SAFETY DATA SHEET

According to JIS Z 7253:2019
Revision Date 09-Feb-2021
Version 2.02

Section 1: PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product name</th>
<th>Collodion (10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product code</td>
<td>031-16425</td>
</tr>
</tbody>
</table>

Manufacturer  
FUJIFILM Wako Pure Chemical Corporation  
1-2 Doshomachi 3-Chome  
Chuo-ku, Osaka 540-8605, Japan  
Phone: +81-6-6203-3741  
Fax: +81-6-6203-5964  

Supplier  
FUJIFILM Wako Pure Chemical Corporation  
1-2 Doshomachi 3-Chome, Chuo-ku, Osaka 540-8605, Japan  
Phone: +81-6-6203-3741  
Fax: +81-6-6203-2029  

Emergency telephone number  
+81-6-6203-3741 / +81-3-3270-8571  

Recommended uses and restrictions on use  
For research use only

Section 2: HAZARDS IDENTIFICATION

GHS classification
Classification of the substance or mixture
Explosives  
Division 1.1
Flammable liquids  
Category 2
Serious eye damage/eye irritation  
Category 2B
Carcinogenicity  
Category 1A
Reproductive Toxicity  
Category 1A
Specific target organ toxicity (single exposure)  
Category 3 Respiratory tract irritation, Narcotic effects
Specific target organ toxicity (repeated exposure)  
Category 1 liver  
Category 2 central nervous system

Pictograms

Signal word  
Danger

Hazard statements
H201 - Explosive; mass explosion hazard
H225 - Highly flammable liquid and vapor
H320 - Causes eye irritation
H350 - May cause cancer
H360 - May damage fertility or the unborn child
H353 - May cause respiratory irritation
H336 - May cause drowsiness or dizziness
H372 - Causes damage to the following organs through prolonged or repeated exposure: liver
H373 - May cause damage to the following organs through prolonged or repeated exposure: central nervous system
Precautionary statements-(Prevention)

• Obtain special instructions before use
• Do not handle until all safety precautions have been read and understood
• Use personal protective equipment as required.
• Wash face, hands and any exposed skin thoroughly after handling
• Do not breathe dust/fume/gas/mist/vapors/spray
• Do not eat, drink or smoke when using this product
• Use only outdoors or in a well-ventilated area
• Keep away from heat/sparks/open flames/hot surfaces. — No smoking
• Keep wetted with water
• Ground/bond container and receiving equipment
• Do not subject to grinding/shock/friction
• Keep container tightly closed
• Use explosion-proof electrical/ventilating/lighting/equipment
• Use only non-sparking tools
• Take precautionary measures against static discharge
• Keep cool

Precautionary statements-(Response)

• IF exposed or concerned: Get medical advice/attention
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
• If eye irritation persists: Get medical advice/attention.
• IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
• Explosion risk in case of fire
• DO NOT fight fire when fire reaches explosives
• In case of fire: Use CO2, dry chemical, or foam for extinction
• Evacuate area

Precautionary statements-(Storage)

• Store locked up.
• Store in a well-ventilated place. Keep container tightly closed
• Store in accordance with local regulations

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  Mixture

<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>Diethyl Ether</td>
<td>45</td>
<td>74.12</td>
<td>(2)-365,(2)-361</td>
<td>公表</td>
<td>60-29-7</td>
</tr>
<tr>
<td>Ethanol</td>
<td>45</td>
<td>46.07</td>
<td>(2)-202</td>
<td>公表</td>
<td>64-17-5</td>
</tr>
<tr>
<td>Collodion</td>
<td>9.5~10.5</td>
<td>N/A</td>
<td>(8)-176</td>
<td>公表</td>
<td>9004-70-0</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

Specific hazards arising from the chemical product
Thermal decomposition can lead to release of irritating and toxic gases and vapors. Vapors may form explosive mixtures with air

Special extinguishing method
No information available

Special protective actions for 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). Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

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.

