



SILVER FERN CHEMICAL

SAFETY DATA SHEET

DEHA 85%

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: DEHA 85%

Company:

Silver Fern Chemical
2226 Queen Anne Avenue North, Suite C
Seattle WA 98109, USA

Business Contact
Customer Service: 1-866-282-3384
info@silverfernchemical.com

Phone: 1-866-282-3384

24 hr. Emergency: Infotrac: 1-800-535-5053 (USA & Canada)
Outside USA & Canada: 1-352-323-3500

Product name: DEHA 85%
Synonyms: DIETHYLHYDROXYLAMINE 85%, DEHA 85%
Molecular formula: C₄H₁₁NO
Chemical family: amine
Product use: Corrosion inhibitor, Chemical intermediate, Polymerization inhibitor

2. HAZARDS IDENTIFICATION

Emergency Overview

Color: colourless, light yellow
Physical state: liquid
Odor: characteristic, Amines

*Classification of the substance or mixture:

Flammable liquid., Category 3, H226
Inhalation: Acute toxicity, Category 4, H332
Dermal: Acute toxicity, Category 4, H312
Specific target organ toxicity - single exposure, Category 3, H335
Chronic aquatic toxicity, Category 2, H411

*For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms:



Signal word:

Warning

Hazard statements:

H226 : Flammable liquid and vapour.
H312 + H332 : Harmful in contact with skin or if inhaled
H335 : May cause respiratory irritation.
H411 : Toxic to aquatic life with long lasting effects.

Supplemental Hazard Statements:

May displace oxygen and cause rapid suffocation.



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Precautionary statements:

Prevention:

P210 : Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 : Keep container tightly closed.
P240 : Ground/bond container and receiving equipment.
P241 : Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 : Use only non-sparking tools.
P243 : Take precautionary measures against static discharge.
P261 : Avoid breathing gas/mist/vapours/spray.
P271 : Use only outdoors or in a well-ventilated area.
P273 : Avoid release to the environment.
P280 : Wear protective gloves/ eye protection/ face protection.

Response:

P303 + P361 + P353 : IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312 : Call a POISON CENTER/doctor if you feel unwell.
P363 : Wash contaminated clothing before reuse.
P370 + P378 : In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P391 : Collect spillage.

Storage:

P403 + P233 : Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 : Store in a well-ventilated place. Keep cool.
P405 : Store locked up.

Disposal:

P501 : Dispose of contents/ container to an approved waste disposal plant.

Potential Health Effects:

Prolonged or repeated exposure may cause: tearing of the eyes, coughing, respiratory distress, (severity of effects depends on extent of exposure).

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Ethanamine, N-ethyl-N-hydroxy-	3710-84-7	> 80 %	H411, H335, H332, H312, H226
Water	7732-18-5	< 20 %	Not classified



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**For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1. Description of necessary first-aid measures:

Inhalation:

If inhaled, remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin:

In case of contact, immediately flush skin with plenty of water while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:

Immediately flush eye(s) with plenty of water. Get medical attention if symptoms occur.

Ingestion:

If swallowed, DO NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms/effects, acute and delayed:

For most important symptoms and effects (acute and delayed), see Section 2 (Hazard Statements and Supplemental Information) and Section 11 (Toxicology Information) of this SDS.

4.3. Indication of immediate medical attention and special treatment needed, if necessary:

Unless otherwise noted in Notes to Physician, no specific treatment noted; treat symptomatically.

5. FIREFIGHTING MEASURES

Extinguishing media (suitable):

Carbon dioxide (CO₂), Foam, Dry chemical

Extinguishing media (unsuitable):

Water

Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:

Cool closed containers exposed to fire with water spray.

Closed containers of this material may explode when subjected to heat from surrounding fire.

After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.

Do not allow run-off from fire fighting to enter drains or water courses.

Fire fighting equipment should be thoroughly decontaminated after use.

Fire and explosion hazards:



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Vapors are heavier than air and may travel along the ground or be moved by ventilation and ignited by heat, pilot lights, and other flames and ignition sources at locations distant from material handling point.

Carbon oxides
Nitrogen oxides (NO_x)
Nitriles

When burned, the following hazardous products of combustion can occur:

Cyanides
Diethylamine
Hazardous organic compounds
Amines

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, Emergency procedures, Methods and materials for containment/clean-up:

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Ventilate the area. Eliminate all ignition sources. Avoid generation of vapors. Contain and collect spillage with non-combustible absorbent material such as sodium bicarbonate, sodium carbonate, calcium carbonate, clean sand or non-acidic clay and then wet down (dampen) the mixture with water. Sweep or scoop up using non-sparking tools and place into suitable properly labeled containers for prompt disposal. The sweepings should be wetted down further with water. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

Protective equipment:

Appropriate personal protective equipment is set forth in Section 8.

