Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date: 09/21/2020 Supersedes: 10/18/2019 Version: 5.0 ASS-TM-07001

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Chemical name : Titanium dioxide
Trade name : TIPAQUE CR-97
CAS-No. : 13463-67-7

1.2. Recommended use and restrictions on use

Recommended use : Pigment

1.3. Supplier

Manufacturer
ISHIHARA SANGYO KAISHA, LTD.
3-15 EDOBORI 1-CHOME,NISHI-KU, OSAKA-SHI,OSAKA 550-0002
JAPAN

TEL +81-6-6444-1451

Distributor
ISHIHARA CORPORATION (U. S. A)
601 CALIFORNIA ST., STE 1700
SAN FRANCISCO. CA
94108 - USA
TEL (415) 421-8207

1.4. Emergency telephone number

24 Hour Number for transportation emergency, spills, leak, fire or accident : CHEMTREC
1-800-424-9300 (USA only) / +1-703-741-5970

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification
Not classified

2.2. GHS Label elements, including precautionary statements

GHS US labeling
No labeling applicable

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : None to our knowledge.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Component	Product identifier	%	GHS US classification
Titanium dioxide	(CAS-No.) 13463-67-7	>= 90	Not classified
Aluminum hydroxide	(CAS-No.) 21645-51-2	< 10	Not classified
Zirconium dioxide	(CAS-No.) 1314-23-4	< 10	Not classified
Tin dioxide	(CAS-No.) 18282-10-5	< 10	Not classified

Impurities and/or stabilizing additives which contribute to the classification : None

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
First-aid measures after skin contact : If skin irritation occurs: Get medical advice/attention. Gently wash with plenty of soap and water.
First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
First-aid measures after ingestion : Rinse mouth. Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

No additional information available

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Carbon dioxide. Dry powder. Foam. Sand.
Unsuitable extinguishing media : Strong water jet.

5.2. Specific hazards arising from the chemical

Fire hazard : Dust formation.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Move containers from fire area if it can be done without personal risk. In case of fire: Stop leak if safe to do so.
Protection during firefighting : Suitable respiratory equipment. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate area. Avoid contact with skin and eyes. Do not breathe dust. Do not touch or walk on the spilled product. Ventilate spillage area. Ensure adequate ventilation, especially in confined areas.

6.1.1. For non-emergency personnel

(see section(s) :6.1.2)

6.1.2. For emergency responders

Protective equipment : Wear proper protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

For containment : Stop leak, if possible without risk. Avoid raising dust.

Methods for cleaning up : Clean up immediately by sweeping or vacuum. Retain drain downs in sealed storage pending disposal or for subsequent recycle.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wear proper protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

Hygiene measures : Do not eat, drink or smoke when using this product. Wash hands, forearms and face thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Store away from heat/moisture.

Storage conditions : Store away from direct sunlight or other heat sources. Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Incompatible materials : Refer to Section 10 on Incompatible Materials.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Titanium dioxide (13463-67-7)		
ACGIH	ACGIH TWA (mg/m³)	10 mg/m³
OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust)
IDLH	US IDLH (mg/m³)	5000 mg/m³
NIOSH	NIOSH REL (TWA) (mg/m³)	2.4 mg/m³ (CIB 63-fine) 0.3 mg/m³ (CIB 63-ultrafine, including engineered nanoscale)
Aluminum hydroxide (21645-51-2)		
Not applicable		
Zirconium dioxide (1314-23-4)		
Not applicable		
Tin dioxide (18282-10-5)		
NIOSH	NIOSH REL (TWA) (mg/m³)	2 mg/m³

8.2. Appropriate engineering controls

Appropriate engineering controls : Local exhaust and general ventilation must be adequate to meet exposure standards. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Wear suitable gloves

Eye protection:

Wear eye or face protection

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Wear suitable respiratory equipment

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Powder

Color : white

Odor : odorless

Odor threshold : No data available

pH : 5 - 9

Melting point : 1820 - 1850 °C

Freezing point : No data available

Boiling point : 2500 - 3000 °C

Flash point	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	No data available
Vapor pressure	:	No data available
Relative vapor density at 20 °C	:	No data available
Specific gravity / density	:	3.5 - 4.2 g/cm³
Solubility	:	Insoluble in water and organic solvent.
Log Pow	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosion limits	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Stable under normal conditions.