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**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>JSOH (Japan)</th>
<th>ISHL (Japan)</th>
<th>ACGIH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethyl Ether</td>
<td>400ppm (1200mg/m³)</td>
<td>ISHL/ACL: 400 ppm</td>
<td>STEL: 500 ppm</td>
</tr>
<tr>
<td>Ethanol</td>
<td>N/A</td>
<td>N/A</td>
<td>STEL: 1000 ppm</td>
</tr>
</tbody>
</table>

**Personal protective equipment**
- **Respiratory protection**: gas mask for organic gas
- **Hand protection**: Impermeable 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 - slightly yellow
- **Turbidity**: clear
- **Appearance**: liquid
- **Odor**: Pungent odor

**Melting point/freezing point**: No data available

**Boiling point, initial boiling point and boiling range**: 46 °C

**Flammability**: Highly flammable liquid and vapor

**Evaporation rate**: No data available

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

**Upper/lower flammability or explosive limits**
- **Upper**: No data available
- **Lower**: -20 °C

**Flash point**: No data available

**Auto-ignition temperature**: No data available

**Decomposition temperature**: No data available

**pH**: 4.0 - 8.0 (25 °C)

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

**Dynamic viscosity**: No data available

**Solubilities**

**n-Octanol/water partition coefficient; log Pow**: No data available

**Vapour pressure**: No data available

**Specific Gravity / Relative density**: 0.765-0.775

**Vapour density**: No data available

**Particle characteristics**: No data available

Section 10: STABILITY AND REACTIVITY

**Stability**

**Reactivity**: No data available

**Chemical stability**: May be altered by light.

**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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethyl Ether</td>
<td>1,207 mg/kg (Rat)</td>
<td>&gt; 20 mL/kg (Rabbit)</td>
<td>32000 ppm (Rat) 4 h</td>
</tr>
<tr>
<td>Ethanol</td>
<td>6200 mg/kg (Rat)</td>
<td>20000 mg/kg (Rabbit)</td>
<td>63000 ppm (rat) 4 h</td>
</tr>
<tr>
<td>Collodion</td>
<td>&gt; 5000 mg/kg (Rat)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Chemical Name | Acute toxicity -oral- source information | Acute toxicity -dermal- source information | Acute toxicity -inhalation gas-source information
--- | --- | --- | ---
Diethyl Ether | Based on the NITE GHS classification results. | Based on the NITE GHS classification results. | Based on the NITE GHS classification results.
Ethanol | Based on the NITE GHS classification results. | Based on the NITE GHS classification results. | Based on the NITE GHS classification results.
Collodion | Based on the NITE GHS classification results. | Based on the NITE GHS classification results. | Based on the NITE GHS classification results.

Chemical Name | Acute toxicity -inhalation vapor-source information | Acute toxicity -inhalation dust-source information | Acute toxicity -inhalation mist-source information
--- | --- | --- | ---
Diethyl Ether | Based on the NITE GHS classification results. | Based on the NITE GHS classification results. | Based on the NITE GHS classification results.
Ethanol | Based on the NITE GHS classification results. | Based on the NITE GHS classification results. | Based on the NITE GHS classification results.
Collodion | Based on the NITE GHS classification results. | Based on the NITE GHS classification results. | Based on the NITE GHS classification results.

Skin irritation/corrosion

Chemical Name | Skin corrosion/irritation source information
--- | ---
Diethyl Ether | Based on the NITE GHS classification results.
Ethanol | Based on the NITE GHS classification results.
Collodion | Based on the NITE GHS classification results.

Serious eye damage/irritation

Chemical Name | Serious eye damage/irritation source information
--- | ---
Diethyl Ether | Based on the NITE GHS classification results.
Ethanol | Based on the NITE GHS classification results.
Collodion | Based on the NITE GHS classification results.

Respiratory or skin sensitization

Chemical Name | Respiratory or Skin sensitization source information
--- | ---
Diethyl Ether | Based on the NITE GHS classification results.
Ethanol | Based on the NITE GHS classification results.
Collodion | Based on the NITE GHS classification results.

Reproductive cell mutagenicity

Chemical Name | germ cell mutagenicity source information
--- | ---
Diethyl Ether | Based on the NITE GHS classification results.
Ethanol | Based on the NITE GHS classification results.
Collodion | Based on the NITE GHS classification results.

