

CANON OPTRON INC.

SDS Number: ES17  
 Product Name: SiO<sub>2</sub> (Quartz)

# 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	SiO <sub>2</sub> (Quartz)
Product code	ES17
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
	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

CANON OPTRON INC.

SDS Number: ES17  
 Product Name: SiO2 (Quartz)

# SAFETY DATA SHEET

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

	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	Category 2
	Carcinogenicity	Category 1A
	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)	Category 1
	Aspiration hazard	Classification not possible
Environmental hazards	Hazardous to the aquatic environment Short-term(acute)	Not classified
	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

Suspected of causing genetic defects.  
 May cause cancer.  
 Causes damage to organs through prolonged or repeated exposure Respiratory

Precautionary statements

CANON OPTRON INC.

SDS Number: ES17  
 Product Name: SiO<sub>2</sub> (Quartz)

# SAFETY DATA SHEET

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

<b>【Safety measures】</b>	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapours/spray. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wear Protective gloves/protective clothing/eye protection/face protection.
<b>【First-aid measures】</b>	If exposed or concerned: Get medical advice/attention. Get medical advice/attention if you feel unwell.
<b>【Storage】</b>	Store locked up.
<b>【Disposal】</b>	Dispose of contents/container in accordance with national regulations.
<b>【Other hazards】</b>	-

## SECTION 3 Composition/information on ingredients

Substance/Mixture	Substance
Chemical name	<i>Quartz</i>
Chemical formula	<i>SiO<sub>2</sub> (Quartz)</i>
Concentration or concentration range	99.9<
CAS No.	14808-60-7
TSCA Inventory	<i>Quartz (SiO<sub>2</sub>)</i>
EINECS number	<i>238-878-4</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.
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

CANON OPTRON INC.

SDS Number: ES17  
 Product Name: SiO<sub>2</sub> (Quartz)

# SAFETY DATA SHEET

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

## SECTION 5    Firefighting measures

Suitable extinguishing media	This material is non-flammable. It use an extinguishing agent adapted to the surrounding fire.
Unsuitable extinguishing media	No data available
Specific hazards	There is a risk of the container exploding due to heating.
Specific extinguishing methods	If it is not dangerous to do so, move the container out of the fire area.
Special protective equipment for firefighters	Wear an appropriate breathing apparatus and chemical protective clothing when extinguishing a fire.

## SECTION 6    Accidental release measures

Personal precautions, protective equipment, and emergency procedures	Immediately, It isolate leakage area as the appropriate distance in all directions. 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.
Environmental precautions	The Note is discharged into rivers or the like, so as not to cause damage to the environment. It should not be released to the environment.
Methods and material for containment and cleaning up	Collection and neutralization: Sweep up leaked material and collect it in a sealable empty container. If it is not dangerous to do so, stop the leak. Promptly remove all sources of ignition (no smoking, sparks, or flames in the vicinity).
Secondary disaster prevention measures	Because of the risk of slippery when left on the floor, to handle frequently.

## 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	Be sure to get the instruction manual before use. Do not handle until you read and understand all safety precautions. Do not swallow contact, or inhalation. Making a ventilation exhaust in order to keep the exposure limits or less concentration in the air.
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	

CANON OPTRON INC.

SDS Number: ES17  
 Product Name: SiO<sub>2</sub> (Quartz)

# SAFETY DATA SHEET

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

Safe storage conditions	Store locked up.
Safety packaging material	No packaging, regulation of the container, but put to those that do not damage sealable.

## SECTION 8 Exposure controls/personal protection

### SiO<sub>2</sub> (Quartz)

Permissible concentration

ACGIH

TLV-TWA: 0.025 mg/m<sup>3</sup> (respiratory fraction)  
 (a crystalline silica,  $\alpha$ -quartz and cristobalite)  
 (2015 version)

Appropriate engineering controls

The workshop handling or storage of this material, it is recommended that you install the appropriate safety shower and eye wash.  
 When dust and fume are generated in the high-temperature process, a ventilation system should be installed to keep the air contaminants below the controlled and allowable concentrations.

