1. PRODUCT AND COMPANY IDENTIFICATION

Product name : (−)-Nicotine solution
Product Number : N5511
Brand : Fluka
Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO  63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555
Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption

Target Organs
Eyes, Kidney, Liver, Heart, Central nervous system

GHS Classification
Acute toxicity, Oral (Category 3)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Dermal (Category 3)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Specific target organ toxicity - single exposure (Category 1)

GHS Label elements, including precautionary statements

Pictogram

Signal word : Danger

Hazard statement(s)
H301 + H311  Toxic if swallowed or in contact with skin
H315  Causes skin irritation.
H319  Causes serious eye irritation.
H331  Toxic if inhaled.
H370  Causes damage to organs.

Precautionary statement(s)
P260  Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280  Wear protective gloves/ protective clothing.
P301 + P310  IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed: Call a POISON CENTER or doctor/physician.

HMIS Classification
- Health hazard: 2
- Chronic Health Hazard: *
- Flammability: 0
- Physical hazards: 0

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

Potential Health Effects
- Inhalation: Toxic if inhaled. Causes respiratory tract irritation.
- Skin: Toxic if absorbed through skin. Causes skin irritation.
- Eyes: Causes eye irritation.
- Ingestion: Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301 + H311 + H331, H370</td>
<td>-</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>67-56-1</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>200-659-6</td>
<td></td>
</tr>
<tr>
<td>Index-No.</td>
<td>603-001-00-X</td>
<td></td>
</tr>
<tr>
<td>Registration number</td>
<td>01-2119433307-44-XXXX</td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

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

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

In case of skin contact
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.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Conditions of flammability
Not flammable or combustible.

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

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for safe storage
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.
Recommended storage temperature: 2 - 8 °C

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>TWA</td>
<td>200 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Remarks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>250 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>200 ppm 260 mg/m3</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin notation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>250 ppm 325 mg/m3</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin notation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>200 ppm 260 mg/m3</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</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>TWA</td>
<td>200 ppm 260 mg/m3</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Potential for dermal absorption</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST</td>
<td>250 ppm 325 mg/m3</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Potential for dermal absorption</td>
<td></td>
</tr>
</tbody>
</table>

Personal protective equipment

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).
**Hand 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.

**Eye protection**
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin and body protection**
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures**
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

#### Appearance

**Form**
- liquid

**Colour**
- no data available

#### Safety data

**pH**
- no data available

**Melting point/freezing point**
- no data available

**Boiling point**
- no data available

**Flash point**
- no data available

**Ignition temperature**
- no data available

**Auto-ignition temperature**
- no data available

**Lower explosion limit**
- no data available

**Upper explosion limit**
- no data available

**Vapour pressure**
- no data available

**Density**
- no data available

**Water solubility**
- no data available

**Partition coefficient: n-octanol/water**
- no data available

**Relative vapour density**
- no data available

**Odour**
- no data available

**Odour Threshold**
- no data available

**Evaporation rate**
- no data available

### 10. STABILITY AND REACTIVITY

#### Chemical stability

Stable under recommended storage conditions.

#### Possibility of hazardous reactions

no data available

#### Conditions to avoid

no data available
Materials to avoid
Acids, Oxidizing agents, Alkali metals, Strong oxidizing agents, Acid chlorides, Acid anhydrides, Reducing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity
Oral LD50
no data available
Inhalation LC50
no data available
Dermal LD50
no data available
Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
Eyes: no data available

Respiratory or skin sensitisation
no data available

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

Teratogenicity
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available
Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available
Aspiration hazard
no data available

Potential health effects
Inhalation Toxic if inhaled. Causes respiratory tract irritation.
Ingestion  Toxic if swallowed.
Skin  Toxic if absorbed through skin. Causes skin irritation.
Eyes  Causes eye irritation.

Signs and Symptoms of Exposure
Methyl alcohol may be fatal or cause blindness if swallowed. Cannot be made non-poisonous. Effects due to ingestion may include: Nausea, Dizziness, Gastrointestinal disturbance, Weakness, Confusion, Drowsiness, Unconsciousness. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects
no data available

Additional Information
RTECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity
no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
no data available

13. DISPOSAL CONSIDERATIONS

Product
Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1230  Class: 3  Packing group: II
Proper shipping name: Methanol, solution
Reportable Quantity (RQ): 5000 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 1230  Class: 3 (6.1)  Packing group: II
Proper shipping name: METHANOL, SOLUTION
EMS-No: F-E, S-D

IATA
UN number: 1230  Class: 3 (6.1)  Packing group: II
Proper shipping name: Methanol, solution

15. REGULATORY INFORMATION
OSHA Hazards
Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption

SARA 302 Components
The following components are subject to reporting levels established by SARA Title III, Section 302:

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-)-Nicotine</td>
<td>54-11-5</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
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</table>

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

Massachusetts Right To Know Components

<table>
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Pennsylvania Right To Know Components

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New Jersey Right To Know Components

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<tbody>
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<td>54-11-5</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
</tr>
</tbody>
</table>

California Prop. 65 Components

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

<table>
<thead>
<tr>
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<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-)-Nicotine</td>
<td>54-11-5</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

Text of H-code(s) and R-phrase(s) mentioned in Section 3

| Acute Tox. | Acute toxicity |
| Flam. Liq. | Flammable liquids |
| H225 | Highly flammable liquid and vapour. |
| H301 + H311 + | Toxic if swallowed, in contact with skin or if inhaled |
| H331 | |
| H370 | Causes damage to organs. |
| STOT SE | Specific target organ toxicity - single exposure |

Further information
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