

**Safety Data Sheet
acc. to OSHA HCS**

Printing date 05/28/2020

Version 5.00

Reviewed on 05/28/2020

1 Identification**Product identifier**

Trade name: **KRONOS Titanium dioxide**
Product Codes KRONOS 1002; KRONOS 2044; KRONOS 2073;
KRONOS 2078; KRONOS 2211; KRONOS 2220;
KRONOS 2222; KRONOS 2230; KRONOS 2233;
KRONOS 2500; KRONOS 9000; KRONOS 9100

CAS Number: 13463-67-7

EC number: 236-675-5

**Relevant identified uses of the
substance or mixture**

White pigment for application in
Coating materials, printing inks, man-made fibres, plastics, paper, glass,
vitreous enamels, ceramic products

Uses advised against

None

Details of the supplier of the safety data sheet

Manufacturer/Supplier: KRONOS (US), Inc.
5430 LBJ Freeway, Suite 1700
Dallas, Tx 75230-2620
+1 (972) 233-1700

Emergency telephone number: CHEMTREC: (800) 424-9300
KRONOS: (800) 866-5600

2 Hazard(s) identification**Classification of the substance
or mixture**

The substance is not classified, according to the Globally Harmonized System (GHS).

Label elements

GHS label elements Not applicable

Hazard pictograms Not applicable

Signal word Not applicable

Hazard statements Not applicable

Other hazards

Dust load

3 Composition/information on ingredients**Chemical characterization: Substances**

CAS No. Description: 13463-67-7 titanium dioxide

EC number: 236-675-5

4 First-aid measures**Description of first aid measures**

General information No special measures required.

After inhalation

Supply fresh air; consult doctor in case of complaints.

(Contd. on page 2)

**Safety Data Sheet
acc. to OSHA HCS**

Printing date 05/28/2020

Version 5.00

Reviewed on 05/28/2020

Trade name: KRONOS Titanium dioxide

(Contd. of page 1)

After skin contact	Immediately wash with water and soap and rinse thoroughly.
After eye contact	Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
After swallowing	Rinse out mouth and then drink plenty of water.
Most important symptoms and effects, both acute and delayed	No further relevant information available.
Indication of any immediate medical attention and special treatment needed	No further relevant information available.

5 Fire-fighting measures

Extinguishing media	
Suitable extinguishing agents	Use fire fighting measures that suit the environment. The product is not flammable.
Special hazards arising from the substance or mixture	None
Advice for firefighters	
Protective equipment:	Use protective measures that suit the hazard conditions.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures	Not required.
Environmental precautions:	No special measures required.
Methods and material for containment and cleaning up:	Avoid dust formation. Sweep or vacuum up, use vacuum approved for fine dusts.
Reference to other sections	See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

7 Handling and storage

Handling	
Precautions for safe handling	Provide vacuum dust collection if dust is formed.
Information about protection against explosions and fires:	The product is not flammable Titanium dioxide product may be packaged at temperatures of approximately 100 to 120 °C (212 to 248 °F) and stay hot for a long time depending on ambient temperatures and inventory storage practices. Due to the potential of

(Contd. on page 3)

**Safety Data Sheet
acc. to OSHA HCS**

Printing date 05/28/2020

Version 5.00

Reviewed on 05/28/2020

Trade name: KRONOS Titanium dioxide**(Contd. of page 2)**

elevated pigment temperature, caution should be used while handling pigment and when used in or near volatile solvent applications.

Conditions for safe storage, including any incompatibilities**Requirements to be met by storerooms and receptacles:**

No special requirements.

Information about storage in one common storage facility:

Not required.

Further information about storage conditions:

Store in dry conditions.

8 Exposure controls/personal protection**Control parameters****Components with limit values that require monitoring at the workplace:****Additional Occupational Exposure Limit Values for possible hazards during processing:****CAS: 13463-67-7 Titanium dioxide**ACGIH - TLV 10 mg/m³ TWA,OSHA - PEL 15* mg/m³

*total dust, 8 hr TWA

Exposure controls

Use local exhaust ventilation if airborne concentrations would otherwise exceed applicable exposure limits.

Personal protective equipment**General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed. Titanium dioxide pigments are not irritant but as with all fine powders can absorb moisture and natural oil from the surface of the skin during prolonged exposure. Prolonged exposure should be avoided by wearing suitable protective gloves and clothing.

Breathing equipment:

If workplace exposure limits are exceeded, use respiration protection according to national regulations.
The respirator must be selected by a technically qualified individual.

