

CANON OPTRON INC.
 SDS Number: EY01
 Product Name: Y2O3

SAFETY DATA SHEET

rev. 8.0 Date of Issue 2013/10/16
 Revised Date 2024/3/15

SECTION 1 Chemicals and company identification

| | |
|----------------------------|---|
| Product name | Y2O3 |
| Product code | EY01 |
| 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 |
| Health hazards | Desensitize explosives | Classification not possible |
| | Acute toxicity(oral) | Classification not possible |
| | 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 | Category 2B |
| | Respiratory sensitization | Classification not possible |
| | Skin sensitization | Classification not possible |
| | Germ cell mutagenicity | Classification not possible |
| | Carcinogenicity | Classification not possible |
| | Reproductive toxicity | Classification not possible |
| | Reproductive toxicity, effects on or via lactation | Classification not possible |
| | Specific target organ toxicity(single exposure) | Classification not possible |
| | Specific target organ toxicity(repeated exposure) | Classification not possible |
| | 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 | No symbol |
| | | No symbol |
| Signal word | | Warning |
| Dangerous goods hazard information | | Causes eye irritation. |
| Precautionary statements | | |
| | 【Safety measures】 | Wash hands thoroughly after handling. |
| | 【First-aid measures】 | 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. |

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|-----------------|---|
| 【Storage】 | — |
| 【Disposal】 | — |
| 【Other hazards】 | — |

SECTION 3 Composition/information on ingredients

| | |
|--------------------------------------|--|
| Substance/Mixture | Mixture |
| Chemical name | Yttrium oxide |
| Chemical formula | Y2O3 |
| Concentration or concentration range | 99.9< |
| CAS No. | 1314-36-9 |
| TSCA Inventory | Yttrium oxide (Y2O3) |
| EINECS number | 215-233-5 |
| 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 | No data available |
| Protection of first aiders | Rescuers, wear suitable protective equipment as the situation demands. |
| Special precautions for physicians | No data available |

SECTION 5 Firefighting measures

| | |
|--------------------------------|---|
| Suitable extinguishing media | Water spray, foam, carbon dioxide, powder fire extinguisher. |
| Unsuitable extinguishing media | Because a fire might spread through the outskirts, It avoid direct stick irrigation. |
| Specific hazards | As a general precaution, in the case of powdered materials, dust explosions can be caused under certain conditions. |

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| Specific extinguishing methods | <p>Cut off the source of combustion to the origin of the fire, and use a fire extinguishing agent to extinguish the fire.</p> <p>Cool surrounding tanks, buildings, etc. by spraying water to prevent the spread of fire.</p> <p>It performs the fire fighting from windward.</p> <p>Restrict access to the area around the fire location to persons other than those involved with the fire.</p> <p>If it is not dangerous to do so, move the container out of the fire area.</p> |
| Special protective equipment for firefighters | <p>Wear appropriate self-contained equipment for respiratory organ protection and protective clothing (heat-resistant) for eye and skin protection during firefighting operations.</p> |

SECTION 6 Accidental release measures

| | |
|--|--|
| Personal precautions, protective equipment, and emergency procedures | <p>It prohibits the entrance except the person concerned.</p> <p>The worker wears appropriate personal protective equipment (in item of "8. revelation prevention and protection measures" reference) and avoids eyes, contact and inhalation to skin.</p> |
| Environmental precautions | <p>It avoids an outflow to the environmental average of the product to have possibilities to influence neighboring environment.</p> |
| Methods and material for containment and cleaning up | <p>Sweep up scattered material or use suction by a vacuum cleaner or the like to prevent scattering and dust emission as much as possible, and collect the material in an empty container.</p> <p>No eating and drinking in the vicinity of handling and storage areas.</p> <p>Promptly remove all sources of ignition (no smoking, sparks, or flames in the vicinity).</p> <p>Prevent inflow into drains, sewers, basements, or closed areas.</p> |
| Secondary disaster prevention measures | <p>No data available</p> |

SECTION 7 Handling and storage

| | |
|--|---|
| Precautions for safe handling | |
| Technical measures | <p>Take measures for equipment as described in "8. Exposure controls/personal protection" and wear protective equipment.</p> |
| Safety handling precautions | <p>It prevents you from producing dust.</p> |
| Avoidance of contact | <p>Refer to "10. Stability and reactivity."</p> |
| Hygiene measures | <p>Wash hands thoroughly after handling.</p> <p>Do not eat, drink or smoke when using this product.</p> |
| Conditions for safe storage, including any incompatibilities | |
| Safe storage conditions | <p>The storage area shall be equipped with the necessary lighting and ventilation equipment to store or handle dangerous or hazardous substances.</p> <p>To take preventive measures against electrostatic discharge.</p> |
| Safety packaging material | <p>It uses the container which it can seal up without damage and the leak.</p> |

SECTION 8 Exposure controls/personal protection

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Permissible concentration

ACGIH

TLV-TWA: 1 mg/m³
(as yttrium and compound, yttrium)
(2015 version)

Appropriate engineering controls

In the work shop which dust produces, It use a device, an apparatus sealed up by all means or a local ventilator.