10.4. Conditions to avoid

Avoid creating or spreading dust. Direct sunlight. Heat.

10.5. Incompatible materials

No data available.

10.6. Hazardous decomposition products

No data available.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Titanium dioxide (13463-67-7)	
Acute toxicity (oral)	Not classified
Acute toxicity (dermal)	Not classified
Acute toxicity (inhalation)	Not classified
LD50 : rat (oral)	> 10000 mg/kg
Aluminum hydroxide (21645-51-2)	
Acute toxicity (oral)	Not classified
Acute toxicity (dermal)	Not classified
Acute toxicity (inhalation)	Not classified
LD50 : rat (oral)	> 5000 mg/kg
Zirconium dioxide (1314-23-4)	
Acute toxicity (oral)	Not classified
Acute toxicity (dermal)	Not classified
Acute toxicity (inhalation)	Not classified
Tin dioxide (18282-10-5)	
Acute toxicity (oral)	Not classified.
Acute toxicity (dermal)	Not classified
Acute toxicity (inhalation)	Not classified
LD50 : rat (oral)	700 mg/kg

Skin corrosion/irritation : Not classified
pH: 5 - 9

Titanium dioxide (13463-67-7)	
Skin corrosion/irritation	Not classified
Aluminum hydroxide (21645-51-2)	
Skin corrosion/irritation	Not classified

Zirconium dioxide (1314-23-4)	
Skin corrosion/irritation	Not classified
Tin dioxide (18282-10-5)	
Skin corrosion/irritation	Not classified

Serious eye damage/irritation : Not classified
pH: 5 - 9

Titanium dioxide (13463-67-7)	
Serious eye damage/irritation	Not classified
Aluminum hydroxide (21645-51-2)	
Serious eye damage/irritation	Not classified
Zirconium dioxide (1314-23-4)	
Serious eye damage/irritation	Not classified
Tin dioxide (18282-10-5)	
Serious eye damage/irritation	Not classified

Respiratory or skin sensitization : Not classified

Titanium dioxide (13463-67-7)	
Respiratory or skin sensitization	Not classified
Aluminum hydroxide (21645-51-2)	
Respiratory or skin sensitization	Not classified
Zirconium dioxide (1314-23-4)	
Respiratory or skin sensitization	Not classified
Tin dioxide (18282-10-5)	
Respiratory or skin sensitization	Not classified

Germ cell mutagenicity : Not classified

Titanium dioxide (13463-67-7)	
Germ cell mutagenicity	Not classified
Aluminum hydroxide (21645-51-2)	
Germ cell mutagenicity	Not classified
Zirconium dioxide (1314-23-4)	
Germ cell mutagenicity	Not classified
Tin dioxide (18282-10-5)	
Germ cell mutagenicity	Not classified

Carcinogenicity : Not classified

Titanium dioxide (13463-67-7)	
Carcinogenicity	Not classified. In lifetime inhalation studies of rats, airborne respirable titanium dioxide have been shown to cause an increase in lung tumors at concentrations associated with substantial particle lung laboratory animals, such as mice and hamsters, indicate that rats are significantly more susceptible to lung overload and inflammation that causes lung cancer. However, epidemiology studies do not suggest an increased risk of cancer in humans from occupational exposure to titanium dioxide
Additional information	see section(s) :16
IARC group	2B - Possibly carcinogenic to humans
In OSHA Hazard Communication Carcinogen list	Yes
Aluminum hydroxide (21645-51-2)	
Carcinogenicity	Not classified
IARC group	No data available

Zirconium dioxide (1314-23-4)	
Carcinogenicity	Not classified
IARC group	No data available
Tin dioxide (18282-10-5)	
Carcinogenicity	Not classified
IARC group	No data available