Protection of hands:

Use gloves appropriate for work conditions to minimize prolonged skin contact and prevent drying and subsequent irritation of skin.
Check protective gloves prior to each use for their proper condition.
Preventive skin protection by use of skin-protecting agents is recommended.

Eye protection:

Safety glasses

Body protection:

Protective work clothing.

(Contd. on page 4)

US

Safety Data Sheet
acc. to OSHA HCS

Printing date 05/28/2020

Version 5.00

Reviewed on 05/28/2020

Trade name: KRONOS Titanium dioxide

(Contd. of page 3)

9 Physical and chemical properties**Information on basic physical and chemical properties****General Information****Appearance:**

Form:	Powder
Color:	White
Odor:	Odorless
Odor threshold:	Not relevant

pH-value at 20°C (68°F): 7

Melting point/Melting range: >1800°C (>3,272°F)

Boiling point/Boiling range: Not relevant

Flash point: Not applicable

Flammability (solid, gaseous): Product is not flammable.

Ignition temperature: Not applicable

Danger of explosion: Product is not explosive.

Density:	20°C	Anatase	3,9 g/cm ³ (30 lbs/ U.S. gal.)
		Rutile	4,2 g/cm ³ (35 lbs/U.S. gal.)

Bulk density: ca. 500-900 kg/m³ (4.2 - 7.5 lbs/U.S. gal.)

Vapor density: Not applicable.

Evaporation rate: Not applicable.

Solubility in / Miscibility with
Water: Insoluble

Partition coefficient (n-octanol/water): Not applicable

Viscosity:
dynamic: Not applicable.

Other information: No further relevant information available.

10 Stability and reactivity

Reactivity: The substance is stable under normal use conditions.

Chemical stabilityThermal decomposition /
conditions to be avoided: No decomposition under normal use conditions.Possibility of hazardous
reactions: No dangerous reactions known

(Contd. on page 5)

US

Safety Data Sheet
acc. to OSHA HCS

Printing date 05/28/2020

Version 5.00

Reviewed on 05/28/2020

Trade name: KRONOS Titanium dioxide

(Contd. of page 4)

Conditions to avoid	No further data; see section 7.
Incompatible materials:	No further data; see section 7.
Hazardous decomposition products:	No dangerous decomposition products known

11 Toxicological information**Information on toxicological effects****Acute toxicity:****LD/LC50 values that are relevant for classification:****CAS: 13463-67-7 Titanium dioxide**

Oral	LD50	> 5,000 mg/kg (rat) (OECD 425)
Dermal	LD50	> 5,000 mg/kg (rabbit)
Inhalative	LC50/4h	> 6.8 mg/l (rat)

Primary irritant effect:

on the skin:	OECD 404: No irritant effect. Powderized material may dry and mechanically irritate skin.
on the eye:	OECD 405: No irritating effect. Like any foreign body, particles (dust) can cause mechanical irritation.

Sensitization:	OECD 406, OECD 429 No sensitizing effects.
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Subacute to chronic toxicity:**CAS: 13463-67-7 Titanium dioxide**

Oral	NOAEL	3,500 mg/kg/d (rat) (90 d)
Dermal	NOAEL	(-) no relevant data available
Inhalative	NOAEC	10 mg/m ³ (rat) (90 d)

Additional toxicological information:

Titanium Dioxide
On February 18, 2020, the European Union (EU) published the delegated regulation classifying certain powder titanium dioxide (TiO₂) as a suspected carcinogen (Category 2) via inhalation under EU Regulation No 1272/2008 on classification, labelling, and packing (CLP) of substances and mixtures. Classification requirements will come into force on October 1, 2021, mandating hazard labels be placed on certain TiO₂ powder products and certain powder mixtures containing TiO₂ sold into the EU market. This classification of TiO₂ is not based on new science but instead on older scientifically questioned animal test data. Other studies and extensive data, including separate epidemiologic studies of TiO₂ workers, have shown no TiO₂-specific links to cancer. TiO₂ has been characterized by IARC as possibly carcinogenic to humans

(Contd. on page 6)



**Safety Data Sheet
acc. to OSHA HCS**

Printing date 05/28/2020

Version 5.00

Reviewed on 05/28/2020

Trade name: KRONOS Titanium dioxide

(Contd. of page 5)

(Group 2B) through inhalation (not ingestion). It has not been characterized as a potential carcinogen by either NTP or OSHA.

