1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name: Triethylamine
Product Number: 471283
Brand: Sigma-Aldrich
Index-No.: 612-004-00-5
CAS-No.: 121-44-8

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

Identified uses: Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company: Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO  63103
USA
Telephone: +1 800-325-5832
Fax: +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone #: (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable liquids (Category 2), H225
Acute toxicity, Oral (Category 4), H302
Acute toxicity, Inhalation (Category 3), H331
Acute toxicity, Dermal (Category 3), H311
Skin corrosion (Category 1A), H314
Serious eye damage (Category 1), H318
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Acute aquatic toxicity (Category 2), H401

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

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word: Danger

Hazard statement(s)
H225: Highly flammable liquid and vapour.
H302: Harmful if swallowed.
H311 + H331: Toxic in contact with skin or if inhaled.
H314: Causes severe skin burns and eye damage.
H318: Causes serious eye damage.
H335: May cause respiratory irritation.
H401   Toxic to aquatic life.

Precautionary statement(s)
P210   Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233   Keep container tightly closed.
P240   Ground/bond container and receiving equipment.
P241   Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242   Use only non-sparking tools.
P243   Take precautionary measures against static discharge.
P261   Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264   Wash skin thoroughly after handling.
P270   Do not eat, drink or smoke when using this product.
P277   Use only outdoors or in a well-ventilated area.
P280   Avoid release to the environment.
P301   Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P312 + P330   IF SWALLOWED: Call a POISON CENTER/doctor 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.
P304 + P340 + P310   IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 + P310   IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P362   Take off contaminated clothing and wash before reuse.
P370 + P378   In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P233   Store in a well-ventilated place. Keep container tightly closed.
P403 + P235   Store in a well-ventilated place. Keep cool.
P405   Store locked up.
P501   Dispose of contents/ container to an approved waste disposal plant.

2.3  Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1  Substances

<table>
<thead>
<tr>
<th>Formula</th>
<th>Molecular weight</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Registration number</th>
</tr>
</thead>
<tbody>
<tr>
<td>C₆H₁₅N</td>
<td>101.19 g/mol</td>
<td>121-44-8</td>
<td>204-469-4</td>
<td>612-004-00-5</td>
<td>01-2119475467-26-XXXX</td>
</tr>
</tbody>
</table>

Hazardous components

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triethylamine</td>
<td>Flam. Liq. 2; Acute Tox. 4; Acute Tox. 3; Skin Corr. 1A; Eye Dam. 1; STOT SE 3; Aquatic Acute 2; H225, H302, H311 + H331, H314, H318, H335, H401</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

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

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
No data available

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.

7.2 **Conditions for safe storage, including any incompatibilities**
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.
Storage class (TRGS 510): Flammable liquids

7.3 **Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

---

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### 8.1 Control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triethylamine</td>
<td>121-44-8</td>
<td>TWA</td>
<td>1.000000 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Remarks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Upper Respiratory Tract irritation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Visual impairment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>See Notice of Intended Changes (NIC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not classifiable as a human carcinogen</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Danger of cutaneous absorption</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.5 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
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<td></td>
<td>Remarks</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Upper Respiratory Tract irritation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Visual impairment</td>
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<td></td>
<td>2015 Adoption</td>
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<td></td>
<td>Not classifiable as a human carcinogen</td>
<td></td>
</tr>
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<td>Danger of cutaneous absorption</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>3.000000 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
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<td></td>
<td></td>
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<tr>
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<td></td>
<td>Upper Respiratory Tract irritation</td>
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<td>Visual impairment</td>
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<td>2015 Adoption</td>
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<td>Not classifiable as a human carcinogen</td>
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<td></td>
<td></td>
<td>Danger of cutaneous absorption</td>
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<td></td>
<td></td>
<td>STEL</td>
<td>1 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
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<td></td>
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<td></td>
<td>Upper Respiratory Tract irritation</td>
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<td></td>
<td>Visual impairment</td>
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<td></td>
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<td></td>
<td>2015 Adoption</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not classifiable as a human carcinogen</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Danger of cutaneous absorption</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>25.000000 ppm</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100.000000 mg/m3</td>
<td></td>
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<td></td>
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<td></td>
<td>Remarks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The value in mg/m3 is approximate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>See Appendix D - Substances with No Established RELs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>1 ppm</td>
<td>California permissible exposure limits for chemical contaminants (Title 8, Article 107)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.1 mg/m3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Skin
### Derived No Effect Level (DNEL)

