SAFETY DATA SHEET

DEHA (N,N-Diethylhydroxylamine), 98%

Version 1.7  Revision Date 2016-05-17

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product information

Product Name: DEHA (N,N-Diethylhydroxylamine), 98%
Material: 1113508, 1102492, 1103898, 1032840

EC-No. Registration number

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index No.</th>
<th>Legal Entity</th>
<th>Registration number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylhydroxylamine</td>
<td>3710-84-7</td>
<td>223-055-4</td>
<td></td>
<td>Chevron Phillips Chemicals International N.V</td>
<td>01-2119962470-39-XXXX</td>
</tr>
</tbody>
</table>

Relevant Identified Uses

Supported: Use as processing aid (water treatment)
Use in polymer processing – industrial
Colour stabilizer (film/photographic industry)
Colour stabilizer for chemical products (fuel, resins, etc.)
and for de-colourisation of phenols

Company

: Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Local

: Chevron Phillips Chemicals International N.V.
Airport Plaza (Stockholm Building)
Leonardo Da Vincielaan 19
1831 Diegem
Belgium

SDS Requests: (800) 852-5530
Technical Information: (832) 813-4862
Responsible Party: Product Safety Group
Email: sds@cpchem.com

Emergency telephone:

Health:
866.442.9628 (North America)

SDS Number: 100000014095
SECTION 2: Hazards identification

Classification of the substance or mixture
REGULATION (EC) No 1272/2008

- **Flammable liquids**, Category 3
  - H226: Flammable liquid and vapor.
- **Acute toxicity**, Category 4
  - H332: Harmful if inhaled.
  - H312: Harmful in contact with skin.
- **Specific target organ systemic toxicity - single exposure**, Category 3, Respiratory system
  - H335: May cause respiratory irritation.
- **Acute aquatic toxicity**, Category 2
  - H401: Toxic to aquatic life.
- **Chronic aquatic toxicity**, Category 2
  - H411: Toxic to aquatic life with long lasting effects.

Label elements

Labeling (REGULATION (EC) No 1272/2008)

- **Hazard pictograms**
  ![Flammable Liquid Symbol](image)
  ![Exclamation Symbol](image)
  ![Aquatic Life Hazard Symbol](image)

- **Signal Word**: Warning

- **Hazard Statements**
  - H226: Flammable liquid and vapor.
  - 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**
  - **Prevention**: P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  - P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
  - P273 Avoid release to the environment.
  - **Response**: P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
  - P312 Call a POISON CENTER/doctor if you feel unwell.
  - P370 + P378 In case of fire: Use dry sand, dry chemical
or alcohol-resistant foam for extinction.

Hazardous ingredients which must be listed on the label:
- 3710-84-7  Diethylhydroxylamine

SECTION 3: Composition/information on ingredients

Synonyms: Ethanamine, N-Ethyl-N-Hydroxy Amine - (98%)
Molecular formula: (C2H5)2-N-OH

Mixtures Hazardous ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No. EC-No. Index No.</th>
<th>Classification (REGULATION (EC) No 1272/2008)</th>
<th>Concentration [wt%]</th>
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</thead>
<tbody>
<tr>
<td>Diethylhydroxylamine</td>
<td>3710-84-7 223-055-4</td>
<td>Flam. Liq. 3; H226 Acute Tox. 4; H332 Acute Tox. 4; H312 STOT SE 3; H335 Aquatic Acute 2; H401 Aquatic Chronic 2; H411</td>
<td>98</td>
</tr>
</tbody>
</table>

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

SECTION 4: First aid measures

General advice: Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.

If inhaled: Move to fresh air. If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact: Take victim immediately to hospital. If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact: Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed: Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Take victim immediately to hospital.
SECTION 5: Firefighting measures

Flash point: 46 °C (115 °F)

Autoignition temperature: No data available

Unsuitable extinguishing media: High volume water jet.

Specific hazards during firefighting: Do not allow run-off from fire fighting to enter drains or water courses.

Special protective equipment for fire-fighters: Wear self-contained breathing apparatus for firefighting if necessary.

Further information: Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

Fire and explosion protection: Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Hazardous decomposition products: Nitrogen oxides (NOx). Carbon oxides.

SECTION 6: Accidental release measures

Personal precautions: Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up: Neutralize with acid. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). For additional details, see the Exposure Scenario in the Annex portion.

SECTION 7: Handling and storage

Handling
SAFETY DATA SHEET

DEHA (N,N-Diethylhydroxylamine), 98%

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Advice on safe handling: Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion: Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers: No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

<table>
<thead>
<tr>
<th>DNEL</th>
<th>End Use: Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of exposure: Inhalation</td>
<td></td>
</tr>
<tr>
<td>Potential health effects: Long-term systemic effects</td>
<td></td>
</tr>
<tr>
<td>Value: 3.65 mg/m³</td>
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</table>

<table>
<thead>
<tr>
<th>DNEL</th>
<th>End Use: Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of exposure: Inhalation</td>
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</tr>
<tr>
<td>Potential health effects: Acute systemic effects</td>
<td></td>
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<tr>
<td>Value: 45.6 mg/m³</td>
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</table>

<table>
<thead>
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</tr>
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<tbody>
<tr>
<td>Routes of exposure: Inhalation</td>
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</tr>
<tr>
<td>Potential health effects: Long-term local effects</td>
<td></td>
</tr>
<tr>
<td>Value: 2.92 mg/m³</td>
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</table>

<table>
<thead>
<tr>
<th>DNEL</th>
<th>End Use: Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of exposure: Inhalation</td>
<td></td>
</tr>
<tr>
<td>Potential health effects: Acute local effects</td>
<td></td>
</tr>
<tr>
<td>Value: 8.76 mg/m³</td>
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<table>
<thead>
<tr>
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<th>End Use: Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of exposure: Skin contact</td>
<td></td>
</tr>
<tr>
<td>Potential health effects: Long-term systemic effects</td>
<td></td>
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<td>Value: 0.26 mg/kg</td>
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</table>

<table>
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<th>DNEL</th>
<th>End Use: Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routes of exposure: Skin contact</td>
<td></td>
</tr>
<tr>
<td>Potential health effects: Systemic effects, Acute effects</td>
<td></td>
</tr>
<tr>
<td>Value: 4.7 mg/kg</td>
<td></td>
</tr>
</tbody>
</table>
PNEC : Fresh water  
Value: 0,0082 mg/l  
PNEC : Marine water  
Value: 0,00082 mg/l  
PNEC : Fresh water sediment  
Value: 0,0625 mg/kg  
PNEC : Marine sediment  
Value: 0,00652 mg/kg  
PNEC : Soil  
Value: 0,0082 mg/kg

Personal protective equipment

Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate; Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.

Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance
SAFETY DATA SHEET

DEHA (N,N-Diethylhydroxylamine), 98%

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Form: Liquid
Physical state: Liquid
Color: Colorless to light yellow
Odor: amine

Safety data
Flash point: 46 °C (115 °F)
Lower explosion limit: 1,7 % (V)
Upper explosion limit: 11,2 % (V)
Oxidizing properties: no
Autoignition temperature: No data available
Molecular formula: (C2H5)2-N-OH
Molecular weight: 89,15 g/mol
pH: 10,2
Freezing point: -6 °C (21 °F)
Pour point: No data available
Boiling point/boiling range: 125 - 132 °C (257 - 270 °F)
Vapor pressure: 3,36 MMHG
Relative density: 0,87
at 25 °C (77 °F)
Density: 0,86 G/ML
Water solubility: Partly soluble
Partition coefficient: n-octanol/water: No data available
Viscosity, kinematic: No data available
Relative vapor density: 1
(Air = 1.0)
Evaporation rate: No data available
Percent volatile: > 99 %

SECTION 10: Stability and reactivity
SAFETY DATA SHEET

DEHA (N,N-Diethylhydroxylamine), 98%

Version 1.7

Revision Date 2016-05-17

Chemical stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid: No data available.

Hazardous decomposition products: Nitrogen oxides (NOx)
Carbon oxides

Other data: No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

DEHA (N,N-Diethylhydroxylamine), 98%
Acute oral toxicity: LD50: 2.190 mg/kg
Species: Rat

DEHA (N,N-Diethylhydroxylamine), 98%
Acute inhalation toxicity: LC50: 19 mg/l
Exposure time: 4 h
Species: Rat

DEHA (N,N-Diethylhydroxylamine), 98%
Acute dermal toxicity: LD50: 1.300 mg/kg
Species: Rabbit

DEHA (N,N-Diethylhydroxylamine), 98%
Skin irritation: May cause skin irritation and/or dermatitis.

