Section 1: PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product name</th>
<th>1,2,3,4-Tetrahydronaphthalene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product code</td>
<td>201-00597,203-00596</td>
</tr>
<tr>
<td>CAS RN</td>
<td>119-64-2</td>
</tr>
<tr>
<td>Formula</td>
<td>C10H12</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>FUJIFILM Wako Pure Chemical Corporation</td>
</tr>
<tr>
<td></td>
<td>1-2 Doshomachi 3-Chome</td>
</tr>
<tr>
<td></td>
<td>Chuo-ku, Osaka 540-8605, Japan</td>
</tr>
<tr>
<td></td>
<td>Phone: +81-6-6203-3741</td>
</tr>
<tr>
<td></td>
<td>Fax: +81-6-6203-5964</td>
</tr>
<tr>
<td>Supplier</td>
<td>FUJIFILM Wako Pure Chemical Corporation</td>
</tr>
<tr>
<td></td>
<td>1-2 Doshomachi 3-Chome, Chuo-ku, Osaka 540-8605, Japan</td>
</tr>
<tr>
<td></td>
<td>Phone: +81-6-6203-3741</td>
</tr>
<tr>
<td></td>
<td>Fax: +81-6-6203-2029</td>
</tr>
<tr>
<td>Emergency telephone number</td>
<td>+81-6-6203-3741 / +81-3-3270-8571</td>
</tr>
<tr>
<td>Recommended uses and restrictions on use</td>
<td>For research purposes</td>
</tr>
</tbody>
</table>

Section 2: HAZARDS IDENTIFICATION

GHS classification

<table>
<thead>
<tr>
<th>Classification of the substance or mixture</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flammable liquids</td>
<td>Category 4</td>
</tr>
<tr>
<td>Acute toxicity - Inhalation (Vapors)</td>
<td>Category 2</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Category 3 Narcotic effects</td>
<td></td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Category 2</td>
</tr>
<tr>
<td>Category 2 blood</td>
<td></td>
</tr>
<tr>
<td>Aquatic environment (acute hazard)</td>
<td>Category 2</td>
</tr>
</tbody>
</table>

Pictograms

Signal word

Danger

Hazard statements

- H227 - Combustible liquid
- H315 - Causes skin irritation
- H330 - Fatal if inhaled
- H336 - May cause drowsiness or dizziness
- H401 - Toxic to aquatic life
- H373 - May cause damage to the following organs through prolonged or repeated exposure: blood

Precautionary statements-(Prevention)

- Wash face, hands and any exposed skin thoroughly after handling
Precautionary statements-(Response)
- Get medical advice/attention if you feel unwell
- IF ON SKIN: Wash with plenty of soap and water
- IF skin irritation occurs: Get medical advice/attention
- Take off contaminated clothing and wash before reuse
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Call a POISON CENTER or doctor/physician if you feel unwell.
- In case of fire: Use CO2, dry chemical, or foam for extinction

Precautionary statements-(Storage)
- Store in a well-ventilated place. Keep container tightly closed
- Store locked up.

Precautionary statements-(Disposal)
- Dispose of contents/container to an approved waste disposal plant

Others
Other hazards
Not available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Single Substance or Mixture
Substance

Formula
C10H12

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Weight-%</th>
<th>Molecular weight</th>
<th>ENCS</th>
<th>ISHL No.</th>
<th>CAS RN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>97.0</td>
<td>132.20</td>
<td>(4)-574</td>
<td>公表</td>
<td>119-64-2</td>
</tr>
</tbody>
</table>

Impurities and/or Additives : Not applicable

Section 4: FIRST AID MEASURES

Inhalation
- Remove to fresh air. If symptoms persist, call a physician.

Skin contact
- Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

Eye contact
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.

Ingestion
- Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Do not induce vomiting without medical advice.

Protection of first-aiders
- Use personal protective equipment as required.

Section 5: FIRE FIGHTING MEASURES

Suitable extinguishing media
- Water spray (fog), Carbon dioxide (CO2), Foam, Extinguishing powder, Sand

Unsuitable extinguishing media
- No information available

Special extinguishing method
- No information available

Specific hazards arising from the chemical product
Thermal decomposition can lead to release of irritating and toxic gases and vapors.

