Material Safety Data Sheet

DEHA, Anhydrous

Revision Date *02-Aug-2011*

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name	**DEHA, Anhydrous**
Synonyms	N-Ethyl-N-hydroxy-Ethanamine
Use of the Substance/Preparation	Chemical intermediate, corrosion inhibitor
Company/Undertaking Identification	**Taminco Inc.** Two Windsor Plaza, Suite 411 7540 Windsor Drive Allentown, PA 18195 (800) 223-3258
Emergency telephone number	In case of emergency call CHEMTREC 1-800-424-9300 703-527-3887 (International Calls), 02-8014-4880 (Australia local calls)

2. HAZARDS IDENTIFICATION

Appearance

Clear, Colorless to Straw liquid; Ammoniacal odor

Emergency Overview

- WARNING!
- Flammable liquid and vapor
- May cause eye/skin irritation
- May be harmful in contact with skin
- May cause irritation of respiratory tract
- The substance is identified as a hazardous chemical according to the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Principal Routes of Exposure

- Inhalation
- Skin contact
- Eye contact

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %
N,N-Diethylhydroxylamine	3710-84-7	98

4. FIRST AID MEASURES

Ingestion

- Never give anything by mouth to an unconscious person
- Do not induce vomiting without medical advice
- If victim is conscious
- Rinse mouth
- drink 1 or 2 glasses of water
- Immediate medical attention is required

Skin Contact

- Wash off immediately with plenty of water
- Remove and wash contaminated clothing before re-use
- If skin irritation persists, call a physician

Eye Contact

- Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes
- Seek immediate medical attention/advice

Inhalation

- Move to fresh air
- If breathing is difficult, give oxygen
- If breathing is irregular or stopped, administer artificial respiration
- Do not give mouth-to-mouth
- Obtain medical attention
- Symptoms may be delayed

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

- Alcohol-resistant foam
- water spray
- carbon dioxide (CO2)
- dry chemical

Specific methods

- In case of fire, stop leak if safe to do so
- Evacuate area and fight fire from a safe distance
- Keep people away from and upwind of spill/leak
- Suppress (knock down) gases/vapors/mists with a water spray jet
- In the event of fire, cool tanks with water spray
- Do not allow run-off from fire fighting to enter drains or water courses

Special protective equipment for fire-fighters

- Firefighters 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)

Specific hazards

- Flammable
- Eliminate all ignition sources if safe to do so
- Pay attention to the spreading of gases especially at ground level (heavier than air) and to the direction of the wind
- Pay attention to flashback
- Fire or intense heat may cause violent rupture of packages
- In case of fire hazardous decomposition products may be produced such as
- Nitrogen oxides (NOx)
- Ammonia
- Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

- Avoid contact with skin, eyes and clothing
- In case of inadequate ventilation wear respiratory protection
- Remove all sources of ignition
- Evacuate personnel to safe areas
- Keep people away from and upwind of spill/leak
- Take precautionary measures against static discharges
- Pay attention to flashback
- Suppress (knock down) gases/vapours/mists with a water spray jet
- Do not use sparking tools

Environmental Precautions

- Should not be released into the environment
- Prevent product from entering drains

Methods for Clean-up

- Use only non-sparking tools
- Large spills should be collected mechanically (remove by pumping) for disposal
- Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container
- Keep in suitable, closed containers for disposal
- Dispose of as special waste in compliance with local and national regulations

7. HANDLING AND STORAGE

Storage

Technical measures/Precautions

- In accordance with local and national regulations
- Keep containers tightly closed in a dry, cool and well-ventilated place
- Keep away from open flames, hot surfaces and sources of ignition
- Protect containers from physical damage
- To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded

Incompatible products

- Strong acids and oxidizing agents
- Mineral acid
- Peroxides

Handling

Technical measures/Precautions

- In accordance with local and national regulations
- Use only in area provided with appropriate exhaust ventilation
- Ensure that eyewash stations and safety showers are close to the workstation location

Safe handling advice

- Wear personal protective equipment
- Ensure adequate ventilation
- In case of insufficient ventilation, wear suitable respiratory equipment
- Do not breathe vapors or spray mist
- Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors)
- Ground and bond containers when transferring material
- Do not use sodium nitrite or other nitro sating agents in product
- Empty containers retain product residue and may be hazardous
- Wash thoroughly after handling

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL
N,N-Diethylhydroxylamine	Not listed	None Established

Respiratory Protection

- In accordance with local and national regulations
- Use only in area provided with appropriate exhaust ventilation
- Avoid breathing dust/fume/gas/mist/vapors/spray
- In case of insufficient ventilation, wear suitable respiratory equipment
- a respirator with filter for organic vapor
- In case of higher concentration
- wear a positive-pressure supplied-air respirator with full facepiece
- The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace

Engineering measures

- Local exhaust
- Use explosion-proof equipment

Personal Protective Equipment

Eye Protection

- Chemical resistant goggles must be worn
- Ensure that eyewash stations and safety showers are close to the workstation location

Hand protection

- Impervious gloves
- Solvent-resistant gloves
- Request information on glove permeation properties from the glove supplier

Skin Protection

- Solvent-resistant apron and boots
- Wash contaminated clothing before re-use
- Choose body protection according to the amount and concentration of the dangerous substance at the work place