DEHA (N,N-Diethylhydroxylamine), 98%
Eye irritation: No eye irritation

Vapors may cause irritation to the eyes, respiratory system and the skin.

Sensitization

Diethylhydroxylamine: Did not cause sensitization on laboratory animals.

Repeated dose toxicity

Diethylhydroxylamine: Species: Rat, male and female
Sex: male and female
Application Route: Inhalation
Dose: 15, 150, 1506 ppm
Exposure time: 28 d
Number of exposures: 6 h/d, 5d/wk
NOEL: 150 ppm
Lowest observable effect level: 1506 ppm
Method: OECD Guideline 412
Target Organs: Thymus, Liver
Reproductive toxicity
Diethylhydroxylamine: This information is not available.

Developmental Toxicity
Diethylhydroxylamine: Species: Rat
Application Route: oral gavage
Dose: 87.4, 393, 568 mg/kg
Number of exposures: daily
Test period: GD 6-15
Method: OECD Guideline 414
NOAEL Teratogenicity: \( \geq 568 \) mg/kg
NOAEL Maternal: 87.4 mg/kg
No adverse effects expected

DEHA (N,N-Diethylhydroxylamine), 98%
Aspiration toxicity: No aspiration toxicity classification.

CMR effects
Diethylhydroxylamine: Teratogenicity: Animal testing did not show any effects on fetal development.

Further information: Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish
Diethylhydroxylamine: LC50: > 134 mg/l
Exposure time: 96 h
Species: Pimephales promelas (fathead minnow)
static test Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates
Diethylhydroxylamine: EC50: 8.2 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
static test Method: OECD Test Guideline 202

Toxicity to algae
Diethylhydroxylamine: ErC50: > 101 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Growth inhibition Method: OECD Test Guideline 201

Biodegradability
Diethylhydroxylamine: Result: Not readily biodegradable.
11 %
Testing period: 28 d
Method: OECD Test Guideline 301

Ecotoxicology Assessment

Acute aquatic toxicity
Diethylhydroxylamine: Toxic to aquatic life.

Chronic aquatic toxicity
Diethylhydroxylamine: Toxic to aquatic life with long lasting effects.

Toxicity Data on Soil: No data available

Other organisms relevant to the environment: No data available

Impact on Sewage Treatment: No data available

Results of PBT assessment
Diethylhydroxylamine: Non-classified PBT substance, Non-classified vPvB substance

Additional ecological information: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names,

SDS Number:100000014095
etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
UN1993, FLAMMABLE LIQUIDS, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN1993, FLAMMABLE LIQUID, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III, (46 °C), MARINE POLLUTANT, (DIETHYLHYDROXYLAMINE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN1993, FLAMMABLE LIQUID, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN1993, FLAMMABLE LIQUID, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III, (D/E), ENVIRONMENTALLY HAZARDOUS, (DIETHYLHYDROXYLAMINE)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN1993, FLAMMABLE LIQUID, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III, ENVIRONMENTALLY HAZARDOUS, (DIETHYLHYDROXYLAMINE)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN1993, FLAMMABLE LIQUID, N.O.S., (DIETHYLHYDROXYLAMINE), 3, III, ENVIRONMENTALLY HAZARDOUS, (DIETHYLHYDROXYLAMINE)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

National legislation

Quantity 1: 5.000 t
Quantity 2: 50.000 t

Notification status
Europe REACH: On the inventory, or in compliance with the inventory
United States of America TSCA: On the inventory, or in compliance with the inventory
Canada DSL: On the inventory, or in compliance with the inventory
Australia AICS: On the inventory, or in compliance with the inventory
SECTION 16: Other information

NFPA Classification : Health Hazard: 2
                     Fire Hazard: 2
                     Reactivity Hazard: 0

Further information
Legacy SDS Number : CPC00067

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in 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 guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered 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 materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
</tr>
<tr>
<td>ACS</td>
<td>Australia, Inventory of Chemical Substances</td>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Non-Domestic Substances List</td>
</tr>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration 50%</td>
</tr>
<tr>
<td>EGEST</td>
<td>EOSCA Generic Exposure Scenario Tool</td>
</tr>
<tr>
<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
</tr>
<tr>
<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
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<tr>
<td>GHS</td>
<td>Globally Harmonized System</td>
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<tr>
<td>LD50</td>
<td>Lethal Dose 50%</td>
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<tr>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
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<td>NFPA</td>
<td>National Fire Protection Agency</td>
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<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
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<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
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<td>NZIoC</td>
<td>New Zealand Inventory of Chemicals</td>
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<tr>
<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
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<tr>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
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<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
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<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<tr>
<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
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<tr>
<td>PRNT</td>
<td>Presumed Not Toxic</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation Recovery</td>
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</table>
### DEHA (N,N-Diethylhydroxylamine), 98%

**Version 1.7**

**Revision Date 2016-05-17**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Act</th>
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<tbody>
<tr>
<td>&gt;=</td>
<td>Greater Than or Equal To</td>
<td>STEL</td>
</tr>
<tr>
<td>IC50</td>
<td>Inhibition Concentration 50%</td>
<td>SARA</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
<td>TLV</td>
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<td>Inventory of Existing Chemical Substances in China</td>
<td>TWA</td>
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<td>Japan, Inventory of Existing and New Chemical Substances</td>
<td>TSCA</td>
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<td>KECI</td>
<td>Korea, Existing Chemical Inventory</td>
<td>UVCB</td>
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<td>&lt;=</td>
<td>Less Than or Equal To</td>
<td>WHMIS</td>
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<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
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</tbody>
</table>

Full text of H-Statements referred to under sections 2 and 3.

- **H226** Flammable liquid and vapor.
- **H312** Harmful in contact with skin.
- **H332** Harmful if inhaled.
- **H335** May cause respiratory irritation.
- **H401** Toxic to aquatic life.
- **H411** Toxic to aquatic life with long lasting effects.
Annex

1. Short title of Exposure Scenario: Use as processing aid (water treatment)

Main User Groups: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Process category:
PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC6: Calendering operations
PROC7: Industrial spraying
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC13: Treatment of articles by dipping and pouring
PROC15: Use as laboratory reagent

Environmental release category: ERC6b: Industrial use of reactive processing aids

2.1 Contributing scenario controlling environmental exposure for: ERC6b: Industrial use of reactive processing aids

Environment factors not influenced by risk management
Flow rate: 18,000 m³/d

Other given operational conditions affecting environmental exposure
Initial release factor
Number of emission days per year: 100
Emission or Release Factor: Air: 0,1 %

Final release factor
Emission or Release Factor: Air: 0,1 %
Local release rate: Water: 0,0066
Local release rate: Air: 9.2 kg/day
Local release rate: Soil:
Remarks: There is no direct exposure to soil.

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant: Municipal sewage treatment plant, Yes
Flow rate of sewage treatment plant effluent: 2,000 m³/d
Sludge Treatment: Agricultural soil, No

Conditions and measures related to external treatment of waste for disposal
Waste treatment: No

SDS Number: 100000014095
### Remarks

ERC based assessment demonstrating control of risk with default conditions.
Low risk assumed for waste life stage.
Waste disposal according to national/local legislation is sufficient.

### 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
<th>Exposure duration</th>
<th>&lt; 8 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human factors not influenced by risk management</td>
<td>Exposed skin area</td>
<td>One hand face only (240 cm²)</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td></td>
<td>Temperature</td>
<td>40 °C</td>
</tr>
<tr>
<td></td>
<td>Remarks</td>
<td>Basic general ventilation (1-3 air changes per hour)</td>
</tr>
</tbody>
</table>

### Technical conditions and measures

Closed system (minimal contact during routine operations)
Local exhaust ventilation- inhalation; No (Effectiveness: 0 %)

### Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, No (Effectiveness: 0 %)
Respiratory Protection, No (Effectiveness: 0 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
<th>Exposure duration</th>
<th>&lt; 8 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human factors not influenced by risk management</td>
<td>Exposed skin area</td>
<td>Palms of both hands (480 cm²)</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td>Outdoor / Indoor</td>
<td>Indoor</td>
</tr>
<tr>
<td></td>
<td>Temperature</td>
<td>40 °C</td>
</tr>
<tr>
<td></td>
<td>Remarks</td>
<td>Enhanced general ventilation (5-10 air changes per hour)</td>
</tr>
</tbody>
</table>

### Technical conditions and measures

Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation; Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal; No (Effectiveness: 0 %)

### Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)
DEHA (N,N-Diethylhydroxylamine), 98%

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2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Frequency and duration of use
  Exposure duration : < 8 h

Human factors not influenced by risk management
  Exposed skin area : One hand face only (240 cm²)

