

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

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Trade name: KRONOS Titanium dioxide

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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.

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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/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.

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Breathing equipment:	If workplace exposure limits are exceeded, use respiratory 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.
Material of gloves:	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.
Eye protection:	Safety glasses
Body protection:	Protective work clothing.

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/cm³ (30 lbs/ U.S. gal.)
 Rutile 4,2 g/cm³ (35 lbs/U.S. gal.)

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

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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.

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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/m³ (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 (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)

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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

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Trade name: KRONOS Titanium dioxide

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Packing group	Not applicable
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

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

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

Printing date 09/01/2022

Version 7.00

Reviewed on 09/01/2022

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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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