

Safety Data Sheet

Diethylhydroxylamine 85%

SECTION 1 – PRODUCT AND SUPPLIER IDENTIFICATION

Product: Diethylhydroxylamine 85%
Supplier: SingleTrack Solutions Corp
Address: 4838 Richard Road SW, Calgary, Alberta, Canada T3E 6L1
Office: 1-587-353-4119
Emergency (24hr): 1-888-226-8832 (CANUTEC)

Product detail

Product Name : Diethylhydroxylamine 85%
 Synonyms: DEHA 85%
 CAS No.: 3710-84-7 EINECS/ELINCS: 223-055-4

SECTION 2 – HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

Classification according to regulation (EC) No 1272/2008



Flammable

Flammable liquid 3	H226	Flammable liquid and vapour
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Environment

Aquatic Chronic 2	H411	Toxic to aquatic life with long lasting effects
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Acute Tox.4	H312	Harmful in contact with skin
Acute Tox.4	H323	Harmful if inhaled
STOT SE 3	H335	May cause respiratory irritation

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Label elements

Labelling according to regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation

Hazard pictograms



Signal word: Warning

Hazard determining components of labelling: N, N-diethylhydroxylamine

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

Precautionary statements:

- P261** Avoid breathing dust/fume/gas/mist/vapours/spray.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P337+P313 If eye irritation persists: Get medical advice/attention.
P312 Call a POISON CENTER/doctor/.../if you feel unwell.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P210 Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
(P303+P361+ IF ON SKIN (or hair): Take off immediately all contaminated
P353) clothing. Rinse skin with water/shower.
P321 Specific treatment (see on this label).
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazards

Results of PBT and vPvB assessment

PBT: Not applicable

vPvB: Not applicable

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterisation: Mixtures

Description: Product Name – N, N Diethylhydroxylamine 85% aqueous solution

Dangerous components:

CAS: 3710-84-7	N, N Diethylhydroxylamine	85%
EINECS: 223-055-4	Flam. Liq. 3, H226; Aquatic Chronic 2, H411; Acute Tox. 4, H312; Acute Tox. 4, H332; STOT SE 3, H335	
CAS: 7732-18-5	water, distilled, conductively or of similar purity	15%
EINECS: 231-791-2		

Additional information:

CAS No: 3710-84-7
Molecular Formula: C₄H₁₁NO
Formula weight: 89.16 g/mol
Synonyms: DEHA 85%

SECTION 4 – FIRST-AID MEASURES

Description of first aid measures

General Information: Under the shower: Take off immediately all contaminated clothing.

After inhalation:

Inhalation of mists, move patients from contaminated area to fresh air. Oxygen or artificial respiration if needed. Keep under medical surveillance. In case of problems: Hospitalize.

After skin contact:

Wash immediately abundantly and thoroughly with water. Consult a physician.

After eye contact:

Rinse opened eye for several minutes under running water.

After swallowing:

Do not induce vomiting, rinse mouth and lips with plenty of water if the subject is conscious, then hospitalize.

Most important symptoms and effects, both acute and delayed

No further information available

Information for doctor:

Treat symptomatically and supportively

Indication of any immediate medical attention and special treatment needed

If entering a saturated atmosphere, wear a self-contained breathing apparatus. Protective suit.

SECTION 5 – FIRE-FIGHTING MEASURES**Extinguishing media****Suitable extinguishing agents:**

Water spray, Foam, Dry powder, Carbon dioxide (CO₂)

For safety reasons unsuitable extinguishing agents:

Water with full jet

Special hazards arising from:

Flammable., Possible re-ignition of vapours from a distance.

Formation of toxic products through combustion:

Nitriles, Cyanides Thermal decomposition giving toxic products: Ammonia, Carbon oxides

Advice for firefighters**Protective Equipment:**

In the event of fire, wear self-contained breathing apparatus. Complete suit protecting against chemicals.

Additional Information:

Use water spray to cool unopened containers. Ensure containers can be rapidly moved. In case of fire nearby, remove exposed containers.

SECTION 6 – ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures:**

Use personal protective equipment. Avoid contact with skin and eyes and inhalation of Vapours. Ensure adequate ventilation. Evacuate personnel to safe areas. Prohibit all sources of sparks and ignition - Do not smoke. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions:

Prevent product from entering drains. Dam up with sand or inert earth (do not use combustible materials). Should not be released into the environment.