Environmental exposure controls

- Do not contaminate surface water
- Avoid subsoil penetration

9. PHYSICAL AND CHEMICAL PROPERTIES

General Information

Physical State	Liquid
Color	Light yellow
Odor	Amine-like

Important Health Safety and Environmental Information

Boiling Point/Range	133°C 271°F
Flash Point	50°C closed cup 122°F
Method	Tag closed cup
Viscosity	No information available
Vapor Pressure	5 mmHg @ 20 °C
Vapor Density	3.1 (Air =1.0)
Partition Coefficient (n-octanol/water)	log Pow , : 0.43

pH	Alkaline
Water solubility	Soluble 35 %
Oxidizing Properties	Not applicable
Melting Point/Range	-6°C 21°F
Density	0.87 g/cm3 @ 20 °C
Flammability	flammable
Autoignition Temperature	No information available

10. STABILITY AND REACTIVITY

Stability
- Stable under recommended storage conditions

Conditions to Avoid
- Keep away from open flames, hot surfaces and sources of ignition
- Materials to avoid
- Incompatible with strong acids and oxidizing agents
- Peroxides
- Do not use sodium nitrite or other nitro sating agents in product
- Product slowly corrodes copper, aluminum, zinc and galvanized surfaces

Hazardous Decomposition Products
- Thermal decomposition can lead to release of irritating gases and vapours
- Nitrogen oxides (NOx)
- Carbon monoxide
- Carbon dioxide (CO_2)
- Ammonia

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Eye Contact Contact with eyes may cause irritation. Slightly irritating to rabbits.

Skin Contact Slight irritation to Moderately irritating to rabbits. May be absorbed through the skin in harmful amounts.

Inhalation May cause irritation of the mucous membranes. May cause irritation of respiratory tract.

Ingestion May cause irritation of the mucous membranes. May cause gastrointestinal irritation.

Chronic Effects None known.

Carcinogenicity There are no known carcinogenic chemicals in this product. The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	IARC	ACGIH	OSHA	NTP
N,N-Diethylhydroxylamine	Not Listed	Not Listed	Not Listed	Not Listed

Aggravated Medical Conditions Skin disorders. Eye disease. Respiratory disorders.

Product Information

LD50/oral/rat =	2190 mg/kg
LD50/dermal/rabbit =	1300 mg/kg
LC50/inhalation/4h/rat =	11.4 mg/l
Eye irritation	Irritating to eyes
Skin irritation	Irritating to skin
Sensitization	Did not cause sensitization on laboratory animals
Mutagenic Effects	Did not show mutagenic effects in animal experiments
Reproductive toxicity	Did not show teratogenic effects in animal experiments

12. ECOLOGICAL INFORMATION

Ecotoxicity

LC50/96h/guppy =	150 mg/l
EC50/48h/daphnia =	111 mg/l
Toxicity to algae EC50/72h/algae =	> 101 mg/l
Toxicity to bacteria	IC50 : 37 mg/l

Mobility

No information available

Persistence and Degradability

Not readily biodegradable (20 % after 28 days)

Bioaccumulative Potential

minimum

13. DISPOSAL CONSIDERATIONS

Waste disposal methods	Dispose of in accordance with local regulations
Contaminated Packaging	In accordance with local and national regulations. Empty containers should be taken for local recycling, recovery or waste disposal. Empty containers retain product residue and may be hazardous.

14. TRANSPORT INFORMATION

DOT

Shipping Description	UN1993, Flammable liquid, n.o.s. (Diethylhydroxylamine), 3, PG III
Hazard Class	3
UN-No	UN1993
Packing Group	III
Reportable Quantity (RQ)	None
Marine Pollutant	No
Labelling	Flammable liquid

IMDG/IMO

Shipping Description	UN1993, Flammable liquid, n.o.s. (Diethylhydroxylamine), 3, PGIII
Hazard Class	3
UN-No	UN1993
Packing Group	III
Marine Pollutant	No
Labelling	Flammable liquid

IATA

UN-No	UN1993
Shipping Description	UN1993, Flammable liquid, n.o.s. (Diethylhydroxylamine), 3, PG III
Hazard Class	3
Packing Group	III
Labelling	Flammable liquid

15. REGULATORY INFORMATION

International Inventories

All of the components in the product are on the following Inventory lists: U.S.A. (TSCA), Europe (EINECS/ELINCS/NLP), Canada (DSL/NDSL), Japan (ENCS), Japan Bioaccum (MITI), Australia (AICS), Philippines (PICCS), China (IECSC), Korea (KECL), New Zealand (NZIoC).

NOTE: X = Listed

Chemical Name	TSCA	EINECS	DSL	ENCS	MITI	AICS	PICCS	IECSC	KECL	NZIoC
N,N-Diethylhydroxylamine	X	223-055-4	X	2-190	(2)-190	X	X	X	KE-13827	X

OSHA HAZARD CLASSIFICATION: This material is classified as hazardous under Federal OSHA regulation: Combustible liquid, Irritant

SARA 311/312 Hazardous Categorization
Acute Health Hazard, Fire Hazard

SARA TITLE III SECTION 313 INFORMATION:
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

NOTE: X = Listed

CERCLA Hazardous Substances
This product has the following CERCLA/SARA TPQ and RQ: DEHA contains a small impurity of less than 1% Diethylamine which has a RQ of 100lbs.

State Right-to-Know

NOTE: X = Listed

Chemical Name	PA	NJ	MA
N,N-Diethylhydroxylamine 3710-84-7	Not Listed	Not Listed	Not Listed

California Proposition 65 This product does not contain any Proposition 65 chemicals.

WHMIS Hazard Class	B3 Combustible liquid D2B Toxic materials
Canadian Environmental Protection Act	This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

16. OTHER INFORMATION

HMIS	**Health** 2	**Flammability** 2	**Physical Hazard** 0
NFPA	**Health** 2	**Fire** 2	**Instability** 0

Legend: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

Literary Reference -Chemiekaarten : 25th ed. - 2010 -Taminco Proprietary Studies

Disclaimer: The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet