

CANON OPTRON INC.
 SDS Number: EA01
 Product Name: AI2O3

SAFETY DATA SHEET

rev. 7.0 Date of Issue 2014/9/1
 Revised Date 2022/5/13

SECTION 1 Chemicals and company identification

| | |
|----------------------------|---|
| Product name | AI2O3 |
| Product code | EA01 |
| Company name | CANON OPTRON INC. |
| Address | 1744-1, Kanakubo, Yuki-shi, Ibaraki-ken, 307-0015 Japan |
| Section name | Sales Department |
| Telephone number | +81-296-21-3700 |
| Fax number | +81-296-21-3770 |
| Emergency telephone number | +81-296-21-3700 |
| Use | Vacuum deposition material |

SECTION 2 Hazards identification



GHS Classification (A classification by JIS Z 7252 "classification methods such as chemical substances based on GHS")

| | | | |
|-------------------------------------|--|------------------------------------|-----------------------------|
| Physical hazards | Explosives | Classification not possible | |
| | Flammable gases | Not applicable | |
| | Aerosols | Not applicable | |
| | Oxidizing gases | Not applicable | |
| | Gas under pressure | Not applicable | |
| | Flammable liquids | Not applicable | |
| | Flammable solids | Classification not possible | |
| | Self-reactive substances and mixtures | Classification not possible | |
| | Pyrophoric liquids | Not applicable | |
| | Pyrophoric solids | Classification not possible | |
| | Self-heating substances and mixtures | Classification not possible | |
| | Substances and mixtures which, in contact with water, emit flammable gases | Classification not possible | |
| | Oxidizing liquids | Not applicable | |
| | Oxidizing solids | Classification not possible | |
| | Organic peroxides | Classification not possible | |
| | Corrosive to metals | Classification not possible | |
| | Desensitize explosives | Classification not possible | |
| | Health hazards | Acute toxicity(oral) | Not classified |
| | | Acute toxicity(dermal) | Classification not possible |
| | | Acute toxicity (Inhalation: Gases) | Not applicable |
| Acute toxicity (Inhalation: Vapors) | | Classification not possible | |

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| | | |
|------------------------------------|--|--|
| | Acute toxicity (Inhalation: Dusts and mists) | Classification not possible |
| | Skin corrosion/irritation | Classification not possible |
| | Serious eye damage/eye irritation | Classification not possible |
| | Respiratory sensitization | Classification not possible |
| | Skin sensitization | Classification not possible |
| | Germ cell mutagenicity | Classification not possible |
| | Carcinogenicity | Not classified |
| | Reproductive toxicity | Classification not possible |
| | Reproductive toxicity, effects on or via lactation | Classification not possible |
| | Specific target organ toxicity(single exposure) | Category 3 |
| | Specific target organ toxicity(repeated exposure) | Category 1 |
| | Aspiration hazard | Classification not possible |
| Environmental hazards | Hazardous to the aquatic environment Short-term(acute) | Classification not possible |
| | Hazardous to the aquatic environment Long-term(chronic) | Classification not possible |
| | Hazardous to the ozone layer | Classification not possible |
| Label elements | | |
| hazard Pictograms | Exclamation | Health Hazard |
| |  |  |
| Signal word | Danger | |
| Dangerous goods hazard information | May cause respiratory irritation. Causes damage to organs through prolonged or repeated exposure Lungs. | |
| Precautionary statements | | |
| 【Safety measures】 | Do not breathe dust/fume/gas/mist/vapours/spray. Avoid breathing dust/fume/gas/mist/vapours/spray. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. | |

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|----------------------|--|
| 【First-aid measures】 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF exposed or concerned: Call poison center or doctor/physician. Call a poison center / doctor/physician if you feel unwell. Get medical advice/attention if you feel unwell. Specific treatment. |
| 【Storage】 | Store in a well-ventilated place. Keep container tightly closed. Store locked up. |
| 【Disposal】 | Dispose of contents/container in accordance with national regulations. |
| 【Other hazards】 | - |

SECTION 3 Composition/information on ingredients

| Substance/Mixture | Substance |
|--------------------------------------|--|
| Chemical name | Aluminum oxide |
| Chemical formula | Al ₂ O ₃ |
| Concentration or concentration range | 99.9%< |
| CAS No. | 1344-28-1 |
| TSCA Inventory | Aluminum oxide (Al ₂ O ₃) |
| EINECS number | 215-691-6 |
| Radioactive information | Radioactive substances are not used as the material. Therefore, there is no reason that ionizing radiation would be generated. |

