1 Identification
   Product identifier
   Product name: Allylamine

   Stock number: L07162
   CAS Number: 107-11-9
   EC number: 203-463-9
   Index number: 612-046-00-4

   Relevant identified uses of the substance or mixture and uses advised against.
   Identified use: SU24 Scientific research and development

2 Hazard(s) identification
   Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)
   GHS02 Flame
   Flam. Liq. 2 H225 Highly flammable liquid and vapor.
   GHS06 Skull and crossbones
   Acute Tox. 3 H301 Toxic if swallowed.
   Acute Tox. 3 H311 Toxic in contact with skin.
   Acute Tox. 3 H331 Toxic if inhaled.
   Hazards not otherwise classified No information known.

   Label elements
   GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

   Hazard pictograms
   GHS02 GHS06

   Signal word Danger
   Hazard statements
   H225 Highly flammable liquid and vapor.
   H301+H311+H331 Toxic if swallowed, in contact with skin if inhaled.
   Precautionary statements
   P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
   P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
   P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
   P361 Remove/Take off immediately all contaminated clothing.
   P405 Store locked up.
   P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

   WHMIS classification
   B1 - Flammable liquid
   D1A - Very toxic material causing immediate and serious toxic effects

   Classification system
   HMIS ratings (scale 0-4)
   (Hazardous Materials Identification System)
   Health (acute effects) = 3
   Flammability = 3
   Physical Hazard = 1

3 Composition/information on ingredients
   Chemical characterization: Substances
   CAS# Description:
   107-11-9 Allylamine
   Identification number(s):
   EC number: 203-463-9
   Index number: 612-046-00-4
4 First-aid measures

Description of first aid measures
General information
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing has been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.

After skin contact
Immediately wash with water and soap and rinse thoroughly.
Seek immediate medical advice.

After eye contact
Rinse opened eye for several minutes under running water. Then consult a doctor.

Information for doctor
Most important symptoms and effects, both acute and delayed
Toxic in contact with skin.
Toxic if inhaled.
Toxic if swallowed.

Indication of any immediate medical attention and special treatment needed
No further relevant information available.

5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Special hazards arising from the substance or mixture
If this product is involved in a fire, the following can be released:
Carbon monoxide and carbon dioxide
Nitrogen oxides (NOx)

Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.
Keep away from ignition sources.

Environmental precautions: Do not allow product to reach sewage system or any water course.

Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of contaminated material as waste according to section 13.
Ensure adequate ventilation.

Prevention of secondary hazards: Keep away from ignition sources.

Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling
Precautions for safe handling
Handle under dry protective gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Open and handle container with care.

Information about protection against explosions and fires:
Protect against electrostatic charges.
Fumes can combine with air to form an explosive mixture.
Keep ignition sources away.

Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles: Store in a cool location.
Information about storage in one common storage facility:
Store away from air.
Store away from oxidizing agents.

Further information about storage conditions:
Store under dry inert gas.
This product is air sensitive.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters
Components with limit values that require monitoring at the workplace:
107-11-9 Allylamine (100.0%)
EL (Canada) Long-term value: 2 ppm

Additional information: No data

Exposure controls
Personal protective equipment
General protective and hygienic measures
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Remove all soiled and contaminated clothing immediately.
Product name: Allylamine

Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.

Breathing equipment: Use self-contained respiratory protective device in emergency situations.

Recommended filter device for short term use:
Use a respirator with multi-purpose combination (US) or type AXBEK (EN 14387) as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU).

Protection of hands:
Impervious gloves
Check protective gloves prior to each use for their proper condition.
The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

Material of gloves: Butyl rubber, BR
Penetration time of glove material (in minutes): 78
Glove thickness: 0.3 mm
Eye protection: Safety glasses

Body protection: Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance: Liquid
Form: Liquid
Odor: Ammonia-like
Odor threshold: Not determined.

pH-value: Not determined.

Change in condition
Melting point/Melting range: -88 °C (-126 °F)
Boiling point/Boiling range: 53-54 °C (127-129 °F)
Sublimation temperature / start: Not determined

Flash point: -29 °C (-20 °F)
Flammability (solid, gaseous): Not determined.
Ignition temperature: 370 °C (698 °F)
Decomposition temperature: Not determined
Auto igniting: Not determined.

Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures is possible.

Explosion limits:
Lower: 2.2 Vol %
Upper: 22 Vol %

Vapor pressure at 35 °C (95 °F): 533 hPa (400 mm Hg)
Density at 20 °C (68 °F): 0.761 g/cm³ (6.351 lbs/gal)
Relative density: Not determined.
Vapor density: Not determined.
Evaporation rate: Not determined.
Solubility in / Miscibility with:
Water: Fully miscible
Partition coefficient (n-octanol/water): Not determined.