Methods and material for containment and cleaning up:**Recovery:**

Pump into a labelled inert emergency tank. Moist product : absorb the remainder with an inert absorbent material. Capture the gas with fine water spray (scrubbing), collect and treat contaminated water.

Neutralization:

Neutralize with a sodium bisulphate solution.

Elimination:

Destroy the product by incineration (in accordance with local and national regulations).

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7 – HANDLING AND STORAGE**Precautions for safe handling:**

Ensure good ventilation/exhaustion at the workplace.

Technical measures/Precautions:

Storage and handling precautions applicable to products: Liquid. Flammable. Harmful. Irritant. Dangerous for the environment Provide appropriate exhaust ventilation at machinery. Provide fire-blanket nearby. Provide showers, eyebaths. Provide water supplies near the point of use.

Information about fire - and explosion protection:

Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.

Conditions for safe storage, including any incompatibilities.**Storage:****Requirements to be met by storerooms and receptacles:**

Keep in a dry, cool, and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store protected from moisture and heat. Remove all sources of ignition. Store under shade at ambient temperature (<450C) & dry conditions in well-sealed containers. Provide a catch-tank in a bunded area. Provide impermeable floor. Provide electrical earthing of equipment and electrical equipment usable in explosive atmospheres.

Information about storage in one common storage facility:**To be avoided:**

Light metals and alloys (corrosion), Aluminium and copper alloys., Zinc and alloys, Rubber.

Do not store above: 50 °C**Further information about storage conditions:**

Keep container tightly sealed.

Packaging material:

Recommended: Ordinary steel, High density polyethylene (HDPE)

Specific end use(s)

N,N-Diethylhydroxylamine is used in Decolourisation, Polymerization ,Water Treatment.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION**Control parameters****Ingredients with limit values that require monitoring at the workplace:**

The product does not contain any relevant quantities of materials with critical values that must be monitored at the workplace.

DNELs

Data for WORKERS

INHALATION Exposure

Systemic Effects

Long-term: (DNEL) 49.3 mg/m³ repeated dose toxicity

Acute /short term: (DNEL) 45.6 mg/m³ acute toxicity

Local Effects

Long-term: (DNEL) 2.92 mg/m³ repeated dose toxicity

Acute /short term: (DNEL) 8.76 mg/m³ irritation (respiratory tract)

DERMAL Exposure

Systemic Effects

Long-term: (DNEL) 70 mg/kg bw/day repeated dose toxicity

Acute /short term: (DNEL) 47 mg/kg bw/day acute toxicity

Data for the GENERAL POPULATION

INHALATION Exposure

Systemic Effects

Long-term: (DNEL) 8.7 mg/m³ repeated dose toxicity

Local Effects

Long-term: (DNEL) 540 µg/m³ irritation (respiratory tract)

DERMAL Exposure

Systemic Effects

Long-term: (DNEL) 25 mg/kg bw/day repeated dose toxicity

ORAL Exposure

Systemic Effects

Long-term: (DNEL) 2.5 mg/kg bw/day repeated dose toxicity

PNECs

Hazard for Aquatic Organisms

Freshwater 8.2 µg/L

Intermittent releases (freshwater) 82 µg/L

Marine water 820 ng/L

Intermittent releases (marine water)- Sewage treatment plant (STP) 10 mg/L Sediment

(freshwater) 65.2 µg/kg sediment dw

Sediment (marine water) 6.52 µg/kg sediment dw

Hazard for Terrestrial Organism

Soil 6.4 mg/kg soil dw

Additional information: The lists valid during the making were used as basis.

Exposure controls

Personal protective equipment:

General protective and hygienic measures:

Avoid exposure to vapor. Avoid contact with the skin and the eyes. When using do not eat, drink, or smoke.

Wash hands after handling. Remove contaminated clothing and protective equipment before entering eating areas. Provide sufficient air exchange and/or exhaust in work rooms.