<table>
<thead>
<tr>
<th>Application Area</th>
<th>Exposure routes</th>
<th>Health effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term local effects, Long-term systemic effects</td>
<td>8.4 mg/m³</td>
</tr>
<tr>
<td>Workers</td>
<td>Inhalation</td>
<td>Acute local effects, Acute systemic effects</td>
<td>12.6 mg/m³</td>
</tr>
<tr>
<td>Workers</td>
<td>Skin contact</td>
<td>Long-term systemic effects</td>
<td>12.1 mg/kg BW/d</td>
</tr>
</tbody>
</table>

### Predicted No Effect Concentration (PNEC)

<table>
<thead>
<tr>
<th>Compartment</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil</td>
<td>2.361 mg/kg</td>
</tr>
<tr>
<td>Marine water</td>
<td>0.0064 mg/l</td>
</tr>
<tr>
<td>Fresh water</td>
<td>0.064 mg/l</td>
</tr>
<tr>
<td>Fresh water sediment</td>
<td>0.1992 mg/kg</td>
</tr>
<tr>
<td>Sewage treatment plant</td>
<td>100 mg/l</td>
</tr>
<tr>
<td>Aquatic intermittent release</td>
<td>0.064 mg/l</td>
</tr>
</tbody>
</table>

### 8.2 Exposure controls

**Appropriate engineering controls**
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

**Personal protective equipment**

**Eye/face protection**
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 480 min
Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.2 mm
Break through time: 49 min
Material tested: Dermatril® P (KCL 743 / Aldrich Z677388, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

**Body Protection**
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
   a) Appearance
      Form: liquid, clear
      Colour: colourless
   b) Odour
      amine-like
   c) Odour Threshold
      No data available
   d) pH
      12.7 at 100 g/l at 15 °C (59 °F)
   e) Melting point/freezing point
      Melting point/range: -115 °C (-175 °F) - lit.
   f) Initial boiling point and boiling range
      88.8 °C (191.8 °F) - lit.
   g) Flash point
      -15 °C (5 °F) - closed cup
   h) Evaporation rate
      No data available
   i) Flammability (solid, gas)
      No data available
   j) Upper/lower flammability or explosive limits
      Upper explosion limit: 8 %(V)
      Lower explosion limit: 1.2 %(V)
   k) Vapour pressure
      68.99 hPa (51.75 mmHg) at 20 °C (68 °F)
      85.06 hPa (63.80 mmHg) at 30 °C (86 °F)
   l) Vapour density
      3.49 - (Air = 1.0)
   m) Relative density
      0.726 g/cm3 at 25 °C (77 °F)
   n) Water solubility
      112 g/l at 20 °C (68 °F)
   o) Partition coefficient: n-octanol/water
      log Pow: 1.15
   p) Auto-ignition temperature
      > 215 °C (> 419 °F)
   q) Decomposition temperature
      No data available
   r) Viscosity
      No data available
   s) Explosive properties
      No data available
   t) Oxidizing properties
      The substance or mixture is not classified as oxidizing.

9.2 Other safety information
   Surface tension
   20.7 mN/m at 20 °C (68 °F)
   Relative vapour density
   3.49 - (Air = 1.0)

10. STABILITY AND REACTIVITY

10.1 Reactivity
   No data available

10.2 Chemical stability
   Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
   Vapours may form explosive mixture with air.
10.4 **Conditions to avoid**
Heat, flames and sparks.

