SECTION 1: Identification

1.1. Identification

Product form : Substance
Trade name : Flexsorb®SE
Chemical name : Hindered Alkanolamine
Formula : C8H19NO2

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Gas treatment
Laboratory chemical

1.3. Supplier

Monument Chemical
10200 Bay Area Blvd.
Pasadena, TX 77507 - USA
T (281)474-5550
sds@monumentchemical.com - www.monumentchemical.com

1.4. Emergency telephone number

Emergency number : 24 HR CHEMTREC: 1-800-424-9300 (International +1 703-741-5970)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification
Acute toxicity (oral) : H302 - Harmful if swallowed
Category 4
Skin corrosion/irritation : H314 - Causes severe skin burns and eye damage
Category 1A
Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling
Hazard pictograms (GHS US) : 

Signal word (GHS US) : Danger
Hazard statements (GHS US) : H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
Precautionary statements (GHS US) : P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 - If swallowed: Call a doctor, a POISON CENTER if you feel unwell
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a doctor, a POISON CENTER
P321 - Specific treatment (see supplemental first aid instruction on this label
P330 - Rinse mouth.
P363 - Wash contaminated clothing before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification

No additional information available
SECTION 3: Composition/Information on ingredients

3.1. Substances

Chemical name: Hindered Alkanolamine

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindered Alkanolamine*</td>
<td>(CAS-No.) Trade Secret</td>
<td>95-99</td>
</tr>
<tr>
<td>Diethylene glycol</td>
<td>(CAS-No.) 111-46-6</td>
<td>&lt;= 2</td>
</tr>
</tbody>
</table>

*Chemical name, CAS number and/or exact concentration have been withheld as a trade secret

Full text of hazard classes and H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures


First-aid measures after inhalation: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact: Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.

First-aid measures after eye contact: Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Take victim to an ophthalmologist. Do not apply neutralizing agents.


4.2. Most important symptoms and effects (acute and delayed)

Potential Adverse human health effects and symptoms: Harmful if swallowed. Causes severe skin burns. Causes serious eye damage.

Symptoms/effects: Causes severe skin burns and eye damage.

Symptoms/effects after inhalation: EXPOSURE TO HIGH CONCENTRATIONS: Corrosion of the upper respiratory tract.

Symptoms/effects after skin contact: Caustic burns/corrosion of the skin.

Symptoms/effects after eye contact: Corrosion of the eye tissue.

Symptoms/effects after ingestion: Possible esophageal perforation. Burns to the gastric/intestinal mucosa.

Chronic symptoms: No effects known.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media


Unsuitable extinguishing media: Water (quick-acting extinguisher, reel); risk of puddle expansion. Water; risk of puddle expansion.

5.2. Specific hazards arising from the chemical

Fire hazard: DIRECT FIRE HAZARD: Material presenting a fire hazard. INDIRECT FIRE HAZARD: Temperature above flashpoint: higher fire/explosion hazard.

Reactivity: Corrosive vapors.
5.3. Special protective equipment and precautions for fire-fighters

Precautionary measures for fire:

- Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: seal off low-lying areas. Exposure to fire/heat: have neighbourhood close doors and windows.
- Firefighting instructions:
  - Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.
- Protection during firefighting:
  - Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment:
- Emergency procedures:
  - Mark the danger area. No naked flames. Wash contaminated clothes.

6.1.2. For emergency responders

- Protective equipment:
  - Equip cleanup crew with proper protection.
- Emergency procedures:
  - Ventilate area.

6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

- For containment:
  - Contain released product, pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Heat exposure: dilute toxic gas/vapour with water spray. Take account of toxic/corrosive precipitation water.
- Methods for cleaning up:
  - Take up liquid spill into inert absorbent material. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling:
  - At temperature > flashpoint: use spark-/explosionproof appliances. In finely divided state: use spark-/explosionproof appliances. Keep away from naked flames/heat. Finely divided: keep away from ignition sources/sparks. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Clean contaminated clothing. Do not discharge the waste into the drain. Keep container tightly closed.
- Hygiene measures:
  - Observe very strict hygiene - avoid contact.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures:
  - Comply with applicable regulations.
- Storage conditions:
  - Keep only in the original container in a cool, well ventilated place away from : Heat sources, Ignition sources, Incompatible materials. Keep container closed when not in use.
- Incompatible products:
  - Strong bases. Strong acids.
- Incompatible materials:
  - Sources of ignition. Direct sunlight.
- Heat-ignition:
  - KEEP SUBSTANCE AWAY FROM: heat sources.
- Information on mixed storage:
  - KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. copper alloy.
- Storage area:
  - Store in a cool area. Store in a dry area. Ventilation at floor level. Provide for a tub to collect spills. Meet the legal requirements. Keep out of direct sunlight.
- Special rules on packaging:
  - SPECIAL REQUIREMENTS: closing. hermetical. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
- Packaging materials:

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
8.2. Appropriate engineering controls

No additional information available.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:
Avoid all unnecessary exposure.