7. HANDLING AND STORAGE

Handling

General information on handling:

Keep away from heat, sparks and flames.
Avoid contact with skin, eyes and clothing.
Avoid breathing mist.
Avoid breathing vapor.
No smoking.
Keep container closed.
Use only with adequate ventilation.
Avoid breathing processing vapor or mist.
Do not enter confined spaces unless adequately ventilated.
Wash thoroughly after handling.
Check that all equipment is properly grounded and installed to satisfy electrical classification requirements.
Container hazardous when empty.
Follow label warnings even after container is emptied.
RESIDUAL VAPORS MAY EXPLODE ON IGNITION.
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.
Improper disposal or reuse of this container may be dangerous and/or illegal.
Emptied container retains vapor and product residue.

Storage



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General information on storage conditions:

Keep in a dry, cool place. Store in tightly closed container. Keep away from direct sunlight. Keep container closed when not in use. Store in closed containers, in a secure area to prevent container damage and subsequent spillage. Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity. Ensure that all storage and handling equipment is properly grounded and installed to satisfy electrical classification requirements. Static electricity may accumulate when transferring material. All metal and groundable storage containers, including but not limited to drums, cylinders, Returnable Intermodal Bulk Containers (RIBCs) and Class C Flexible Intermodal Bulk Containers (FIBCs) must be bonded and grounded during filling and emptying operations. Observe all federal, state and local regulations and National Fire Protection Association (NFPA) Codes which pertain to the specific local conditions of storage and use, including OSHA 29 CFR 1910.106 and NFPA 30, 70, 77, and 497.

Storage incompatibility_ General:

Store separate from: Oxidizers.

Nitrates

Peroxides

Nitrous acid - Nitrites - Oxygen

Strong acids

Water

Halogens

Product likely to react violently in alkaline environment

Temperature tolerance_ Do not store above:

122 °F (50 °C)

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

Ethanamine, N-ethyl-N-hydroxy- (3710-84-7)

US. ACGIH Threshold Limit Values

Time weighted average	2 ppm
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Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

Engineering controls:

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Monitor carbon monoxide and oxygen levels in tanks and enclosed spaces. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.



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Respiratory protection:

Avoid breathing vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection:

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear face shield and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing immediately and wash before reuse. Clean protective equipment before reuse. Wash thoroughly after handling.

Eye protection:

Where eye contact may be likely, wear chemical goggles and have eye flushing equipment available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	colourless, light yellow
Physical state:	liquid
Odor:	characteristic, Amines
Odor threshold:	No data available
Flash point	121.1 °F (49.5 °C) (closed cup)(Method: ISO 3679)
Auto-ignition temperature:	No data available
Lower flammable limit (LFL):	2.3 %(V)
Upper flammable limit (UFL):	12.3 %(V)
pH:	alkaline (as aqueous solution)
Density:	902 kg/m ³ (68 °F (20 °C))
Vapor pressure:	32 mmHg (77 °F (25 °C))
Vapor density:	3.1 kg/m ³ (68 °F (20 °C))
Boiling point/boiling range:	257 - 266 °F (125 - 130 °C)
Melting point/range:	-13 °F (-25 °C)

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Freezing point:	No data available
Evaporation rate:	No data available
Solubility in water:	450.5 g/l
Solubility in other solvents: [qualitative and quantitative]	Soluble in: Alcohol
Viscosity, dynamic:	No data available
Oil/water partition coefficient:	No data available
Thermal decomposition	248 - 266 °F (120 - 130 °C)
Flammability:	See GHS Classification in Section 2

10. STABILITY AND REACTIVITY

Stability:

This material is chemically stable under normal and anticipated storage, handling and processing conditions.

Hazardous reactions:

None known.

Materials to avoid:

Very exothermic reaction and possibility of spattering with:

Strong acids

Halogens

Product likely to react violently in alkaline environment

• Violent reaction and flammability with :

Peroxides

Nitrates

Oxidizers.

• Very exothermic reaction with :

Water

• Formation of toxic products (n-nitrosamines) with:

Nitrous acid and other nitrosating agents

Nitrites

Oxygen

Corrosion with : light metals and alloys

Conditions / hazards to avoid:

Avoid moisture. Protect from heat.

Hazardous decomposition products:

Thermal decomposition giving flammable and toxic products :

Amines

Carbon oxides



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Diethylamine
Nitrogen oxides (NOx)
Cyanides
Nitriles
Hazardous organic compounds

11. TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Data for DEHA 85%

Acute toxicity

Oral:

Acute toxicity estimate 2,500 mg/kg.

Dermal:

Acute toxicity estimate 1,512 mg/kg.

Inhalation:

4 h Acute toxicity estimate 13.26 mg/l. (vapor)

Data for Ethanamine, N-ethyl-N-hydroxy- (3710-84-7)

Acute toxicity

Oral:

May be harmful if swallowed. (mouse) LD50 = 2,150 mg/kg.

May be harmful if swallowed. (rat) LD50 = 2,190 mg/kg.

Dermal:

Harmful in contact with skin. (rabbit) LD50 = 1,300 mg/kg. (occluded exposure)

Inhalation:

Harmful if inhaled. (rat) 4 h LC50 11.4 mg/l. signs: eye irritation, respiratory irritation (vapor)

Specific target organ toxicity - single exposure:

May cause respiratory irritation.

