SAFETY DATA SHEET

According to JIS Z 7253:2012
Revision Date 21-Jun-2018
Version 3

Section 1: PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product name</th>
<th>Silica-Supported Palladium(0) Nanoparticle Catalyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product code</td>
<td>195-16531,191-16533</td>
</tr>
<tr>
<td>CAS No</td>
<td>N/A</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 purposes |

| Announcement of company name change | Company name has changed since April 1, 2018. Former name was "Wako Pure Chemical Industries, Ltd." |

Section 2: HAZARDS IDENTIFICATION

GHS classification
Classification of the substance or mixture
Not a hazardous substance or mixture according to the Globally Harmonized System (GHS)

Pictograms
Signal word none

Hazard statements
Not a hazardous substance or mixture according to the Globally Harmonized System (GHS)

Precautionary statements-(Prevention)
• Not applicable

Precautionary statements-(Response)
• Not applicable

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 Mixture
### Chemical Name

<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>Silica-Supported Palladium</td>
<td>100</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A-19-1653</td>
<td>N/A-19-1653</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**
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

**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**
- 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 eyes and skin. 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. Packed with an inert gas.
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>Silicagel 7631-86-9</td>
<td>N/A</td>
<td>N/A</td>
<td>TWA 10mg/m³</td>
</tr>
</tbody>
</table>

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
gray - brown
Appearance
crystalline powder - powder
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
No data available
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
No data available
Solubilities
No data available
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

### Incompatible materials
- Strong oxidizing agents

### Hazardous decomposition products
- Palladium oxide

## 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>Silicagel</td>
<td>3160 mg/kg (Rat)</td>
<td>&gt; 2000 mg/kg (Rabbit)</td>
<td>&gt; 200 g/m³ 1 h (Rat)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Acute toxicity -oral- source information</th>
<th>Acute toxicity -dermal- source information</th>
<th>Acute toxicity -inhalation gas-source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicagel</td>
<td></td>
<td></td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Acute toxicity -inhalation vapor-source information</th>
<th>Acute toxicity -inhalation dust-source information</th>
<th>Acute toxicity -inhalation mist-source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicagel</td>
<td>Based on the NITE GHS classification results.</td>
<td>Based on the NITE GHS classification results.</td>
<td></td>
</tr>
</tbody>
</table>

### Skin irritation/corrosion

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Skin corrosion irritation source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicagel</td>
<td></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>Silicagel</td>
<td></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>Silicagel</td>
<td></td>
</tr>
</tbody>
</table>

### Reproductive cell mutagenicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Mutagenic source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicagel</td>
<td></td>
</tr>
</tbody>
</table>

### Carcinogenicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Carcinogenicity source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicagel</td>
<td></td>
</tr>
</tbody>
</table>

<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>Silicagel</td>
<td></td>
<td></td>
<td>Group 3</td>
<td></td>
</tr>
<tr>
<td>7631-86-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Section 12: ECOLOGICAL INFORMATION

#### Ecotoxicity
No information available

#### Other data

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Aquatic toxicity -Acute- source information</th>
<th>Aquatic toxicity -Chronic- source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicagel</td>
<td></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**: 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**: -
- **Proper shipping name**: 
- **UN classification**: 
- **Subsidiary hazard class**: 
- **Packing group**: 
- **Marine pollutant**: Not applicable

#### IMDG
- **UN number**: -
- **Proper shipping name**: 
- **UN classification**: 
- **Subsidiary hazard class**: 
- **Packing group**: 
- **Marine pollutant (Sea)**: Not applicable
- **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**: No information available
IATA: Not regulated

Proper shipping name: -

UN classification: -

Subsidiary hazard class: -

Packing group: -

Environmentally Hazardous Substance: Not applicable

Section 15: REGULATORY INFORMATION

International Inventories

EINECS/ELINCS: Listed

TSCA: Listed

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
Dictionary of Synthetic Organic Chemistry, SSOCJ, Koudansha Scientifc Co.Ltd.
Chemical Dictionary, Kyouritsu Publishing Co., Ltd.

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