Viscosity:
dynamic: Not determined.
kinematic: Not determined.

Other information: No further relevant information available.

10 Stability and reactivity

Reactivity: No information known.
Chemical stability: Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.

Possibility of hazardous reactions: Reacts with strong oxidizing agents

Conditions to avoid: No further relevant information available.

Incompatible materials:
Air
Oxidizing agents

Hazardous decomposition products:
Carbon monoxide and carbon dioxide
Nitrogen oxides

11 Toxicological information

Information on toxicological effects

Acute toxicity:
Toxic in contact with skin.
Toxic if inhaled.
Toxic if swallowed.
Danger through skin absorption.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

LD/LC50 values that are relevant for classification:

Oral LD50 102 mg/kg (rat)
Dermal LD50 35 mg/kg (rabbit)

Skin irritation or corrosion: May cause irritation
Eye irritation or corrosion: May cause irritation

Germl cell mutagenicity: No sensitizing effects known.

Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

Reproductive toxicity: No effects known.

Specific target organ system toxicity - repeated exposure: No effects known.

Specific target organ system toxicity - single exposure: No effects known.

Aspiration hazard: No effects known.

Subacute to chronic toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance. (Contd. on page 4)
12 Ecological information

Toxicity
Aquatic toxicity: No further relevant information available.
Persistence and degradability No further relevant information available.
Bioaccumulative potential No further relevant information available.
Mobility in soil No further relevant information available.

Additional ecological information:
General notes:
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Toxic to aquatic life.
May cause long lasting harmful effects to aquatic life.
Avoid transfer into the environment.

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

Other adverse effects No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

UN-Number
DOT, IMDG, IATA UN2334

UN proper shipping name
DOT Allylamine
IMDG, IATA ALLYLAMINE

Transport hazard class(es)

DOT

Class 6.1 Toxic substances.
Label 6.1+3

IMDG, IATA

Class 6.1 Toxic substances.
Label 6.1+3

Packaging group DOT, IMDG, IATA I

Environmental hazards:
Environmentally hazardous substance, liquid

Special precautions for use
Poison inhalation hazard: Warning: Toxic substances
Yes
EMS Number: F-E,S-D

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.

Transport/Additional information:

DOT Marine Pollutant (DOT): No
Remarks: This material is poisonous by inhalation in Hazard Zone B.

UN "Model Regulation": UN2334, Allylamine, 6.1 (3), I

15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms

GHS02 GHS06

Signal word Danger

Hazard statements H225 Highly flammable liquid and vapor.
H301+H311+H331 Toxic if swallowed, in contact with skin or if inhaled.

Precautionary statements P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P353+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
Product name: Allylamine

P361 Remove/Take off immediately all contaminated clothing.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

National regulations
All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Domestic Substances List (DSL).

SARA Section 313 (specific toxic chemical listings)

<table>
<thead>
<tr>
<th>107-11-9</th>
<th>Allylamine</th>
</tr>
</thead>
<tbody>
<tr>
<td>California Proposition 65</td>
<td></td>
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<tr>
<td>Prop 65 - Chemicals known to cause cancer Substance is not listed.</td>
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<tr>
<td>Prop 65 - Developmental toxicity Substance is not listed.</td>
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<tr>
<td>Prop 65 - Developmental toxicity, female Substance is not listed.</td>
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</tr>
<tr>
<td>Prop 65 - Developmental toxicity, male Substance is not listed.</td>
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<tr>
<td>Information about limitation of use: For use only by technically qualified individuals.</td>
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<tr>
<td>Other regulations, limitations and prohibitive regulations</td>
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<tr>
<td>Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006, Substance is not listed.</td>
<td></td>
</tr>
<tr>
<td>The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.</td>
<td></td>
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<tr>
<td>Substance is not listed.</td>
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<tr>
<td>Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.</td>
<td></td>
</tr>
<tr>
<td>Chemical safety assessment: A Chemical Safety Assessment has not been carried out.</td>
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</tbody>
</table>

16 Other information
Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department

Date of preparation / last revision 04/28/2016 / -

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOJ: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
vPvB: very Persistent and very Bioaccumulative
ACGIH: American Conference of Governmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
NTP: National Toxicology Program (USA)
IARC: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)
Flam. Liq. 2: Flammable liquids, Hazard Category 2
Acute Tox. 3: Acute toxicity, Hazard Category 3