



Material Safety Data Sheet

TITANIUM DIOXIDE PIGMENT

According to Regulation (EC) No 1907/2006, Annex II. According to Regulation (EU) No 1272/2008. Amended by REGULATION (EC) No 453/2010
Version 4.0

Revision Date: 08.06.2023

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product Identifier

Mixture identification:

Product name: TITANIUM DIOXIDE (TiO₂)
Type: TA100,TA700,R900, R903,R905,R906,CR8093,CR8092,HR990,HR991,HR992,HR910
CAS number: 13463-67-7
EC number: 236-675-5
Registration number: 01-2119489379-17-0264

1.2. Relevant identified uses of the substance/mixture and uses advised against

Use of substance/Mixture: Colouring agents, pigments for application in following industries:
Coatings, plastics, printing inks, paper, man-made fibers, glass, vitreous, enamels,
ceramic products, textile, rubber, cement. Chemical industry.

1.3. Details of the supplier of the safety data sheet

Company: **Titanos (Hong Kong) Limited**

Room 1607, Trend Centre, 29-31 Cheung Lee Street, Chai Wan, Hong Kong, China

Telephone: (852)24432321

Telefax: (852) 2443 2983

Email: sales@titanos.com.cn

1.4. Emergency telephone number

For emergency information call Titanos (Hong Kong) Limited Phone number: (852) 2443 2321 (9:00 – 17:00)

or contact the nearest poison control center showing this data sheet

IPCS, List of antipoison centres in Europe

<http://www.who.int/ipcs/poisons/centre/directory/euro/en/>

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

EC regulation criteria 1272/2008 (CLP):

The mixture is not classified as dangerous according to EC Regulation 1272/2008 (CLP).

Regulation criteria 67/548/EEC, 99/45/EC, as amended:

Properties / Symbols:



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This product is not considered hazardous in accordance with the directives substances (67/548/EEC) and preparations (1999/45/EC).

Adverse physicochemical, human health and environmental effects:

No other hazards

2.2. Label elements

S Phrases:

S22 Do not breathe dust.

The mixture is not classified as dangerous according to EC Regulation 1272/2008 (CLP).

Symbols:

None

Hazard statements:

None

Precautionary statements:

None

Special Provisions:

None

Special Provisions under Annex XVII of REACH and following adjustments:

None

2.3. Other hazards

vPvB Substances: None - PBT Substances: None

Other Hazards:

No other hazards

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances/Mixture: Mixture

Ingredient(s):

Name	CAS-No	EC-No.	Registration No.	Concentration
Titanium dioxide	13463-67-7	236-675-5	01-2119489379-17-0264	70 – 99%
Aluminium hydroxide	21645-51-2	244-492-7	N/A	0 – 10%
Amorphous Silica	7631-86-9	231-545-4	N/A	0 – 10%
Zirconium dioxide	1314-23-4	215-227-2	N/A	0 – 10%



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Our products are REACH compliant; a registration number may not be provided because either the substance is exempted under REACH (substance exemption), no registration obligation yet (lower volume threshold), or it is not required on the SDS/eSDS (biocide uses, polymers, plant protection products), etc.

4. FIRST AID MEASURES

4.1. Description of first aid measures

In case of skin contact:

Wash with plenty of water and soap.

In case of eyes contact:

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

In case of Ingestion:

No adverse health effects anticipated by this route, however, in the event of ingestion, increase intake of liquid in order to flush from the body. In case of persistent symptoms, consult a doctor.

In case of Inhalation:

Move to a fresh air atmosphere. In case of persistent symptoms, consult a doctor.

4.2. Most important symptoms and effects, both acute and delayed

None

4.3. Indication of any immediate medical attention and special treatment needed

Treatment:

None

5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media:

Water.

Carbon dioxide (CO₂).

Extinguishing media which must not be used for safety reasons:

None in particular.

5.2. Special hazards arising from the substance or mixture

Do not inhale explosion and combustion gases.

Burning produces heavy smoke.

5.3. Advice for fire-fighters

Use suitable breathing apparatus .

Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

Move undamaged containers from immediate hazard area if it can be done safely.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

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Avoid generation dust, ensure adequate ventilation. Wear personal protection equipment.