**Protection of fire-fighters**
Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

### Section 6: ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**
For indoor, provide adequate ventilation process until the end of working. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipments to avoid adhering it on skin, or inhaling the gas. Work from windward, and retract the people downwind.

**Environmental precautions**
To be careful not discharged to the environment without being properly handled waste water contaminated.

**Methods and materials for contaminant and methods and materials for cleaning up**
Absorb dry sand, earth, sawdust and the waste. Collect empty container that can be sealed.

**Recovery, neutralization**
No information available

**Secondary disaster prevention measures**
Clean contaminated objects and areas thoroughly observing environmental regulations.

---

### Section 7: HANDLING AND STORAGE

**Handling**

**Technical measures**
Highly flammable. Avoid contact with high temperature objects, spark, and strong oxidizing agents. Use with local exhaust ventilation.

**Precautions**
Do not rough handling containers, such as upsetting, falling, giving a shock, and dragging. Prevent leakage, overflow, and scattering. Not to generate steam and dust in vain. Seal the container after use. After handling, wash hands and face, and then gargle. In places other than those specified, should not be smoking or eating and drinking. Should not be brought contaminated protective equipment and gloves to rest stops. Deny unnecessary entry of non-emergency personnel to the handling area.

**Safety handling precautions**
Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

**Storage**

**Safe storage conditions**
Keep container protect from light, store in well-ventilated place at room temperature (preferably cool). Keep container tightly closed.

**Safe packaging material**
Glass, Iron

**Incompatible substances**
Strong oxidizing agents

---

### Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering controls**
In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

**Exposure limits**
This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

**Personal protective equipment**

**Respiratory protection**
Protective mask

**Hand protection**
Protective gloves

**Eye protection**
Protective eyeglasses or chemical safety goggles

**Skin and body protection**
Long-sleeved work clothes

**General hygiene considerations**
Handle in accordance with good industrial hygiene and safety practice.
Section 9: PHYSICAL AND CHEMICAL PROPERTIES

- Form:
  - Color: colorless
  - Turbidity: clear
  - Appearance: liquid
  - Odor: characteristic odor
  - pH: No data available
  - Melting point/freezing point: -31 °C
  - Boiling point, initial boiling point and boiling range: 207 °C
  - Flash point: 75 °C

- Evaporation rate:
  - No data available

- Flammability (solid, gas):
  - No data available

- Upper/lower flammability or explosive limits:
  - Upper: 5.0 vol%
  - Lower: 0.8 vol%

- Vapour pressure:
  - No data available

- Vapour density:
  - No data available

- Solubilities:
  - Ethanol and acetone: Very soluble.
  - Water: practically insoluble or insoluble.

- Specific Gravity / Relative density:
  - 0.963 - 0.973 g/ml

- n-Octanol/water partition coefficient:(log Pow):
  - No data available

- Auto-ignition temperature:
  - 385

- Decomposition temperature:
  - No data available

- Viscosity (coefficient of viscosity):
  - No data available

- Dynamic viscosity:
  - No data available

Section 10: STABILITY AND REACTIVITY

- Stability:
  - May be altered by light.

- Reactivity:
  - No data available

- Hazardous reactions:
  - None under normal processing

- Conditions to avoid:
  - Extremes of temperature and direct sunlight, Heat, flames and sparks, static electricity, spark

- Incompatible materials:
  - Strong oxidizing agents

- Hazardous decomposition products:
  - Carbon monoxide (CO), Carbon dioxide (CO2)

Section 11: TOXICOLOGICAL INFORMATION

### Acute toxicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50 (Rat)</th>
<th>Dermal LD50 (Rabbit)</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>2860 mg/kg</td>
<td>16800 mg/kg</td>
<td>N/A</td>
</tr>
</tbody>
</table>

- LD50(oral, rat): 2960 mg/kg bw (SIDS).
- LD50(skin, rabbit): ca. 16800 mg/kg bw (SIDS).
- LD50(skin, rabbit): 17300 mg/kg bw (Patty (5th, 2001)).
- Based on the NITE GHS classification results.

- LD50(oral, rat): 2960 mg/kg bw (SIDS).
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- Based on the NITE GHS classification results.

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- Based on the NITE GHS classification results.