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	Transparent or white
Odour	None

### SiO<sub>2</sub> (Quartz)

Melting point/freezing point  
 Boiling point or initial boiling point  
 and boiling range  
 Flammability  
 Upper/lower flammability or  
 explosive limits  
 Flash point  
 Auto-ignition temperature

Melting point/freezing point	1610°C
Boiling point or initial boiling point and boiling range	2230°C
Flammability	No data available
Upper/lower flammability or explosive limits	Nonflammability (ICSC (2010))
Flash point	Noncombustibility
Auto-ignition temperature	Noncombustibility

CANON OPTRON INC.

SDS Number: ES17  
 Product Name: SiO<sub>2</sub> (Quartz)

# SAFETY DATA SHEET

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

Decomposition temperature	<i>No data available</i>
pH	<i>No data available</i>
Kinematic viscosity	<i>No data available</i>
Solubility	
Water	<i>Insoluble</i>
Other solvents	<i>No data available</i>
Partition coefficient: n-octanol/water	<i>No data available</i>
Vapour pressure	<i>0 mmHg (20°C) (HSFS (2015))</i>
Density and/or relative density (Density)	<i>No data available</i>
Relative vapor density	<i>No data available</i>
Particle characteristics	<i>No data available</i>
Other information	<i>No data available</i>

## SECTION 10 Stability and reactivity

### SiO<sub>2</sub> (Quartz)

Reactivity	<i>No data available</i>
Chemical stability	<i>No data available</i>
Possibility of hazardous reactions	<i>It produce alkali hydroxide, hydrogen fluoride, hydrofluoric acid and a dangerous reaction.</i>
Conditions to avoid	<i>No data available</i>
Incompatible materials	<i>No data available</i>
Hazardous decomposition products	<i>No data available</i>

## SECTION 11 Toxicological information

### SiO<sub>2</sub> (Quartz)

Acute toxicity(oral)	<i>No data available</i>
Acute toxicity(dermal)	<i>No data available</i>
Acute toxicity (Inhalation: Gases)	<i>Solid (GHS definition)</i>
Acute toxicity (Inhalation: Vapours)	<i>Solid (GHS definition)</i>
Acute toxicity (Inhalation: Dusts and mists)	<i>No data available</i>
Skin corrosion/irritation	<i>No data available</i>
Serious eye damage/irritation	<i>No data available</i>

CANON OPTRON INC.

SDS Number: ES17  
Product Name: SiO2 (Quartz)

## SAFETY DATA SHEET

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

Respiratory or skin sensitization	<i>No data available</i>
Germ cell mutagenicity	<i>As for in vivo, an hprt gene mutation test with alveolar epithelial cells of rats dosed by intratracheal instillation was positive, an hprt gene mutation test with the lung tissue of mice was negative though the method of administration was not specified, a micronucleus test with mice dosed intraperitoneally was negative, a chromosomal aberration test and a sister chromatid exchange test with human lymphocytes were positive though exposure methods were not specified, oxidative DNA damage tests with the lung and peripheral blood of rats were positive or negative, and DNA strand break tests with the epithelial lung cells of rats were positive (SIDS (2013), CICAD 24 (2000), DFGOT Vol. 14 (2000), IARC 68 (1997)). As for in vitro, mammalian cell gene mutation tests gave positive and negative results, micronucleus tests with mammalian cultured cells gave positive and negative results, and chromosomal aberration tests and sister chromatid exchange tests with mammalian cultured cells were negative (SIDS (2013), CICAD 24 (2000), DFGOT Vol. 14 (2000), IARC 68 (1997)). From the above, this substance was classified in Category 2 in accordance with the GHS classification guidance for the Japanese government. Besides, the genotoxicity of this substance is thought to be attributable to reactive oxygen species derived from this substance or from the inflammatory cells caused by this substance (SIDS (2013), IARC 100C (2012)).</i>
Carcinogenicity	<i>In the results of many epidemiological studies, a positive correlation between occupational exposure to crystalline silica containing this substance (quartz) and an increased risk of lung cancer was found. Also, in particular, even when the results of multiple studies were pooled, and different meta-analyses were conducted, a significant increase in the relative risk was shown consistently (IARC 100C (2012), SIDS (2013)). Accordingly, it is described that there is sufficient evidence for an increased risk of lung cancer in humans by inhalation exposure to crystalline silica dust with the shape of this substance (quartz) (IARC 100C (2012)). Meanwhile, in experimental animals, in a 2-year test in which female and male rats were exposed by inhalation to 1 mg/m<sup>3</sup> of this substance (mass median aerodynamic diameter (MMAD): 1.3 micrometers), and in a 83-week test in which female rats were exposed by nose inhalation to 12 mg/m<sup>3</sup> of this substance (MMAD: 2.24 micrometers), significant increases in lung tumors were observed in the exposed group, and there were many adenocarcinomas as the histological type. Furthermore, also in a study in which female rats were exposed by nose inhalation to 6.1 and 30.6 mg/m<sup>3</sup> of this substance (MMAD: 1.8 micrometers), a dose-dependent increase in lung tumors was observed, and squamous cell carcinoma was the most common in the histological type, and bronchiolo/alveolar epithelial carcinomas or adenomas were often observed (IARC 100C (2012)). From the above, based on information on carcinogenicity in humans and experimental animals, in 1997, IARC classified it in Group 1 with regard to carcinogenicity in humans due to exposure to the dust of this substance, and even in a reevaluation in 2012, the classification result was not changed (IARC 68 (1997), IARC 100C (2012)). As for results of carcinogenicity classifications by other organizations, Japan Society for Occupational Health classified it in Group 1 (Recommendation of Occupational Exposure Limits (2015)), ACGIH has classified it in A2 since 2004 (ACGIH (7th, 2006)), and NTP classified Crystalline Silica (Respirable Size) as K (NTP RoC (13th, 2014)). Therefore, it was classified in Category 1A for this hazard class.</i>
Reproductive toxicity	<i>No data available</i>
Specific target organ toxicity(single exposure)	<i>Classification not possible due to lack of data. Besides, the data on effects on the human respiratory organs used in the previous classification was short-term exposure data and not data on single-dose acute effects.</i>

