Safety Data Sheet
acc. to OSHA HCS

Printing date 09/01/2022 **Version 7.00** **Reviewed on 09/01/2022**

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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
Manufacture of titanium metal
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
+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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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 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 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: 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 available

Inhalative 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 (TiO_2) 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_2 powder products and certain powder mixtures containing TiO_2 sold into the EU market. This classification of TiO_2 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_2 workers, have shown no TiO_2-specific links to cancer.
TiO_2 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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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.

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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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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.

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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 75240 e-mail: SDS-NA@kronosww.com
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.	* Data altered compared to the previous version .