Reproductive toxicity : Not classified

Titanium dioxide (13463-67-7)	
Reproductive toxicity	Not classified
Aluminum hydroxide (21645-51-2)	
Reproductive toxicity	Not classified
Zirconium dioxide (1314-23-4)	
Reproductive toxicity	Not classified

Tin dioxide (18282-10-5)	
Reproductive toxicity	Not classified

STOT-single exposure : Not classified

Titanium dioxide (13463-67-7)	
STOT-single exposure	Not classified
Aluminum hydroxide (21645-51-2)	
STOT-single exposure	Not classified
Zirconium dioxide (1314-23-4)	
STOT-single exposure	Not classified
Tin dioxide (18282-10-5)	
STOT-single exposure	Not classified

STOT-repeated exposure : Not classified

Titanium dioxide (13463-67-7)	
STOT-repeated exposure	Not classified
Aluminum hydroxide (21645-51-2)	
STOT-repeated exposure	Not classified
Zirconium dioxide (1314-23-4)	
STOT-repeated exposure	Not classified
Tin dioxide (18282-10-5)	
STOT-repeated exposure	Not classified

Aspiration hazard : Not classified
Viscosity, kinematic : No data available

Titanium dioxide (13463-67-7)	
Aspiration hazard	Not classified
Aluminum hydroxide (21645-51-2)	
Aspiration hazard	Not classified
Zirconium dioxide (1314-23-4)	
Aspiration hazard	Not classified
Tin dioxide (18282-10-5)	
Aspiration hazard	Not classified

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Zirconium dioxide (1314-23-4)	
BCF : fish	(no bioaccumulation)

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other adverse effects : Not listed in Annexes to the Montreal Protocol.

SECTION 13: Disposal considerations

13.1. Disposal methods

Ecology - waste materials : Dispose in a safe manner in accordance with local/national regulations. Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)
In accordance with DOT
Not applicable
Transportation of Dangerous Goods
Not applicable

Transport by sea
Not applicable

Air transport
Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

Products	
CERCLA RQ	No data available

OSHA

Not regulated (29 CFR 1910.1001-1053).

SARA Title III

This product or mixture is not known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Titanium dioxide (13463-67-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Aluminum hydroxide (21645-51-2)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Zirconium dioxide (1314-23-4)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Tin dioxide (18282-10-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Titanium dioxide (13463-67-7)
Listed on the Canadian DSL (Domestic Substances List)
Aluminum hydroxide (21645-51-2)
Listed on the Canadian DSL (Domestic Substances List)
Zirconium dioxide (1314-23-4)
Listed on the Canadian DSL (Domestic Substances List)
Tin dioxide (18282-10-5)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Titanium dioxide (13463-67-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Aluminum hydroxide (21645-51-2)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Zirconium dioxide (1314-23-4)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Tin dioxide (18282-10-5)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Titanium dioxide (13463-67-7)
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Japanese ISHL (Industrial Safety and Health Law) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on the TCSI (Taiwan Chemical Substance Inventory)

Aluminum hydroxide (21645-51-2)
Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Japanese ISHL (Industrial Safety and Health Law) Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Listed on INSQ (Mexican National Inventory of Chemical Substances) Listed on the TCSI (Taiwan Chemical Substance Inventory)

Zirconium dioxide (1314-23-4)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Tin dioxide (18282-10-5)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

15.3. US State regulations

California Prop. 65

⚠ **WARNING:** This product can expose you to Titanium dioxide, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Component	State or local regulations
Titanium dioxide(13463-67-7)	U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List
Tin dioxide (18282-10-5)	U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16: Other information

HMIS Rating

Health : 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Personal protection : E - Safety glasses, Gloves, Dust respirator

Revision date : 09/21/2020

Data sources : 1) HSDB (2005)
2) IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Vol. 93,p. 193 (2010)
3) Carcinogenesis, Vol. 18, No. 2, p. 423 (1997)
4) Toxicological Sciences, Vol. 70, p. 86 (2002)
5) ACGIH (2001)
6) IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Vol. 47, p. 307 (1989)
7) The Annals of occupational Hygiene, Vol. 49, No. 6, p. 462 (2005)

Approved by
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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.