

## 1 Identification

**Product identifier**
**Trade name:**
**KRONOS Titanium Dioxide (grades containing TMP)**
**Product Codes**

KRONOS 1071; KRONOS 1073; KRONOS 1074;  
KRONOS 2043; KRONOS 2047; KRONOS 2056;  
KRONOS 2064; KRONOS 2066; KRONOS 2075;  
KRONOS 2076; KRONOS 2160; KRONOS 2190;  
KRONOS 2225; KRONOS 2300; KRONOS 2310;  
KRONOS 2360; KRONOS 2365; KRONOS 2450;  
KRONOS 2800; KRONOS 2900

**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  
+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 product 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

## 3 Composition/information on ingredients

**Chemical characterization: Mixtures**
**Dangerous components:**
**CAS: 77-99-6**
**Trimethylolpropane (TMP)**
 $\leq 0.45\%$ 
**EINECS: 201-074-9**
**☠ Toxic to Reproduction 2, H361**
**Additional information**

Certain manufacturers of TMP self-classified the substance as a category 2, suspected human reproductive toxicant (Repr. 2, H361 Suspected of damaging fertility or the unborn child), under the European Union's REACH regulation based on their interpretation

(Contd. on page 2)

**Printing date 09/27/2022**
**Version 5.00**
**Reviewed on 09/01/2022**
**Trade name: KRONOS Titanium Dioxide (grades containing TMP)**

(Contd. of page 1)

of the results of an OECD 443 Extended One-Generation Reproduction Toxicity study in rats commissioned by those manufacturers. See Section 11 for additional information.

#### 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.**

(Contd. on page 3)

**Printing date 09/27/2022**
**Version 5.00**
**Reviewed on 09/01/2022**
**Trade name: KRONOS Titanium Dioxide (grades containing TMP)**

(Contd. of page 2)

**See Section 13 for disposal information.**

## 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:**

**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 following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.  
At this time, the remaining constituent has no known exposure limits.

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

**ACGIH - TLV Long-term value: 10 TWA, mg/m<sup>3</sup>  
respirable fraction 1mg/m<sup>3</sup> TWA**

**OSHA - PEL Long-term value: 15\* 5\*\* mg/m<sup>3</sup>  
\*total dust, \*\* inhalable 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 and potential skin absorption of TMP should be avoided by wearing suitable protective gloves and clothing that covers the arms.

(Contd. on page 4)

**Printing date 09/27/2022**
**Version 5.00**
**Reviewed on 09/01/2022**
**Trade name: KRONOS Titanium Dioxide (grades containing TMP)**

(Contd. of page 3)

**Store protective clothing separately.**
**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 potential skin absorption of TMP 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:**
**Wear long-sleeved protective work clothing.**
**9 Physical and chemical properties**
**Information on basic physical and chemical properties**
**General Information**
**Appearance:**

|                        |                     |
|------------------------|---------------------|
| <b>Form:</b>           | <b>Powder</b>       |
| <b>Color:</b>          | <b>White</b>        |
| <b>Odor:</b>           | <b>Odorless</b>     |
| <b>Odor threshold:</b> | <b>Not relevant</b> |

|                                 |          |
|---------------------------------|----------|
| <b>pH-value at 20°C (68°F):</b> | <b>7</b> |
|---------------------------------|----------|

|                                     |                                 |
|-------------------------------------|---------------------------------|
| <b>Melting point/Melting range:</b> | <b>&gt;1800°C (&gt;3,272°F)</b> |
|-------------------------------------|---------------------------------|

|                                     |                     |
|-------------------------------------|---------------------|
| <b>Boiling point/Boiling range:</b> | <b>Not relevant</b> |
|-------------------------------------|---------------------|

|                     |                       |
|---------------------|-----------------------|
| <b>Flash point:</b> | <b>Not applicable</b> |
|---------------------|-----------------------|

|                                       |                                  |
|---------------------------------------|----------------------------------|
| <b>Flammability (solid, gaseous):</b> | <b>Product is not flammable.</b> |
|---------------------------------------|----------------------------------|

|                              |                       |
|------------------------------|-----------------------|
| <b>Ignition temperature:</b> | <b>Not applicable</b> |
|------------------------------|-----------------------|

|                             |                                  |
|-----------------------------|----------------------------------|
| <b>Danger of explosion:</b> | <b>Product is not explosive.</b> |
|-----------------------------|----------------------------------|

