CANON OPTRON INC.
SDS Number: EM04
Product Name: MgO

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	MgO
Product code	EM04
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 tumber	+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
	Acute toxicity (Inhalation: Dusts and mists)	Classification not possible

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	Skin corrosion/irritation	Classification not possible
	Serious eye damage/eye irritation	Category 2A
	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)	Category 3
	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 Exclamation

Signal word Warning

Dangerous goods hazard information
Causes serious eye irritation.
May cause respiratory irritation.

Precautionary statements

【Safety measures】
Avoid breathing dust/fume/gas/mist/vapours/spray.
Wash hands thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear Protective glovess/protective clothing/eye protection/face protection.

【First-aid measures】
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call poison center or doctor/physician if you feel unwell.
If eye irritation persists: Get medical advice/attention.

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【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	*Magnesium oxide*
Chemical formula	*MgO*
Concentration or concentration range	99.9<
CAS No.	1309-48-4
TSCA Inventry	*Magnesium oxide (MgO)*
EINECS number	*215-171-9*
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 rising. 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

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SECTION 5 Firefighting measures

Suitable extinguishing media	It uses a water mist, dry chemicals, fire foam, carbon dioxide depending on neighboring fires.
Unsuitable extinguishing media	Because a fire might spread through the outskirts, It avoid direct stick irrigation.
Specific hazards	In the case of fires, a toxic decomposition product may occur.
Specific extinguishing methods	It performs the fire fighting from windward. Restrict access to the area around the fire location to persons other than those involved with the fire. It moves a container from the fire area if not dangerous.
Special protective equipment for firefighters	On the occasion of fire extinguishing work, it wears appropriate personal protective equipment and rescue suit.

SECTION 6 Accidental release measures

Personal precautions, protective equipment, and emergency procedures	It prohibits the entrance except the person concerned. 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. Personal protective equipment for the individual, A mask with filter for the particle depending on density out of the air.
Environmental precautions	It avoids an outflow to the environmental average of the product to have possibilities to influence neighboring environment.
Methods and material for containment and cleaning up	The prohibition of handling and eating and drinking in neighboring of the storage area. It prevents the inflow to a drainage, a sewer, a basement or the closedown place. It sweeps it and puts the material which it shed in a container. When you may moisten it, it sweeps it after moistening it in order to avoid dust and puts it.
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	Use it only at the outdoors or a good place of the ventilation. It prevents diffusion of the dust.
Avoidance of contact	No contact with halogen-containing substances and strong acid.
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	You lock it, and keep it Keep it at a good place of the ventilation. Sealing up a container. It establishes the facilities of illumination necessary it stores danger, detriment in the storage area or to handle it and the ventilation. It avoids direct rays of the sun and keeps it in the cool and dark space. It separates it from strong acid. Drying.

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Safety packaging material	It uses the container which it can seal up without damage and the leak.

SECTION 8 Exposure controls/personal protection

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Permissible concentration

ACGIH	*TLV-TWA: 10 mg/m³ of (II) (magnesium oxide) (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

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Melting point/freezing point	*2800℃*
Boiling point or initial boiling point and boiling range	*3600℃*
Flammability	*No data available*
Upper/lower flammability or explosive limits	*No data available*
Flash point	*Noninflammability (ICSC (2010))*
Auto-ignition temperature	*Noninflammability (ICSC (2010))*
Decomposition temperature	*No data available*
pH	*10.3 (20 degrees Celsius, saturated solution) (GESTIS (2015))*
Kinematic viscosity	*No data available*

Solubility

Water	*Slightly soluble in water. (ICSC (2010))*
Other solvents	*Soluble in acid and ammonium salt solutions. Insoluble in ethanol (HSDB (2015)).*

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Partition coefficient: n-octanol/water	*No data available*
Vapour pressure	*0 mmHg (20℃) (NITE (2015))*
Density and/or relative density	*MIN3.2 ,MAX3.75 (WebKis-Plus (2015))*
(Density)	※ (granular product) 3.58 2.1-2.3 (pellet) as MgO
Relative vapor density	*No data available*
Particle characteristics	*No data available*
Other information	*No data available*

SECTION 10 Stability and reactivity

MgO

Reactivity	*Noncombustibility*
Chemical stability	*No data available*
Possibility of hazardous reactions	*There is a risk of explosion due to contact with aluminum powder, aniline perchlorate, magnesium powder, or sulfur during heating.* *Produces dangerous reactions with ammonia, strong acid, bromine pentafluoride, chlorine trifluoride, and phosphorus pentachloride.* *Reaction with phosphorus pentachloride is accompanied by incandescence.* *Contact with halogen-containing substances produces dangerous reactions or ignition.*
Conditions to avoid	*No data available*
Incompatible materials	*There is a risk of explosion due to contact with aluminum powder, aniline perchlorate, magnesium powder, or sulfur during heating.* *Produces dangerous reactions with ammonia, strong acid, bromine pentafluoride, chlorine trifluoride, and phosphorus pentachloride.* *Reaction with phosphorus pentachloride is accompanied by incandescence.* *Contact with halogen-containing substances produces dangerous reactions or ignition.*
Hazardous decomposition products	*No data available*

SECTION 11 Toxicological information

MgO

Acute toxicity(oral)	*From reported LD50 values of 3,870 mg/kg (males) and 3,990 mg/kg (females) for rats (HSDB (Access on June 2015))*
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	*No data available*
Serious eye damage/irritation	*Based on the information that a slight irritation of the eye was observed in 95 workers exposed to the dust of this substance (an unknown concentration) (ACGIH (7th, 2003)), it was classified in Category 2.*

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Respiratory or skin sensitization	*No data available*
Germ cell mutagenicity	*The classification is not possible due to lack of data. There is no in vivo data. As for in vitro, it is reported that a bacterial reverse mutation test was negative (ACGIH (7th, 2003), HSDB (Access on June 2015)).*
Carcinogenicity	*As for humans, it is reported that excess cancers occurred in multiple organs by combined occupational exposure to this substance and others, and specific tumors formed in exposure to this substance were the lip, stomach, and lung cancers based on the standardized incidence ratio (SIR). However, it is described that the interpretation of this result is limited because the number of subjects were small and the level and duration of exposure to magnesium oxide were unknown (ACGIH (7th, 2003)). Besides, there is no evidence of carcinogenicity in humans by an inhalation route of magnesium oxide dust or fumes. It is pointed out that the increased frequency of lung cancer observed in welders in the past is likely caused by exposure to hexavalent chromium, not magnesium oxide (DFGOT vol. 2 (1991)).* *As for experimental animals, it is described that the substance was intratracheally applied in hamsters at a dose of 2mg/week for 30 weeks and observed for up to 100 weeks and as a result, the number of histiocytic lymphomas increased (ACGIH (7th, 2003)). However, there is no carcinogenicity test report according to the standard guidelines.* *From the above, ACGIH classified this substance in A4 in carcinogenicity. Also in this classification, the substance was classified as "Classification not possible" in this hazard class due to lack of data.*
Reproductive toxicity	*No data available*
Specific target organ toxicity(single exposure)	*It is reported that this substance is irritating to the respiratory tract (ACGIH (7th, 2003), DFGOT vol. 2 (1991), HSDB (Access on June 2015)), but no other acute effects were reported.* *From the above, the substance was classified in Category 3 (respiratory tract irritation).*
Specific target organ toxicity(repeated exposure)	*As for humans, a fume fever by occupational exposure was reported. However, it is described that the exposure assessment in this plant was insufficient for assessing it is due to the effects to this substance alone. (ACGIH (7th, 2003))* *There is no useful information on experimental animals. Therefore, the substance was classified as "Classification not possible."*
Aspiration hazard	*No data available*
Other information	No data available

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SECTION 12 Ecological information

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Toxicity

Hazardous to the aquatic environment Short-term(acute)	*No data available*
Hazardous to the aquatic environment Long-term(chronic)	*No data available*
Persistence and degradablility	*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

MgO

International regulation

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 lows and regulations	*No data available*
Special precautions for users	*Requires retention of yellow card when transporting. 。* *Ensure that the container is not damaged or leaking.* *Ensure that loads are prevented from collapsing.* *Conduct packaging, labeling, and transportation in accordance with applicable laws and regulations.* *Avoid direct sunlight.* *Refer to "Accidental release measures."*
Special Provisions	–

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SECTION 15 Regulatoly information(Japan)

MgO

Occupational Safety and Health Law	*No data available*
PRTR Law	*No data available*
Poisonous and Deleterious Substances control Law	*No data available*
Labor Standards Act	*No data available*
Chemical substances control Law	*No data available*
Fire fighting Law	*No data available*
Air Pollution Control Act	*No data available*
Water Pollution Prevention Act	*No data available*
Water Supply Act	*No data available*
Sewerage Act	*No data available*
Marine Pollution Prevention Law	*No data available*
Waste Management and Public Cleansing Act	*No data available*
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)