Skin Irritation:

Causes mild skin irritation. (rabbit)

Eye Irritation:

Causes mild eye irritation. (rabbit)

Skin Sensitization:

Not a sensitizer. Repeated skin exposure. (Guinea pig) No skin allergy was observed

Repeated dose toxicity



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Chronic oral administration to rat and mouse / No adverse effects reported.

Repeated inhalation administration to Rat / affected organ(s): liver, Thymus, nose / signs: irritation, blood chemistry changes, changes in organ weights

Genotoxicity

Assessment in Vitro:

Genetic changes were observed in laboratory tests using: animal cells, human cells

No genetic changes were observed in a laboratory test using: bacteria

Genotoxicity

Assessment in Vivo:

No genetic changes were observed in laboratory tests using: rats, mice

Developmental toxicity

Exposure during pregnancy. Inhalation (mouse) / No birth defects were observed. (present as a component of the test mixture)

Exposure during pregnancy. Oral (rat) / No birth defects were observed. (at doses that produce effects in mothers)

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway

Data on this material and/or its components are summarized below.

Data for Ethanamine, N-ethyl-N-hydroxy- (3710-84-7)

Biodegradation:

Not readily biodegradable. (28 d) biodegradation 11 - 17 %

Octanol Water Partition Coefficient:

log Pow = 0.5

Ecotoxicology

Data on this material and/or its components are summarized below.

Data for Ethanamine, N-ethyl-N-hydroxy- (3710-84-7)

Aquatic toxicity data:

Practically nontoxic. Pimephales promelas (fathead minnow) 96 h LC50 > 134 mg/l

Aquatic invertebrates:

Toxic. Daphnia magna (Water flea) 48 h EC50 = 8.2 mg/l

Practically nontoxic. Daphnia magna (Water flea) 48 h EC50 = 111 mg/l

Algae:

Practically nontoxic. Pseudokirchneriella subcapitata (green algae) 72 h ErC50 > 101 mg/l

Microorganisms:

Activated sludge 28 h NOEC = 100 mg/l



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Bacteria 16 h EC50 = 37.2 mg/l

Chronic toxicity to aquatic plants:

Cell multiplication inhibition test / Pseudokirchneriella subcapitata 72 h NOEC r (growth rate) = 26 mg/l

13. DISPOSAL CONSIDERATIONS

Waste disposal:

Disposal via incineration is recommended. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

Take appropriate measures to prevent release to the environment.

14. TRANSPORT INFORMATION

US Department of Transportation (DOT)

UN Number : 1993
Proper shipping name : Flammable liquids, n.o.s.
Technical name : (N,N-Diethylhydroxylamine)
Class : 3
Packaging group : III
Marine pollutant : yes

International Maritime Dangerous Goods Code (IMDG)

UN Number : 1993
Proper shipping name : FLAMMABLE LIQUID, N.O.S.
Technical name : (N,N-DIETHYLHYDROXYLAMINE)
Class : 3
Packaging group : III
Marine pollutant : yes
Flash point : 121.1 °F (49.5 °C) closed cup

15. REGULATORY INFORMATION

Chemical Inventory Status

EU. EINECS	EINECS	Conforms to
United States TSCA Inventory	TSCA	The components of this product are all on the TSCA Inventory.
Canadian Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL



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China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	Conforms to
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	Conforms to
Japan. ISHL - Inventory of Chemical Substances	ISHL (JP)	Conforms to
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	Conforms to
Australia Inventory of Chemical Substances (AICS)	AICS	Conforms to

United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:

The components in this product are either not SARA Section 302 regulated or regulated but present in negligible concentrations.

SARA Title III - Section 311/312 Hazard Categories:

Acute Health Hazard, Fire Hazard

SARA Title III – Section 313 Toxic Chemicals:

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):

The components in this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

United States – State Regulations

New Jersey Right to Know

No components are subject to the New Jersey Right to Know Act.

Pennsylvania Right to Know

<u>Chemical name</u>	<u>CAS-No.</u>
Ethanamine, N-ethyl-N-hydroxy-	3710-84-7
Water	7732-18-5



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**California Prop. 65**

WARNING! This product contains chemicals, including Acetaldehyde and Ethanamine, N-ethyl-N-nitroso-, known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

<u>Chemical name</u>	<u>CAS-No.</u>
Ethanamine, N-ethyl-N-nitroso-	55-18-5
Acetaldehyde	75-07-0

16. OTHER INFORMATION**Full text of H-Statements referred to under sections 2 and 3.**

H226	Flammable liquid and vapour.
H312	Harmful in contact with skin.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.

Miscellaneous:

Other information: Refer to National Fire Protection Association (NFPA) Codes 30, 70, 77, and 497 and OSHA 29 CFR 1910.106, for safe handling.

Latest Revision(s):

Reference number: 000000031866
Date of Revision: 07/22/2016
Date Printed: 07/23/2016

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