Respiratory protection:

High concentrations or prolonged activity: Self contained Breathing Apparatus Low concentrations or short activity: Mask with specific cartridge Recommended Filter type: A2B2E2K2P3

Protection of hands:



Protective gloves

The glove material must be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves:

Splash contact, intermittent and prolonged PVC gloves According to permeation index EN 374: 1 (time elapsed > 10 mins)

Penetration time of glove material:

The exact break through time must be found out by the manufacturer of the protective gloves and must be observed

Eye Protection:

Safety Glasses

Body Protection:

At the workplace: Protective clothing (cotton)

Intervention at incident: Combination with delayed penetration

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

General Information:

Appearance:	Liquid
Form:	Liquid
Colour:	Colourless
Odour:	Amine-like
Odour threshold:	Not applicable
pH value:	Alkaline
Change in condition	
Melting point/Melting range:	<-9 °C (at101.3kPa)
Boling point/ Boiling range:	96°C (at 101.3 kPa) (Re-ECHA dossier for DEHA)
Flash point:	48.5°C (at 101325 Pa) (Re-ECHA dossier for DEHA)
Flammability:	Flammable Liquid
Ignition Temperature:	
Decomposition temperature:	120-130°C
Self-igniting:	Self-ignition temperature at 101 325 Pa: 265°C

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Danger of explosion:	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
Explosion Limits:	
Lower:	1.9 Vol%
Upper:	10 Vol%
Oxidising properties:	No oxidising properties
Vapour pressure at 20°C:	23 hPa
Density at 20°C:	0.89035 g/cm ³
Relative Density:	Not applicable
Vapour density:	3.1 (Air=1)
Evaporation rate:	Not applicable
Solubility in/Miscibility with water:	Fully miscible
Partition coefficient (n-octanol/water):	Not determined
Viscosity:	
Dynamic:	Not determined
Kinematic:	Not determined
Solvent Content:	
Organic solvents:	0.0%
Water:	15.0%
VOC (EC):	0.00%
Other Information	No further relevant information available

SECTION 10 – STABILITY AND REACTIVITY

Reactivity:

The product is stable if stored and handled as prescribed/indicated.

Chemical stability

Thermal decomposition: Decomposition temperature: 120 - 130 °C

Possibility of hazardous reactions:

No dangerous reactions known

Conditions to avoid Temperatures:

above 50 °C

Incompatible materials:

Violent reaction and flammability with: Oxidizing agents, Nitrates, Peroxides.

Very exothermic reaction and possibility of spitting with: Strong acids, Halogens, Product likely to react violently in alkaline environment.

Formation of toxic products (n-nitrosamines) with: Nitrous acid and other nitrosating agents, Nitrites, Oxygen

Very exothermic reaction with: Water

Protect from heat.

Corrosion with light metals and alloys

Hazardous decomposition products:

Thermal decomposition giving flammable and irritating products: Diethylamine Formation of toxic products through combustion: Carbon oxides, nitrogen oxides (NOx)

SECTION 11 – TOXICOLOGICAL INFORMATION**Information on toxicological effects:****Acute Toxicity:**

Harmful in contact with skin or if inhaled

LD/LC50 values relevant for classification:**3710-84-7 N, N-diethylhydroxylamine**

Oral	LD50	2190 mg/kg bw (rat)
Dermal	LD50	1300 mg/kg bw (rabbit)
Inhalative	LC50	11.4 mg/L (rat (Sprague-Dawley) male/female)

Primary irritant effect:**Skin Corrosion/irritation**

skin irritation: in vivo

Principles of method if other than guideline: Draize Test

Species: rabbit

Results: Irritation

parameter: erythema score

Basis: animal: 1 to 6

Time point: 24/48/72 h

Score: 0

Max. score: 4

Irritation parameter: edema score

Basis: animal: 1 to 6

Time point: 24/48/72 h

Score: 0

Max. score: 4

Conclusion: On a weight of evidence approach, DEHA is considered to be at most a slight skin irritant. On this basis and in accordance with Regulation (EC) No 1272/2008, DEHA does not merit classification as skin irritant.

Serious eye damage/irritation:

Slightly irritating

eye irritation: in vivo

Species: rabbit

Results:

Irritation parameter: conjunctivae score

Basis: animal: animal 1 to 6

Time point: 24/48/72 h

Score: 0.66

Max. score: 4

Reversibility: fully reversible within: 72h

Irritation parameter: chemosis score

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Basis: animal: animal 1 to 6

Time point: 24/48/72 h

Score: 0

Irritation parameter: cornea opacity score

Basis: animal: animal 1 to 6

Time point: 24/48/72 h

Score: 0

Irritation parameter: iris score

Basis: animal: animal 1 to 6

Time point: 24/48/72 h

Score: 0

Conclusion: On a weight of evidence basis, DEHA is concluded to be a slight eye irritant. On this basis and in accordance with Regulation (EC) No 1272/2008, DEHA does not merit classification as eye irritant