Other operational conditions affecting workers exposure
  Outdoor / Indoor : Indoor
  Temperature : 40 °C
  Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
  Closed continuous process with occasional controlled exposure
  Local exhaust ventilation - inhalation:, Yes (Effectiveness: 90 %)
  Local exhaust ventilation - dermal:, No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
  Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
  Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Frequency and duration of use
  Exposure duration : < 8 h

Human factors not influenced by risk management
  Exposed skin area : Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure
  Outdoor / Indoor : Indoor
  Temperature : 40 °C
  Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
  Semi-closed process with occasional controlled exposure
  Local exhaust ventilation - inhalation:, Yes (Effectiveness: 90 %)
  Local exhaust ventilation - dermal:, Yes (Effectiveness: 90 %)

Conditions and measures related to personal protection, hygiene and health evaluation
  Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
  Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

SDS Number:100000014095
**DEHA (N,N-Diethylhydroxylamine), 98%**

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### Frequency and duration of use

**Exposure duration**: < 4 h

### Human factors not influenced by risk management

**Exposed skin area**: Two hands (960 cm²)

### Other operational conditions affecting workers exposure

**Outdoor / Indoor**: Indoor

**Remarks**: Enhanced general ventilation (5-10 air changes per hour)

### Technical conditions and measures

**Containment measures**: No

**Local exhaust ventilation - inhalation**: Yes (Effectiveness: 90 %)

**Local exhaust ventilation - dermal**: Yes (Effectiveness: 90 %)

### Conditions and measures related to personal protection, hygiene and health evaluation

**Dermal Protection**: Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)

**Respiratory Protection**: Yes, Respirator with APF of 10 (Effectiveness: 90 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

**Frequency and duration of use**

**Exposure duration**: < 1 h

### Human factors not influenced by risk management

**Exposed skin area**: Skin

**Exposed skin area**: 1500 cm²

### Other operational conditions affecting workers exposure

**Outdoor / Indoor**: Indoor

**Temperature**: 40 °C

**Remarks**: Enhanced general ventilation (5-10 air changes per hour)

### Technical conditions and measures

**Containment measures**: No

**Local exhaust ventilation - inhalation**: Yes (Effectiveness: 95 %)

**Local exhaust ventilation - dermal**: Yes (Effectiveness: 95 %)

### Conditions and measures related to personal protection, hygiene and health evaluation

**Dermal Protection**: Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)

**Respiratory Protection**: Yes, Respirator with APF of 10 (Effectiveness: 90 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

**Frequency and duration of use**

**Exposure duration**: < 4 h

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DEHA (N,N-Diethylhydroxylamine), 98%

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Revision Date 2016-05-17

1 Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

2 Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Good general ventilation (3-5 air changes per hour)

3 Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation: Yes (Effectiveness: 90 %)
Local exhaust ventilation- dermal: Yes (Effectiveness: 90 %)

4 Conditions and measures related to personal protection, hygiene and health evaluation
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness: 90 %)
Respiratory Protection, Yes, APF 20 (Effectiveness: 95 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Frequency and duration of use
Exposure duration : < 8 h
Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation: Yes (Effectiveness: 95 %)
Local exhaust ventilation- dermal: Yes (Effectiveness: 95 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Frequency and duration of use
Exposure duration : < 1 h
Human factors not influenced by risk management

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**DEHA (N,N-Diethylhydroxylamine), 98%**

**Version 1.7**

**Exposure Details**

| Exposed skin area | Palms of both hands (480 cm²) |

**Other operational conditions affecting workers exposure**

| Outdoor / Indoor | Indoor |
| Temperature | 40 °C |
| Remarks | Enhanced general ventilation (5-10 air changes per hour) |

**Technical conditions and measures**

- **Semi-closed process with occasional controlled exposure**
- **Local exhaust ventilation - inhalation**: Yes (Effectiveness: 90 %)
- **Local exhaust ventilation - dermal**: No (Effectiveness: 0 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**

- **Dermal Protection**: Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
- **Respiratory Protection**: Yes, Respirator with APF of 10 (Effectiveness: 90 %)

---

**2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring**

**Frequency and duration of use**

- **Exposure duration**: < 4 h

**Human factors not influenced by risk management**

| Exposed skin area | Palms of both hands (480 cm²) |

**Other operational conditions affecting workers exposure**

| Outdoor / Indoor | Indoor |
| Temperature | 40 °C |
| Remarks | Enhanced general ventilation (5-10 air changes per hour) |

**Technical conditions and measures**

- **Containment measures**: No
- **Local exhaust ventilation - inhalation**: Yes (Effectiveness: 90 %)
- **Local exhaust ventilation - dermal**: Yes (Effectiveness: 90 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**

- **Dermal Protection**: Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
- **Respiratory Protection**: Yes, Respirator with APF of 10 (Effectiveness: 90 %)

---

**2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent**

**Frequency and duration of use**

- **Exposure duration**: < 8 h

**Human factors not influenced by risk management**

| Exposed skin area | One hand face only (240 cm²) |

**Other operational conditions affecting workers exposure**

| Outdoor / Indoor | Indoor |

---
## DEHA (N,N-Diethylhydroxylamine), 98%

### Technical conditions and measures
- **Containment measures**: No
- **Local exhaust ventilation - inhalation**: Yes (Effectiveness: 90 %)
- **Local exhaust ventilation - dermal**: No (Effectiveness: 0 %)

### Conditions and measures related to personal protection, hygiene and health evaluation
- **Dermal Protection**: Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
- **Respiratory Protection**: No (Effectiveness: 0 %)

### 3. Exposure estimation and reference to its source

#### Environment

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartment</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC6d</td>
<td>EUSES</td>
<td></td>
<td>Freshwater</td>
<td>0.000147 mg/L</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Freshwater sediment</td>
<td>0.001 mg/kg dry weight (d.w.)</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine water</td>
<td>0.000015 mg/L</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Marine sediment</td>
<td>0.000119 mg/kg dry weight (d.w.)</td>
<td>0.018</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td>0.0000033 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Agricultural soil</td>
<td>0.001 mg/kg dry weight (d.w.)</td>
<td>0.151</td>
<td></td>
</tr>
</tbody>
</table>

**ERC6d**: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

#### Workers/Consumers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC1</td>
<td>ECETOC TRA Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>0.037 mg/m3</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0.034 mg/kg bw /day</td>
<td>0.131</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0.141</td>
<td></td>
</tr>
<tr>
<td>PROC2</td>
<td>ECETOC TRA Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>0.557 mg/m3</td>
<td>0.153</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0.068 mg/kg bw /day</td>
<td>0.264</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0.416</td>
<td></td>
</tr>
<tr>
<td>PROC3</td>
<td>ECETOC TRA Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1.114 mg/m3</td>
<td>0.305</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0.034 mg/kg bw /day</td>
<td>0.133</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term –</td>
<td></td>
<td>0.438</td>
<td></td>
</tr>
<tr>
<td>PROC</td>
<td>ECETOC TRA</td>
<td>Systemic Combined Routes</td>
<td>Value (mg/m³)</td>
<td>Value (mg/kg bw/day)</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>------------</td>
<td>-------------------------</td>
<td>---------------</td>
<td>---------------------</td>
<td></td>
</tr>
<tr>
<td>PROC4</td>
<td>Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>2,228</td>
<td>0,51</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,034</td>
<td>0,132</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0,742</td>
<td>0,19</td>
<td></td>
</tr>
<tr>
<td>PROC6</td>
<td>Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>2,006</td>
<td>0,55</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,049</td>
<td>0,19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0,739</td>
<td>0,19</td>
<td></td>
</tr>
<tr>
<td>PROC7</td>
<td>Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1,671</td>
<td>0,458</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,013</td>
<td>0,049</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0,507</td>
<td>0,19</td>
<td></td>
</tr>
<tr>
<td>PROC8a</td>
<td>Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>0,39</td>
<td>0,107</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,082</td>
<td>0,316</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0,423</td>
<td>0,132</td>
<td></td>
</tr>
<tr>
<td>PROC8b</td>
<td>Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1,393</td>
<td>0,382</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,034</td>
<td>0,132</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0,513</td>
<td>0,19</td>
<td></td>
</tr>
<tr>
<td>PROC9</td>
<td>Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1,114</td>
<td>0,305</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,069</td>
<td>0,264</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0,569</td>
<td>0,19</td>
<td></td>
</tr>
<tr>
<td>PROC13</td>
<td>Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>2,006</td>
<td>0,55</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,025</td>
<td>0,095</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0,644</td>
<td>0,19</td>
<td></td>
</tr>
<tr>
<td>PROC15</td>
<td>Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1,114</td>
<td>0,305</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,017</td>
<td>0,065</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0,371</td>
<td>0,19</td>
<td></td>
</tr>
</tbody>
</table>