See protective measures under point 7 and 8.

6.2. Environmental precautions

Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.

Retain contaminated washing water and dispose it.

In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Suitable material for taking up: absorbing material, organic, sand

6.3. Methods and material for containment and cleaning up

Use any feasible mechanical means (e.g. vacuum, sweeping) but avoid dusting during clean-up. The product can cause slippery conditions if wet. Even at low concentration, the product renders the discharge in liquid effluent highly visible.

6.4. Reference to other sections

See also section 8 and 13

7. HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid raising dust, handling systems and areas should be operated in such a way as to minimise exposure to dust.

Avoid raising and breathing dust. Observe good industrial hygiene practice for chemical handling.

Local ventilation may be necessary. Handle minimising dust. Take precautionary measures against static discharges.

Manual handling guidelines should be adhered to when handling sacks.

WARNING: At the final stage of production, titanium dioxide product is packaged at temperature approximately 100 to 120 °C (212 to 248°F). The material may stay hot for a long time depending on ambient temperatures and inventory storage practices.

Due to the potential of elevated pigment temperature, caution should be used while handling pigment and in solvent applications.

Each work environment must be assessed to determine hazards.

See also section 8 for recommended protective equipment.

7.2. Conditions for safe storage, including any incompatibilities

Keep away from food, drink and feed.

Incompatible materials: None in particular.

Packaging materials: No special requirement.

Instructions as regards storage premises: Stored in a cool, dry and adequately ventilated premises.

Further information: Use original container. Protect against physical damage; observe all warning and precautions listed for the product.

7.3. Specific end use(s)

None in particular

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Occupational exposure limits:

Substance	CAS No.	EINECS No.	Occupational Exposure Limit Value (8-hours reference period)	Occupational Exposure Limit Value (15-minutes reference period)

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			ppm	mg/m ³	ppm	mg/m ³
Titanium dioxide	13463-67-7	236-675-5	-	10 (Total inhalable dust): 4 (respirable dust)	-	-
Amorphous Silica	7631-86-9	231-545-4	-	6 (Total inhalable dust): 2.4 (respirable dust)	-	-

Additional exposure limits under the conditions of use : Not available.

DNEL/DMEL and PNEC-Values : Not available.

8.2. Exposure controls

Appropriate engineering controls:

Production facilities should be provided with running drinking water, local and general aspiration system. In facilities where titanium dioxide is handled, eating and food storage are not permitted.

Protective Equipment

Respiratory Protection:

A respirator must be used if the dust concentration is likely to exceed the occupational exposure limit. An approved dust respirator is recommended as appropriate depending on dust levels and other workplace factors.

Skin Protection

Respect main rule concerning the protection clothes for chemicals handling.

Hand Protection

Glove materials: Use protective gloves according to EN 374 to prevent skin contact with dust. Break through time: > 60 min.

Environmental exposure controls

Do not allow material to contaminate ground water system.

Eye Protection

Wear dust-proof goggles, (protection class 5) according to EN 166.

Hygiene Measures

Individuals having sensitive skin may find it beneficial to use a barrier cream or moisturizer when excessive or prolonged contact with the skin is likely.

Environmental Exposure controls:

It is recommended that the exhaust air of the air-conditioning is filtered off in bag filters.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state	Powdered solid
Colour	White
Odour	Odourless
Odour threshold	Not available

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pH	5-10 (10% slurry)
Melting point /range (°C)	≥ 1800 °C (approximately)
Boiling point /range (°C)	2500 – 3000°C
Solid/gas flammability	Non-flammable
Upper/lower flammability or explosive limits	Not determined
Flash point (°C)	Not applicable
Evaporation rate	Not determined
Vapour pressure (20°C)	Not applicable
Vapour density	Not applicable
Relative density	Anatase: 3.8 g/cm ³ ; Rutile: 4.2 g/cm ³
Bulk density (25 °C)	500 – 900 kg/cm ³
Water solubility (g/l) at 20°C	Insoluble
Partition coefficient (n-octanol/water):	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	Not applicable
Viscosity, dynamic (mPas)	Not applicable
Explosive properties	Not explosive
Oxidizing properties	Not oxidising
Molecular Formula	TiO ₂
Molecular Weight	79.90
9.2. Other information	
Miscibility	Insoluble in organic solvent
Fat Solubility	Insoluble
Surface tension	Not applicable
Substance Groups relevant properties:	Not applicable

10. STABILITY AND REACTIVITY

10.1. Reactivity

This substance is stable under normal storage and handling conditions

10.2. Chemical stability

Stable under normal conditions

10.3. Possibility of hazardous reactions

Under normal conditions, not hazardous reaction will occur.

