

CANON OPTRON INC.
 SDS Number: E010
 Product Name: OM-4

SAFETY DATA SHEET

rev. 7.2 Date of Issue 2014/9/1
 Revised Date 2022/10/3

SECTION 1 Chemicals and company identification

Product name	OM-4
Product code	E010
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	Classification not possible
	Respiratory sensitization	Classification not possible
	Skin sensitization	Category 1
	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)	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 an allergic skin reaction. May cause respiratory irritation. Causes damage to organs through prolonged or repeated exposure Lungs.	

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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. Contaminated work clothing should not be allowed out of the workplace. Wear Protective glovess/protective clothing/eye protection/face protection.
【First-aid measures】	IF ON SKIN: Wash with plenty of soap and water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF exposed or concerned: Call poison center or doctor/physician. Call poison center or doctor/physician if you feel unwell. Get medical advice/attention if you feel unwell. Specific treatment . If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.
【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	Mixture	
Chemical name	<i>Zirconium oxide</i>	<i>Aluminum oxide</i>
Chemical formula	<i>ZrO2</i>	<i>Al2O3</i>
Concentration or concentration range	ZrO2 : 55- 65 Al2O3 : 35- 45	
CAS No.	1314-23-4	1344-28-1
TSCA Inventory	<i>Zirconium oxide (ZrO2)</i>	<i>Aluminum oxide (Al2O3)</i>
EINECS number	<i>215-227-2</i>	<i>215-691-6</i>
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.

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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	This product itself is not flammable.
Unsuitable extinguishing media	No data available
Specific hazards	No data available
Specific extinguishing methods	In the case of a fire in the periphery, the portable container is quickly moved to a safe place.
Special protective equipment for firefighters	Wear suitable protective equipment (gloves, glasses and a mask) in fire-fighting.

SECTION 6 Accidental release measures

Personal precautions, protective equipment, and emergency procedures	Protection equipment (specified as those in which the properties of the product are suitable) worn during operation so that airborne droplets, etc., do not adhere to the skin and dusts and gases are not absorbed.
Environmental precautions	The leakage may not directly flow into rivers or sewage.
Methods and material for containment and cleaning up	The leaked material is scooped up, or swept up and gathered to be recovered in a paper bag or a drum. After recovery, a small amount of the residue is absorbed in sediment, sawdust, etc.
Secondary disaster prevention measures	No data available

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	Handling work must be practiced in a room where there is a local or total ventilation facility.
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.

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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 data available

SECTION 8 Exposure controls/personal protection

ZrO₂

Al₂O₃

Permissible concentration

ACGIH

TLV-TWA: 5 mg/m³
 TLV-TWA: 10 mg/m³
 (as zirconium and compound, zirconium)
 (2015 version)

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

Appropriate engineering controls

Use sealed devices, equipment, or a local exhaust ventilation as much as possible.

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

ZrO₂

Al₂O₃

Melting point/freezing point

2,680°C (Merck(15th,2013))

2072°C

Boiling point or initial boiling point
 and boiling range

4300°C

2980°C

Flammability

No data available

No data available

Upper/lower flammability or
 explosive limits

No data available

No data available

Flash point

Nonflammability (GESTIS (2015))

Noncombustibility

Auto-ignition temperature

Nonflammability (GESTIS (2015))

Noncombustibility

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Decomposition temperature	<i>No data available</i>	<i>No data available</i>
pH	<i>No data available</i>	<i>No data available</i>
Kinematic viscosity	<i>No data available</i>	<i>No data available</i>
Solubility		
Water	<i>Insoluble</i>	<i>Insoluble</i>
Other solvents	<i>No data available</i>	<i>The slightly soluble in non-polar organic solvent</i>
Partition coefficient: n-octanol/water	<i>No data available</i>	<i>No data available</i>
Vapour pressure	<i>No data available</i>	<i>0.073Pa (mp.)</i>
Density and/or relative density (Density)	<i>No data available</i> ※ 3.0 ~ 3.8 (pellet) as OM-4	<i>3.97</i>
Relative vapor density	<i>No data available</i>	<i>No data available</i>
Particle characteristics	<i>No data available</i>	<i>No data available</i>
Other information	<i>No data available</i>	<i>No data available</i>

SECTION 10 Stability and reactivity

	<u>ZrO2</u>	<u>Al2O3</u>
Reactivity	<i>No data available</i>	<i>No data available</i>
Chemical stability	<i>No data available</i>	<i>Stability</i>
Possibility of hazardous reactions	<i>No data available</i>	<i>Possibility of hazardous reaction is negligible.</i>
Conditions to avoid	<i>No data available</i>	<i>Generation of dust, diffusion.</i>
Incompatible materials	<i>No data available</i>	<i>Not applicable</i>
Hazardous decomposition products	<i>No data available</i>	<i>Not applicable</i>

SECTION 11 Toxicological information

	<u>ZrO2</u>	<u>Al2O3</u>
Acute toxicity(oral)	<i>No data available</i>	<i>SPECIES: Rat ENDPOINT: LD50 VALUE: > 5000 mg/kg</i>
Acute toxicity(dermal)	<i>No data available</i>	<i>No data available</i>
Acute toxicity (Inhalation: Gases)	<i>Solid (GHS definition)</i>	<i>Solid (GHS definition)</i>
Acute toxicity (Inhalation: Vapours)	<i>Solid (GHS definition)</i>	<i>No data available</i>
Acute toxicity (Inhalation: Dusts and mists)	<i>No data available</i>	<i>No data available</i>

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Skin corrosion/irritation	<i>No data available</i>	<i>No data available</i>
Serious eye damage/irritation	<i>No data available</i>	<i>No data available</i>
Respiratory or skin sensitization	<i>The classification is not possible due to lack of data. Besides, in DFGOT vol. 12 (1999), zirconium and its compounds are classified as a respiratory sensitizer from the information on zirconium and other zirconium compounds, but this substance was classified as "Classification not possible" due to no information on the substance. It is reported that this substance causes Granulomatous skin reactions in humans (DFGOT vol. 12 (1999)). In DFGOT vol. 12 (1999), zirconium and its compounds are classified as a sensitizer (Sah). From the above, this substance was classified in Category 1.</i>	<i>No data available</i>
Germ cell mutagenicity	<i>No data available</i>	<i>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.</i>
Carcinogenicity	<i>As described in this hazard class for zirconium (CAS number: 7440-67-7), ACGIH classified zirconium and its compounds in A4 in carcinogenicity (ACGIH (7th, 2001)). Therefore, this substance was classified as "Classification not possible" for this hazard class.</i>	<i>Not classified because of "A"</i>
Reproductive toxicity	<i>No data available</i>	<i>No data available</i>
Specific target organ toxicity(single exposure)	<i>No data available</i>	<i>It was set as category 3 (respiratory irritation) from the statement of upper respiratory irritation (ICSC (2000)).</i>

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toxicity(repeated exposure)

As for humans, it is reported that effects on lungs were not observed in workers exposed to this substance (DFGOT vol. 12 (1999)). On the other hand, changes in the lung (asthma, bronchitis, pneumoconiosis, sarcoid granulomatosis, granulomatous interstitial pneumonia) were reported, but it is reported that association with this substance is not clear because they were also exposed to other substances that could cause lung damage (DFGOT vol. 12 (1999)). However, there are cases where zirconium was confirmed in granulomatous lesions in the lungs of three, and extrinsic allergic alveolitis was observed just in one. It is reported that histological examination of the lungs revealed "various stages of epithelioid cell granuloma induced by foreign matter" with foreign matter inclusions in giant cells and fibrosis, and the principal component of foreign matter is zirconium, and similar changes were also found in skin, and granulomatous lesions were observed in mammary and axillary lymph nodes (DFGOT vol. 12 (1999)).

As for experimental animals, it is reported that toxic effects were not found in an inhalation toxicity test using rats, rabbits, dogs, guinea pigs, and cats (DFGOT vol. 12 (1999), ACGIH (7th, 2001)). It is also reported that in a diet administration test using rats, toxic effects were not observed (DFGOT vol. 12 (1999)).

As above, because effects of this substance cannot be denied completely in humans, the substance was classified as "Classification not possible."

It was classified into Category 1 according to the statement that by occupational exposure of aluminas, pulmonary fibrosis was occurred (EHC (1997)).

Aspiration hazard

No data available

No data available

Other information

No data available

SECTION 12 Ecological information

ZrO2Al2O3

Toxicity

Hazardous to the aquatic
environment Short-
term(acute)

No data available

No data available

Hazardous to the aquatic
environment Long-
term(chronic)

No data available

No data available

Persistence and degradability

No data available

No data available

Bioaccumulative potential

No data available

No data available

Mobility in soil

No data available

No data available

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Hazard to the ozone layer	<i>No data available</i>	<i>No data available</i>
Other adverse effects	<i>No data available</i>	<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

	<u>ZrO2</u>	<u>Al2O3</u>
International regulation		
UN number	<i>Not applicable</i>	<i>Not applicable</i>
UN proper shipping name	<i>Not applicable</i>	<i>Not applicable</i>
UN classification	<i>Not applicable</i>	<i>Not applicable</i>
Transport hazard class	<i>Not applicable</i>	<i>Not applicable</i>
Packing group	<i>Not applicable</i>	<i>Not applicable</i>
Hazardous to the aquatic environment	<i>No data available</i>	<i>No data available</i>
Maritime transport in bulk according to IMO instruments	<i>No data available</i>	<i>No data available</i>
Japanese laws and regulations	<i>Land regulation information Not applicable Maritime regulatory information non-hazardous materials Aviation regulatory information non-hazardous materials</i>	<i>Land regulation information Not applicable Maritime regulatory information non-hazardous materials Aviation regulatory information non-hazardous materials</i>
Special precautions for users	<i>Requires retention of yellow card when transporting. When transporting, protect from direct sunlight and take on cargo without breakage of container, corrosion and leakage.</i>	<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)

	<u>ZrO2</u>	<u>Al2O3</u>
Occupational Safety and Health Law	<i>There is it in the case of an application or an application</i>	<i>There is it in the case of an application or an application</i>
PRTR Law	<i>Not applicable</i>	<i>Not applicable</i>
Poisonous and Deleterious Substances control Law	<i>Not applicable</i>	<i>Not applicable</i>

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Labor Standards Act	<i>Not applicable</i>	<i>Not applicable</i>
Chemical substances control Law	<i>Not applicable</i>	<i>Not applicable</i>
Fire fighting Law	<i>Not applicable</i>	<i>Not applicable</i>
Air Pollution Control Act	<i>Not applicable</i>	<i>Not applicable</i>
Water Pollution Prevention Act	<i>Not applicable</i>	<i>There is it in the case of an application or an application</i>
Water Supply Act	<i>Not applicable</i>	<i>There is it in the case of an application or an application</i>
Sewerage Act	<i>Not applicable</i>	<i>Not applicable</i>
Marine Pollution Prevention Law	<i>Not applicable</i>	<i>Not applicable</i>
Waste Management and Public Cleansing Act	<i>Not applicable</i>	<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.

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)