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### Skin irritation/corrosion

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Skin corrosion irritation source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

### Serious eye damage/ irritation

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Serious eye damage source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

### Respiratory or skin sensitization

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Respiratory, Skin sensitization source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

### Reproductive cell mutagenicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Mutagenic source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

### Carcinogenicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Carcinogenicity source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

### Reproductive toxicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Reproductive toxicity source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

### STOT-single exposure

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>STOT -single exposure- source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

### STOT-repeated exposure

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>STOT -repeated exposure- source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

### Aspiration hazard

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Aspiration Hazard source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

### Section 12: ECOLOGICAL INFORMATION

#### Ecotoxicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,3,4-Tetrahydronaphthalene</td>
<td>EC50: Desmodesmus subspicatus 7 mg/L 72 h</td>
<td>LC50: Brachydanio rerio 3.2 mg/L 96 h</td>
<td>EC50: Daphnia magna 9.5 mg/L 48 h</td>
</tr>
</tbody>
</table>

#### Other data

- **Aquatic toxicity -Acute- source information**: LC50(Danio rerio):3.2 mg/L/96h(SIDS, 2008).
- **Aquatic toxicity -Chronic- source information**: Based on the NITE GHS classification results.

#### Persistence and degradability

- **Degree of decomposition**: 81 % by BOD
- **Bioaccumulative potential**: No information available
- **Mobility in soil**: No information available
- **Hazard to the ozone layer**: No information available

### Section 13: DISPOSAL CONSIDERATIONS

- **Waste from residues**: Disposal should be in accordance with applicable regional, national and local laws and regulations.
- **Contaminated container and contaminated packaging**: Disposal should be in accordance with applicable regional, national and local laws and regulations.

### Section 14: TRANSPORT INFORMATION

- **ADR/RID**
UN number: UN2810
Proper shipping name: Toxic liquid, organic, n.o.s. (1,2,3,4-Tetrahydronaphthalene)
UN classification: 6.1
Subsidiary hazard class: II
Packing group: II
Marine pollutant: Not applicable

IMDG
UN number: UN2810
Proper shipping name: Toxic liquid, organic, n.o.s. (1,2,3,4-Tetrahydronaphthalene)
UN classification: 6.1
Subsidiary hazard class: II
Packing group: II
Marine pollutant (Sea): Not applicable
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: No information available

IATA
UN number: UN2810
Proper shipping name: Toxic liquid, organic, n.o.s. (1,2,3,4-Tetrahydronaphthalene)
UN classification: 6.1
Subsidiary hazard class: II
Packing group: II
Environmentally Hazardous Substance: Not applicable

Section 15: REGULATORY INFORMATION

International Inventories
- EINECS/ELINCS: Listed
- TSCA: Listed

Japanese regulations
- Fire Service Act: Category IV, Class III petroleum, dangerous grade 3
- Poisonous and Deleterious Substances Control Law: Not applicable
- Industrial Safety and Health Act: Toxic Substances - Poison (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage, Attached Table 1)
- Regulations for the carriage and storage of dangerous goods in ship: Not applicable
- Civil Aeronautics Law: Toxic and Infectious Substances (Ordinance Art.194, MITL Notification for Air Transportation of Explosives etc., Attached Table 1)
- Marine Pollution Prevention Law: Enforcement ordinance Appendix No. 1 Noxious liquid substance Category Y
- Pollutant Release and Transfer Register Law: Not applicable
- Export Trade Control Order: Not applicable

Section 16: OTHER INFORMATION

Key literature references and sources for data etc.
- NITE: National Institute of Technology and Evaluation (JAPAN)
  http://www.safe.nite.go.jp/japan/db.html
- IATA dangerous Goods Regulations
- RTECS: Registry of Toxic Effects of Chemical Substances
- Japan Industrial Safety and Health Association: GHS Model SDS
- Dictionary of Synthetic Oraganic Chemistry, SSOCJ, Koudansha Scientific Co.Ltd.
- Chemical Dictionary, Kyoritsu Publishing Co., Ltd.
- etc

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material...
used in combination with any other materials or in any process, unless specified in the text. GHS Classification is according to JIS Z7252(2014). *JIS: Japanese Industrial Standards

End of Safety Data Sheet