SAFETY DATA SHEET

According to JIS Z 7253:2012
Revision Date 07-Jan-2019
Version 2.01

Section 1: PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product name</th>
<th>2,5-Piperazinedione</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product code</td>
<td>359-02241</td>
</tr>
<tr>
<td>CAS No</td>
<td>106-57-0</td>
</tr>
<tr>
<td>Formula</td>
<td>C4H6N2O2</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>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</td>
</tr>
<tr>
<td>Supplier</td>
<td>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</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>
<tr>
<td>Announcement of company name change</td>
<td>Company name has changed since April 1, 2018. Former name was &quot;Wako Pure Chemical Industries, Ltd.&quot;</td>
</tr>
</tbody>
</table>

Section 2: HAZARDS IDENTIFICATION

GHS classification
Classification of the substance or mixture
Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 2A

Pictograms

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Hazard statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warning</td>
<td>H315 - Causes skin irritation H319 - Causes serious eye irritation</td>
</tr>
</tbody>
</table>

Precautionary statements-(Prevention)
- Wash face, hands and any exposed skin thoroughly after handling
- Wear protective gloves/protective clothing/eye protection/face protection

Precautionary statements-(Response)
- 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: Wash with plenty of soap and water
• If skin irritation occurs: Get medical advice/attention
• Take off contaminated clothing and wash before reuse

Precautionary statements-(Storage)
• Not applicable

Precautionary statements-(Disposal)
• Not applicable

Others
Other hazards Not available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Single Substance or Mixture Substance

Formula C4H6N2O2

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Weight-%</th>
<th>Molecular weight</th>
<th>ENCS</th>
<th>ISHL No.</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycine anhydride</td>
<td>96</td>
<td>114.1</td>
<td>N/A</td>
<td>8-(2)-597</td>
<td>106-57-0</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

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 contaminent and methods and materials for cleaning up**

Sweep up and gather scattered particles, and collect it in an empty airtight container.

**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**

Avoid contact with 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**

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**

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**: Dust mask
- **Hand protection**: Protection 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**: White - nearly white
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>crystals - crystalline powder</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>312 °C (dec.)</td>
</tr>
<tr>
<td>Boiling point, initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate:</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas):</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Upper :</td>
<td>No data available</td>
</tr>
<tr>
<td>Lower :</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour density</td>
<td>No data available</td>
</tr>
<tr>
<td>Specific Gravity / Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Solubilities</td>
<td>hydrochloric acid : soluble</td>
</tr>
<tr>
<td>n-Octanol/water partition coefficient:(log Pow)</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature:</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature:</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity (coefficient of viscosity)</td>
<td>No data available</td>
</tr>
<tr>
<td>Dynamic viscosity</td>
<td>No data available</td>
</tr>
</tbody>
</table>

**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

**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

<table>
<thead>
<tr>
<th>ADR/RID</th>
<th>UN number</th>
<th>Proper shipping name:</th>
<th>UN classification</th>
<th>Subsidiary hazard class</th>
<th>Packing group</th>
<th>Marine pollutant</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMDG</td>
<td>UN number</td>
<td>Proper shipping name:</td>
<td>UN classification</td>
<td>Subsidiary hazard class</td>
<td>Packing group</td>
<td>Marine pollutant (Sea)</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</td>
<td>No information available</td>
</tr>
<tr>
<td>IATA</td>
<td>UN number</td>
<td>Proper shipping name:</td>
<td>UN classification</td>
<td>Subsidiary hazard class</td>
<td>Packing group</td>
<td>Environmentally Hazardous Substance</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Section 15: REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>International Inventories</th>
<th>EINECS/ELINCS</th>
<th>Listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA</td>
<td>Listed</td>
<td></td>
</tr>
</tbody>
</table>

| Japanese regulations | Fire Service Act | Not applicable |
Poisonous and Deleterious Substances Control Law Not applicable
Industrial Safety and Health Act Not applicable
Regulations for the carriage and storage of dangerous goods in ship Not applicable
Civil Aeronautics Law Not applicable
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
Chemical Dictionary, Kyouritsu 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

Product information
You might get a product which indicates a former company name, during the period of transition.

End of Safety Data Sheet