



**Safety Data Sheet**  
**acc. to U.S. OSHA HCS 2012**

Printing date 12/06/2017

Version 2

Reviewed on 11/30/2017

**1 Identification****Product identifier****Trade name:** **KRONOS Titanium dioxide (all types)****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 75240-2397  
+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.**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.**(Contd. on page 2)**



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**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 type approved vacuum cleaner.

**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 elevated pigment temperature, caution should be used while handling pigment and in solvent applications.

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**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/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.

**Breathing equipment:**

If workplace exposure limits are exceeded, use respiration protection according to national regulations.  
Use a NIOSH-approved respirator for particulates with N100, P100, or R100 filter.  
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.

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<b>Conditions to avoid</b>	No further data; see section 7.
<b>Incompatible materials:</b>	No further data; see section 7.
<b>Hazardous decomposition products:</b>	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.  
OECD 405:  
No irritating effect.  
Like any foreign body, particles (dust) can cause mechanical irritation.

**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 available  
Inhalative NOAEC 10 mg/m<sup>3</sup> (rat) (90 d)

**Additional toxicological  
information:**

In lifetime inhalation studies of rats, airborne respirable-size titanium dioxide particles have been shown to cause an increase in lung tumors at concentrations associated with substantial particle lung burdens and consequential pulmonary overload and inflammation. The potential for these adverse health effects appears to be closely related to the particle size and the amount of the exposed surface area that comes into contact with the lung.  
However, tests with other laboratory animals, such as mice and hamsters, indicate that rats are significantly more susceptible to the pulmonary overload and inflammation that may lead to lung cancer.  
Epidemiology studies do not suggest an increased risk of cancer in humans from occupational exposure to titanium dioxide.

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Titanium dioxide 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.

**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): &gt; 1000 mg/l (static, EPA-540/9-85-006, Acute Toxicity Test for Freshwater Fish)

Marine water fish:

Cyprinodon variegatus LC50 (96 h): &gt; 10000 mg/l (semi-static, OECD 203)

**Toxicity to Daphnia and other aquatic invertebrates**

Titanium dioxide

Freshwater:

Daphnia magna LC50 (48 h): &gt; 1000 mg/l (static, equivalent or similar to OECD 202)

Marine water:

Acartia tonsa LC50 (48 h): &gt; 10000 mg/l (ISO 14669 (1999); ISO 5667-16 (1998))

**Toxicity to algae and aquatic plants**

Titanium dioxide

Freshwater:

Pseudokirchnerella subcapitata EC50 (72 h): &gt; 100 mg/l (static, OECD 201))

Marine water:

Skeletonema costatum EC50 (72 h): &gt; 10000 mg/l (ISO 10253)

**Toxicity to sediment organisms**

Titanium dioxide

Freshwater:

Hyalella azteca NOEC(28 d): ≥ 100000 mg/kg sediment dw (semi-static, ASTM 1706)

Marine water:

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Corophium volutator NOEC (10 d):  $\geq 14989$  mg/kg sediment dw (semi-static, 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

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**TSCA and Canada DSL Status:**

Substance is listed

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

CAS: 13463-67-7 Titanium dioxide

**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

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

Substance is listed.

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

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5430 LBJ Freeway, Suite 1700  
Dallas, Tx 75240-2397  
e-mail: SDS-NA@kronosww.com

**Date of preparation / last revision**

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**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  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative  
NIOSH: National Institute for Occupational Safety  
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