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC6: Calendering operations

PROC7: Industrial spraying
**DEHA (N,N-Diethylhydroxylamine), 98%**

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PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable

1. Short title of Exposure Scenario: **Use in polymer processing –industrial**

| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites |
| Process category | PROC1: Use in closed process, no likelihood of exposure |
| | PROC2: Use in closed, continuous process with occasional controlled exposure |
| | PROC3: Use in closed batch process (synthesis or formulation) |
| | PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises |
| | PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting: |
| | PROC6: Calendering operations |
| | PROC7: Industrial spraying |
| | PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities |
| | PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities |
| | PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |
| | PROC13: Treatment of articles by dipping and pouring |
| | PROC15: Use as laboratory reagent |

| Environmental release category | ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers |

### 2.1 Contributing scenario controlling environmental exposure for:ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

| Environment factors not influenced by risk management |
|---|---|
| Flow rate | 18.000 m3/d |

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DEHA (N,N-Diethylhydroxylamine), 98%

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Other given operational conditions affecting environmental exposure

Initial release factor
- Number of emission days per year: 100
- Emission or Release Factor: Air: 0,5 %
- Emission or Release Factor: Water: 0,001 %

Final release factor
- Emission or Release Factor: Air: 0,5 %
- Emission or Release Factor: Water: 0,001 %
- Emission or Release Factor: Soil: 0 %
- Local release rate: Water: 0,092 kg/day
- Local release rate: Air: 46 kg/day
- Local release rate: Soil: 

Remarks: There is no direct exposure to soil.

Technical conditions and measures / Organizational measures

Water
- Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 99,9 %)

Remarks: Do not apply industrial sludge to natural soils.

Air
- Treat air emission to provide the required removal efficiency of (%): (Effectiveness: 99,5 %)

Remarks: Sludge should be incinerated, contained or reclaimed.
Remarks: Soil emission controls are not applicable as there is no direct release to soil.

Conditions and measures related to municipal sewage treatment plant
- Type of Sewage Treatment Plant: Municipal sewage treatment plant, Yes
- Flow rate of sewage treatment plant effluent: 2.000 m3/d
- Effectiveness (of a measure): 0,7 %
- Sludge Treatment: Agricultural soil, No

Conditions and measures related to external treatment of waste for disposal
- Waste treatment: No
- Remarks: ERC based assessment demonstrating control of risk with default conditions.
Low risk assumed for waste life stage.
Waste disposal according to national/local legislation is sufficient.

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Frequency and duration of use
- Exposure duration: < 8 h

Human factors not influenced by risk management
- Exposed skin area: One hand face only (240 cm2)

Other operational conditions affecting workers exposure
- Outdoor / Indoor: Indoor
- Temperature: 40 °C
- Remarks: Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures
- Closed system (minimal contact during routine operations)
- Local exhaust ventilation - inhalation: No (Effectiveness: 0 %)

SDS Number: 100000014095
## Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, No (Effectiveness: 0 %)
Respiratory Protection, No (Effectiveness: 0 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

**Frequency and duration of use**

| Exposure duration | < 8 h |

**Human factors not influenced by risk management**

| Exposed skin area | Palms of both hands (480 cm²) |

**Other operational conditions affecting workers exposure**

| Outdoor / Indoor | Indoor |
| Temperature      | 40 °C  |
| Remarks          | Enhanced general ventilation (5-10 air changes per hour) |

**Technical conditions and measures**

Closed continuous process with occasional controlled exposure.
Local exhaust ventilation- inhalation: Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal: No (Effectiveness: 0 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**

Dermal Protection, Yes (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

**Frequency and duration of use**

| Exposure duration | < 8 h |

**Human factors not influenced by risk management**

| Exposed skin area | One hand face only (240 cm²) |

**Other operational conditions affecting workers exposure**

| Outdoor / Indoor | Indoor |
| Temperature      | 40 °C  |
| Remarks          | Enhanced general ventilation (5-10 air changes per hour) |

**Technical conditions and measures**

Closed batch process with occasional controlled exposure.
Local exhaust ventilation- inhalation: Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal: No (Effectiveness: 0 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
## 2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
<th>Exposure duration:</th>
<th>&lt; 8 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human factors not influenced by risk management</td>
<td>Exposed skin area:</td>
<td>Palms of both hands (480 cm²)</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td>Outdoor / Indoor:</td>
<td>Indoor</td>
</tr>
<tr>
<td></td>
<td>Temperature:</td>
<td>40 °C</td>
</tr>
<tr>
<td></td>
<td>Remarks:</td>
<td>Enhanced general ventilation (5-10 air changes per hour)</td>
</tr>
<tr>
<td>Technical conditions and measures</td>
<td>Semi-closed process with occasional controlled exposure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Local exhaust ventilation- inhalation:</td>
<td>Yes (Effectiveness: 90 %)</td>
</tr>
<tr>
<td></td>
<td>Local exhaust ventilation-dermal:</td>
<td>Yes (Effectiveness: 90 %)</td>
</tr>
</tbody>
</table>

**Conditions and measures related to personal protection, hygiene and health evaluation**

- **Dermal Protection**: Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
- **Respiratory Protection**: Yes, Respirator with APF of 10 (Effectiveness: 90 %)

## 2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;

<table>
<thead>
<tr>
<th>Frequency and duration of use</th>
<th>Exposure duration:</th>
<th>&lt; 1 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human factors not influenced by risk management</td>
<td>Exposed skin area:</td>
<td>Palms of both hands (480 cm²)</td>
</tr>
<tr>
<td>Other operational conditions affecting workers exposure</td>
<td>Outdoor / Indoor:</td>
<td>Indoor</td>
</tr>
<tr>
<td></td>
<td>Temperature:</td>
<td>40 °C</td>
</tr>
<tr>
<td></td>
<td>Remarks:</td>
<td>Enhanced general ventilation (5-10 air changes per hour)</td>
</tr>
<tr>
<td>Technical conditions and measures</td>
<td>Containment measures:</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Local exhaust ventilation- inhalation:</td>
<td>Yes (Effectiveness: 90 %)</td>
</tr>
<tr>
<td></td>
<td>Local exhaust ventilation-dermal:</td>
<td>No (Effectiveness: 0 %)</td>
</tr>
</tbody>
</table>

**Conditions and measures related to personal protection, hygiene and health evaluation**

- **Dermal Protection**: Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
- **Respiratory Protection**: Yes, Respirator with APF of 10 (Effectiveness: 90 %)
### 2.2 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

**Frequency and duration of use**  
Exposure duration: < 4 h

**Human factors not influenced by risk management**  
Exposed skin area: Two hands (960 cm²)

**Other operational conditions affecting workers exposure**  
Outdoor / Indoor: Indoor  
Remarks: Enhanced general ventilation (5-10 air changes per hour)

**Technical conditions and measures**  
Containment measures, No  
Local exhaust ventilation - inhalation:, Yes (Effectiveness: 90 %)  
Local exhaust ventilation - dermal:, Yes (Effectiveness: 90 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**  
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)  
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

**Frequency and duration of use**  
Exposure duration: < 1 h

**Human factors not influenced by risk management**  
Exposed skin area: Skin  
: 1500 cm²

**Other operational conditions affecting workers exposure**  
Outdoor / Indoor: Indoor  
Temperature: 40 °C  
Remarks: Enhanced general ventilation (5-10 air changes per hour)

**Technical conditions and measures**  
Containment measures, No  
Local exhaust ventilation - inhalation:, Yes (Effectiveness: 95 %)  
Local exhaust ventilation - dermal:, Yes (Effectiveness: 95 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**  
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)  
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

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**DEHA (N,N-Diethylhydroxylamine), 98%**

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### Frequency and duration of use

| Exposure duration | < 4 h |

### Human factors not influenced by risk management

| Exposed skin area | Two hands (960 cm2) |

### Other operational conditions affecting workers exposure

| Outdoor / Indoor | Indoor |
| Temperature | 40 °C |
| Remarks | Good general ventilation (3-5 air changes per hour) |

### Technical conditions and measures

- Containment measures, No
- Local exhaust ventilation- inhalation:, Yes (Effectiveness: 90 %)
- Local exhaust ventilation-dermal:, No (Effectiveness: 90 %)

### Conditions and measures related to personal protection, hygiene and health evaluation

- Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 90 %)
- Respiratory Protection, Yes, APF 20 (Effectiveness: 95 %)

#### 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

| Exposure duration | < 8 h |

### Technical conditions and measures

- Semi-closed process with occasional controlled exposure
- Local exhaust ventilation- inhalation:, Yes (Effectiveness: 95 %)
- Local exhaust ventilation-dermal:, Yes (Effectiveness: 95 %)