CANON OPTRON INC.

SDS Number: ES17  
 Product Name: SiO<sub>2</sub> (Quartz)

# SAFETY DATA SHEET

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

Specific target organ  
 toxicity(repeated exposure)

*In humans, in many epidemiological studies, effects on the respiratory organs (silicosis, lung cancer, pulmonary tuberculosis) due to occupational exposure to this substance were found. In addition, autoimmune diseases (scleroderma, rheumatoid arthritis, polyarthritis, mixed connective tissue disease, systemic lupus erythematosus, Sjogren's syndrome, polymyositis, fibrositis), chronic renal disease, and subclinical renal changes were also observed (SIDS (2013), CICAD 24 (2000), DFGOT vol. 14 (2000)). These kidney diseases are thought to be related to autoimmunity (SIDS (2013)). Likewise in experimental animals, fibrosis in the lung was found in repeated inhalation exposure tests with rats (SIDS (2013)). Therefore, it was classified in Category 1 (respiratory organs, immune system, kidney).*

Aspiration hazard

No data available

Other information

No data available

## SECTION 12 Ecological information

### SiO<sub>2</sub> (Quartz)

Toxicity

Hazardous to the aquatic  
 environment Short-  
 term(acute)

*From the test data on amorphous silica of 24-hour LL50 > 10,000 mg/L for crustacea (Daphnia magna) and 96-hour LLO = 10,000 mg/L for fish (Danio rerio) (both SIDS, 2013), it was classified as "Not classified."*

Hazardous to the aquatic  
 environment Long-  
 term(chronic)

No data available

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

### SiO<sub>2</sub> (Quartz)

International regulation

UN number

Not applicable

UN proper shipping name

Not applicable



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SDS Number: ES17  
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# SAFETY DATA SHEET

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

UN classification	<i>Not applicable</i>
Transport hazard class	<i>Not applicable</i>
Packing group	<i>Not applicable</i>
Hazardous to the aquatic environment	<i>No data available</i>
Maritime transport in bulk according to IMO instruments	<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>
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.        Do not stack heavy good thereupon.</i>
Special Provisions	-

## SECTION 15 Regulatory information (Japan)

### SiO<sub>2</sub> (Quartz)

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

## SECTION 16 Other information

CANON OPTRON INC.

SDS Number: ES17  
Product Name: SiO<sub>2</sub> (Quartz)

# SAFETY DATA SHEET

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

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)