10.4. Conditions to avoid

Incompatible materials. The substance is amphoteric (exhibits characteristics of very weak acid and weak base). Reducible, reacts with halogens, interreacts with ammonia and hydrogen peroxide. Reacting with H₂O₂ generates ortho-titanic acid H₄TiO₄ (of yellow color). When heated with NH₃ generates TiN. When melted or agglomerated with oxides, metal carbonates titanates and double oxides are generated. With hydrogen, carbon, active metals (magnesium, calcium, sodium) TiO₂ when heated is reduced to lower oxides. When heated with chlorine in the presence of reducing agents (coal) generates TiCl₄.

10.5. Incompatible materials



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None reasonably foreseeable

10.6. Hazardous decomposition products

None in normal or expected use

11. TOXICOLOGICAL INFORMATION

11.1. Toxicokinetics, metabolism and distribution

Non-human toxicological data	Not available
Method	Not available
Dosis	Not available
Routes of administration	Not available
Results	Not available
Absorption	Not available
Distribution	Not available
Metabolism	Not available
Excretion	Not available

11.2. Information on toxicological effects

Acute toxicity

LD50 (Oral, Rat)	> 5000 mg/kg bw (Titanium dioxide)
	> 5000 mg/kg bw (Amorphous Silica)
LD50 (Dermal, Rabbit)	Not applicable
LC50 (Inhalation, Rat)	> 6.82 mg/L air/4h (Titanium dioxide)
	> 2.08 mg/L air/4h (analysis)(Amorphous Silica)
Skin corrosion/irritation	Not irritating
Serious eye damage/irritation	Not irritating
Respiratory or skin sensitization	Not sensitising
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT-single exposure	Not classified
STOT-repeated exposure	Not classified
Aspiration hazard	Not classified

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Acute Toxicity		Time	Species	Method	Evaluation	Remarks
LC50	1000 mg/l	48h	Fish (Leuciscus idus)	OECD 203	N.A.	N.A.
EC50	2.0 mg/l	96h	Daphnia magna (Scenedesmus obliquus)	OECD 202	N.A.	N.A.
EC50	N.A.	96h	Algae	OECD 201	N.A.	N.A.

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12.2. Persistence and degradability

Biodegradability [BD = (BOD5:COA)-100%]: <10% (practically nonbiodegradable)

Chemical oxygen demand (COD): nonoxidizable

Biological oxygen demand (BOD): nonoxidizable

The substance half life: > 30 days

Persistence and biodegradability is resistance to degradation and is not subject to biodegradation.

12.3. Bioaccumulative potential

Cumulativeness: weak

12.4. Mobility in soil

Toxic effect on soil invertebrates: bacterial toxicity : EC0 > 5000 mg/l (Pseudomonas fluorescens, Escherichia coli; 24 hours).

12.5. Results of PBT and vPvB assessment

The substance is not persistent bioaccumulative one

12.6. Other adverse effects

Not applicable

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

The product is not hazardous for waste dumping in industrial or sanitary retentin ponds. Disposal of the waste in correspondence with the state and local regulations.

13.2. Product / Packaging disposal

Contaminated packages are not considered hazardous. If recycling is not practicable, dispose of in compliance with local regulations.

