

SAFETY DATA SHEETS

1. Identification

Chemical Name	Titanium Dioxide
Product Name	TITONE SA-120
Company Name	Sakai Chemical Industry Co.,Ltd.
Division Name	Titanium Dioxide Division
Section Name	Technology Section
Address	110 tajuku,shimogawa,izumimachi,iwaki,fukushima 971-8183 JAPAN
Tel.	81-246-56-5112
Fax.	81-246-53-5223
Recommended Use	electronic industry material

2. Hazard identification

GHS Classification¹⁾

Physical hazards :	Explosives	Not applicable
	Flammable gases	Not applicable
	Flammable aerosols	Not applicable
	Oxidizing gases	Not applicable
	Gases under pressure	Not applicable
	Flammable liquids	Not applicable
	Flammable solids	Not classified
	Self-reactive substances	Not applicable
	Pyrophoric liquids	Not applicable
	Pyrophoric solids	Not classified
	Self-heating substances	Not classified
	Substances which, in contact with water, emit flammable gases	Not classified
	Oxidizing liquids	Not applicable
	Oxidizing solids	Not classified
	Organic peroxides	Not applicable
	Corrosive to metals	Classification not possible
Health hazards :	Acute toxicity (Oral)	Not classified
	Acute toxicity (Dermal)	Not classified
	Acute toxicity (Gases)	Not applicable
	Acute toxicity (Vapors)	Classification not possible
	Acute toxicity (Dusts)	Not classified
	Acute toxicity (Mists)	Not applicable
	Skin corrosion/irritation	Not classified
	Serious eye damage/eye irritation	Category 2 B

Health hazards :	Respiratory sensitization	Classification not possible
	Skin sensitization	Classification not possible
	Germ cell mutagenicity	Not classified
	Carcinogenicity	Not classified
	Productive toxicity	Classification not possible
	Specific target organs systemic toxicity (Single exposure)	Classification not possible
	Specific target organs systemic toxicity (Repeated exposure)	Classification not possible
	Aspiration hazard	Classification not possible
Environmental hazards :	Acute hazard to aquatic environment	Classification not possible
	Chronic hazard to aquatic environment	Classification not possible
	Hazardous property to the ozone layer	Classification not possible

Label elements¹⁾

Labeling or symbol :	Non
Signal words :	Warning
Hazard statements :	Eye irritation

Precautionary statements :	<p>【Prevention】 Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Do not breathe dust. Wash hands thoroughly after handling. Avoid release to the environment.</p> <p>【Response】 IF INHALED : Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES : 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. Get medical advice/attention if you feel unwell.</p> <p>【Storage】 Store container tightly closed in well-ventilated place.</p> <p>【Disposal】 Dispose of contents in accordance with local/regional/national/international regulation.</p>
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3. Composition/information on ingredients

Classification of the substance or mixture : substance

	(main)	(surface)		
Chemical name	Titanium dioxide			
General name	Titanium dioxide			
Formula	TiO ₂			
Content	98~100% (as TiO ₂)			
CAS No.	13463-67-7			
EINECS No.	2366755			

4. First-aid measures

Inhalation :	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
Skin :	Wash with plenty of soap and water. If skin irritation occurs, get medical advice/attention.
Eye :	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 if you feel unwell.
Expected immediate and delayed symptoms :	Redness of skin and eyes.

5. Fire-fighting measures

Extinguishing media :	Not combustible.
Unsuitable extinguishing media :	Use an extinguishing media that is suitable for the materials involved in the surrounding fire.
Peculiar hazards :	Generating dust.
Peculiar fire extinguishing method :	Not applicable
Protective equipment :	Firefighters should wear a full set of protective clothing, including a breathing apparatus.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures :	Notify safety personnel. Wear protective gloves/clothing and eye/face protections. Avoid contact to skin and eyes. Avoid inhalation of dust and fume.
Environmental precautions :	Be careful not to release to the environment.
Methods and materials for containment and cleaning up :	Scoop up material and all contaminated soil for later disposal.
Prevention of side hazards :	Keep floor clean each time because the substance may cause slip when it gets wet.

7. Handling and storage

Handling

Technical measures :	Described in 『 8. Exposure controls/personal protection』
Ventilation :	Described in 『 8. Exposure controls/personal protection』
Caution :	Containers should be protected from physical damage. Avoid inhalation and ingestion. Do not get in eyes. Do not breathe dust and fume. Wash hands thoroughly after handling. Use only outdoors or in a well-ventilated area. Do not eat, drink or smoke when using this product.

Storage

Conditions :	Store container tightly closed in well-ventilated place.
Safety container :	No requirements

8. Exposure controls/personal protection

Exposure limit :	
ACGIH(2005)	TLV-TWA 10mg/m ³ A4*
	* Not classifiable as a human carcinogen

Facilities :	Eyewash fountains should be available in work area. In the case of creating dust, local exhaust ventilation should be provided. General ventilation should be provided to keep dust concentrations below the exposure limits.
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Personal protective equipment

Respirator :	Wear appropriate respirator.
Hands :	Wear appropriate gloves.
Eyes :	Wear safety glasses with side shields.
Skin :	Wear appropriate protective clothing
Hygiene :	Do not breathe dust.

