Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 27.09.2022 **Version number 10.00 (replaces version 9.00)** **Revision: 01.09.2022**

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 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**
EU REACH Registration number:	**01-2119489379-17-xxxx**

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 substance is not classified, according to the 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**

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 210 and EUH 212 are 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.

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2.3 Other hazards No further relevant information available.

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SECTION 3: Composition/information on ingredients

3.1 Substances
CAS No. Designation: CAS: 13463-67-7 titanium dioxide
EC number: 236-675-5

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.

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.

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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 protection 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.

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 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.

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

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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
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:	
dynamic:	Not applicable.
Solubility in / Miscibility with	
Water:	Insoluble
Partition coefficient n-octanol/water (log value)	Not applicable
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
0,028	0,002	0,083	EN15051-2

9.2 Other information

Appearance:

Form:	Powder

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Important information on protection of health and environment, and on safety.

Self-flammability:	**Not applicable**
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

Pyrophoric solids

not applicable

Self-heating substances and mixtures

not applicable

Substances and mixtures, which emit flammable gases in contact with water

not applicable

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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)

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.

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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

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.

11.2 Information on other hazards

Endocrine disrupting properties

Substance is not listed.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish

CAS: 13463-67-7 titanium dioxide

LC50 > 10,000 mg/l (Sheepshead minnow)

> 1,000 mg/l (Pimephales promelas)

Toxicity to Daphnia and other aquatic invertebrates

CAS: 13463-67-7 titanium dioxide

LC50 > 10,000 mg/l (Acartia tonsa)

> 1,000 mg/l (Daphnia magna)

Toxicity to algae and aquatic plants

CAS: 13463-67-7 titanium dioxide

EC50 > 100 mg/l (Pseudokirchneriella subcapitata)

> 10,000 mg/l (Skeletonema costatum)

Toxicity to sediment organisms

CAS: 13463-67-7 titanium dioxide

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

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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 substance is immobile in soil.
12.5 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.
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	not applicable
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.
14.6 Special precautions for user	Not applicable.
14.7 Maritime transport in bulk according to IMO instruments	Not relevant.

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SECTION 15: Regulatory information

Directive 2004/42/EC

Directive 2012/18/EU
Named dangerous substances - ANNEX I Substance is not listed.

DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II

Substance is not listed.

REGULATION (EU) 2019/1148

Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))

Substance is not listed.

Annex II - REPORTABLE EXPLOSIVES PRECURSORS

Substance is not listed.

Regulation (EC) No 273/2004 on drug precursors

Substance is not listed.

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

Substance is not 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

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Date of previous version: 27.05.2021

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Version number of previous version:	9.00
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 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
Sources	REACH-Registration Dossier (Update 2021)
* Data compared to the previous version altered.	Amended according to Regulation (EU) no 2020/878