Respiratory or skin sensitisation:

Skin sensitisation

The skin sensitizer potential of diethylhydroxylamine was evaluated in a test performed according to the Buehler method (Shapiro, 1989). After establishing the highest non-irritating dose concentration, a 3-week induction period was initiated during which 10 young adult, male, guinea pigs were treated with diethylhydroxylamine applied as a 30% w/w solution in deionized water and 10 were treated with 0.08% dinitrochlorobenzene (DNCB) in 95% ethyl alcohol (positive controls). During the induction period the animals were dosed on alternate days until a total of nine dose applications was achieved. Seventeen days after the ninth application a challenge dose (30%) was applied to a naive site on each guinea pig and approximately 24 and 48 hours later the animals were scored for a sensitization response (Erythema and edema). By the 4th induction many diethyls hydroxylamine -treated animals exhibited very mild erythema at both 24- and 48-hours post-dose. A slight increase in the severity of irritation was noted at several sites after inductions 8 and 9. In positive control animals (0.08% DNCB), varying degrees of erythema were observed throughout induction, increasing in severity toward the end of this period. No irritation was noted after challenge in diethylhydroxylamine-treated animals. and naive control animals. In positive control animals, 24 and 48 hours after challenge all sites were erythemic, showing a faint to moderate response. It was concluded that diethylhydroxylamine was not a skin sensitizer.

Repeated dose toxicity:

Repeated dose toxicity: oral

No Observed Adverse Effect Level (NOAEL) in rats administered for 13 weeks was set at 500 mg/kg/day.

Repeated dose toxicity: inhalation

In conclusion, toxicity was exhibited in the 1500 ppm group by clinical signs, inhibition of body weight gain and food consumption, changes in white blood cell differential counts, various serum chemistry changes, reduced thymus gland weights-and increased liver weights. Medullary plasmacytosis was noted in the iliac and popliteal lymph nodes in males in the 1500 ppm group. Systemic effects in the 150-ppm group were limited to slight decreases in albumin and A/G ratio (females only). Based on data collected following a two-week no

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exposure (recovery) period, all these effects were considered to be reversible. Microscopic changes were noted in the nasal passages of male and female rats in the 150 and 1500 ppm groups; these effects were due to local irritation, not systemic toxicity, and reversible. The hematological, serum chemistry and organ weight (Thymus and liver) effects in the 1500 ppm group indicate that the liver and thymus were the target organs, however, no test article related histomorphology changes were seen in these tissues

CMR effects (carcinogenicity, mutagenicity, and toxicity for reproduction) Germ cell mutagenicity

Genetic toxicity: in vitro

DIETHYLHYDROXYLAMINE does not show mutagenic activity in the bacterial reverse mutation test with *Salmonella typhimurium*.

Genetic toxicity: in vivo

When treated once via oral gavage with Diethylhydroxylamine at doses up to 2000 mg/kg male Han Wistar rats showed no induction of UDS in hepatocytes isolated ex vivo approximately 2-4 or 12-14 hours after dosing. It is concluded that Diethylhydroxylamine had no genotoxic activity detectable in this test system under the experimental conditions employed.

Carcinogenicity:

Test chemical is not carcinogen.

Reproductive toxicity:

Developmental toxicity / teratogenicity Maternal toxicity was expressed by inhibition of body weight gain and food consumption at dose levels of 393 and 568 mg/kg/day. No maternal toxicity was evident at a dose level of 87.4 mg/kg/day. No developmental toxicity was apparent at any dose level. Based on the results of this study, the NOAEL (no observable adverse effect level) for maternal toxicity was 87.4 mg/kg/day, and the NOAEL for developmental toxicity was 568 mg/kg/day.

STOT-single exposure

May cause respiratory irritation. Clinical signs of irritation of the mucosa of the respiratory tract were seen in an acute inhalation study and microscopic changes in the nasal passages of rats were observed in a 28-day inhalation repeated dose toxicity study. Diethylhydroxylamine is slightly irritating to rabbit skin and eyes and irritating to the respiratory tract.

STOT-repeated exposure:

Based on available data, the classification criteria are not met.

Aspiration hazard:

Based on available data; the classification criteria are not met.

