

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**
**1.1 Product identifier**

**Trade name:** KRONOS Titanium dioxide (TMP grades)  
**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

**CAS Number:** 13463-67-7  
**EINECS Number:** 236-675-5  
**EU REACH Registration number:** 01-2119489379-17-xxxx

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

<b>Identified uses of the substance or mixture</b>	White pigment for application in Coating materials, printing inks, man-made fibres, plastics, paper, glass, vitreous enamels, ceramic products
<b>Uses advised against</b>	Manufacture of titanium metal None

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

**Manufacturer/Supplier:** KRONOS INTERNATIONAL, Inc.  
 Peschstrasse 5  
 51373 Leverkusen, Germany  
 Tel.: INT +49 214 356-0

**1.4 EMERGENCY TELEPHONE NUMBER:**

KRONOS INTERNATIONAL, Inc. (Germany)  
 Tel.: INT + 49 214 356-4444

**SECTION 2: Hazards identification**
**2.1 Classification of the substance or mixture**

**Classification according to Regulation (EC) No 1272/2008** The product is not classified, according to the CLP regulation.

**2.2 Label elements**

<b>Labelling according to Regulation (EC) No 1272/2008</b>	not applicable
<b>Hazard pictograms</b>	not applicable
<b>Signal word</b>	not applicable
<b>Hazard statements</b>	not applicable

**Additional information:** The products identified in section 1.1 are not classified pursuant to Regulation 2020/217 (14th ATP to Regulation (EU) 1272/2008, Annex VI). EUH 212 is included in section 2.2 voluntarily.

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EUH210 Safety data sheet available on request.

EUH212 Warning! Hazardous respirable dust may be formed when used. Do not breathe dust.

**2.3 Other hazards****Results of PBT and vPvB assessment**

The product is an inorganic substance and does not fulfill the criteria for PBT and vPvB according to Annex XIII of REACH.


**Determination of endocrine-disrupting properties**

The product does not contain substances with endocrine disrupting properties.

**SECTION 3: Composition/information on ingredients****3.2 Mixtures****Dangerous components:**

CAS: 77-99-6 Trimethylolpropane

0.1 - 0.45%

 Repr. 2, H361fd**Additional information:**Based upon a recent reproductive toxicity study (OECD 443), the manufacturer and others of its consortium membership self-classified TMP as a suspected reproductive toxicant (Repr. Cat 2). The group also determined new Derived No Effect Levels (DNEL). The new suggested TMP DNEL for workers by inhalation is 3.3 mg/m<sup>3</sup> (long-term, systemic).**SECTION 4: First aid measures****4.1 Description of first aid measures****General information:**

No special measures required.

**After inhalation:**

Supply fresh air; consult doctor in case of symptoms.

**After skin contact:**

Wash with water and soap and rinse thoroughly.

**After eye contact:**

Rinse opened eye for several minutes under running water. In case of persistent symptoms consult physician.

**After swallowing:**

No special measures required.

**4.2 Most important symptoms and effects, both acute and delayed**

No further relevant information available.

**4.3 Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

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**SECTION 5: Firefighting measures**
**5.1 Extinguishing media**

**Suitable extinguishing agents:** Use fire fighting measures that suit the environment.  
The product is not flammable.

**5.2 Special hazards arising from the substance or mixture**

None

**5.3 Advice for firefighters**

**Protective equipment:** Use protective measures that suit the hazard conditions.

**SECTION 6: Accidental release measures**
**6.1 Personal precautions, protective equipment and emergency procedures**

Not required.

**6.2 Environmental precautions:** No special measures required.

**6.3 Methods and material for containment and cleaning up:**

 Collect mechanically.  
Avoid causing dust.

**6.4 Reference to other sections**

 See Section 8 for information on personal protective equipment.  
See Section 13 for information on disposal.

**SECTION 7: Handling and storage**
**7.1 Precautions for safe handling**

Provide vacuum dust collection if dust is formed.

**Information about protection against explosions and fires:**

The product is not flammable.

**7.2 Conditions for safe storage, including any incompatibilities**
**Requirements to be met by storerooms and containers:**

No special requirements.

**Information about storage in one common storage facility:**

Not required.

**Further information about storage conditions:**

Store under dry conditions.

**7.3 Specific end use(s)**

There are no further specific end uses than those named in section 1.2.

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**SECTION 8: Exposure controls/personal protection**
**8.1 Control parameters**
**Components with critical 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.

**8.2 Exposure controls**
**Individual protection measures, such as personal protective equipment**
**General protective and hygienic measures:**

The usual precautionary measures should be adhered to in handling chemicals. Titanium dioxide pigments are not irritants 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. Store protective clothing separately.

