Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 15.10.2025 Version number 10.00 (replaces version 9.00) Revision: 15.10.2025

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

1.1 Product identifier
Trade name: KRONOS Titanium Dioxide (non-pigmentary)
Product Codes KRONOS 1020; KRONOS 3025; KRONOS 3900

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 Additive for application in Glass, vitreous enamels, ceramic products

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

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

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 any substances above the legal limits that have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605.

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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

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Additional information: Titanium dioxide without pigment properties (not a nanomaterial according to European Commission Recommendation 2022/C 229/01)

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.

6.2 Environmental precautions: No special measures required.

6.3 Methods and material for containment and cleaning up: Collect mechanically.
Avoid causing dust.

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6.4 Reference to other sections See Section 7 for information on safe handling
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: No special measures required.
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) No further relevant information available.

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
Appropriate engineering controls No further data; see Section 7

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.

Breathing equipment: If workplace exposure limits are exceeded, use respiratory protection according to national regulations.
EN149 / EN14387: Filter type FFP2 / P2

Hand protection Requirements according to EN 374

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	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	
Physical state	**Solid**
Colour:	**White**
Smell:	**Odourless**
Odour threshold:	**Not relevant**
Melting point/freezing point:	**>1800°C**
Boiling point or initial boiling point and boiling range	**Not determined**
Flammability	**Product is not flammable.**
Flash point:	**Not applicable**
Auto-ignition temperature:	**Not applicable**
pH (100 g/l) at 20°C	**7 - 10**
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:	**350 - 900 kg/m³**
Particle characteristics	**See section 3.**

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.**

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Information with regard to physical hazard classes 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)

Primary irritant effect:

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

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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 — **No substantial accumulation of titanium was observed in tissues following oral administration of titanium dioxide.**
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 — **The product does not contain any substances above the legal limits that have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605.**

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SECTION 12: Ecological information

12.1 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)

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)

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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 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 any substances above the legal limits that have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Delegated Regulation (EU) 2018/605.**
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 applicable.**
14.6 Special precautions for user	**Not applicable**

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14.7 Maritime transport in bulk according to IMO instruments Not applicable

Transport/Additional information: Not dangerous according to transport specifications.

SECTION 15: Regulatory information

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

LIST OF SUBSTANCES SUBJECT TO AUTHORISATION (ANNEX XIV): (Substances not listed)

Substance is not listed.

Regulation (EU) No 649/2012

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 (EU) 2024/590 on substances that deplete the ozone layer

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.

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SECTION 16: Other information

This information pertains solely to the identified product and includes our reliance on regulations in effect and information from third parties as of the date hereof. It remains the sole responsibility of the customer to determine the suitability of the product when used in specific processes and applications or combined with other materials and to ensure compliance with all relevant laws, regulations, and standards governing those uses. The provision of this information does not constitute a warranty, guarantee, or representation of any kind. No contractual obligations, either express or implied, are created between KRONOS and any recipient of this information.

Department issuing data sheet: Global Quality Management

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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
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

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