(Contd. on page 5)

US

**Printing date 09/27/2022**
**Version 5.00**
**Reviewed on 09/01/2022**
**Trade name: KRONOS Titanium Dioxide (grades containing TMP)**

(Contd. of page 4)

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

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

|                      |                        |
|----------------------|------------------------|
| <b>Vapor density</b> | <b>Not applicable.</b> |
|----------------------|------------------------|

|                         |                        |
|-------------------------|------------------------|
| <b>Evaporation rate</b> | <b>Not applicable.</b> |
|-------------------------|------------------------|

|                                                |                  |
|------------------------------------------------|------------------|
| <b>Solubility in / Miscibility with Water:</b> | <b>Insoluble</b> |
|------------------------------------------------|------------------|

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

|                   |                        |
|-------------------|------------------------|
| <b>Viscosity:</b> |                        |
| <b>dynamic:</b>   | <b>Not applicable.</b> |

|                          |                                                   |
|--------------------------|---------------------------------------------------|
| <b>Other information</b> | <b>No further relevant information available.</b> |
|--------------------------|---------------------------------------------------|

## 10 Stability and reactivity

|                   |                                                             |
|-------------------|-------------------------------------------------------------|
| <b>Reactivity</b> | <b>The substance is stable under normal use conditions.</b> |
|-------------------|-------------------------------------------------------------|

|                                                          |                                                      |
|----------------------------------------------------------|------------------------------------------------------|
| <b>Chemical stability</b>                                |                                                      |
| <b>Thermal decomposition / conditions to be avoided:</b> | <b>No decomposition under normal use conditions.</b> |

|                                           |                                     |
|-------------------------------------------|-------------------------------------|
| <b>Possibility of hazardous reactions</b> | <b>No dangerous reactions known</b> |
|-------------------------------------------|-------------------------------------|

|                            |                                        |
|----------------------------|----------------------------------------|
| <b>Conditions to avoid</b> | <b>No further data; see Section 7.</b> |
|----------------------------|----------------------------------------|

|                                |                                        |
|--------------------------------|----------------------------------------|
| <b>Incompatible materials:</b> | <b>No further data; see Section 7.</b> |
|--------------------------------|----------------------------------------|

|                                          |                                                   |
|------------------------------------------|---------------------------------------------------|
| <b>Hazardous decomposition products:</b> | <b>No dangerous decomposition products known.</b> |
|------------------------------------------|---------------------------------------------------|

## 11 Toxicological information

### Information on toxicological effects

|                                                             |                                                                          |
|-------------------------------------------------------------|--------------------------------------------------------------------------|
| <b>Acute toxicity:</b>                                      | <b>Based on available data, the classification criteria are not met.</b> |
| <b>LD/LC50 values that are relevant for classification:</b> |                                                                          |

|                            |                        |
|----------------------------|------------------------|
| <b>ATE(Mix), oral</b>      | <b>&gt; 2000 mg/kg</b> |
| <b>ATE(Mix), dermal</b>    | <b>&gt; 2000 mg/kg</b> |
| <b>ATE(Mix), inhalativ</b> | <b>&gt; 5 mg/l</b>     |

|                                 |                                                                    |
|---------------------------------|--------------------------------------------------------------------|
| <b>Primary irritant effect:</b> |                                                                    |
| <b>on the skin:</b>             | <b>OECD 404:</b>                                                   |
|                                 | <b>No irritant effect.</b>                                         |
|                                 | <b>Powderized material may dry and mechanically irritate skin.</b> |
| <b>on the eye:</b>              | <b>OECD 405:</b>                                                   |

(Contd. on page 6)

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

Printing date 09/27/2022

Version 5.00

Reviewed on 09/01/2022

**Trade name: KRONOS Titanium Dioxide (grades containing TMP)**

(Contd. of page 5)

**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)****CAS: 77-99-6 Trimethylolpropane (TMP)****Oral NOAEL 67 mg/kg (rat)  
subchronic 90-days study****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.