### Conditions and measures related to personal protection, hygiene and health evaluation

- Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
- Respiratory Protection, Yes (Effectiveness: 90 %)

#### 2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

| Exposure duration | < 1 h |

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## Human factors not influenced by risk management

**Exposed skin area**: Palms of both hands (480 cm²)

## Other operational conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
<td>40 °C</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Enhanced general ventilation (5-10 air changes per hour)</td>
</tr>
</tbody>
</table>

## Technical conditions and measures

- Semi-closed process with occasional controlled exposure
- Local exhaust ventilation - inhalation: Yes (Effectiveness: 90 %)
- Local exhaust ventilation - dermal: No (Effectiveness: 0 %)

## Conditions and measures related to personal protection, hygiene and health evaluation

- Dermal Protection: Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
- Short term/high peak exposure, Respiratory Protection: Yes, Respirator with APF of 10 (Effectiveness: 90 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

**Frequency and duration of use**

| Exposure duration | < 4 h |

**Human factors not influenced by risk management**

- Exposed skin area: Palms of both hands (480 cm²)

**Other operational conditions affecting workers exposure**

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
<td>40 °C</td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Enhanced general ventilation (5-10 air changes per hour)</td>
</tr>
</tbody>
</table>

## Technical conditions and measures

- Containment measures, No
- Local exhaust ventilation - inhalation: Yes (Effectiveness: 90 %)
- Local exhaust ventilation - dermal: Yes (Effectiveness: 90 %)

## Conditions and measures related to personal protection, hygiene and health evaluation

- Dermal Protection: Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
- Short term/high peak exposure, Respiratory Protection: Yes, Respirator with APF of 10 (Effectiveness: 90 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

**Frequency and duration of use**

| Exposure duration | < 8 h |

**Human factors not influenced by risk management**

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DEHA (N,N-Diethylhydroxylamine), 98%

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Exposed skin area: One hand face only (240 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: 40 °C
Remarks: Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation: Yes (Effectiveness: 90 %)
Local exhaust ventilation- dermal: No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartiment</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC6d Eluates</td>
<td>Freshwater</td>
<td></td>
<td></td>
<td>0.005 mg/L</td>
<td>0.575</td>
<td></td>
</tr>
<tr>
<td>ERC6d fresh water sediment</td>
<td></td>
<td></td>
<td>Freshwater</td>
<td>0.037 mg/kg d.w.</td>
<td>0.575</td>
<td></td>
</tr>
<tr>
<td>ERC6d Marine water</td>
<td>Marine water</td>
<td></td>
<td></td>
<td>0.00047 mg/L</td>
<td>0.576</td>
<td></td>
</tr>
<tr>
<td>ERC6d Marine sediment</td>
<td>Marine sediment</td>
<td></td>
<td></td>
<td>0.004 mg/kg d.w.</td>
<td>0.575</td>
<td></td>
</tr>
<tr>
<td>ERC6d Seawage treatment plant</td>
<td>Seawage treatment plant</td>
<td></td>
<td></td>
<td>0.046 mg/L</td>
<td>&lt; 0.01</td>
<td></td>
</tr>
<tr>
<td>ERC6d Agricultural soil</td>
<td>Agricultural soil</td>
<td></td>
<td></td>
<td>0.006 mg/kg d.w.</td>
<td>0.71</td>
<td></td>
</tr>
</tbody>
</table>

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Workers/Consumers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC1 ECETOC TRA Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>0.037 mg/m³</td>
<td>0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC1 ECETOC TRA Modified</td>
<td>Worker – dermal, long-term – systemic</td>
<td>0.034 mg/kg bw/day</td>
<td>0.131</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC1 ECETOC TRA Modified</td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0.034 mg/kg bw/day</td>
<td>0.141</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC2 ECETOC TRA Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>0.557 mg/m³</td>
<td>0.153</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC2 ECETOC TRA Modified</td>
<td>Worker – dermal, long-term – systemic</td>
<td>0.068 mg/kg bw/day</td>
<td>0.264</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC2 ECETOC TRA Modified</td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0.034 mg/kg</td>
<td>0.133</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC3 ECETOC TRA Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1.114 mg/m³</td>
<td>0.305</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC3 ECETOC TRA Modified</td>
<td>Worker – dermal, long-term – systemic Combined routes</td>
<td>0.034 mg/kg</td>
<td>0.133</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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## SAFETY DATA SHEET

**DEHA (N,N-Diethylhydroxylamine), 98%**

**Version 1.7**

**Revision Date** 2016-05-17

**SDS Number:** 100000014095

### PROC4: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Route</th>
<th>Concentration</th>
<th>Exposure</th>
<th>Hazard Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker – inhalation, long-term – systemic</td>
<td>2,228 mg/m³</td>
<td>0.61</td>
<td></td>
</tr>
<tr>
<td>Worker – dermal, long-term – systemic</td>
<td>0.034 mg/kg bw/day</td>
<td>0.132</td>
<td></td>
</tr>
<tr>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PROC5: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Route</th>
<th>Concentration</th>
<th>Exposure</th>
<th>Hazard Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker – inhalation, long-term – systemic</td>
<td>1,114 mg/m³</td>
<td>0.305</td>
<td></td>
</tr>
<tr>
<td>Worker – dermal, long-term – systemic</td>
<td>0.137 mg/kg bw/day</td>
<td>0.527</td>
<td></td>
</tr>
<tr>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PROC6: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Route</th>
<th>Concentration</th>
<th>Exposure</th>
<th>Hazard Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker – inhalation, long-term – systemic</td>
<td>2,006 mg/m³</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>Worker – dermal, long-term – systemic</td>
<td>0.049 mg/kg bw/day</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PROC7: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Route</th>
<th>Concentration</th>
<th>Exposure</th>
<th>Hazard Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker – inhalation, long-term – systemic</td>
<td>1,671 mg/m³</td>
<td>0.458</td>
<td></td>
</tr>
<tr>
<td>Worker – dermal, long-term – systemic</td>
<td>0.013 mg/kg bw/day</td>
<td>0.049</td>
<td></td>
</tr>
<tr>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PROC8a: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Route</th>
<th>Concentration</th>
<th>Exposure</th>
<th>Hazard Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker – inhalation, long-term – systemic</td>
<td>0.39 mg/m³</td>
<td>0.107</td>
<td></td>
</tr>
<tr>
<td>Worker – dermal, long-term – systemic</td>
<td>0.082 mg/kg bw/day</td>
<td>0.316</td>
<td></td>
</tr>
<tr>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PROC8b: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Route</th>
<th>Concentration</th>
<th>Exposure</th>
<th>Hazard Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker – inhalation, long-term – systemic</td>
<td>1,393 mg/m³</td>
<td>0.382</td>
<td></td>
</tr>
<tr>
<td>Worker – dermal, long-term – systemic</td>
<td>0.034 mg/kg bw/day</td>
<td>0.132</td>
<td></td>
</tr>
<tr>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PROC9: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Route</th>
<th>Concentration</th>
<th>Exposure</th>
<th>Hazard Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker – inhalation, long-term – systemic</td>
<td>1,114 mg/m³</td>
<td>0.305</td>
<td></td>
</tr>
<tr>
<td>Worker – dermal, long-term – systemic</td>
<td>0.069 mg/kg bw/day</td>
<td>0.264</td>
<td></td>
</tr>
<tr>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PROC13: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Route</th>
<th>Concentration</th>
<th>Exposure</th>
<th>Hazard Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker – inhalation, long-term – systemic</td>
<td>2,006 mg/m³</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>Worker – dermal, long-term – systemic</td>
<td>0.025 mg/kg bw/day</td>
<td>0.095</td>
<td></td>
</tr>
<tr>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PROC15: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Route</th>
<th>Concentration</th>
<th>Exposure</th>
<th>Hazard Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker – inhalation, long-term – systemic</td>
<td>1,114 mg/m³</td>
<td>0.305</td>
<td></td>
</tr>
<tr>
<td>Worker – dermal, long-term – systemic</td>
<td>0.017 mg/kg bw/day</td>
<td>0.065</td>
<td></td>
</tr>
<tr>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PROC1:** Use in closed process, no likelihood of exposure

