

## 1 Identification

**Product identifier**

**Trade name:** KRONOS Titanium dioxide  
**Product Codes:** KRONOS 1000; KRONOS 1002; KRONOS 2044;  
 KRONOS 2073; KRONOS 2078; KRONOS 2211;  
 KRONOS 2220; KRONOS 2222; KRONOS 2230;  
 KRONOS 2233; KRONOS 2350; KRONOS 2500;

**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:** Manufacture of titanium metal  
 None

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:** KRONOS (US), Inc.  
 5430 LBJ Freeway, Suite 1700  
 Dallas, Tx 75240  
 +1 (972) 233-1700

**Emergency telephone number:** CHEMTREC: +1-800-424-9300 for transportation emergencies only (U.S.)  
 KRONOS: +1-800-866-5600 for other product information (8:00 am – 5:00 pm, central time U.S.)

## 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:** CAS: 13463-67-7 Titanium dioxide

**EC number:** 236-675-5

(Contd. on page 2)

Trade name: KRONOS Titanium dioxide

(Contd. of page 1)

#### 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.

**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 protective equipment.  
 See Section 13 for disposal information.

(Contd. on page 3)

Trade name: KRONOS Titanium dioxide

(Contd. of page 2)

## 7 Handling and storage

### Handling

Precautions for safe handling  
 Information about protection  
 against explosions and fires:

Provide vacuum dust collection if dust is formed.

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 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:  
 Information about storage in  
 one common storage facility:

No special requirements.

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:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.  
 Not required.

Additional Occupational Exposure Limit Values for possible hazards during processing:

CAS: 13463-67-7 Titanium dioxide

ACGIH - TLV 10 mg/m<sup>3</sup> TWA,

OSHA - PEL 15\* mg/m<sup>3</sup>

\*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.

(Contd. on page 4)

Trade name: KRONOS Titanium dioxide

(Contd. of page 3)

<b>Breathing equipment:</b>	If workplace exposure limits are exceeded, use respiratory protection according to national regulations. The respirator must be selected by a technically qualified individual.
<b>Protection of hands:</b>	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.
<b>Material of gloves:</b>	The selection of suitable gloves depends on the type of job, the characteristics of all substances to be handled and on further marks of quality, which may vary from manufacturer to manufacturer. If the product is used in a preparation of several substances, the resistance of the glove material cannot be calculated in advance and has therefore to be checked prior to the application.
<b>Eye protection:</b>	Safety glasses
<b>Body protection:</b>	Protective work clothing.

## 9 Physical and chemical properties

### Information on basic physical and chemical properties

#### General Information

#### Appearance:

<b>Form:</b>	Powder
<b>Color:</b>	White
<b>Odor:</b>	Odorless
<b>Odor threshold:</b>	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<sup>3</sup> (30 lbs/ U.S. gal.)  
    Rutile 4,2 g/cm<sup>3</sup> (35 lbs/U.S. gal.)

**Bulk density:** ca. 500-900 kg/m<sup>3</sup> (4.2 - 7.5 lbs/U.S. gal.)

(Contd. on page 5)

Trade name: KRONOS Titanium dioxide

(Contd. of page 4)

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 stability  
 Thermal decomposition / conditions to be avoided: No decomposition under normal use conditions.

Possibility of hazardous reactions No dangerous reactions known

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.

(Contd. on page 6)

Trade name: KRONOS Titanium dioxide

(Contd. of page 5)

**Sensitization:** OECD 406, OECD 429  
No sensitizing effects.

**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 availableInhalative NOAEC 10 mg/m<sup>3</sup> (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 (TiO<sub>2</sub>) 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 TiO<sub>2</sub> powder products and certain powder mixtures containing TiO<sub>2</sub> sold into the EU market. This classification of TiO<sub>2</sub> 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 TiO<sub>2</sub> workers, have shown no TiO<sub>2</sub>-specific links to cancer. TiO<sub>2</sub> has been characterized by IARC as possibly carcinogenic to humans (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.

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

CAS: 13463-67-7 Titanium dioxide

LC50 > 10,000 mg/l (Sheepshead minnow)  
(semi-static, OECD 203 (acute toxicity for fish))> 1,000 mg/l (Pimephales promelas)  
(static, EPA-540/9-85-006, Acute Toxicity Test for Freshwater Fish)

(Contd. on page 7)

US

Trade name: KRONOS Titanium dioxide

(Contd. of page 6)

**Toxicity to Daphnia and other aquatic invertebrates**

CAS: 13463-67-7 Titanium dioxide

 LC50 > 10,000 mg/l (Acartia tonsa)  
 (ISO 14669 (1999); ISO 5667-16 (1998))  
 > 1,000 mg/l (Daphnia magna)  
 (static, OECD 202 (daphnia acute immobilisation test))

**Toxicity to algae and aquatic plants**

CAS: 13463-67-7 Titanium dioxide

 EC50 > 100 mg/l (Pseudokirchneriella subcapitata)  
 (static, OECD 201 (freshwater alga and cyanobacteria, growth inhibition test))  
 > 10,000 mg/l (Skeletonema costatum)  
 (ISO 10253)

**Toxicity to sediment organisms**

CAS: 13463-67-7 Titanium dioxide

 NOEC ≥ 100,000 mg/kg dw (Hyalella azteca)  
 (semi-static, ASTM 1706)

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

 Disposal must be made according to all federal, state, and local  
 (municipal) regulations.

 Uncleaned packagings:  
 Recommendation:

 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  
 ADR/RID/ADN, ADN, IMDG, IATA            Not applicable  
 Transport hazard class(es)

 DOT, ADR/RID/ADN, ADN, IMDG, IATA  
 Class     Not applicable

(Contd. on page 8)

Printing date 09/01/2022

Version 7.00

Reviewed on 09/01/2022

Trade name: KRONOS Titanium dioxide

(Contd. of page 7)

<b>Packing group</b>	Not applicable
<b>DOT, ADR/RID/ADN, IMDG, IATA</b>	Not applicable
<b>Environmental hazards:</b>	Not an environmentally hazardous substance.
<b>Special precautions for user</b>	Not applicable.
<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>	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

**Section 311 (TIER 1 notification)**

Substance is not listed.

**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.**OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)****New Jersey Right-to-Know List:**

Substance is listed.

**New Jersey Special Hazardous Substance List:**

Substance is not listed.

**Pennsylvania Right-to-Know List:**

Substance is listed.

**Pennsylvania Special Hazardous Substance List:**

Substance is not listed.

**Carcinogenic categories****EPA (Environmental Protection Agency)**

Substance is not listed.

**TLV (Threshold Limit Value Notation established by ACGIH)**

: A4 Not classifiable as human carcinogen

**EU REACH registration status:** 01-2119489379-17-xxxx

(Contd. on page 9)

US



Printing date 09/01/2022

Version 7.00

Reviewed on 09/01/2022

Trade name: KRONOS Titanium dioxide

(Contd. of page 8)

**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.  
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**Date of preparation / last revision** 09/01/2022

**Abbreviations and acronyms:** ADR: Accord relatif au transport international 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  
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.

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