SECTION 4 First aid measures

| | |
|---|--|
| Inhalation | Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell. |
| Skin contact | Take off immediately all contaminated clothing. Rinse affected areas with water/shower. IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: : Get medical advice/attention. |
| Eye contact | 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. |
| Ingestion | Rinse mouth. Get medical advice/attention. |
| Most important symptoms and effects, both acute and delayed | Inhalation: Coughing. Eye contact: Reddening. |
| Protection of first aiders | Rescuers, wear suitable protective equipment as the situation demands. |
| Special precautions for physicians | No data available |

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SECTION 5 Firefighting measures

| | |
|---|--|
| Suitable extinguishing media | This material is non-flammable. It use an extinguishing agent adapted to the surrounding fire. |
| Unsuitable extinguishing media | No data available |
| Specific hazards | No data available |
| Specific extinguishing methods | It move a container from the fire area if not dangerous. |
| Special protective equipment for firefighters | On the occasion of fire fighting, including the appropriate air respirator, wear appropriate chemical protective clothing. Immovable case, it is cooled with water spray in and around the container. |

SECTION 6 Accidental release measures

| | |
|--|--|
| Personal precautions, protective equipment, and emergency procedures | Immediately, It isolate leakage area as the appropriate distance in all directions. It prohibit the entrance except the person concerned. Wear, the worker to avoid contact and inhalation gas, fume of the eye, to the skin (see section "protection measures and 8. Exposure prevention") appropriate protective equipment. |
| Environmental precautions | No data available |
| Methods and material for containment and cleaning up | If it is not dangerous to do so, stop the leak. Collection and neutralization: Sweep up leaked material and collect it in a sealable empty container. |
| Secondary disaster prevention measures | Generation of dust, It avoid spreading. |

SECTION 7 Handling and storage

Precautions for safe handling

| | |
|-----------------------------|--|
| Technical measures | Take measures for equipment as described in "8. Exposure controls/personal protection" and wear protective equipment. |
| Safety handling precautions | Be used only in well-ventilated area or outdoors. Do not swallow contact, or inhalation. Do not breathe dust, fumes. |
| Avoidance of contact | Refer to "10. Stability and reactivity." |
| Hygiene measures | Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. |

Conditions for safe storage,
including any incompatibilities

| | |
|---------------------------|--|
| Safe storage conditions | Store in a well-ventilated place. Keep container tightly closed. Store locked up. |
| Safety packaging material | No packaging, regulation of the container, but put to those that do not damage sealable. |

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SECTION 8 Exposure controls/personal protection

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Permissible concentration

ACGIH

(Particulate asbestos-free, less than 1% crystalline silica) TLV-TWA 10mg/m³

Appropriate engineering controls

Making a ventilation exhaust in order to keep the exposure limits or less concentration in the air.
 And placing a safety shower and eye wash in the workplace handling or storage of this material.

Individual protection measures,
 such as personal protective
 equipment

| | |
|------------------------|---------------------|
| Respiratory protection | Dustproof mask |
| Hand protection | Protective gloves |
| Eye/face protection | Dust-proof glasses |
| Skin protection | Protective clothing |

SECTION 9 Physical and chemical properties

Appearance

| | |
|----------------|---------------------------|
| Physical state | Solid |
| Form | Pellets, granules, powder |
| Colour | White or transparency |
| Odour | None |

AI2O3

| | |
|--|---|
| Melting point/freezing point | 2072°C |
| Boiling point or initial boiling point and boiling range | 2980°C |
| Flammability | No data available |
| Upper/lower flammability or explosive limits | No data available |
| Flash point | Noncombustibility |
| Auto-ignition temperature | Noncombustibility |
| Decomposition temperature | No data available |
| pH | No data available |
| Kinematic viscosity | No data available |
| Solubility | |
| Water | Insoluble |
| Other solvents | The slightly soluble in non-polar organic solvent |

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| | |
|--|--|
| Partition coefficient: n-octanol/water | No data available |
| Vapour pressure | 0.073Pa (mp.) |
| Density and/or relative density (Density) | 3.97 ※ 2.63 ~ 3.05 (pellet) as Al ₂ O ₃ |
| Relative vapor density | No data available |
| Particle characteristics | No data available |
| Other information | No data available |

SECTION 10 Stability and reactivity

Al₂O₃

| | |
|------------------------------------|--|
| Reactivity | No data available |
| Chemical stability | Stability |
| Possibility of hazardous reactions | Possibility of hazardous reaction is negligible. |
| Conditions to avoid | Generation of dust, diffusion. |
| Incompatible materials | Not applicable |
| Hazardous decomposition products | Not applicable |