**PROC2:** Use in closed, continuous process with occasional controlled exposure

**PROC3:** Use in closed process, controlled exposure

**PROC4:** Use in closed process, occasional controlled exposure

**PROC5:** Use in closed, continuous process with occasional controlled exposure

**PROC6:** Use in closed process, controlled exposure

**PROC7:** Use in closed process, occasional controlled exposure

**PROC8a:** Use in closed, continuous process with occasional controlled exposure

**PROC8b:** Use in closed process, controlled exposure

**PROC9:** Use in closed process, occasional controlled exposure

**PROC13:** Use in closed, continuous process with occasional controlled exposure

**PROC15:** Use in closed process, controlled exposure
### DEHA (N,N-Diethylhydroxylamine), 98%

**Version 1.7**

**Revision Date 2016-05-17**

1. **Short title of Exposure Scenario:** Colour stabilizer (film/photographic industry)

2. **Main User Groups:**
   - SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites

3. **Process category:**
   - PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
   - PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
   - PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
   - PROC10: Roller application or brushing
   - PROC11: Non industrial spraying
   - PROC15: Use as laboratory reagent

4. **Environmental release category:**
   - ERC8b: Wide dispersive indoor use of reactive substances in open systems

5. **2.1 Contributing scenario controlling environmental exposure for: ERC8b: Wide dispersive indoor use of reactive substances in open systems**

6. **Environment factors not influenced by risk management: Flow rate:** 18.000 m3/d

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SAFETY DATA SHEET

DEHA (N,N-Diethylhydroxylamine), 98%

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Other given operational conditions affecting environmental exposure

Initial release factor
Number of emission days per year : 365
Emission or Release Factor: Air : 0,1 %
Emission or Release Factor: Water : 2 %

Final release factor
Emission or Release Factor: Air : 0,1 %
Emission or Release Factor: Water : 2 %
Emission or Release Factor: Soil : 0 %
Local release rate: Water : 0,00088 kg/day

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant, Yes
Flow rate of sewage treatment plant effluent : 2.000 m3/d
Effectiveness (of a measure) : 0,7 %
Sludge Treatment : Agricultural soil, Yes

Conditions and measures related to external treatment of waste for disposal
Waste treatment : No
Remarks : ERC based assessment demonstrating control of risk with default conditions.
Low risk assumed for waste life stage.
Waste disposal according to national/local legislation is sufficient.

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Frequency and duration of use
Exposure duration : < 1 h

Human factors not influenced by risk management
Exposed skin area : Two hands (960 cm2)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures
Semi-closed process with occasional controlled exposure
Local exhaust ventilation- inhalation: Yes (Effectiveness: 80 %)
Local exhaust ventilation-dermal: No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 90 %)
Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
**SAFETY DATA SHEET**

**DEHA (N,N-Diethylhydroxylamine), 98%**

Version 1.7

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---

**Frequency and duration of use**

| Exposure duration | : < 1 h |

**Human factors not influenced by risk management**

| Exposed skin area | : Two hands (960 cm²) |

**Other operational conditions affecting workers exposure**

| Outdoor / Indoor | : Indoor |
| Temperature       | : 40 °C |

**Technical conditions and measures**

- Semi-closed process with occasional controlled exposure
- Local exhaust ventilation - inhalation: Yes (Effectiveness: 90 %)
- Local exhaust ventilation - dermal: No (Effectiveness: 0 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**

- Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 90 %)
- Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

---

### 2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

**Frequency and duration of use**

| Exposure duration | : < 1 h |

**Human factors not influenced by risk management**

| Exposed skin area | : Palms of both hands (480 cm²) |

**Other operational conditions affecting workers exposure**

| Outdoor / Indoor | : Indoor |
| Temperature       | : 40 °C |
| Remarks           | : Basic general ventilation (1-3 air changes per hour) |

**Technical conditions and measures**

- Semi-closed process with occasional controlled exposure
- Local exhaust ventilation - inhalation: Yes (Effectiveness: 80 %)
- Local exhaust ventilation - dermal: No (Effectiveness: 0 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**

- Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
- Respiratory Protection, Yes, Respirator with APF of 10, Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness: 90 %)

---

### 2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

**Frequency and duration of use**

| SDS Number | : 100000014095 | 33/45 |
### SAFETY DATA SHEET

**DEHA (N,N-Diethylhydroxylamine), 98%**

**Version 1.7**

**Revision Date 2016-05-17**

<table>
<thead>
<tr>
<th>Exposure duration</th>
<th>&lt; 1 h</th>
</tr>
</thead>
</table>

**Human factors not influenced by risk management**

- Exposed skin area: Two hands (960 cm²)

**Other operational conditions affecting workers exposure**

- Outdoor / Indoor: Indoor
- Temperature: 40 °C
- Remarks: Basic general ventilation (1-3 air changes per hour)

**Technical conditions and measures**

- Containment measures, No
- Local exhaust ventilation - inhalation: Yes, Use extract ventilation to minimize exposure. (Effectiveness: 80 %)
- Local exhaust ventilation - dermal: No (Effectiveness: 0 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**

- Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
- Respiratory Protection, Yes, Respirator with APF of 10, Wear a respirator conforming to EN140 with Type A filter or better. (Effectiveness: 90 %)

#### 2.2 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

**Frequency and duration of use**

- Exposure duration: < 4 h

**Human factors not influenced by risk management**

- Exposed skin area: Skin
- : 1500 cm²

**Other operational conditions affecting workers exposure**

- Outdoor / Indoor: Indoor
- Temperature: 40 °C
- Remarks: Basic general ventilation (1-3 air changes per hour)

**Technical conditions and measures**

- Containment measures, No
- Local exhaust ventilation - inhalation: Yes (Effectiveness: 80 %)
- Local exhaust ventilation - dermal: Yes (Effectiveness: 80 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**

- Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
- Respiratory Protection, Yes, APF 20 (Effectiveness: 95 %)

#### 2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

**Frequency and duration of use**

- Exposure duration: < 8 h

**SDS Number:** 100000014095

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SAFETY DATA SHEET

DEHA (N,N-Diethylhydroxylamine), 98%

Version 1.7

Revision Date 2016-05-17

Human factors not influenced by risk management
Exposed skin area : One hand face only (240 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor
Temperature : 40 °C
Remarks : Basic general ventilation (1-3 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation- inhalation: Yes, Handle in a fume cupboard or under extract ventilation. (Effectiveness: 80 %)
Local exhaust ventilation-dermal: No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
Respiratory Protection, No (Effectiveness: 0 %)

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Environment</th>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartments</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC8b EUSES</td>
<td>Freshwater</td>
<td>0.00019 mg/L</td>
<td></td>
<td></td>
<td>0.023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERC8b EUSES</td>
<td>Freshwater sediment</td>
<td>0.002 mg/kg dry weight (d.w.)</td>
<td></td>
<td></td>
<td>0.023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERC8b EUSES</td>
<td>Marine water</td>
<td>0.000019 mg/L</td>
<td></td>
<td></td>
<td>0.024</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERC8b EUSES</td>
<td>Marine sediment</td>
<td>0.00015 mg/kg dry weight (d.w.)</td>
<td></td>
<td></td>
<td>0.024</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERC8b EUSES</td>
<td>Sewage treatment plant</td>
<td>0.00043 mg/L</td>
<td></td>
<td></td>
<td>&lt; 0.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERC8b EUSES</td>
<td>Agricultural soil</td>
<td>0.00011 mg/kg dry weight (d.w.)</td>
<td></td>
<td></td>
<td>0.014</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ERC8b: Wide dispersive indoor use of reactive substances in open systems

Workers/Consumers

<table>
<thead>
<tr>
<th>Workers/Consumers</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC8a ECETOC TRA Modified Worker – inhalation, long-term – systemic</td>
<td>0.297 mg/m³</td>
<td>0.081</td>
<td></td>
</tr>
<tr>
<td>PROC8a ECETOC TRA Modified Worker – dermal, long-term – systemic</td>
<td>0.055 mg/kg bw/day</td>
<td>0.211</td>
<td></td>
</tr>
<tr>
<td>PROC8a ECETOC TRA Modified Worker – long-term – systemic Combined routes</td>
<td>0.292</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROC8b ECETOC TRA Modified Worker – inhalation, long-term – systemic</td>
<td>0.074 mg/m³</td>
<td>0.02</td>
<td></td>
</tr>
<tr>
<td>PROC8b ECETOC TRA Modified Worker – dermal, long-term – systemic</td>
<td>0.055 mg/kg bw/day</td>
<td>0.211</td>
<td></td>
</tr>
<tr>
<td>PROC8b ECETOC TRA Modified Worker – long-term – systemic Combined</td>
<td>0.231</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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SAFETY DATA SHEET

DEHA (N,N-Diethylhydroxylamine), 98% Version 1.7

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PROC9: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Routes</th>
<th>Worker – inhalation, long-term – systemic</th>
<th>0,297 mg/m³</th>
<th>0,081</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,027 mg/kg bw/day</td>
<td>0,106</td>
</tr>
<tr>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0,187</td>
</tr>
</tbody>
</table>