14. TRANSPORT INFORMATION

	Land transport (ADR/RID)	Sea transport (IMDG)	Air transport (ICAO/IATA)
UN-Number	Not regulated	Not regulated	Not regulated
UN Proper shipping name	Not regulated	Not regulated	Not regulated
Transport hazard class	Not regulated	Not regulated	Not regulated
Packaging group	Not regulated	Not regulated	Not regulated
Environmental Hazards	No	No	No
NoSpecial precautions for user	See section 2.2	See section 2.2	See section 2.2
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not regulated	Not regulated	Not regulated

Trans ortation recaution: inte ral acka in , careful loadin . Durin trans ortation, be sure no leakage, collapse, falling or damage. Consolidation with acid products are absolutely not allowed. Keep away from sunshne, rain and high temperature

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Dir. 67/548/EEC (Classification, packaging and labelling of dangerous substances). Dir. 99/45/EEC (Classification, packaging and labelling of dangerous preparations). Dir. 98/24/EC (Risks related to chemical agents at work). Dir. 2000/39/EC



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(Occupational exposure limit values); Dir. 2006/8/CE. Regulation (CE) n. 1907/2006 (REACH), Regulation (CE) n. 1272/2008 (CLP), Regulation (CE) n. 790/2009 (1° ATP CLP), Regulation (EU) n. 453/2010 (Annex I).

Where applicable, refer to the following regulatory provisions :

Directive 2003/105/CE ('Activities linked to risks of serious accidents') and subsequent amendments.

Regulation (EC) nr 648/2004 (detergents).

1999/13/EC (VOC directive)

15.2. All components/ingredients of this product are:

EINECS status	:	On the inventory, or in compliance with the inventory.
TSCA status	:	On the inventory, or in compliance with the inventory.
AICS status	:	On the inventory, or in compliance with the inventory.
DSL status	:	On the inventory, or in compliance with the inventory.
ENCS (JP) status	:	On the inventory, or in compliance with the inventory.
KECI (KR) status	:	On the inventory, or in compliance with the inventory.
PICCS (PH) status	:	On the inventory, or in compliance with the inventory.
INV (CN) status	:	On the inventory, or in compliance with the inventory.
Canada (WHMIS)	:	This product has been classified as D2A controlled product under WHMIS. The listing does not cover titanium dioxide when it is inextricably bound within a product.

SARA 313 Regulated Chemical(s): SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, section 313.

California Prop. 65 : WARNING! This product contains a chemical known to the State of California to cause cancer. The listing of titanium dioxide is for "airborne, unbound particles to respirable size." The listing is not applicable to titanium dioxide when it remains bound within a product matrix.

PA Right to Know Regulated Chemical(s): Substance of the Pennsylvania Hazardous Substance List present at a concentration of 1% or more (0.1% for substances identified as carcinogens, mutagens or teratogens): Titanium dioxide, Silicon dioxide, amorphous.

NJ Right to Know Regulated Chemical(s): Substance on the New Jersey Workplace Hazardous Substance List present at a concentration of 1% or more (0.1% for substances identified as carcinogens, mutagens or teratogens): Titanium dioxide, Silicon dioxide, amorphous.

15.3. Chemical Safety Assessment

Yes

16. OTHER INFORMATION

This document was prepared by a competent person who has received appropriate training.

Main bibliographic sources:

ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities

SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold

CCNL - Appendix 1

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Insert further consulted bibliography

The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.

It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.

This MSDS cancels and replaces any preceding release.

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.

CAS: Chemical Abstracts Service (division of the American Chemical Society).

CLP: Classification, Labeling, Packaging.

DNEL: Derived No Effect Level.

GefStoffVO: Ordinance on Hazardous Substances, Germany.

GHS: Globally Harmonized System of Classification and Labeling of Chemicals.

IATA: International Air Transport Association.

IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

ICAO: International Civil Aviation Organization.

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO).

IMDG: International Maritime Code for Dangerous Goods.

INCI: International Nomenclature of Cosmetic Ingredients.

KSt: Explosion coefficient.

LC50: Lethal concentration, for 50 percent of test population.

LD50: Lethal dose, for 50 percent of test population.

LTE: Long-term exposure.

PNEC: Predicted No Effect Concentration.

RID: Regulation Concerning the International Transport of Dangerous Goods by Rail.

STE: Short-term exposure.

STEL: Short Term Exposure limit.

STOT: Specific Target Organ Toxicity.

TLV: Threshold Limiting Value.

TWATLV: Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).

WGK: German Water Hazard Class.