**Trimethylolpropane (TMP)**

Certain manufacturers of TMP self-classified the substance as a Category 2, suspected human reproductive toxicant (Repr. 2, H361 Suspected of damaging fertility or the unborn child) under the European Union's (EU) REACH regulation based on their interpretation of the results of an OECD 443 Extended One-Generation Reproduction Toxicity study in rats commissioned by those manufacturers. Taking into consideration the data from the study, the group also determined a new EU Derived No Effect Level (DNEL) for workers of 0.94 mg/kg/d (systemic, long-term, dermal route). TMP is contained in the specified TiO<sub>2</sub> products at less than 0.45 %. See Section 8 for recommended exposure control/personal protection.

(Contd. on page 7)

**Printing date 09/27/2022**
**Version 5.00**
**Reviewed on 09/01/2022**
**Trade name: KRONOS Titanium Dioxide (grades containing TMP)**

(Contd. of page 6)

**Carcinogenic categories**
**IARC (International Agency for Research on Cancer)**
**CAS: 13463-67-7 Titanium dioxide: 2B**
**NTP (National Toxicology Program)**
**None of the ingredients is listed.**
**OSHA-Ca (Occupational Safety & Health Administration)**
**None of the ingredients is listed.**
**12 Ecological information**
**Toxicity**

Based on available data, the classification criteria are not met.

**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)

**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**
**CAS: 13463-67-7 Titanium dioxide: not relevant for inorganic substances.**
**Other information:**
**CAS: 77-99-6 Trimethylolpropane: not easily biodegradable**
**Bioaccumulative potential**
**Does not accumulate in organisms**
**Mobility in soil**
**The product is immobile in soil.**

(Contd. on page 8)

**Printing date 09/27/2022**
**Version 5.00**
**Reviewed on 09/01/2022**
**Trade name: KRONOS Titanium Dioxide (grades containing TMP)**

(Contd. of page 7)

**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**
**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):**
**None of the ingredients is listed**
**Section 313 (Specific toxic chemical listings):**
**None of the ingredients is listed**
**Section 311 (TIER 1 notification)**
**None of the ingredients is listed.**
**TSCA and Canada DSL Status:**
**All components have the value ACTIVE.**
**Hazardous Air Pollutants**
**None of the ingredients is listed.**

(Contd. on page 9)

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

Printing date 09/27/2022

Version 5.00

Reviewed on 09/01/2022

Trade name: KRONOS Titanium Dioxide (grades containing TMP)

(Contd. of page 8)

**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.

**OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)**

New Jersey Special Hazardous Substance List:

None of the ingredients is listed.

Pennsylvania Right-to-Know List:

CAS: 13463-67-7 Titanium dioxide

Pennsylvania Special Hazardous Substance List:

None of the ingredients is listed.

**Carcinogenic categories**

EPA (Environmental Protection Agency)

None of the ingredients is listed.

TLV (Threshold Limit Value Notation established by ACGIH)

CAS: 13463-67-7 Titanium dioxide: A4 Not classifiable as human carcinogen

**EU REACH registration status:**

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:**

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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  
ELINCS: European List of Notified 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

(Contd. on page 10)



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

**Page 10/10**

**Printing date 09/27/2022**

**Version 5.00**

**Reviewed on 09/01/2022**

**Trade name: KRONOS Titanium Dioxide (grades containing TMP)**

(Contd. of page 9)

REL: Recommended Exposure Limit

Toxic to Reproduction 2: Reproductive toxicity – Category 2

**\* Data compared to the previous  
version altered.**

**\* Data altered compared to the previous version .**

US