PROC10: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Routes</th>
<th>Worker – inhalation, long-term – systemic</th>
<th>0,297 mg/m³</th>
<th>0,081</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,11 mg/kg bw/day</td>
<td>0,422</td>
</tr>
<tr>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0,503</td>
</tr>
</tbody>
</table>

PROC11: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Routes</th>
<th>Worker – inhalation, long-term – systemic</th>
<th>1,114 mg/m³</th>
<th>0,305</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,129 mg/kg bw/day</td>
<td>0,495</td>
</tr>
<tr>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0,8</td>
</tr>
</tbody>
</table>

PROC15: ECETOC TRA Modified

<table>
<thead>
<tr>
<th>Routes</th>
<th>Worker – inhalation, long-term – systemic</th>
<th>1,486 mg/m³</th>
<th>0,407</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,007 mg/kg bw/day</td>
<td>0,026</td>
</tr>
<tr>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0,433</td>
</tr>
</tbody>
</table>

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC11: Non industrial spraying

PROC15: Use as laboratory reagent

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable

1. Short title of Exposure Scenario: Colour stabilizer for chemical products (fuel, resins, etc.) and for de-colourisation of phenols

Main User Groups: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Process category: PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC6: Calendering operations

SDS Number:100000014095
DEHA (N,N-Diethylhydroxylamine), 98%

Environmental release category: ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

2.1 Contributing scenario controlling environmental exposure for: ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

<table>
<thead>
<tr>
<th>Environment factors not influenced by risk management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
</tr>
<tr>
<td>18.000 m³/d</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other given operational conditions affecting environmental exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial release factor</td>
</tr>
<tr>
<td>Number of emission days per year</td>
</tr>
<tr>
<td>100</td>
</tr>
<tr>
<td>Emission or Release Factor: Air</td>
</tr>
<tr>
<td>5%</td>
</tr>
<tr>
<td>Emission or Release Factor: Water</td>
</tr>
<tr>
<td>0,005 %</td>
</tr>
<tr>
<td>Final release factor</td>
</tr>
<tr>
<td>Emission or Release Factor: Air</td>
</tr>
<tr>
<td>5%</td>
</tr>
<tr>
<td>Emission or Release Factor: Water</td>
</tr>
<tr>
<td>0,005 %</td>
</tr>
<tr>
<td>Emission or Release Factor: Soil</td>
</tr>
<tr>
<td>0,025 %</td>
</tr>
<tr>
<td>Local release rate: Water</td>
</tr>
<tr>
<td>0,04 kg/day</td>
</tr>
<tr>
<td>Local release rate: Air</td>
</tr>
<tr>
<td>40 kg/day</td>
</tr>
<tr>
<td>Local release rate: Soil</td>
</tr>
<tr>
<td>Remarks: There is no direct exposure to soil.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical conditions and measures / Organizational measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
</tr>
<tr>
<td>Treat air emission to provide a typical removal efficiency of</td>
</tr>
<tr>
<td>(%) (Effectiveness: 95 %)</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Do not apply industrial sludge to natural soils.</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Sludge should be incinerated, contained or reclaimed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conditions and measures related to municipal sewage treatment plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Sewage Treatment Plant</td>
</tr>
<tr>
<td>Municipal sewage treatment plant, Yes</td>
</tr>
<tr>
<td>Flow rate of sewage treatment plant effluent</td>
</tr>
<tr>
<td>2.000 m³/d</td>
</tr>
<tr>
<td>Effectiveness (of a measure)</td>
</tr>
<tr>
<td>0,7 %</td>
</tr>
<tr>
<td>Sludge Treatment</td>
</tr>
<tr>
<td>Agricultural soil, No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conditions and measures related to external treatment of waste for disposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste treatment</td>
</tr>
<tr>
<td>No</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>ERC based assessment demonstrating control of risk with default conditions.</td>
</tr>
<tr>
<td>Low risk assumed for waste life stage.</td>
</tr>
<tr>
<td>Waste disposal according to national/local legislation is sufficient.</td>
</tr>
</tbody>
</table>

SDS Number: 100000014095
2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Frequency and duration of use
Exposure duration: < 8 h

Human factors not influenced by risk management
Exposed skin area: One hand face only (240 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: 40 °C

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation: No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Dermal Protection: No (Effectiveness: 0 %)
Respiratory Protection: No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Frequency and duration of use
Exposure duration: < 8 h

Human factors not influenced by risk management
Exposed skin area: Palms of both hands (480 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: 40 °C
Remarks: Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Closed continuous process with occasional controlled exposure
Local exhaust ventilation- inhalation: Yes, Provide extraction ventilation at points where emissions occur. (Effectiveness: 90 %)
Local exhaust ventilation- dermal: No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Dermal Protection: Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection: No (Effectiveness: 0 %)

2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)
## Frequency and duration of use

| Exposure duration | < 8 h |

## Human factors not influenced by risk management

| Exposed skin area | One hand face only (240 cm²) |

## Other operational conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>40 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Enhanced general ventilation (5-10 air changes per hour)</td>
</tr>
</tbody>
</table>

## Technical conditions and measures

Closed batch process with occasional controlled exposure.  
Local exhaust ventilation - inhalation: Yes, Provide extraction ventilation at points where emissions occur. (Effectiveness: 90 %)  
Local exhaust ventilation - dermal: No (Effectiveness: 0 %)

## Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)  
Respiratory Protection, No (Effectiveness: 0 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

| Exposure duration | < 8 h |

## Human factors not influenced by risk management

| Exposed skin area | Palms of both hands (480 cm²) |

## Other operational conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Indoor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>40 °C</td>
</tr>
<tr>
<td>Remarks</td>
<td>Enhanced general ventilation (5-10 air changes per hour)</td>
</tr>
</tbody>
</table>

## Technical conditions and measures

Semi-closed process with occasional controlled exposure  
Local exhaust ventilation - inhalation: Yes, Provide enhanced general ventilation by mechanical means, Provide extraction ventilation at points where emissions occur. (Effectiveness: 90 %)  
Local exhaust ventilation - dermal: Yes (Effectiveness: 90 %)

## Conditions and measures related to personal protection, hygiene and health evaluation

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)  
Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC6: Calendering operations
**SAFETY DATA SHEET**

**DEHA (N,N-Diethylhydroxylamine), 98%**

**Version 1.7**

**Revision Date 2016-05-17**

<table>
<thead>
<tr>
<th><strong>Frequency and duration of use</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exposure duration</strong></td>
<td>&lt; 4 h</td>
</tr>
</tbody>
</table>

**Human factors not influenced by risk management**

| Exposed skin area                   | Two hands (960 cm²) |

**Other operational conditions affecting workers exposure**

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Indoor</th>
</tr>
</thead>
</table>

**Remarks**

Enhanced general ventilation (5-10 air changes per hour)

**Technical conditions and measures**

<table>
<thead>
<tr>
<th>Containment measures</th>
<th>No</th>
</tr>
</thead>
</table>

**Local exhaust ventilation- inhalation:** Yes, Provide extraction ventilation at points where emissions occur. (Effectiveness: 90%)

**Local exhaust ventilation-dermal:** Yes (Effectiveness: 90%)

**Conditions and measures related to personal protection, hygiene and health evaluation**

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95%)

Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90%)

### 2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

<table>
<thead>
<tr>
<th><strong>Frequency and duration of use</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exposure duration</strong></td>
<td>&lt; 4 h</td>
</tr>
</tbody>
</table>

**Human factors not influenced by risk management**

<table>
<thead>
<tr>
<th>Exposed skin area</th>
<th>Skin</th>
</tr>
</thead>
</table>

| Exposed skin area                   | 1500 cm² |

**Other operational conditions affecting workers exposure**

<table>
<thead>
<tr>
<th>Outdoor / Indoor</th>
<th>Indoor</th>
</tr>
</thead>
</table>

| Temperature       | 40 °C |

**Remarks**

Enhanced general ventilation (5-10 air changes per hour)

**Technical conditions and measures**

<table>
<thead>
<tr>
<th>Containment measures</th>
<th>No</th>
</tr>
</thead>
</table>

**Local exhaust ventilation- inhalation:** Yes (Effectiveness: 95%)

**Local exhaust ventilation-dermal:** Yes (Effectiveness: 95%)

**Conditions and measures related to personal protection, hygiene and health evaluation**

Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95%)

Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90%)

### 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

<table>
<thead>
<tr>
<th><strong>Frequency and duration of use</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exposure duration</strong></td>
<td>&lt; 4 h</td>
</tr>
</tbody>
</table>