9.Physical and chemical properties

Appearance :	White powder
Odor :	No data
p H :	Neutral (litmus paper) in condition of water suspension (1 : 10) ³⁾
Melting point/freezing point :	1820~1850°C ⁴⁾
Boiling range :	2500~3000°C ⁴⁾
Flash point :	Incombustibles
Explosive limits :	Incombustibles
Vapor pressure :	No data Sulfuric acid
Vapor density :	No data
Relative density :	3.9
Solubility :	Insoluble in water and organic solvents Soluble in heated conc. Sulfuric acid
Partition coefficient (n-octanol/water) :	No data
Auto ignition temperature :	No data
Decomposition temperature :	No data
Evaporation rate :	Not applicable
Flammability(solid, gas) :	Incombustibles

10.Stability and reactivity

Stability :	Titanium dioxide is stable in general conditions.
Possibility of hazardous reactions :	No information
Conditions to avoid :	Creating dust
Incompatible materials :	No information
Hazardous decomposition products :	No information

11.Toxicological information

Acute toxicity :	Oral	Rat	LD50>12000mg/kg ⁵⁾
	Dermal	Rabbit	approx. LD50>10000mg/kg ⁵⁾
	Inhalation(vapor)		No information
	Inhalation(dust)	Rat	LC >6.82mg/L(4hours) ⁵⁾
Skin corrosion/irritation :	Rabbit	: not irritating ⁵⁾	
Serious eye damage/ irritation :	Category 2B (Causes eye irritation)		
	Rabbit	: mild irritation ⁵⁾	
Respiratory sensitization :	No information		
Skin sensitization :	Human	: Negative(patch-test) ⁵⁾	
Germ cell mutagenicity :	Mouse	: Negative(micronucleus test, chromosome aberration test) ⁶⁾	

Carcinogenicity :	Classification not possible In carcinogenicity studies, lung cancer has occurred at rats administered under the conditions of particle overload. If rat were exposed under excess load for poorly soluble particles of low toxicity to other Indicate the sensitivity of their own on the formation of lung tumors. Observed a mouse or other animal experiments under the same conditions. Symptoms of lung tumors was observed only in rats. Humans exposed, other rodents, and non-human primates, these pathological changes is not permitted. Cancer risk causal relationship between exposure of the titanium oxide is not also observed in epidemiological studies. Because can not associate the carcinogenicity of titanium oxide from these thing, can not be classified.
Reproductive toxicity :	No information
STOST-single exposure :	It is thought that it is nontoxic even if the human takes titania. The oral is not classified. ACGIH(2001) ⁹⁾ Not classified because data in other routes is insufficient.
STOST-repeated exposure :	Titania is evidence showing an association with pulmonary fibrosis are not epidemiological surveys. No significant effect was observed in 2-years inhalation exposure study with rats. Not classified in an inhalation exposure in humans from this. But, not classified because there is no data of dermal exposure
Aspiration hazard :	No information

12.Ecological information

Acute aquatic toxicity :	Not classified
Chronic aquatic toxicity :	Not classified
Hazardous property to the ozone layer :	The substance concerned is not listed by the appendix of the Montreal Protocol

13.Disposal considerations

Waste disposal :	Comply with local/regional/national regulations.
Containers :	Containers should be cleaned up, then recycle or dispose of in accordance with regulations.

14.Transport information

International regulation	Transporting by sea :	Not dangerous goods
	Transporting by air :	Not dangerous goods
Peculiar protection :	Containers should be protected from direct sunlight, fall, shock, corrosion etc. Pallets with containers should not be stacked up.	
UN Number	Not listed	

15.Regulatory information

Montreal Protocol :	Not listed
Stockholm Convention :	Not listed
Rotterdam Convention :	Not listed
Marine Pollution Prevention Act :	Class Z

16.Other information

References	1) GHS Classification(2010) “National Institute of Technology and Evaluation” IARC RECENTRY EVALUATED 「TITANIUM DIOXIDE」 5.SUMMELY OF DATA REPORTED POSTED 27 FEBRUARY(2006)
	2) HSDDB(2005)
	3) ICSC(2002)
	4) IUCLID(2000)
	5) NTP DB(2005)
	6) DFGOT vol.2(1991)
	7) IARC Monograph Vol.93, in preparation
	8) ACGIH(2001)
	9)

17.Caution

- This information may be amended in the light of newly acquired knowledge and/or test results.
- The information provided has been prepared on the basis of materials, knowledge, data, etc. which are currently available. However, the information given on the contents, physical properties, and the hazardous or harmful nature of the product cannot be guaranteed.
- Cautions are given on the handling of the product in normal circumstances. If the product is to be used in a special manner, precautionary measures must be taken appropriate to such usage.
- Since any chemical product is liable to have unknown harmful effects, very careful handling is always necessary. Users are advised that it is their responsibility to establish safe conditions for handling the product.