CANON OPTRON INC.
SDS Number: EO17
Product Name: OF－SR

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	OF－SR
Product code	EO17
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	Category 1A
	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)	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 Health Hazard

Signal word

Danger

Dangerous goods hazard information

May cause an allergic skin reaction.
May cause respiratory irritation.
Causes damage to organs Digestive organs.

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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 a poison center or doctor/physician.
Call poison center or doctor/physician 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】
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SECTION 3 Composition/information on ingredients

Substance/Mixture: Mixture

Chemical name	*Copper*	*Iron*	*Perfluoropolyether compound*
Chemical formula	*Cu*	*Fe*	*Perfluoropolyether compound*

Concentration or concentration range
Cu+Fe : 96.4-99.5
Perfluoropolyether compound : 0.5-3.6

Total = 100%

CAS No.	7440-50-8	7439-89-6	Confidential-1
TSCA Inventry	*Copper*	*Iron*	*No data available*
EINECS number	*231-159-6*	*231-096-4*	*No data available*

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.

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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

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.

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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.

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

Permissible concentration

	Cu	***Fe***	***Perfluoropolyether compound***
ACGIH	*TWA 0.2 mg/m³ (Hume), TWA 1 mg/m³ (dust, mist) (2013 Edition)*	*No data available*	*TWA 200ppm (methanol decomposition products:) STEL 250ppm (methanol decomposition products:) (2012 edition)*

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	Cup, fibrous
Colour	Red copper color and dark gray
Odour	None

	Cu	***Fe***	***Perfluoropolyether compound***
Melting point/freezing point	*1083℃*	*1535℃*	*Not applicable*

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Boiling point or initial boiling point and boiling range	*2595℃*	*2730℃*	*Not applicable*
Flammability	*No data available*	*No data available*	*No data available*
Upper/lower flammability or explosive limits	*No data available*	*No data available*	*No data available*
Flash point	*No data available*	*No data available*	*No data available*
Auto-ignition temperature	*No data available*	*No data available*	*No data available*
Decomposition temperature	*No data available*	*No data available*	*No data available*
pH	*No data available*	*No data available*	*No data available*
Kinematic viscosity	*No data available*	*No data available*	*No data available*
Solubility			
Water	*Insoluble*	*Insoluble*	*Sparingly soluble*
Other solvents	*It gradually dissolve in an ammonium solution. : HSDB(2013)*	*No data available*	*No data available*
Partition coefficient: n-octanol/water	*No data available*	*No data available*	*No data available*
Vapour pressure	*1 mm Hg at 1628℃: HSDB(2013)*	*No data available*	*Fine (25 ℃)*
Density and/or relative density	*8.94g/cm³:HSDB(2013)*	*7.86*	*1.71(25℃)*
(Density)			
Relative vapor density	*No data available*	*No data available*	*No data available*
Particle characteristics	*No data available*	*No data available*	*No data available*
Other information	*No data available*	*No data available*	*No data available*

SECTION 10 Stability and reactivity

	Cu	***Fe***	***Perfluoropolyether compound***
Reactivity	*Turns green upon exposure to humid air. Compounds sensitive to shock are formed by acetylene compounds, ethylene oxides, and azides*	*No data available*	*No data available*
Chemical stability	*Turns green upon exposure to humid air. Compounds sensitive to shock are formed by acetylene compounds, ethylene oxides, and azides*	*Slowly oxidizes in the atmosphere.*	*No data available*

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Possibility of hazardous reactions	*Reacts with oxides (chlorates, bromates, and iodates, etc.), so there is a risk of explosion*	*Produces rust when in presence of humidity.*	*No data available*
Conditions to avoid	*Contact with humidity and hazardous reactive materials.*	*High temperature, humidity, and flame*	*No data available*
Incompatible materials	*Acetylene compounds, ethylene oxides, azides, and oxidants (chlorate, bromate, iodate, etc)*	*Strong acids and ammonia*	*No data available*
Hazardous decomposition products	*Carbon monoxide, carbon dioxide, and copper fumes produced by combustion.*	*No data available*	*No data available*

SECTION 11 Toxicological information

	Cu	***Fe***	***Perfluoropolyether compound***
Acute toxicity(oral)	*No data available*	*Oral administration in rat: LD50: 30 g/kg, Intraperitoneal administration in rat: LDLo: 20 mg/kg Oral administration in guinea pig: LD50: 20 mg/kg*	*LD50: 5628mg/kg (rat) (methanol decomposition products:)*
Acute toxicity(dermal)	*No data available*	*No data available*	*No data available*
Acute toxicity (Inhalation: Gases)	*Solid (GHS definition)*	*No data available*	*LC50: 6400ppm/4Hr (rat) (methanol decomposition products:)*
Acute toxicity (Inhalation: Vapours)	*Solid (GHS definition)*	*No data available*	*No data available*
Acute toxicity (Inhalation: Dusts and mists)	*No data available*	*No data available*	*No data available*
Skin corrosion/irritation	*Classification not possible due to lack of data. Besides, it is described in PATTY (6th, 2012) that contact dermatitis associated with copper has been reported, but few cases of dermatitis caused by copper metal or its compounds occur in the industry.*	*No data available*	*Skin irritation: 20mg/24Hr in irritation (rabbit) (methanol decomposition products:)*