**Breathing equipment:**

If workplace exposure limits are exceeded, use respiratory protection according to national regulations.  
 EN149: FFP2; EN143: P2

**Hand protection**

Requirements according to EN 374  
 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 does not only depend on the material, but also on further marks of quality and varies 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/face protection**

Safety glasses

**Body protection:**

Protective work clothing.

**SECTION 9: Physical and chemical properties**
**9.1 Information on basic physical and chemical properties**
**General Information**
**Colour:**

White

**Smell:**

Odourless

**Odour threshold:**

Not relevant

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<b>Melting point/freezing point:</b>	>1800°C
<b>Boiling point or initial boiling point and boiling range</b>	Not relevant
<b>Flammability</b>	Product is not flammable.
<b>Flash point:</b>	Not applicable
<b>pH (100 g/l) at 20°C</b>	7
<b>Viscosity:</b>	
<b>Kinematic viscosity</b>	Not applicable
<b>Solubility in / Miscibility with Water:</b>	Insoluble
<b>Partition coefficient n-octanol/water (log value)</b>	Not determined.
<b>Vapour pressure:</b>	
<b>Density and/or relative density</b>	
<b>Density:</b>	20°C    Anatase 3,9 g/cm <sup>3</sup> Rutile 4,2 g/cm <sup>3</sup>
<b>Apparent density at 20°C:</b>	500-900 kg/m <sup>3</sup>
<b>Vapour density</b>	Not applicable.
<b>Particle characteristics</b>	Percentage of particles with an aerodynamic diameter ≤ 10 µm in the products identified in Section 1.1
	mean [%]    minimum [%]    maximum [%]    method
	0,011        0,003            0,061            EN15051-2

**9.2 Other information**

<b>Appearance:</b>	
<b>Form:</b>	Powder
<b>Important information on protection of health and environment, and on safety.</b>	
<b>Explosive properties:</b>	Product is not explosive.
<b>Evaporation rate</b>	Not applicable.

**Information with regard to physical hazard classes**

<b>Explosives</b>	not applicable
<b>Flammable gases</b>	not applicable
<b>Aerosols</b>	not applicable
<b>Oxidising gases</b>	not applicable
<b>Gases under pressure</b>	not applicable
<b>Flammable liquids</b>	not applicable
<b>Flammable solids</b>	not applicable
<b>Self-reactive substances and mixtures</b>	not applicable
<b>Pyrophoric liquids</b>	not applicable
<b>Pyrophoric solids</b>	not applicable
<b>Self-heating substances and mixtures</b>	not applicable
<b>Substances and mixtures, which emit flammable gases in contact with water</b>	not applicable
<b>Oxidising liquids</b>	not applicable
<b>Oxidising solids</b>	not applicable
<b>Organic peroxides</b>	not applicable
<b>Corrosive to metals</b>	not applicable

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Desensitised explosives                      not applicable

**SECTION 10: Stability and reactivity**

10.1 Reactivity                                      The substance is stable under normal use conditions.

 10.2 Chemical stability  
 Thermal decomposition /  
 Conditions to be avoided:                      No decomposition under normal use conditions

 10.3 Possibility of hazardous  
 reactions    No dangerous reactions known

10.4 Conditions to avoid                        No further data; see Section 7

10.5 Incompatible materials:                    No further data; see Section 7

 10.6 Hazardous decomposition  
 products:    No dangerous decomposition products known

**SECTION 11: Toxicological information**

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

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

CAS: 13463-67-7 titanium dioxide

Oral      LD50      &gt; 5,000 mg/kg (rat) (OECD 425)

Dermal   LD50      &gt; 5,000 mg/kg (rabbit)

Inhalative LC50/4h &gt; 6.8 mg/l (rat)

CAS: 77-99-6 Trimethylolpropane

Oral      LD50      14,700 mg/kg (rat)

Dermal   LD50      &gt; 10,000 mg/kg (rabbit)

 Inhalative LC50      850 mg/m<sup>3</sup> (rat)

 Skin corrosion/irritation                      OECD 404:  
 No irritant effect

 Serious eye damage/irritation                OECD 405:  
 No irritant effect  
 Like any foreign body, particles (dust) can cause mechanical  
 irritation.

 Respiratory or skin sensitisation              OECD 406, OECD 429  
 No sensitizing effects.

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.

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Aspiration hazard

Based on available data, the classification criteria are not met. (Contd. of page 6)

**Subacute to chronic toxicity:**

CAS: 13463-67-7 titanium dioxide

Oral NOAEL 3,500 mg/kg/d (rat) (90 d)

Dermal NOAEL mg/kg/d

Inhalative NOAEC 10 mg/m<sup>3</sup> (rat) (90 d)**Toxicokinetics, metabolism and distribution**

Dermal absorption can be considered negligible, as titanium dioxide has been shown not to penetrate human skin to any appreciable degree.

