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

1.1. Product identifier

- **Product form**: Substance
- **Physical state**: Liquid
- **Substance name**: BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE, 95%
- **Product code**: SIB1816.9
- **Formula**: C20H47NO6Si2
- **Synonyms**: 4-(TRIETHOXYSILYL)-N-[4-(TRIETHOXYSILYL)BUTYL]-1-BUTANAMINE, 3,15-DIOXA-9-AZA-4,14-DISILAHEPTADECANE, 4,4,14,14-TETRAETHOXY-
- **Chemical family**: ORGANOETHOXYSILANE

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

- **Use of the substance/mixture**: Chemical intermediate

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

**GELEST, INC.**
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

**GELEST INC.**
Fritz-Klatte-Strasse 8
65933 Frankfurt
Germany
T +49 (0) 69 3535106-500 - F +49 (0) 69 3535106-501 - (M-F): 8:00 AM - 4:00 PM
info@gelestde.com - www.gelestde.com

1.4. Emergency telephone number

- **Emergency number**: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

**Classification according to Regulation (EC) No. 1272/2008 [CLP]**
- Skin corrosion/irritation, Category 2: H315
- Serious eye damage/eye irritation, Category 1: H318
- Specific target organ toxicity — Single exposure, Category 3: H335
- Respiratory tract irritation

Full text of H statements: see section 16

**Adverse physicochemical, human health and environmental effects**

No additional information available

2.2. Label elements

**Labelling according to Regulation (EC) No. 1272/2008 [CLP]**
- **Hazard pictograms (CLP)**: 
  - GHS05
  - GHS07

- **Signal word (CLP)**: Danger
- **Hazard statements (CLP)**: H315 - Causes skin irritation.
BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE, 95%

Safety Data Sheet

Precautionary statements (CLP):
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P264 - Wash hands thoroughly after handling.
- P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
- 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 POISON CENTER or doctor/physician.

H318 - Causes serious eye damage.
H335 - May cause respiratory irritation.

2.3. Other hazards

Other hazards not contributing to the classification:
The hydrolysis product of this compound is ethanol. Overexposure to ethanol by skin absorption, inhalation or ingestion may have a narcotic effect (headache, nausea, drowsiness). ethanol is metabolized to acetaldehyde and acetic acid which in large quantities result in metabolic acidosis, CNS depression and death due to respiratory arrest. This product contains ethanol which is classified as a carcinogen by IARC in alcoholic beverages.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name:
BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE, 95%

CAS-No.:
18643-04-4

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
</tr>
</thead>
</table>
| Bis[4-(triethoxy)silyl]butylamine | (CAS-No.) 18643-04-4 | 95 - 100 | Skin Irrit. 2, H315
|                           |                    |       | Eye Dam. 1, H318
|                           |                    |       | STOT SE 3, H335                                             |
| 4-Aminoethyltriethoxysilane| (CAS-No.) 3069-30-5 | 0 - 5 | Acute Tox. 4 (Oral), H302
|                           |                    |       | Skin Irrit. 2, H315
|                           |                    |       | Eye Dam. 1, H318
|                           |                    |       | STOT SE 3, H335                                             |

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general:
Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation:
Remove person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact:
Wash with plenty of water/…. Get medical advice/attention.

First-aid measures after eye contact:
Immediately flush eyes thoroughly with water for at least 15 minutes. Get immediate medical advice/attention.

First-aid measures after ingestion:
Never give anything by mouth to an unconscious person. Get medical advice/attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation:
May cause respiratory irritation.

Symptoms/effects after skin contact:
Causes skin irritation.

Symptoms/effects after eye contact:
Causes serious eye damage.

Symptoms/effects after ingestion:
May be harmful if swallowed.

Chronic symptoms:
On contact with water this compound liberates ethanol which is known to have a chronic effect on the central nervous system.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Unsuitable extinguishing media:
Do not use straight streams.
5.2. Special hazards arising from the substance or mixture

Fire hazard: Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

5.3. Advice for firefighters

Firefighting instructions: Exercise caution when fighting any chemical fire. Use water spray to cool exposed surfaces.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapour and mist.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment: Wear protective equipment as described in Section 8.

Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment: Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up: Clean up any spills as soon as possible, using an absorbent material to collect it.

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: Avoid all eye and skin contact and do not breathe vapour and mist. Provide good ventilation in process area to prevent formation of vapour.

Hygiene measures: Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Keep container tightly closed. Store locked up.


Storage area: Store in a well-ventilated place. Store away from heat.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls:
Provide local exhaust or general room ventilation.

Personal protective equipment:
Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection:
Neoprene or nitrile rubber gloves

Eye protection:
Chemical goggles. Contact lenses should not be worn

Skin and body protection:
Wear suitable protective clothing
Respiratory protection:
Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified combination organic vapor - amine gas (brown cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>453.76 g/mol</td>
</tr>
<tr>
<td>Colour</td>
<td>Amine. Ammonia-like</td>
</tr>
<tr>
<td>Odour</td>
<td>No data available</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>Refractive index</td>
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</tr>
<tr>
<td>pH</td>
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</tr>
<tr>
<td>Relative evaporation rate (butylacetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>153 - 157 °C @ 0.5 mm Hg</td>
</tr>
<tr>
<td>Flash point</td>
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</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
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<tr>
<td>Relative vapour density at 20 °C</td>
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</tr>
<tr>
<td>Relative density</td>
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<tr>
<td>Solubility</td>
<td>Reacts with water</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
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<tr>
<td>Explosive properties</td>
<td>No data available</td>
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<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable when stored in sealed containers.

10.3. Possibility of hazardous reactions
Reacts with water and moisture in air, liberating ethanol.

10.4. Conditions to avoid
Heat. Sparks. Open flame.

10.5. Incompatible materials

10.6. Hazardous decomposition products
Ethanol. Organic acid vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity : Not classified

4-Aminobutyltriethoxysilane (3069-30-5)

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>1620 mg/kg</td>
</tr>
<tr>
<td>LD50 dermal rabbit</td>
<td>2500 mg/kg</td>
</tr>
</tbody>
</table>
### 4-Aminobutytriethoxysilane (3069-30-5)

<table>
<thead>
<tr>
<th>ATE CLP (oral)</th>
<th>1620 mg/kg bodyweight</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE CLP (dermal)</td>
<td>2500 mg/kg bodyweight</td>
</tr>
</tbody>
</table>

- **Skin corrosion/irritation**: Causes skin irritation.
- **Serious eye damage/irritation**: Causes serious eye damage.
- **Respiratory or skin sensitisation**: Not classified
- **Germ cell mutagenicity**: Not classified
- **Carcinogenicity**: None of the components in this product at concentrations >0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.

#### Reproductive toxicity
Not classified

#### STOT - single exposure
May cause respiratory irritation.

#### STOT - repeated exposure
Not classified

#### Aspiration hazard
Not classified

#### Symptoms/effects after inhalation
May cause respiratory irritation.

#### Symptoms/effects after skin contact
Causes skin irritation.

#### Symptoms/effects after eye contact
Causes serious eye damage.

#### Symptoms/effects after ingestion
May be harmful if swallowed.

#### Chronic symptoms
On contact with water this compound liberates ethanol which is known to have a chronic effect on the central nervous system.

#### Reason for classification
Expert judgment

### SECTION 12: Ecological information

#### 12.1. Toxicity

- **Acute aquatic toxicity**: Not classified
- **Chronic aquatic toxicity**: Not classified

#### 12.2. Persistence and degradability
No additional information available

#### 12.3. Bioaccumulative potential
No additional information available

#### 12.4. Mobility in soil
No additional information available

#### 12.5. Results of PBT and vPvB assessment
No additional information available

#### 12.6. Other adverse effects
Other adverse effects: This substance may be hazardous to the environment.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

- **Sewage disposal recommendations**: Do not dispose of waste into sewer.
- **Product/Packaging disposal recommendations**: May be incinerated. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.
- **Ecology - waste materials**: Avoid release to the environment.