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Serious eye damage/irritation	*No data available*	*No data available*	*Eye irritation: 100mg/24Hr in irritation (rabbit) (methanol decomposition products:)*
Respiratory or skin sensitization	*It was classified in Category 1A because the Japan Society for Occupational Health (JSOH) classified copper and its compounds as occupational skin sensitizers Group 2 (Recommendation of Occupational Exposure Limits (Japan Society For Occupational Health (JSOH), 2012)), and it applies to this substance (OEL Documentations (Sensitization classification) (Japan Society For Occupational Health (JSOH, May 26, 2010))).*	*No data available*	*No data available*
Germ cell mutagenicity	*No data available*	*No data available*	*No data available*
Carcinogenicity	*It was classified as "Classification not possible" because the U.S. EPA classified it in I (IRIS (2005)). The category was revised according to the revised GHS classification guidance for the Japanese government.*	*No data available*	*No data available*
Reproductive toxicity	*No data available*	*No data available*	*No data available*

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Specific target organ toxicity(single exposure)	*From the knowledge in humans in EHC (1998), ACGIH (7th, 2001), and ATSDR (2004), respiratory symptoms (respiratory tract irritation) are the main acute toxic signs in the inhalation route. As for oral exposure, it is described that digestive symptoms (nausea, vomiting, abdominal pain, etc.) were observed after the ingestion of drinking-water and others containing high copper concentrations, and there are numerous reports that nausea and vomiting mainly occurred. Other than these, it is reported in EHC that inhalation exposure caused hepatomegaly, but the air levels were very high, and it is described in ATSDR that liver lesions from acute copper poisoning are rare except for specific diseases (Wilson's disease, etc.). Therefore, the liver was not included in the target organs, and it was classified in Category 1 (digestive system), Category 3 (respiratory tract irritation).*	*No data available*	*No data available*

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Specific target organ toxicity(repeated exposure)	*It is reported in EHC (1998), DFGOT vol. 22 (2006) that repeated oral exposure to copper in humans caused digestive symptoms (nausea, vomiting, abdominal pain, etc.) and liver disorder (hepatic failure, cirrhosis). Because digestive symptoms are nausea, vomiting, abdominal pain, etc., they cannot be regarded as specific target organ toxicity. Furthermore, hepatic failure is reported in only one case, therefore it was judged impossible to generalize it. From the above, it was classified as "Classification not possible."*	*No data available*	*There can cause conjunctivitis, headache, dizziness, insomnia, gastrointestinal disorders, blurred vision (methanol decomposition products:)*
Aspiration hazard	*No data available*	*No data available*	*No data available*

Other information: The fluorine resin, which is an active ingredient, there may be generated toxic gas containing hydrogen fluoride is thermally decomposed slowly at high temperatures.

SECTION 12 Ecological information

	Cu	***Fe***	***Perfluoropolyether compound***
Toxicity			
Hazardous to the aquatic environment Short-term(acute)	*No data available*	*No data available*	*No data available*
Hazardous to the aquatic environment Long-term(chronic)	*No data available*	*No data available*	*No data available*
Persistence and degradablility	*No data available*	*No data available*	*No data available*
Bioaccumulative potential	*No data available*	*No data available*	*No data available*
Mobility in soil	*No data available*	*No data available*	*No data available*
Hazard to the ozone layer	*This substance is not listed in Annexes to the Montreal Protocol.*	*No data available*	*No data available*
Other adverse effects	*No data available*	*No data available*	*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

	Cu	***Fe***	***Perfluoropolyether compound***
International regulation			
UN number	*Not applicable*	*Not applicable*	*Not applicable*
UN proper shipping name	*Not applicable*	*Not applicable*	*Not applicable*
UN classification	*Not applicable*	*Not applicable*	*Not applicable*
Transport hazard class	*Not applicable*	*Not applicable*	*Not applicable*
Packing group	*Not applicable*	*Not applicable*	*Not applicable*
Hazardous to the aquatic environment	*No data available*	*No data available*	*No data available*
Maritime transport in bulk according to IMO instruments	*No data available*	*No data available*	*No data available*
Japanese lows and regulations	*Refer to "15. Regulatory information."*	*Refer to "15. Regulatory information."*	*No data available*
Special precautions for users	*When transporting, protect from direct sunlight and take on cargo without breakage of container, corrosion and leakage. Do not transport with food and feedstuffs. Do not stack heavy good thereupon.*	*No data available*	*No data available*
Special Provisions	－	－	－

SECTION 15 Regulatoly information（Japan）

	Cu	***Fe***	***Perfluoropolyether compound***
Occupational Safety and Health Law	*There is it in the case of an application or an application*	*Not applicable*	*No data available*
PRTR Law	*Not applicable*	*Not applicable*	*No data available*
Poisonous and Deleterious Substances control Law	*Not applicable*	*Not applicable*	*No data available*

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Labor Standards Act	*Not applicable*	*Not applicable*	*No data available*
Chemical substances control Law	*Not applicable*	*Not applicable*	*No data available*
Fire fighting Law	*Not applicable*	*There is it in the case of an application or an application*	*No data available*
Air Pollution Control Act	*There is it in the case of an application or an application*	*Not applicable*	*No data available*
Water Pollution Prevention Act	*There is it in the case of an application or an application*	*There is it in the case of an application or an application*	*No data available*
Water Supply Act	*There is it in the case of an application or an application*	*There is it in the case of an application or an application*	*No data available*
Sewerage Act	*There is it in the case of an application or an application*	*There is it in the case of an application or an application*	*No data available*
Marine Pollution Prevention Law	*Not applicable*	*Not applicable*	*No data available*
Waste Management and Public Cleansing Act	*Not applicable*	*Not applicable*	*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）