Materials for protective clothing:
GIVE GOOD RESISTANCE: chloroprene rubber. nitrile rubber. PVC. butyl rubber

Hand protection:
Gloves

Eye protection:
Face shield

Skin and body protection:
Corrosion-proof clothing

Respiratory protection:
High gas/vapour concentration: full face mask

Other information:
Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid
Appearance : Colorless to amber colored liquid.
Color : Colorless amber
Odor : Amine-like
Odor threshold : No data available
pH : 9.1% in water
Melting point : No data available
Freezing point : No data available
Boiling point : 230 °C (446°F)
Flash point : 112 °C (234°F)
Relative evaporation rate (butyl acetate=1) : < 1
Flammability (solid, gas) : Non flammable.
Vapor pressure : 4 Pa (38°C; 100°F)
Relative vapor density at 20 °C : 5.56 (Calculated)
Relative density : 0.94 (24 °C, ISO 1183-1: Pycnometer Method)
Specific gravity / density : 0.939 g/cm³ at 24°C (75°F)
Molecular mass : 161.24 g/mol
Solubility : Soluble in water.
Water: > 500000 mg/l
Log Pow : -2.6 (20°C; 68°F)
Auto-ignition temperature : 320 °C (608°F)
Decomposition temperature : No data available
Viscosity, kinematic: 64 mm²/s (20 °C, OECD 114: Viscosity of Liquids)
Viscosity, dynamic: No data available
Explosion limits: No data available
Explosive properties: Not explosive.
Oxidizing properties: No data available

9.2. Other information
VOC content: 100 %
Fat solubility: > 50 g/100ml (37°C; 99°F)
Other properties: Gas/vapour heavier than air at 20°C. Slightly volatile.

SECTION 10: Stability and reactivity

10.1. Reactivity
Corrosive vapors.

10.2. Chemical stability
Stabilized product.

10.3. Possibility of hazardous reactions
Not established.

10.4. Conditions to avoid
Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials
Strong acids. Strong bases.

10.6. Hazardous decomposition products

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity (oral): Oral: Harmful if swallowed.
Acute toxicity (dermal): Not classified
Acute toxicity (inhalation): Not classified

Hindered Alkanolamine

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>1470 mg/kg</td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
<td>&gt; 3160 mg/kg body weight (Equivalent or similar to OECD 402, Rabbit, Male / female, Experimental value, Dermal)</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>1470 mg/kg body weight</td>
</tr>
</tbody>
</table>

Diethylene glycol (111-46-6)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>12565 mg/kg</td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
<td>11890 mg/kg</td>
</tr>
<tr>
<td>LC50 inhalation rat (mg/l)</td>
<td>&gt; 4600 mg/m³ (Exposure time: 4 h)</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>12565 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>11890 mg/kg body weight</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation: Causes severe skin burns and eye damage.
   pH: 9 1% in water
Serious eye damage/irritation: Not classified.
   pH: 9 1% in water
Respiratory or skin sensitization: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
Specific target organ toxicity – single exposure: Not classified
Specific target organ toxicity – repeated exposure: Not classified
Diethylene glycol (111-46-6)

May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard: Not classified
Viscosity, kinematic: 64 mm²/s (20 °C, OECD 114: Viscosity of Liquids)

Hindered Alkanolamine

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
<td>255.3 mg/l (96 h, Pimephales promelas, Static system, Fresh water, Experimental value, Nominal concentration)</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>113.6 mg/l (48 h, Daphnia magna, Static system, Fresh water, Experimental value, Locomotor effect)</td>
</tr>
<tr>
<td>ErC50 (algae)</td>
<td>170 - 180 mg/l (ISO 10253, 72 h, Skeletonema costatum, Static system, Experimental value, Nominal concentration)</td>
</tr>
</tbody>
</table>

Diethylene glycol (111-46-6)

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
<td>75200 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>84000 mg/l (Exposure time: 48 h - Species: Daphnia magna)</td>
</tr>
</tbody>
</table>

Hindered Alkanolamine

Persistence and degradability

Readily biodegradable in water.