### SECTION 14: Transport information

#### 14.1. UN number
In accordance with ADR / RID / IMDG / IATA / ADN

#### 14.2. UN proper shipping name
Proper Shipping Name (ADR): AMINES, LIQUID, CORROSIVE, N.O.S.
**BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE, 95%**

**Safety Data Sheet**

<table>
<thead>
<tr>
<th>Proper Shipping Name (IMDG)</th>
<th>AMINES, LIQUID, CORROSIVE, N.O.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Shipping Name (IATA)</td>
<td>Amines, liquid, corrosive, n.o.s.</td>
</tr>
<tr>
<td>Proper Shipping Name (ADN)</td>
<td>AMINES, LIQUID, CORROSIVE, N.O.S.</td>
</tr>
<tr>
<td>Proper Shipping Name (RID)</td>
<td>AMINES, LIQUID, CORROSIVE, N.O.S.</td>
</tr>
<tr>
<td>Transport document description (ADR)</td>
<td>UN 2735 AMINES, LIQUID, CORROSIVE, N.O.S. (BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE), 8, III, (E)</td>
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<td>Transport document description (IMDG)</td>
<td>UN 2735 AMINES, LIQUID, CORROSIVE, N.O.S. (BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE), 8, III</td>
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<td>Transport document description (IATA)</td>
<td>UN 2735 Amines, liquid, corrosive, n.o.s. (BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE), 8, III</td>
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<td>Transport document description (ADN)</td>
<td>UN 2735 AMINES, LIQUID, CORROSIVE, N.O.S. (BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE), 8, III</td>
</tr>
<tr>
<td>Transport document description (RID)</td>
<td>UN 2735 AMINES, LIQUID, CORROSIVE, N.O.S. (BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE), 8, III</td>
</tr>
</tbody>
</table>

### 14.3. Transport hazard class(es)

**ADR**
- Transport hazard class(es) (ADR): 8
- Danger labels (ADR): 8

**IMDG**
- Transport hazard class(es) (IMDG): 8
- Danger labels (IMDG): 8

**IATA**
- Transport hazard class(es) (IATA): 8
- Hazard labels (IATA): 8

**ADN**
- Transport hazard class(es) (ADN): 8
- Danger labels (ADN): 8

**RID**
- Transport hazard class(es) (RID): 8
- Danger labels (RID): 8
**BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE, 95%**  
Safety Data Sheet

### 14.4. Packing group

<table>
<thead>
<tr>
<th>Packing group (ADR)</th>
<th>III</th>
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</thead>
<tbody>
<tr>
<td>Packing group (IMDG)</td>
<td>III</td>
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<tr>
<td>Packing group (IATA)</td>
<td>III</td>
</tr>
<tr>
<td>Packing group (ADN)</td>
<td>III</td>
</tr>
<tr>
<td>Packing group (RID)</td>
<td>III</td>
</tr>
</tbody>
</table>

### 14.5. Environmental hazards

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dangerous for the environment</td>
<td>No</td>
</tr>
<tr>
<td>Marine pollutant</td>
<td>No</td>
</tr>
<tr>
<td>Other information</td>
<td>No supplementary information available</td>
</tr>
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</table>

### 14.6. Special precautions for user

#### - Overland transport

<table>
<thead>
<tr>
<th>Classification code (ADR)</th>
<th>C7</th>
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</thead>
<tbody>
<tr>
<td>Special provisions (ADR)</td>
<td>274</td>
</tr>
<tr>
<td>Limited quantities (ADR)</td>
<td>5I</td>
</tr>
<tr>
<td>Excepted quantities (ADR)</td>
<td>E1</td>
</tr>
<tr>
<td>Packing instructions (ADR)</td>
<td>P001, IBC03, LP01, R001</td>
</tr>
<tr>
<td>Mixed packing provisions (ADR)</td>
<td>MP19</td>
</tr>
<tr>
<td>Portable tank and bulk container instructions (ADR)</td>
<td>T7</td>
</tr>
<tr>
<td>Portable tank and bulk container special provisions (ADR)</td>
<td>TP1, TP28</td>
</tr>
<tr>
<td>Tank code (ADR)</td>
<td>L4BN</td>
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<tr>
<td>Vehicle for tank carriage</td>
<td>AT</td>
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<td>Transport category (ADR)</td>
<td>3</td>
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<tr>
<td>Special provisions for carriage - Packages (ADR)</td>
<td>V12</td>
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<tr>
<td>Hazard identification number (Kemler No.)</td>
<td>80</td>
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<tr>
<td>Orange plates</td>
<td>80 2735</td>
</tr>
<tr>
<td>Tunnel restriction code (ADR)</td>
<td>E</td>
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<tr>
<td>EAC code</td>
<td>2X</td>
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<tr>
<td>APP code</td>
<td>B</td>
</tr>
</tbody>
</table>