SECTION 11 Toxicological information

Al₂O₃

| | |
|--|--|
| Acute toxicity(oral) | SPECIES: Rat ENDPOINT: LD50 VALUE: > 5000 mg/kg |
| Acute toxicity(dermal) | No data available |
| Acute toxicity (Inhalation: Gases) | Solid (GHS definition) |
| Acute toxicity (Inhalation: Vapours) | No data available |
| Acute toxicity (Inhalation: Dusts and mists) | No data available |
| Skin corrosion/irritation | No data available |
| Serious eye damage/irritation | No data available |
| Respiratory or skin sensitization | No data available |
| Germ cell mutagenicity | The in vivo mutagenicity test has not been carried out, and in the in vitro mutagenicity test, we could only find the Ames test (negative). Therefore we presupposed that we could not classify it for the lack of data. |
| Carcinogenicity | Not classified because of "A" |
| Reproductive toxicity | No data available |

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| | |
|---|---|
| Specific target organ toxicity(single exposure) | <i>It was set as category 3 (respiratory irritation) from the statement of upper respiratory irritation (ICSC (2000)).</i> |
| Specific target organ toxicity(repeated exposure) | <i>It was classified into Category 1 according the statement that by occupational exposure of aluminas, pulmonary fibrosis was occurred (EHC (1997)).</i> |
| Aspiration hazard | <i>No data available</i> |
| Other information | <i>No data available</i> |

SECTION 12 Ecological information

Al2O3

Toxicity

| | |
|---|--------------------------|
| Hazardous to the aquatic environment Short-term(acute) | <i>No data available</i> |
| Hazardous to the aquatic environment Long-term(chronic) | <i>No data available</i> |
| Persistence and degradability | <i>No data available</i> |
| Bioaccumulative potential | <i>No data available</i> |
| Mobility in soil | <i>No data available</i> |
| Hazard to the ozone layer | <i>No data available</i> |
| Other adverse effects | <i>No data available</i> |

SECTION 13 Disposal considerations

| | |
|---|--|
| Waste treatment methods | Process is contracted to industrial waste disposers who received approval of a prefectural governor. |
| Contaminated container and contaminated packaging | The container is recycled after being cleaned, or is appropriately processed according to the standards of related laws and regulations. When disposing of empty containers, the contents should be completely removed. |

SECTION 14 Transport information

Al2O3

International regulation

| | |
|---|--------------------------|
| UN number | <i>Not applicable</i> |
| UN proper shipping name | <i>Not applicable</i> |
| UN classification | <i>Not applicable</i> |
| Transport hazard class | <i>Not applicable</i> |
| Packing group | <i>Not applicable</i> |
| Hazardous to the aquatic environment | <i>No data available</i> |
| Maritime transport in bulk according to IMO instruments | <i>No data available</i> |

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| | |
|-------------------------------|---|
| Japanese laws and regulations | <i>Land regulation information Not applicable Maritime regulatory information non-hazardous materials Aviation regulatory information non-hazardous materials</i> |
| Special precautions for users | <i>When transporting, protect from direct sunlight and take on cargo without breakage of container, corrosion and leakage.</i> |
| Special Provisions | - |

SECTION 15 Regulatory information (Japan)

AI2O3

| | |
|--|--|
| Occupational Safety and Health Law | <i>There is it in the case of an application or an application</i> |
| PRTR Law | <i>Not applicable</i> |
| Poisonous and Deleterious Substances control Law | <i>Not applicable</i> |
| Labor Standards Act | <i>Not applicable</i> |
| Chemical substances control Law | <i>Not applicable</i> |
| Fire fighting Law | <i>Not applicable</i> |
| Air Pollution Control Act | <i>Not applicable</i> |
| Water Pollution Prevention Act | <i>There is it in the case of an application or an application</i> |
| Water Supply Act | <i>There is it in the case of an application or an application</i> |
| Sewerage Act | <i>Not applicable</i> |
| Marine Pollution Prevention Law | <i>Not applicable</i> |
| Waste Management and Public Cleansing Act | <i>Not applicable</i> |
| Note | Ensure this material in compliance with federal requirements and ensure conformity to local regulations. |

SECTION 16 Other information

The Safety Data Sheet (SDS) has been prepared based on currently available materials, information and data, and may be revised based on new information. Further, the important points in the SDS are made for the purpose of normal handling.

When handling the user product in a specialized manner, take the appropriate safety measures for the application or method.

Further, Canon Optron Inc. has paid sufficient attention to the described contents of the SDS, but does not guarantee the accuracy of its contents.

Literature Reference

[WEB site]

National Institute of Technology and Evaluation Homepage
Japan Advanced Information Center of Safety and Health Homepage
Ministry of Health, Labour and Welfare Homepage

[Regulatory review Tools]

ezCRIC (Japan Chemical Database Ltd)