Hindered Alkanolamine

Bioaccumulative potential

Low potential for bioaccumulation (Log Kow < 4).

Hindered Alkanolamine

Surface tension

38 mN/m (24 °C, 250 g/l)

Log Koc

0 - 4.28 (log Koc, OECD 121: Estimation of the Adsorption Coefficient (Koc) on Soil and on Sewage Sludge using High Performance Liquid Chromatography (HPLC), Experimental value)

Ecology - soil

Adsorbs into the soil.
Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging disposal recommendations : Do not discharge into drains or the environment. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Remove to an authorized dump (Class I). Remove to an authorized incinerator with energy recovery.


Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN2735 Amines, liquid, corrosive, n.o.s. (Alkyl amine alcohol), 8, II
UN-No.(DOT) : UN2735
Proper Shipping Name (DOT) : Amines, liquid, corrosive, n.o.s.
Alkyl amine alcohol
Class (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136
Packing group (DOT) : II - Medium Danger
Hazard labels (DOT) : 8 - Corrosive

DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
DOT Packaging Bulk (49 CFR 173.xxx) : 242
DOT Symbols : G - Identifies PSN requiring a technical name
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 °C (1.1 bar at 122 °F), or 130 kPa at 55 °C (1.3 bar at 131 °F) are authorized.
T11 - 6 178.274(d)(2) Normal............. 178.275(d)(3)
TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = 97 / 1 + a (tr - tf) Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling. TP27 - A portable tank having a minimum test pressure of 4 bar (400 kPa) may be used provided the calculated test pressure is 4 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

DOT Packaging Exceptions (49 CFR 173.xxx) : 154
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 30 L
DOT Vessel Stowage Location : A - The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel.
DOT Vessel Stowage Other : 52 - Stow “separated from” acids
Emergency Response Guide (ERG) Number : 153
Other information : No supplementary information available.
### Transport by sea

| Transport document description (IMDG) | UN 2735 AMINES, LIQUID, CORROSIVE, N.O.S. (Alkyl amine alcohol), 8, II |
| UN-No. (IMDG) | 2735 |
| Proper Shipping Name (IMDG) | AMINES, LIQUID, CORROSIVE, N.O.S. |
| Class (IMDG) | 8 - Corrosive substances |
| Packing group (IMDG) | II - substances presenting medium danger |

### Air transport

| Transport document description (IATA) | UN 2735 Amines, liquid, corrosive, n.o.s. (Alkyl amine alcohol), 8, II |
| UN-No. (IATA) | 2735 |
| Proper Shipping Name (IATA) | Amines, liquid, corrosive, n.o.s. |
| Class (IATA) | 8 - Corrosives |
| Packing group (IATA) | II - Medium Danger |

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

**Hindered Alkanolamine**

Listed on the United States TSCA (Toxic Substances Control Act) inventory

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

#### 15.2. International regulations

**CANADA**

**Hindered Alkanolamine**

Listed on the Canadian DSL (Domestic Substances List)

**Diethylene glycol (111-46-6)**

Listed on the Canadian DSL (Domestic Substances List)

**EU-Regulations**

**Hindered Alkanolamine**

Listed on ELINCS (European List of Notified Chemical Substances)

**Diethylene glycol (111-46-6)**

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

**National regulations**

**Hindered Alkanolamine**

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

**Diethylene glycol (111-46-6)**

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

<table>
<thead>
<tr>
<th>Component</th>
<th>State or local regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol(111-46-6)</td>
<td>U.S. - Pennsylvania - RTK (Right to Know) List</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Revision date: 01/31/2019
Other information: None.

Full text of H-phrases:

<table>
<thead>
<tr>
<th>H302</th>
<th>Harmful if swallowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage</td>
</tr>
</tbody>
</table>

NFPA health hazard: 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA fire hazard: 1 - Materials that must be preheated before ignition can occur.

NFPA reactivity: 0 - Material that in themselves are normally stable, even under fire conditions.

Hazard Rating

Health: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability: 1 Slight Hazard - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)

Physical: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Personal protection: H

H - Splash goggles, Gloves, Synthetic apron, Vapor respirator

SDS US (GHS HazCom 2012)

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