#### - Transport by sea

| Special provisions (IMDG)            | 223, 274 |
| Limited quantities (IMDG)            | 5 L      |
| Excepted quantities (IMDG)           | E1       |
| Packing instructions (IMDG)          | P001, LP01 |
| IBC packing instructions (IMDG)      | IBC03    |
| Tank instructions (IMDG)             | T7       |
| Tank special provisions (IMDG)       | TP1, TP28 |
| EmS-No. (Fire)                       | F-A      |
| EmS-No. (Spillage)                   | S-B      |
| Stowage category (IMDG)              | A        |

#### - Air transport

| PCA Excepted quantities (IATA) | E1 |
| PCA Limited quantities (IATA)  | Y841 |
| PCA limited quantity max net quantity (IATA) | 1L |
| PCA packing instructions (IATA) | 852 |
BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE, 95%
Safety Data Sheet

PCA max net quantity (IATA) : 5L
CAO packing instructions (IATA) : 856
CAO max net quantity (IATA) : 60L
Special provisions (IATA) : A3
ERG code (IATA) : 8L

- Inland waterway transport
Classification code (ADN) : C7
Special provisions (ADN) : 274
Limited quantities (ADN) : 5 L
Excepted quantities (ADN) : E1
Carriage permitted (ADN) : T
Equipment required (ADN) : PP, EP
Number of blue cones/lights (ADN) : 0

- Rail transport
Classification code (RID) : C7
Special provisions (RID) : 274
Limited quantities (RID) : 5L
Excepted quantities (RID) : E1
Packing instructions (RID) : P001, IBC03, LP01, R001
Mixed packing provisions (RID) : MP19
Portable tank and bulk container instructions (RID) : T7
Portable tank and bulk container special provisions (RID) : TP1, TP28
Tank codes for RID tanks (RID) : L4BN
Transport category (RID) : 3
Special provisions for carriage – Packages (RID) : W12
Colis express (express parcels) (RID) : CE8
Hazard identification number (RID) : 80

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations
No REACH Annex XVII restrictions
BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE, 95% is not on the REACH Candidate List
BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE, 95% is not on the REACH Annex XIV List
BIS[4-(TRIETHOXYSILYL)BUTYL]AMINE, 95% is not subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.

15.1.2. National regulations

Germany

Netherlands
SZW-list van kankerverwekkende stoffen : The substance is not listed
SZW-list van mutagene stoffen : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed
**Denmark**

Danish National Regulations: Young people below the age of 18 years are not allowed to use the product.

**15.2. Chemical safety assessment**

No additional information available.

**SECTION 16: Other information**

**Abbreviations and acronyms:**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND</td>
<td>Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor</td>
</tr>
</tbody>
</table>

Other information: Prepared by safety and environmental affairs.

Full text of H- and EUH-statements:

- **Acute Tox. 4 (Oral)**: Acute toxicity (oral), Category 4
- **Eye Dam. 1**: Serious eye damage/eye irritation, Category 1
- **Skin Irrit. 2**: Skin corrosion/irritation, Category 2
- **STOT SE 3**: Specific target organ toxicity — Single exposure, Category 3. Respiratory tract irritation
- **H302**: Harmful if swallowed.
- **H315**: Causes skin irritation.
- **H318**: Causes serious eye damage.
- **H335**: May cause respiratory irritation.

**SDS EU (REACH Annex II) - Custom**

The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.

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