Section 1: PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product name</th>
<th>t-Butyl Cyanoacetate</th>
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<tbody>
<tr>
<td>Product code</td>
<td>022-12331</td>
</tr>
<tr>
<td>CAS No</td>
<td>1116-98-9</td>
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<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>
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<tr>
<td>Supplier</td>
<td>FUJIFILM Wako Pure Chemical Corporation</td>
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<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>
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<tr>
<td></td>
<td>Fax: +81-6-6203-2029</td>
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<tr>
<td>Emergency telephone number</td>
<td>+81-6-6203-3741 / +81-3-3270-8571</td>
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<tr>
<td>Recommended uses and restrictions on use</td>
<td>For research purposes</td>
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</tbody>
</table>

Section 2: HAZARDS IDENTIFICATION

GHS classification

Classification of the substance or mixture
- Flammable liquids: Category 4
- Acute toxicity - Oral: Category 4

Pictograms

![Warning symbol]

Signal word: Warning

Hazard statements
- H227 - Combustible liquid
- H302 - Harmful if swallowed

Precautionary statements-(Prevention)
- Wash face, hands and any exposed skin thoroughly after handling
- Do not eat, drink or smoke when using this product
- Keep away from heat/sparks/open flames/hot surfaces. — No smoking
- Wear protective gloves/protective clothing/eye protection/face protection

Precautionary statements-(Response)
- IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
- Rinse mouth.
- In case of fire: Use CO2, dry chemical, or foam for extinction

Precautionary statements-(Storage)
- Store in a well-ventilated place. Keep cool

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  NCCH2COOC(CH3)3

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Weight-%</th>
<th>Molecular weight</th>
<th>ENCS</th>
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<td>98.0</td>
<td>141.17</td>
<td>(2)-1549</td>
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</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**

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

- **Safe packaging material**
  Glass

**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 - pale yellow
- **Turbidity**
  clear
- **Appearance**
  liquid
- **Odor**
  No data available
- **pH**
  No data available
- **Melting point/freezing point**
  No data available
- **Boiling point, initial boiling point and boiling range**
  No data available
- **Flash point**
  91 °C
- **Evaporation rate:**
  No data available
- **Flammability (solid, gas):**
  No data available
- **Upper/lower flammability or explosive limits**
  Upper : No data available
  Lower : No data available
- **Vapour pressure**
  No data available
Vapour density: No data available
Specific Gravity / Relative density: 0.988 g/ml

n-Octanol/water partition coefficient: (log Pow): No data available
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Viscosity (coefficient of viscosity): No data available
Dynamic viscosity: No data available

**Section 10: STABILITY AND REACTIVITY**

**Stability**

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), Nitrogen oxides (NOx)

**Section 11: TOXICOLOGICAL INFORMATION**

**Acute toxicity**
No data available

Skin irritation/corrosion: No data available
Serious eye damage/irritation: No data available
Respiratory or skin sensitization: No data available
Reproductive cell mutagenicity: No data available
Carcinogenicity: No data available

Reproductive toxicity: No data available
STOT-single exposure: No data available
STOT-repeated exposure: No data available
Aspiration hazard: No data available

**Section 12: ECOLOGICAL INFORMATION**

Ecotoxicity: No information available

Other data: No data available

Persistence and degradability: No information available
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

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<td>Packing group</td>
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<td>Marine pollutant (Sea)</td>
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Section 15: REGULATORY INFORMATION

<table>
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<tr>
<th>International Inventories</th>
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<tr>
<td>EINECS/ELINCS</td>
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<table>
<thead>
<tr>
<th>Japanese regulations</th>
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<tr>
<td>Fire Service Act</td>
<td>Category IV, Class III petroleum, dangerous grade 3</td>
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<tr>
<td>Poisonous and Deleterious Substances Control Law</td>
<td>Deleterious Substances 3rd. Grade</td>
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<tr>
<td>Industrial Safety and Health Act</td>
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<tr>
<td>Regulations for the carriage and storage of dangerous goods in ship</td>
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</tr>
<tr>
<td>Civil Aeronautics Law</td>
<td>Not applicable</td>
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<tr>
<td>Pollutant Release and Transfer Register Law</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Export Trade Control Order</td>
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Section 16: OTHER INFORMATION

<table>
<thead>
<tr>
<th>Key literature references and sources for data etc.</th>
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<tbody>
<tr>
<td>IATA dangerous Goods Regulations</td>
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<tr>
<td>RTECS:Registry of Toxic Effects of Chemical Substances</td>
<td></td>
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<tr>
<td>Japan Industrial Safety and Health Association GHS Model SDS</td>
<td></td>
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<tr>
<td>Chemical Dictionary, Kyoritsu Publishing Co., Ltd.</td>
<td></td>
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<tr>
<td>etc</td>
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W01W0102-1233 JGHEEN t-Butyl Cyanoacetate
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