Carcinogenicity

Chemical Name | Carcinogenicity source information
--- | ---
Diethyl Ether | Based on the NITE GHS classification results.
Ethanol | Based on the NITE GHS classification results.
Collodion | Based on the NITE GHS classification results.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>NTP</th>
<th>IARC</th>
<th>ACGIH</th>
<th>JSOH (Japan)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethyl Ether</td>
<td>60-29-7</td>
<td>Group 3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>Known</td>
<td>Group 1</td>
<td>A3</td>
</tr>
<tr>
<td>Collodion</td>
<td>Group 2A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Reproductive toxicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Reproductive toxicity source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethyl Ether</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
<tr>
<td>Collodion</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>Diethyl Ether</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
<tr>
<td>Collodion</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>Diethyl Ether</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
<tr>
<td>Collodion</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>Diethyl Ether</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
<tr>
<td>Collodion</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>Diethyl Ether</td>
<td>N/A</td>
<td>LC50 : Fathead minnow 2,560 mg/L 96 h</td>
<td>LC50 : Daphnia magna 1,378.63 mg/L 48 h</td>
</tr>
<tr>
<td>Ethanol</td>
<td>EC50 : Chlorella alga 1000 mg/L 96 h</td>
<td>LC50 : Oncorhynchus mykiss 11200 ppm 96 h</td>
<td>EC50: Daphnia magna 5463 mg/L 48 h</td>
</tr>
<tr>
<td>Collodion</td>
<td>EC50 : 579 mg/L/96h (Pseudokirchneriella subcapitata)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Other data

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Short-term (acute) hazardous to the aquatic environment</th>
<th>Long-term (chronic) hazardous to the aquatic environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethyl Ether</td>
<td>Based on the NITE GHS classification results.</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
<tr>
<td>Ethanol</td>
<td>Based on the NITE GHS classification results.</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
<tr>
<td>Collodion</td>
<td>Based on the NITE GHS classification results.</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

Persistence and degradability | No information available
Bioaccumulative potential | No information available
Mobility in soil | No information available
Hazard to the ozone layer Mobility | 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
Section 15: REGULATORY INFORMATION

International Inventories
EINECS/ELINCS
-  
TSCA
-  

Japanese regulations
Fire Service Act
Category IV, Class I petroleums, dangerous grade 2
Not applicable

Poisonous and Deleterious Substances Control Law
Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57, Para.1, Enforcement Order Art.18)
Class 2 Organic Solvents (Enforcement Order Attached Table No.6-2, Ordinance on Prevention of Organic Solvent Poisoning Art.1, Para.1, Item 5)
Notifiable Substances (Law Art.57-2, Enforcement Oder Art.18-2 Attached Table No.9/No.61,65,424)
Working Environment Evaluation Standards, Administrative Control Levels (Law Art.65-2, Para.1)
Dangerous Substances - Flammable Substance (Enforcement Order Attached Table 1 Item 4)

Industrial Safety and Health Act
Regulations for the carriage and storage of dangerous goods in ship
Flammable Liquids (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage, Attached Table 1)

Civil Aeronautics Law
Flammable Liquids (Ordinance Art.194, MITL Nortification for Air Transportation of Explosives etc., Attached Table 1)

Marine Pollution Prevention Law
Enforcement ordinance Appendix No. 1 Noxious liquid substance Category Z
Not applicable

Pollutant Release and Transfer Register Law
Appendix 1

Export Trade Control Order

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Poisonous and Deleterious Substances Control Law</th>
<th>Industrial Safety and Health Act Substances (Law Art.57-2)</th>
<th>Pollutant Release and Transfer Register Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethyl Ether 60-29-7 (45)</td>
<td>-</td>
<td>Applicable</td>
<td>-</td>
</tr>
</tbody>
</table>
### 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
- Chemical Dictionary, Kyouritsu Publishing Co., Ltd.
- etc

**Disclaimer**

This SDS is according to JIS Z 7253: 2019. 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(2019). *JIS: Japanese Industrial Standards

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<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Poisonous and Deleterious Substances Control Law</th>
<th>Industrial Safety and Health Act Substances (Law Art.57-2)</th>
<th>Pollutant Release and Transfer Register Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol 64-17-5 (45)</td>
<td>-</td>
<td>Applicable</td>
<td>-</td>
</tr>
<tr>
<td>Collodion 9004-70-0 (9.5~10.5)</td>
<td>-</td>
<td>Applicable</td>
<td>-</td>
</tr>
</tbody>
</table>

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**Revision Date** 09-Feb-2021

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**End of Safety Data Sheet**