SECTION 12 – ECOLOGICAL INFORMATION**Toxicity****Aquatic Toxicity:****3710-84-7 N, N-diethylhydroxylamine**

EC50 (24 hrs) (static) 8.9 mg/L (Daphnia Magna)

EC50 (48 hrs) 8.2 mg/L (Daphnia Magna)

EC50 (72 hrs) (static) > 101 mg/L (Pseudokirchneriella subcapitata) (OECD testing guideline 201)

LC50(96h) (static) > 134 mg/L (Pimephales promelas (Fish, fresh water)) (OECD Guideline 203)

Persistence and degradability:

Ready aerobic biodegradability of N, N DIETHYLHYDROXYLAMINE using the OECD method 301 F shows that this item reached a maximum biodegradation level of 11 % in 28 days. The item did not demonstrate any inhibiting effect on the micro-organisms. Based on these criteria, the N, N DIETHYLHYDROXYLAMINE is not readily biodegradable

Bio accumulative Potential:

the substance is not expected to bioaccumulate in organism tissues.

Mobility in soil:

Test chemical is not expected to sorb on soil or sediment particles.

Ecotoxic Effects:**Remark:**

Toxic for fish

Additional ecological information:**General Notes:**

Water hazards class 1 (German regulation) (self assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. Also poisonous for fish and plankton in water bodies. Toxic for aquatic organisms

Results of PBT and vPvB assessment:

PBT: Not applicable

vPvB: Not applicable

Other adverse effects

No further relevant information available

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste treatment methods

Recommendation

Neutralize with a sodium bisulphate solution. Destroy the product by incineration (in accordance with local and national regulations).

Uncleaned packaging:

Recommendation: Purging of residual gases in empty packaging is obligatory before recovery. Destroy packaging by incineration at an approved waste disposal site. Clean container with water. Recover wastewater for processing later. It is strongly recommended to disfigure the drum/container before disposal.

Recommended cleansing agents: Water, if necessary, together with cleansing agents. Drum decontamination shall be done by repetitive water washings

SECTION 14 – TRANSPORTATION INFORMATION

UN-Number

ADR, IMDG, IATA UN1993

UN Proper shipping name

ADR, 1993 FLAMMABLE LIQUID, N.O.S. (N, N- diethylhydroxylamine), ENVIRONMENTALLY HAZARDOUS, special provision 640E

IMDG

FLAMMABLE LIQUID, N.O.S. (N, N- diethylhydroxylamine), MARINE POLLUTANT

IATA

Flammable liquid, n. o. s. (N, N - diethylhydroxylamine)

Transport hazard Class(es)

ADR, IMDG



Class 3 Flammable Liquid
Label 3

IATA



Class 3 Flammable Liquid
Label 3

Packing group

ADR, IMDG, IATA III

Disclaimer: This Data Sheet provides information without warranty or guarantee. "Physical Properties" are representative values, not specifications. Users must assess product suitability for their applications.

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Environmental hazards:	Product contains environmentally hazardous substances : N, N diethylhydroxylamine
Marine Pollutant:	Symbol (fish and tree)
Special marking (ADR)	Symbol (fish and tree)
Special precautions for user:	Warning: Flammable liquids
Danger code (Kemler):	30
EMS Number:	F-E, S-E
Stowage Category:	A
Transport in bulk according to: Annex II of Marpol and the IBC code	Not applicable
Transport/Additional Information:	
ADR	
Limited Quantities (LQ):	5L
Expected Quantities (EQ):	Code: E1 Maximum net quantity per inner packaging 30 ml Maximum net quantity per outer packaging: 1000 ml
Transport category:	3
Tunnel restriction code :	D/E
IMDG	
Limited quantities (LQ) :	5L
Expected quantities (EQ) :	Code : E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000ml
UN "Model Regulation" :	UN 1933 FLAMMABLE LIQUID, N.O.S., SPECIAL PROVISION 640E (N, N - diethylhydroxylamine), 3, III, Environmentally Hazardous

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SECTION 15 – REGULATORY INFORMATION

Canadian Regulations: This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no) *
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product are listed on the inventory administered by the governing country(s) or are exempt.
 A "No" indicates that one or more components of the product are not listed on the inventory administered by the governing country(s)

SECTION 16 – OTHER INFORMATION

SingleTrack Solutions provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.

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