Safety data sheet
according to 1907/2006/EC Art. 31, as amended by UK REACH Regulations SI 2019/758

Printing date 04.07.2023 **Version number 7.00 (replaces version 6.00)** **Revision: 24.05.2023**

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**
Downstream User Import Notification (DUIN) **submitted (2021)**

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

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

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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 GB CLP regulation.**

2.2 Label elements
Labelling according to Regulation (EC) No 1272/2008 **not applicable**
Hazard pictograms **not applicable**
Signal word **not applicable**
Hazard statements **not applicable**

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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.
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 UK REACH.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Dangerous components:

CAS: 77-99-6 Trimethylolpropane 0.1 - 0.45%
EINECS: 201-074-9
Reg.nr.: 01-2119486799-10-xxxx
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/m³ (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.

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4.3 Indication of any immediate medical attention and special treatment needed No further relevant information available.

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.

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7.3 Specific end use(s) There are no further specific end uses than those named in section 1.2.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with critical values that require monitoring at the workplace: No OEL available

CAS: 13463-67-7 titanium dioxide

WEL Long-term value: 10* 4 mg/m³**
*total inhalable **respirable

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.

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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
Melting point/freezing point:	>1800°C
Boiling point or initial boiling point and boiling range	Not relevant
Flammability	Product is not flammable.
Flash point:	Not applicable
pH (100 g/l) at 20°C	7
Viscosity:	
Kinematic viscosity	Not applicable
Solubility in / Miscibility with	
Water:	Insoluble
Partition coefficient n-octanol/water (log value)	Not determined.
Vapour pressure:	
Density and/or relative density	
Density:	20°C Anatase 3,9 g/cm³ Rutile 4,2 g/cm³
Apparent density at 20°C:	500-900 kg/m³
Vapour density	Not applicable.
Particle characteristics	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

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

Information with regard to physical hazard classes

Explosives	not applicable
Flammable gases	not applicable
Aerosols	not applicable
Oxidising gases	not applicable
Gases under pressure	not applicable
Flammable liquids	not applicable
Flammable solids	not applicable
Self-reactive substances and mixtures	not applicable
Pyrophoric liquids	not applicable

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Pyrophoric solids	not applicable
Self-heating substances and mixtures	not applicable
Substances and mixtures, which emit flammable gases in contact with water	not applicable
Oxidising liquids	not applicable
Oxidising solids	not applicable
Organic peroxides	not applicable
Corrosive to metals	not applicable
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	> 5,000 mg/kg (rat) (OECD 425)
Dermal	LD50	> 5,000 mg/kg (rabbit)
Inhalative	LC50/4h	> 6.8 mg/l (rat)

CAS: 77-99-6 Trimethylolpropane

Oral	LD50	14,700 mg/kg (rat)
Dermal	LD50	> 10,000 mg/kg (rabbit)
Inhalative	LC50	850 mg/m³ (rat)

Skin corrosion/irritation OECD 404:
No irritant effect
Serious eye damage/irritation OECD 405:

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

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
no relevant data available

Inhalative NOAEC 10 mg/m³ (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 > 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))

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> 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)

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 UK REACH Regulation.
PBT:	Not applicable
vPvB:	Not applicable
12.6 Endocrine disrupting properties	The product does not contain substances with endocrine disrupting properties.
12.7 Other adverse effects	No further relevant information available.

SECTION 13: Disposal considerations

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

SECTION 14: Transport information

14.1 UN number or ID number ADR/RID/ADN, ADN, IMDG, IATA	not applicable
14.2 UN proper shipping name ADR/RID/ADN, ADN, IMDG, IATA	not applicable
14.3 Transport hazard class(es) ADR/RID/ADN, ADN, IMDG, IATA Class	not applicable
14.4 Packing group ADR/RID/ADN, IMDG, IATA	not applicable
14.5 Environmental hazards	Not an environmentally hazardous substance

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14.6 Special precautions for user Not applicable

14.7 Maritime transport in bulk according to IMO instruments Not relevant

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Limitation of use None

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.

Relevant phrases H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.

Department issuing data specification sheet: Global Quality Management

Contact:
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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

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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.
UK REACH-Registration Dossier

*** Data compared to the previous version altered.** Amended according to Regulation (EU) no 2020/878