental Release Measures

General information: Use proper personal protective equipment as indicated in Section 8
Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.
Environmental and Regulatory Reporting: See Sections 12, 13 and 15

Section 7: Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Keep container tightly closed. Avoid breathing dust.
Storage: Do not store in direct sunlight. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

Section 8: Exposure Controls / Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
Exposure Limit: Ethylenediamine tetraacetic acid
ACGIH: none listed **NIOSH:** none listed **OSHA-Final PELS:** none listed
OSHA Vacated PELs: Ethylenediamine tetraacetic acid: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.
Hygienic Work Practices: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Section 9: Physical and Chemical Properties

Chemical Name: Ethylenediamine tetraacetic acid
Percent Equivalent: ≥ 99%
Physical State: Crystals
Appearance: white powder
Odor: odorless
pH: 2.5-3.0
Vapor Pressure: Negligible.
Vapor Density: no data
Evaporation Rate: Negligible.
Viscosity: no data
Boiling Point: no data

Freezing/Melting Point: 220ºC
Decomposition Temperature: 240ºC
Solubility: Slightly soluble.
Specific Gravity/Density: 0.86 @ 20ºC
Chelate Value: 339 $MgCaCO_3$ / g
Molecular Formula: $C_{10}H_{16}N_2O_8$
Molecular Weight: 292.25

Section 10: Stability and Reactivity

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions. Decarboxylates above 150ºC
Conditions to Avoid: Dust generation, excess heat.
Incompatibilities with Other Materials: Strong oxidizing agents, strong bases, aluminum, copper, copper alloys, nickel.
Hazardous Decomposition Products: Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization:
May Occur____ Will Not Occur__X__

Section 11: Toxicological Information

RTECS#: AH4025000
LD_{50}/LC_{50}:
CAS# 60-00-4:
Oral, mouse: LD_{50} = 30 mg/kg;
Carcinogenicity:
CAS# 60-00-4:
Not listed by: ACGIH, IARC, NTP, or CA Prop 65.
Epidemiology: No information available.
Teratogenicity: Embryo or Fetus: Stunted fetus, oral-rat TDLo=7632mg/kg.Specific developmental abnormalities: cardiovascular, craniofacial, musculoskeletal, respiratory, and urogenital, oral-rat TDLo=7632mg/kg.
Reproductive Effects: Fertility: Post-implantation mortality, oral-rat TDLo=7632mg/kg.
Mutagenicity: Cytogenetic Analysis: intraperitoneal-mouse 50mmol/L. DNA Inhibition: hamster fibroblast 500ug/L, rabbit kidney 250umol/L.EDTA leads to morphological changes of chromatin & chromosome structure in plant & animal cells.A weak induction of gene mutations has been reported.
Neurotoxicity: No information available.
Special Note on Human Mutagenicity:
It is not conclusive whether or not humans are susceptible to the mutagentic affects of EDTA.
"The data presently at hand...are not sufficient for a reliable risk assessment."[1]

[1] Konrad Heindorff, Otto Aurich, Arnd Michaelis, Rigomar Rieger, "Genetic toxicology of ethylenediaminetetraacetic acid (EDTA)", Mutation Research/Reviews in Genetic Toxicology, Volume 115, Issue 2, June 1983: pp 149-173

Section 12: Ecological Information

Ecotoxicity: Fish:
Channel catfish: LC_{50} = 129-159 mg/L; 96Hr;
UnspecifiedFish: Rainbow trout: LC_{50} = 340 mg/L; 24Hr;
UnspecifiedFish: Bluegill/Sunfish: LC_{50} = 129-159 mg/L; 96Hr;
UnspecifiedFish: Fathead Minnow: 100% Lethal = 750 ppm; 96 Hr;
Static bioassayWater flea Daphnia: LC_{50} > 100 ppm; 96 Hr;
Static bioassay If released to soil, EDTA is expected to complex with trace metals and alkaline earth metals present in the soil, thereby causing an increase in the total solubility of the metals. EDTA may eventually predominate as the Fe(III) chelate in acidic soils and as the Ca chelate in alkaline soils. Biodegradation of

EDTA in aerobic soils is the dominant removal mechanism, although biodegradation in anaerobic soils is negligible. glycine. EDTA is not expected to bioaccumulate in aquatic organisms, adsorb to suspended solids or sediments or volatilize from water surfaces.

Environmental: EDTA and its chelates are expected to leach readily through soil and significant volatilization from soil is not expected. If released to water, EDTA is expected to complex with trace metals and alkaline earth metals. Biodegradation of EDTA is expected to take place relatively slowly under aerobic conditions and to be negligible under anaerobic conditions. Co-metabolism has been suggested as the mechanism for EDTA biodegradation. EDTA may react with photochemically generated hydroxyl radicals (half-life 229 days) and it may photo-degrade.

Physical: Compounds identified as possible biodegradation products of the ammonium ferric chelate of EDTA are as follows: ethylenediamine triacetic acid (ED3A), iminodiacetic acid (IDA), N,N-ethylenediamine diacetic acid (N,N-EDDA), N,N'-EDDA, ethylenediamine monoacetic acid (EDMA), nitrilotriacetic acid (NTA) and glycine. The following photo-degradation products of Fe(III)-EDTA have been identified: carbon monoxide, formaldehyde, ED3A, N,N-EDDA, N,N'-EDDA, IDA, EDMA and glycine.