Carcinogenic categories**IARC (International Agency for Research on Cancer)**

: 2B

NTP (National Toxicology Program)

Substance is not listed.

OSHA-Ca (Occupational Safety & Health Administration)

Substance is not listed.

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)

Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity	Based on available data, the classification criteria are not met.
STOT-single exposure	Based on available data, the classification criteria are not met.
STOT-repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.

12 Ecological information**Toxicity****Toxicity to fish**

Titanium dioxide
Freshwater fish:
Pimephales promelas LC50 (96 h): > 1000 mg/l (static, EPA-540/9-85-006, Acute Toxicity Test for Freshwater Fish)
Marine water fish:
Cyprinodon variegatus LC50 (96 h): > 10000 mg/l (semi-static, OECD 203)

Toxicity to Daphnia and other aquatic invertebrates

Titanium dioxide
Freshwater:
Daphnia magna LC50 (48 h): > 1000 mg/l (static, equivalent or similar to OECD 202)
Marine water:
Acartia tonsa LC50 (48 h): > 10000 mg/l (ISO 14669 (1999); ISO 5667-16 (1998))

Toxicity to algae and aquatic plants

Titanium dioxide
Freshwater:
Pseudokirchnerella subcapitata EC50 (72 h): > 100 mg/l (static, OECD 201))
Marine water:
Skeletonema costatum EC50 (72 h): > 10000 mg/l (ISO 10253)

Toxicity to sediment organisms

CAS: 13463-67-7 Titanium dioxide
Freshwater:
Hyalella azteca NOEC(28 d): ≥ 100000 mg/kg sediment dw (semi-static, ASTM 1706)
Marine water:
Corophium volutator NOEC (10 d): ≥ 14989 mg/kg sediment dw (semi-static,

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS

Printing date 05/28/2020

Version 5.00

Reviewed on 05/28/2020

Trade name: KRONOS Titanium dioxide

(Contd. of page 6)

	OSPARCOM guidelines (1995)
Persistence and degradability	Not relevant for inorganic substances.
Bioaccumulative potential	Does not accumulate in organisms
Mobility in soil	The substance is immobile in soil.
Other adverse effects	No further relevant information available.

13 Disposal considerations

Waste treatment methods Recommendation	Material is not a hazardous waste. Disposal must be made according to all federal, state, and local (municipal) regulations.
Uncleaned packagings: Recommendation:	Material is not a hazardous waste. Disposal must be made according to all federal, state, and local (municipal) regulations.

14 Transport information

UN-Number	
DOT, ADR/RID/ADN, ADN, IMDG, IATA	Not applicable
UN proper shipping name	
DOT, ADR/RID/ADN, ADN, IMDG, IATA	Not applicable
Transport hazard class(es)	
DOT, ADR/RID/ADN, ADN, IMDG, IATA	
Class	Not applicable
Packing group	
DOT, ADR/RID/ADN, IMDG, IATA	Not applicable
Environmental hazards:	Not an environmentally hazardous substance.
Special precautions for user	Not applicable.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.

15 Regulatory information

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

SARA**Section 355 (Extremely hazardous substances):**

Substance is not listed

Section 313 (Specific toxic chemical listings):

Substance is not listed

(Contd. on page 8)

US

**Safety Data Sheet
acc. to OSHA HCS**

Printing date 05/28/2020

Version 5.00

Reviewed on 05/28/2020

Trade name: KRONOS Titanium dioxide

(Contd. of page 7)

TSCA and Canada DSL Status:

: ACTIVE

Hazardous Air Pollutants

Substance is not listed.

Proposition 65**Chemicals known to cause cancer:**

Substance is listed

Additional information: The listing is for titanium dioxide as "airborne, unbound particles of respirable size" and does not cover titanium dioxide when it remains within a product matrix.**Carcinogenic categories****EPA (Environmental Protection Agency)**

Substance is not listed.

TLV (Threshold Limit Value Notation established by ACGIH)

: A4 Not classifiable as human carcinogen

REACH registration number: 01-2119489379-17-xxxx**Substances of very high concern (SVHC) according to EU REACH, Article 57**

The product is not listed as SVHC, it does not contain any substances of very high concern.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Contact: KRONOS (US), Inc.
5430 LBJ Freeway, Suite 1700
Dallas, Tx 75230-2620
e-mail: SDS-NA@kronosww.com**Date of preparation / last revision** 05/28/2020 / 4.00**Abbreviations and acronyms:** ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit*** Data compared to the previous version altered.** Conformed to U.S. OSHA HCS 2012