10.5 **Incompatible materials**
Strong oxidizing agents

10.6 **Hazardous decomposition products**
Other decomposition products - No data available
Hazardous decomposition products formed under fire conditions. - Carbon oxides, Nitrogen oxides (NOx)
In the event of fire: see section 5

### 11. TOXICOLOGICAL INFORMATION

11.1 **Information on toxicological effects**

**Acute toxicity**
LD50 Oral - Rat - 730 mg/kg  
(OECD Test Guideline 401)

LC50 Inhalation - Rat - 4 h - 7.1 mg/l  
(OECD Test Guideline 403)

LD50 Dermal - Rabbit - 580 mg/kg  
(OECD Test Guideline 402)

No data available

**Skin corrosion/irritation**
Skin - Rabbit  
Result: Extremely corrosive and destructive to tissue.  
(OECD Test Guideline 404)

**Serious eye damage/eye irritation**
Eyes - Rabbit  
Result: Risk of serious damage to eyes.  
(OECD Test Guideline 405)

**Respiratory or skin sensitisation**
in vivo assay - Guinea pig  
Result: Did not cause sensitisation on laboratory animals.

**Germ cell mutagenicity**
No data available

**Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**
No data available

No data available

**Specific target organ toxicity - single exposure**
Inhalation - May cause respiratory irritation.

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

**Additional Information**
RTECS: YE0175000
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Central nervous system - Irregularities - Based on Human Evidence
Central nervous system - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

12.1 Toxicity
Toxicity to fish
LC50 - Oryzias latipes (Orange-red killifish) - 24 mg/l - 96 h
(OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates
LC50 - Daphnia dubia (water flea) - 17 mg/l - 48 h

Toxicity to algae
NOEC - Pseudokirchneriella subcapitata (green algae) - 1.1 mg/l - 72 h
(OECD Test Guideline 201)
EC50 - Pseudokirchneriella subcapitata (green algae) - 8 mg/l - 72 h
(OECD Test Guideline 201)

Toxicity to bacteria
LC50 - Bacteria - 95 mg/l - 17 h

12.2 Persistence and degradability
Biodegradability
aerobic - Exposure time 28 d
Result: 80 % - Readily biodegradable
(OECD Test Guideline 301B)

12.3 Bioaccumulative potential
Bioaccumulation
Cyprinus carpio (Carp) - 42 d

Bioconcentration factor (BCF): < 0.5
(OECD Test Guideline 305C)

Remarks: Does not bioaccumulate.

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.
No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods
Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.
14. TRANSPORT INFORMATION

DOT (US)
UN number: 1296       Class: 3 (8)       Packing group: II
Proper shipping name: Triethylamine
Reportable Quantity (RQ): 5000 lbs

Poison Inhalation Hazard: No

IMDG
UN number: 1296       Class: 3 (8)       Packing group: II
Proper shipping name: TRIETHYLAMINE
EMS-No: F-E, S-C

IATA
UN number: 1296       Class: 3 (8)       Packing group: II
Proper shipping name: Triethylamine

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>121-44-8</td>
<td>2007-07-01</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>121-44-8</td>
<td>2007-07-01</td>
</tr>
</tbody>
</table>

Pennsylvania Right To Know Components

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>121-44-8</td>
<td>2007-07-01</td>
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</tbody>
</table>

New Jersey Right To Know Components

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<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>121-44-8</td>
<td>2007-07-01</td>
</tr>
</tbody>
</table>

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

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

Acute Tox.          Acute toxicity
Aquatic Acute      Acute aquatic toxicity
Eye Dam.           Serious eye damage
Flam. Liq.          Flammable liquids
H225               Highly flammable liquid and vapour.
H302               Harmful if swallowed.
H311               Toxic in contact with skin.
H311 + H331        Toxic in contact with skin or if inhaled.
H314               Causes severe skin burns and eye damage.
H318               Causes serious eye damage.
H331               Toxic if inhaled.
H335               May cause respiratory irritation.
H401  Toxic to aquatic life.

**HMIS Rating**
- Health hazard: 2
- Chronic Health Hazard: *
- Flammability: 3
- Physical Hazard: 0

**NFPA Rating**
- Health hazard: 2
- Fire Hazard: 3
- Reactivity Hazard: 0

**Further information**
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