Other: None.

Section 13: Disposal Considerations

Disposal Procedures: Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14: Transport Information

US DOT Classification: Not regulated as a hazardous material

Canada TDG: no information available

Section 15: Regulatory Information

US FEDERAL

TSCA: CAS# 60-00-4 is listed on the TSCA inventory.

Health & Safety Reporting List: None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules: None of the chemicals in this product are under a Chemical Test Rule.

Section 12b: None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule: None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs:

CAS# 60-00-4: 5000 lb final RQ; 2270 kg final RQ

SARA Section 302 Extremely Hazardous Substances:

None of the chemicals in this product have a TPQ.

Section 313:

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.

Clean Water Act:

CAS# 60-00-4: Is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

States:

CAS# 60-00-4 on State right to know lists: California, New Jersey, Pennsylvania, Massachusetts.
California Prop 65: California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols: XI
Risk Phrases: R 36/37/38 Irritating to eyes, respiratory system and skin.
Safety Phrases:
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 37/39 Wear suitable gloves and eye/face protection.
WGK (Water Danger/Protection):
CAS# 60-00-4: 2

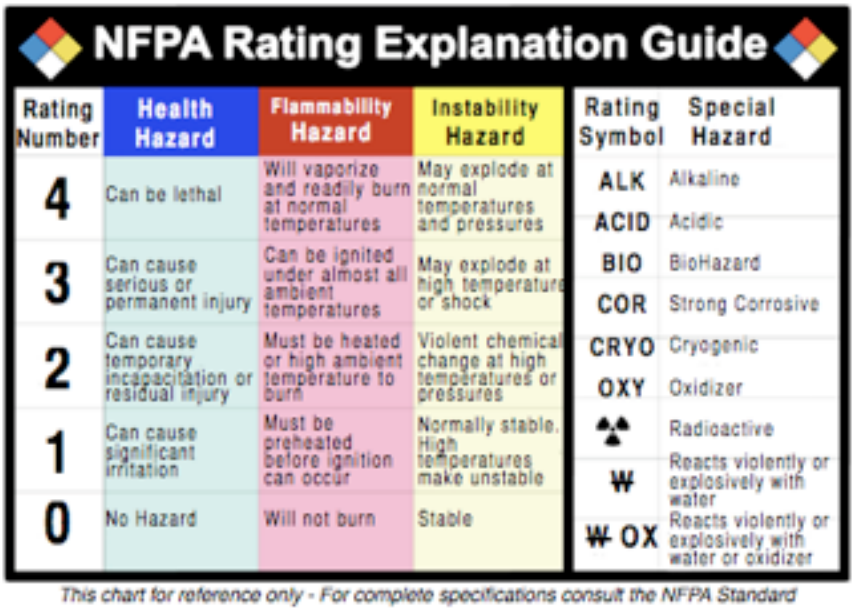
Canada

DSL/NDSL: CAS# 60-00-4: is listed on Canada's DSL List.
WHMIS: This product has a WHMIS classification of D2B.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by those regulations.
Canadian Ingredient Disclosure List

Section 16: Other Information

Acronyms

ACGIH - American Conference of Governmental Industrial Hygienists
ANSI - American National Standards Institute
CAS - Chemical Abstracts Service
CERCLA - Comprehensive Environmental Response, Compensation & Liability Act of 1980
CFR - Code of Federal Regulations
CHEMTREC - Chemical Transportation Emergency Center
CPR - Controlled Products Regulations
CWC - Chemical Weapons Convention
DOT - U.S. Department of Transportation
DSL - Canadian Domestic Substance List
EHS - Extremely Hazardous Substance
EPA - U.S. Environmental Protection Agency
HMIS - Hazardous Material Identification System
IARC - International Agency for Research on Cancer
LEL/UEL - Lower and Upper Explosive Limit
mg/m³ - Milligrams per cubic meter
NAERG - North American Emergency Response Guidebook
NIOSH - National Institute of Occupational Safety and Health
NFPA - National Fire Protection Association



This chart for reference only - For complete specifications consult the NFPA Standard

NTP - National Toxicology Program
OSHA - Occupational Safety and Health Administration
PEL - Permissible Exposure Limit (set by OSHA)
PPE - Personal Protective Equipment
RCRA - Resource Conservation and Recovery Act of 1976
SARA - Superfund Amendments and Reauthorization Act
SDS - Safety Data Sheet
STEL - Concentration to which workers can be exposed continuously for a **short** period of time without suffering from irritation, irreversible tissue damage or narcosis of sufficient degree to increase the likelihood of accidental injury, impair self-rescue or materially reduce work efficiency.
TDG (Canadian)**:** Transport of Dangerous Goods Regulations
TLV - Threshold Limit Value (set by ACGIH)
TWA - 8-hour Time Weighted Average
TSCA - US Toxic Substance Control Act
WHMIS - Workplace Hazardous Material Information System

GHS Pictograms and Hazards

Health Hazard  • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity	**Flame**  • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides	**Exclamation Mark**  • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  • Gases Under Pressure	**Corrosion**  • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals	**Exploding Bomb**  • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle  • Oxidizers	**Environment** (Non-Mandatory)  • Aquatic Toxicity	**Skull and Crossbones**  • Acute Toxicity (fatal or toxic)

SDS Issue Date: n/a
Revised Date: 8-7-2015
Supersedes: 4-13-2014

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