**SECTION 12: Ecological information****12.1 Toxicity**

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

**Toxicity to fish**

CAS: 13463-67-7 titanium dioxide

LC50 &gt; 10,000 mg/l (Sheepshead minnow)

&gt; 1,000 mg/l (Pimephales promelas)

**Toxicity to Daphnia and other aquatic invertebrates**

CAS: 13463-67-7 titanium dioxide

LC50 &gt; 10,000 mg/l (Acartia tonsa)

&gt; 1,000 mg/l (Daphnia magna)

**Toxicity to algae and aquatic plants**

CAS: 13463-67-7 titanium dioxide

EC50 &gt; 100 mg/l (Pseudokirchneriella subcapitata)

&gt; 10,000 mg/l (Skeletonema costatum)

**Toxicity to sediment organisms**

CAS: 13463-67-7 titanium dioxide

NOEC ≥ 100,000 mg/kg dw (Hyalella azteca)

**12.2 Persistence and degradability**

Not relevant for inorganic substances.

**12.3 Bioaccumulative potential**

Does not accumulate in organisms

**12.4 Mobility in soil**

The product is immobile in soil.

**12.5 Results of PBT and vPvB assessment**

The mixture does not contain any components that are to be considered as PBT or vPvB according to the criteria of the REACH Regulation.

PBT:

Not applicable

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<b>vPvB:</b> <b>12.6 Endocrine disrupting properties</b>	<b>Not applicable</b>  <b>The product does not contain substances with endocrine disrupting properties.</b>
<b>12.7 Other adverse effects</b>	<b>No further relevant information available.</b>

**SECTION 13: Disposal considerations**

<b>13.1 Waste treatment methods</b> <b>European waste catalogue</b>	<b>Waste code number according to origin of waste</b>
<b>Uncleaned packagings:</b> <b>Recommendation:</b>	<b>Disposal according to official regulations</b>

**SECTION 14: Transport information**

<b>14.1 UN number or ID number</b> <b>ADR/RID/ADN, ADN, IMDG, IATA</b>	<b>not applicable</b>
<b>14.2 UN proper shipping name</b> <b>ADR/RID/ADN</b> <b>ADN, IMDG, IATA</b>	<b>not applicable</b> <b>not applicable</b>
<b>14.3 Transport hazard class(es)</b>  <b>ADR/RID/ADN, ADN, IMDG, IATA</b> <b>Class</b>	  <b>not applicable</b>
<b>14.4 Packing group</b> <b>ADR/RID/ADN, IMDG, IATA</b>	<b>not applicable</b>
<b>14.5 Environmental hazards</b>	<b>Not an environmentally hazardous substance</b>
<b>14.6 Special precautions for user</b>	<b>Not applicable</b>
<b>14.7 Maritime transport in bulk according to IMO instruments</b>	<b>Not relevant</b>

**SECTION 15: Regulatory information**

<b>15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture</b>	
<b>Directive 2012/18/EU</b> <b>Named dangerous substances - ANNEX I</b>	
<b>None of the ingredients is listed.</b>	
<b>DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II</b>	
<b>None of the ingredients is listed.</b>	
<b>REGULATION (EU) 2019/1148</b> <b>Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))</b>	
<b>None of the ingredients is listed.</b>	
<b>Annex II - REPORTABLE EXPLOSIVES PRECURSORS</b>	
<b>None of the ingredients is listed.</b>	

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**Regulation (EC) No 273/2004 on drug precursors**

None of the ingredients is listed.

**Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors**

None of the ingredients is listed.

**15.2 Chemical Safety Assessment****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.

**Chemical safety assessment:** A Chemical Safety Assessment has been carried out.**SECTION 16: Other information**

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**Carcinogenicity:** In February 2006 IARC concluded, "There is inadequate evidence in humans for the carcinogenicity of titanium dioxide." Based on rat inhalation studies IARC concluded that there is "sufficient evidence in experimental animals for the carcinogenicity of titanium dioxide," IARC's overall evaluation was that "Titanium dioxide is possibly carcinogenic to humans (Group 2b)". This conclusion was based on IARC's guidelines which require such a classification if two or more independent studies in one species carried out at different times or in different laboratories or under different protocols show evidence of tumours.

**Department issuing data specification sheet:**

Global Quality Management

**Contact:**KRONOS INTERNATIONAL, Inc.  
Tel.: INT + 49 214 356-0  
e-mail: MSDS@kronosww.com**Date of previous version:**

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**Version number of previous version:**

6.00

**Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
ICAO: International Civil Aviation Organisation  
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  
IATA: International Air Transport Association  
GHS: Globally Harmonised System of Classification and Labelling of Chemicals  
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  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative  
Repr. 2: Reproductive toxicity – Category 2

**Sources**

Material Safety Data Sheet of the manufacturer.

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**REACH-Registration Dossier****\* Data compared to the previous  
version altered.****Amended according to Regulation (EU) no 2020/878**

EU