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 |
| Colour | White |
| Odour | None |

Y2O3

| | |
|--|---|
| Melting point/freezing point | 2,420 degrees Celsius (inorganic compound, chelate dictionary (1997)) |
| Boiling point or initial boiling point and boiling range | Approximately 4,300 degrees Celsius (inorganic compound, chelate dictionary (1997)) |
| Flammability | No data available |
| Upper/lower flammability or explosive limits | No data available |
| Flash point | Noninflammability (GESTIS (2015)) |
| Auto-ignition temperature | Noninflammability (GESTIS (2015)) |
| Decomposition temperature | No data available |
| pH | No data available |
| Kinematic viscosity | No data available |
| Solubility | |
| Water | Insoluble (GESTIS (2015)) |
| Other solvents | No data available |

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| Partition coefficient: n-octanol/water | No data available |
| Vapour pressure | No data available |
| Density and/or relative density (Density) | No data available ※ 2.2 ~ 2.8 (pellet) as Y2O3 |
| Relative vapor density | No data available |
| Particle characteristics | No data available |
| Other information | No data available |

SECTION 10 Stability and reactivity

Y2O3

| | |
|------------------------------------|-------------------|
| Reactivity | No data available |
| Chemical stability | No data available |
| Possibility of hazardous reactions | No data available |
| Conditions to avoid | No data available |
| Incompatible materials | No data available |
| Hazardous decomposition products | No data available |

SECTION 11 Toxicological information

Y2O3

| | |
|--|--|
| Acute toxicity(oral) | For a rat LD50 price,> 5,000 mg/kg (GESTIS (Access on September 2015)) There is information. |
| Acute toxicity(dermal) | No data available |
| Acute toxicity (Inhalation: Gases) | Solid (GHS definition) |
| Acute toxicity (Inhalation: Vapours) | Solid (GHS definition) |
| Acute toxicity (Inhalation: Dusts and mists) | No data available |
| Skin corrosion/irritation | It is written that this substance showed no irritation to rabbit skin (HSDB (Access on September 2015)). However, due to its unknown details, it was considered as insufficient data to be used for the judging as "Not classified." |
| Serious eye damage/irritation | From the information that this substance showed slight irritation to rabbit eyes (HSDB (Access on September 2015)), it was classified in Category 2B. |
| Respiratory or skin sensitization | No data available |
| Germ cell mutagenicity | No data available |

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| Carcinogenicity | The classification is not possible due to lack of data. Besides, it is reported that in a test in which mice were administered yttrium nitrate in the diet (feeding with a food containing 5 ppm as Y) for life, a dosed group showed an increased tendency in incidence of malignant tumors (leukemia, lymphoma, lung adenocarcinoma) of 33.3% in comparison with 14.6% in a control group (not statistically significant) (HSDB (Access on September 2015), DFGOT (1998; German language), Netherlands evaluation document (2000)). |
| Reproductive toxicity | No data available |
| Specific target organ toxicity(single exposure) | No data available |
| Specific target organ toxicity(repeated exposure) | No data available |
| Aspiration hazard | No data available |
| Other information | No data available |

SECTION 12 Ecological information

Y2O3

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

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

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International regulation

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| | |
|---|---|
| UN number | Not applicable |
| UN proper shipping name | Not applicable |
| UN classification | Not applicable |
| Transport hazard class | Not applicable |
| Packing group | Not applicable |
| Hazardous to the aquatic environment | No data available |
| Maritime transport in bulk according to IMO instruments | No data available |
| Japanese laws and regulations | Land regulation information Not applicable Maritime regulatory information non-hazardous materials Aviation regulatory information non-hazardous materials |
| Special precautions for users | Requires retention of yellow card when transporting. When transporting, protect from direct sunlight and take on cargo without breakage of container, corrosion and leakage. Do not stack heavy good thereupon. |
| Special Provisions | - |

SECTION 15 Regulatory information (Japan)

Y2O3

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

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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.

The SDS prepared by our company includes all findings from our investigation for reference. Not applicable to all items listed.

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)