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## SAFETY DATA SHEET

**DEHA (N,N-Diethylhydroxylamine), 98%**

**Version 1.7**

**Revision Date** 2016-05-17

### Human factors not influenced by risk management
- Exposed skin area: Two hands (960 cm²)

### Other operational conditions affecting workers exposure
- **Outdoor / Indoor**: Indoor
- **Temperature**: 40 °C
- **Remarks**: Good general ventilation (3-5 air changes per hour)

### Technical conditions and measures
- Containment measures, No
- Local exhaust ventilation- inhalation: Yes (Effectiveness: 90 %)
- Local exhaust ventilation- dermal: Yes (Effectiveness: 90 %)

### Conditions and measures related to personal protection, hygiene and health evaluation
- Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
- Respiratory Protection, Yes, APF 20 (Effectiveness: 95 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

**Frequency and duration of use**
- Exposure duration: < 1 h

**Human factors not influenced by risk management**
- Exposed skin area: Two hands (960 cm²)

**Other operational conditions affecting workers exposure**
- **Outdoor / Indoor**: Indoor
- **Temperature**: 40 °C
- **Remarks**: Basic general ventilation (1-3 air changes per hour)

**Technical conditions and measures**
- Semi-closed process with occasional controlled exposure
- Local exhaust ventilation- inhalation: Yes, Provide extraction ventilation at points where emissions occur. (Effectiveness: 95 %)
- Local exhaust ventilation- dermal: Yes (Effectiveness: 95 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**
- Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness: 90 %)
- Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

### 2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

**Frequency and duration of use**
- Exposure duration: < 1 h

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41/45
### DEHA (N,N-Diethylhydroxylamine), 98%

#### Version 1.7

**Revision Date** 2016-05-17

---

**Human factors not influenced by risk management**

- **Exposed skin area**: Palms of both hands (480 cm²)

**Other operational conditions affecting workers exposure**

- **Outdoor / Indoor**: Indoor
- **Temperature**: 40 °C
- **Remarks**: Enhanced general ventilation (5-10 air changes per hour)

**Technical conditions and measures**

- Semi-closed process with occasional controlled exposure
- Local exhaust ventilation - inhalation: Yes (Effectiveness: 90 %)
- Local exhaust ventilation - dermal: No (Effectiveness: 0 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**

- Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
- Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

**2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring**

#### Frequency and duration of use

- **Exposure duration**: < 4 h

**Human factors not influenced by risk management**

- **Exposed skin area**: Palms of both hands (480 cm²)

**Other operational conditions affecting workers exposure**

- **Outdoor / Indoor**: Indoor
- **Temperature**: 40 °C
- **Remarks**: Enhanced general ventilation (5-10 air changes per hour)

**Technical conditions and measures**

- Containment measures, No
- Local exhaust ventilation - inhalation: Yes, Provide extraction ventilation at points where emissions occur. (Effectiveness: 90 %)
- Local exhaust ventilation - dermal: Yes (Effectiveness: 90 %)

**Conditions and measures related to personal protection, hygiene and health evaluation**

- Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
- Short term/high peak exposure, Respiratory Protection, Yes, Respirator with APF of 10 (Effectiveness: 90 %)

**2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent**

#### Frequency and duration of use

- **Exposure duration**: < 8 h

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**SDS Number**: 100000014095  42/45
SAFETY DATA SHEET

DEHA (N,N-Diethylhydroxylamine), 98%

Version 1.7
Revision Date 2016-05-17

Human factors not influenced by risk management
Exposed skin area: One hand face only (240 cm²)

Other operational conditions affecting workers exposure
Outdoor / Indoor: Indoor
Temperature: 40 °C
Remarks: Enhanced general ventilation (5-10 air changes per hour)

Technical conditions and measures
Containment measures, No
Local exhaust ventilation - inhalation: Yes (Effectiveness: 90 %)
Local exhaust ventilation-dermal: No (Effectiveness: 0 %)

Conditions and measures related to personal protection, hygiene and health evaluation
Dermal Protection, Yes, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness: 95 %)
Respiratory Protection, No (Effectiveness: 0 %)

3. Exposure estimation and reference to its source

Environment

<table>
<thead>
<tr>
<th>Contribution Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Compartment</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERC6d</td>
<td>EUSES</td>
<td>Freshwater</td>
<td>Value type</td>
<td>0,002 mg/L</td>
<td>0,261</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Freshwater sediment</td>
<td>Value type</td>
<td>0,017 mg/kg dry weight (d.w.)</td>
<td>0,261</td>
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<td></td>
<td></td>
<td>Marine water</td>
<td>Value type</td>
<td>0,0002148 mg/L</td>
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<tr>
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<td></td>
<td>Marine sediment</td>
<td>Value type</td>
<td>0,002 mg/kg dry weight (d.w.)</td>
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<tr>
<td></td>
<td></td>
<td>Sewage treatment plant</td>
<td>Value type</td>
<td>0,02 mg/L</td>
<td>&lt; 0,01</td>
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<td></td>
<td></td>
<td>Agricultural soil</td>
<td>Value type</td>
<td>0,005 mg/kg dry weight (d.w.)</td>
<td>0,622</td>
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</tr>
</tbody>
</table>

ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Workers/Consumers

<table>
<thead>
<tr>
<th>Contribution Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC1</td>
<td>ECETOC TRA Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>Value type</td>
<td>0,037 mg/m³</td>
<td>0,01</td>
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<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>Value type</td>
<td>0,034 mg/kg bw/day</td>
<td>0,131</td>
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<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>Value type</td>
<td>0,141</td>
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<tr>
<td>PROC2</td>
<td>ECETOC TRA Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>Value type</td>
<td>0,557 mg/m³</td>
<td>0,153</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>Value type</td>
<td>0,068 mg/kg bw/day</td>
<td>0,264</td>
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<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>Value type</td>
<td>0,416</td>
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</table>

SDS Number:100000014095 43/45
<table>
<thead>
<tr>
<th>PROC</th>
<th>ECETOC TRA</th>
<th>Worker – inhalation, long-term – systemic</th>
<th>1,114 mg/m³</th>
<th>0,305</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,034 mg/kg bw /day</td>
<td>0,133</td>
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<tr>
<td></td>
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<td>Worker – long-term – systemic Combined routes</td>
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<td>0,438</td>
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<tr>
<td>PROC4</td>
<td>ECETOC TRA</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>2,228 mg/m³</td>
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<td>Modified</td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,034 mg/kg bw /day</td>
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<td></td>
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<td>Worker – long-term – systemic Combined routes</td>
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<td>0,742</td>
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<tr>
<td>PROC5</td>
<td>ECETOC TRA</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>2,006 mg/m³</td>
<td>0,55</td>
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<tr>
<td></td>
<td>Modified</td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,049 mg/kg bw /day</td>
<td>0,19</td>
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<tr>
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<td>Worker – long-term – systemic Combined routes</td>
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<tr>
<td>PROC6</td>
<td>ECETOC TRA</td>
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<td>0,501 mg/m³</td>
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<tr>
<td></td>
<td>Modified</td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,039 mg/kg bw /day</td>
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<tr>
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<td>Worker – long-term – systemic Combined routes</td>
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<td>0,286</td>
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<tr>
<td>PROC7</td>
<td>ECETOC TRA</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>0,39 mg/m³</td>
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<td>Worker – dermal, long-term – systemic</td>
<td>0,082 mg/kg bw /day</td>
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<td>Worker – long-term – systemic Combined routes</td>
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<td>0,423</td>
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<tr>
<td>PROC8a</td>
<td>ECETOC TRA</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>0,928 mg/m³</td>
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<tr>
<td></td>
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<td>Worker – dermal, long-term – systemic</td>
<td>0,014 mg/kg bw /day</td>
<td>0,053</td>
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<td>Worker – long-term – systemic Combined routes</td>
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<tr>
<td>PROC8b</td>
<td>ECETOC TRA</td>
<td>Worker – inhalation, long-term – systemic</td>
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<tr>
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<td>Modified</td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,069 mg/kg bw /day</td>
<td>0,264</td>
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<tr>
<td></td>
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<td>Worker – long-term – systemic Combined routes</td>
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<tr>
<td>PROC9</td>
<td>ECETOC TRA</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>2,006 mg/m³</td>
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<td>Modified</td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,025 mg/kg bw /day</td>
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<td>PROC13</td>
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<tr>
<td></td>
<td>Modified</td>
<td>Worker – dermal, long-term – systemic</td>
<td>0,017 mg/kg bw /day</td>
<td>0,065</td>
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<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0,371</td>
</tr>
</tbody>
</table>

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC6: Calendering operations

PROC7: Industrial spraying

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable