CANON OPTRON INC.
SDS Number: EA03
Product Name: AI

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	AI
Product code	EA03
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)	Classification not possible
	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
	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	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 1
	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 — Health Hazard

Signal word — Danger

Dangerous goods hazard information — Causes damage to organs Respiratory organs.
Causes damage to organs through prolonged or repeated exposure Respiratory organs.

Precautionary statements

【Safety measures】 — Do not breathe dust/fume/gas/mist/vapours/spray.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.

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【First-aid measures】	IF exposed or concerned: Call poison center or doctor/physician. Get medical advice/attention if you feel unwell. Specific treatment.
【Storage】	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*
Chemical formula	*Al*
Concentration or concentration range	99.9%<
CAS No.	7429-90-5
TSCA Inventry	*Aluminum*
EINECS number	*231-072-3*
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	Inhalation: Lung disorder symptoms. Skin contact: Dermatitis symptoms.
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	Small fire: dry chemical, soda ash, lime, sand Large fire: dry sand, dry chemical, soda ash, lime
Unsuitable extinguishing media	Water, foam fire extinguishing agent
Specific hazards	There is a risk of fire heat, flame and sparks. Is likely to re-ignite after the fire. Is likely to generate a gas corrosive irritation, toxicity, or by fire.
Specific extinguishing methods	It move a container from the fire area if not dangerous. Immovable case, it is cooled with water spray in and around the container. The fire fighting operations performed by a sufficient distance can be effectively performed. Do not pour water into the container. Even after the fire, cooling the container thoroughly with a large amount of water.
Special protective equipment for firefighters	On the occasion of fire extinguishing work, It wear appropriate personal protective equipment and rescue suit.

SECTION 6 Accidental release measures

Personal precautions, protective equipment, and emergency procedures	Do not touch the spilled material, you do not walk therein. Immediately, It isolate leakage area as the appropriate distance in all directions. It prohibit the entrance except the person concerned. Wear, the operator avoid inhalation of gas and contact with eyes, to the skin (see section ″protection measures and 8. Exposure prevention″) appropriate protective equipment. It stay upwind. It away from the lowland. Ventilate Before delving into an enclosed area.
Environmental precautions	It should not be released to the environment. The Note is discharged into rivers or the like, so as not to cause damage to the environment.
Methods and material for containment and cleaning up	The leak thing gathers you using a clean antistatic tool and enter the plastics container and, in the case of a small quantity, do a cover loosely and it is after it and disposes it. In the case of large quantities, a wall prevents an outflow by laying earth on the ground and disposes it later. You must not take water without instructions. The removal of the leak thing disposing it depends on the instructions of the expert. If it is not dangerous to do so, stop the leak. It suppress the evaporation and water it to prevent diffusion of the steam. It do not bet sprinkling on a leakage directly. It cover with dry soil, sand and flaming retardant materials and It prevent scattering and do not get it wet in plastic sheeting in the rain more. It prevent that the powder which It shed covers with plastic sheeting and is scattered and dry it.
Secondary disaster prevention measures	Promptly remove all sources of ignition (no smoking, sparks, or flames in the vicinity). Do not pour water into the container or spilled material.

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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	Because of the risk of occurrence of fire and violent reaction, it is not in contact with water. Do not swallow contact, or inhalation. Avoiding contact with the skin. Do not get in eyes. Do not inhale dust, fumes.
Avoidance of contact	No contact with acid, alcohol, oxidant, and water.
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	Because there is a crisis of the outbreak of the intense reaction and fire, you remove possibility of any contact with the water, and keep it. Keep it in a dry place or an airtight container. Store locked up.
Safety packaging material	It use the container which It can seal up without damage and the leak.

SECTION 8 Exposure controls/personal protection

Al

Permissible concentration

ACGIH	*TLV-TWA: 1 mg/m³ of (R) (metal aluminum and insoluble compound) (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	Pellet, wiry
Colour	Silvery white
Odour	None

Al

Melting point/freezing point	*660℃*
Boiling point or initial boiling point and boiling range	*2327℃*
Flammability	*No data available*
Upper/lower flammability or explosive limits	*No data available*
Flash point	*No data available*
Auto-ignition temperature	*590℃*
Decomposition temperature	*No data available*
pH	*No data available*
Kinematic viscosity	*No data available*
Solubility	
Water	*Insoluble*
Other solvents	*Hydrochloric acid, sulfuric acid, alkali: Soluble (HSDB (2015))*
Partition coefficient: n-octanol/water	*No data available*
Vapour pressure	*1 mmHg (1,284 degrees Celsius) (HSDB (2015))*
Density and/or relative density	*2.7*
(Density)	
Relative vapor density	*No data available*
Particle characteristics	*No data available*
Other information	*No data available*

SECTION 10 Stability and reactivity

Al

Reactivity	*It burn whether powder, foil, the ribbon heat up when It mention a flame.* *It is a non-flammable solid.* *It hardly comes loose in water.*
Chemical stability	*No data available*

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Possibility of hazardous reactions	*It fire it by overheat, a shock, friction, and the thing which It mixed with an oxidizer may self-ignite with moisture and water.* *It may cause a dust explosion when It mix it with air with a powder and granule form.* *It may self-ignite when It contact halogen.* *Hydrogen is generated when It contact water, acid, alkali, and hydrogen may erupt.* *(powder), in response to water, alcohol, react with an oxidizer, strong acid, organochlorine intensely again, and pose the danger of a fire and the explosion.*
Conditions to avoid	*Fire, friction, the strict prohibition including the shock.*
Incompatible materials	*Water, alkali, acid, oxidizer, alcohol*
Hazardous decomposition products	*No data available*

SECTION 11 Toxicological information

AI

Acute toxicity(oral)	*No data available*
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	*The classification is not possible due to lack of data. Besides, it is written that dust of this substance may cause mild inflammation in eyes (HSDB (Access on June 2015)).*
Respiratory or skin sensitization	*No data available*
Germ cell mutagenicity	*The classification is not possible due to lack of data. There are no in vivo and in vitro data for metallic aluminum.*
Carcinogenicity	*In 1970's, increased incidences of bladder and lung cancers were reported in workers at electrolysis tank of aluminum reduction plants. In IARC, working in the aluminum refining process is related to increased risk of cancers in workers, but it is estimated that the causative substance of cancers is not aluminum itself, but polycyclic aromatic hydrocarbon compounds, known carcinogens, or coal tar pitch volatiles, which are by-products derived from the decomposition of electrodes in the electrolysis tank. (IARC Suppl. 7 (1984), ACGIH (7th, 2008), ATSDR (2008)) As results of following epidemiological studies, some reports suggested a functional disorder of respiratory organs, or non-tumor lesions in respiratory organs by exposure to this substance, but there is no report on carcinogenicity (ACGIH (7th, 2008), ATSDR (2008)). Therefore, ACGIH classified in A4 (ACGIH (7th, 2008)). From the above, the substance was classified as "Classification not possible" in this hazard class.*

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Reproductive toxicity	*Due to no information on reproductive toxicity by exposure to this substance, the classification is not possible due to lack of data. Besides, it is reported that in a test in which aluminum chloride or aluminum lactate was dosed in an oral route to pregnant rats during a gestation period, or to neonatal rats on day 5-17 after birth, delayed neurobehavioral development or hypoactivity was observed in newborns (ACGIH (7th, 2008), ATSDR (2008)).*
Specific target organ toxicity(single exposure)	*This substance (dust, powder) is irritating to the respiratory tract (HSDB (Access on June 2015)). As for humans, inhalation of this substance (dust) could cause lung disorder such as pneumoconiosis (aluminosis) (HSDB (Access on June 2015)). As for experimental animals, it is reported that in single inhalation exposure to this substance (dust) in rats, no change in pulmonary function but enzymatic and cytological changes in bronchoalveolar lavage fluid were observed at 0.05 mg/L, and microgranuloma development occurred in the lung and hilum lymph nodes (microscopic observation) at 0.2 mg/L. These were observed at doses corresponding to Category 1 (ACGIH (7th, 2008), PATTY (6th, 2012)).* *From the above, because this substance has effects on the respiratory organs in inhalation exposure, it was classified in Category 1 (respiratory system). Besides, respiratory tract irritation was included in effects on the respiratory organs.* *By adding new information, the previous classification was revised.*
Specific target organ toxicity(repeated exposure)	*As for humans, in an epidemiological survey of 1,142 workers related to manufacturing aluminum and its compounds (1975-1981), effects on lung function were observed in exposure to dust of high concentration (> 100 mg/m^3-year as total dust), and in chest X-ray examination, small and irregular nodes were reported in a lower part of the lung in 7-8% (ACGIH (7th, 2008)).* *As for experimental animals, there is no test report using this substance. Therefore, the substance was classified in Category 1 (respiratory system).* *Besides, as for humans, it is written that decreased cognitive test results were observed, but the clear conclusion was not be drawn (ATSDR (2008)). Moreover, it is written that aluminum is not a factor causing Alzheimer's disease at this time, and that in many studies, there is no consistent relationship between aluminum and nervous disorder (ACGIH (7th, 2008)). Therefore, central nervous system was not included in a target organ.*
Aspiration hazard	*No data available*
Other information	No data available

SECTION 12 Ecological information

AI

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*

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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

AI

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	*Refer to "15. Regulatory information."*
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 Regulatoly information(Japan)

AI

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	*Not applicable*
Chemical substances control Law	*Not applicable*
Fire fighting Law	*There is it in the case of an application or an application*
Air Pollution Control Act	*Not applicable*

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Water Pollution Prevention Act	*There is it in the case of an application or an application*
Water Supply Act	*There is it in the case of an application or an application*
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.

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)