

1 Identification

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;
Type 3741; Type 3752;

Other means of identification
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
Manufacture of titanium metal

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:

+1-800-424-9300 (CHEMTREC) for transportation emergencies only
(US)
+1-800-866-5600 for other product information (8:00 AM – 5:00 PM,
US central time)

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

Other hazards

Dust load

3 Composition/information on ingredients

Chemical characterization: Mixtures
Dangerous components:

Not applicable

4 First-aid measures

Description of first aid measures
General information

No special measures required.

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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. See Section 13 for disposal information.

7 Handling and storage

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 (Contd. on page 3)
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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:

CAS: 13463-67-7 Titanium dioxide

ACGIH - TLV Long-term value: 10 TWA, mg/m³

respirable fraction 1mg/m³ TWA

OSHA - PEL Long-term value: 15* mg/m³

*total 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 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.
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 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.

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Eye protection:	Safety glasses
Body protection:	Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Physical state	Solid.
Color:	White
Odor:	Odorless
Odor threshold:	Not relevant
Melting point/Melting range:	>1800°C (>3,272°F)
Boiling point/Boiling range:	Not relevant
Flammability:	Product is not flammable.
Flash point:	Not applicable
Auto igniting:	Not applicable
pH-value at 20°C (68°F):	5.2 - 8.5
Viscosity:	
dynamic:	Not applicable.
Solubility in / Miscibility with	
Water:	Insoluble
Partition coefficient (n-octanol/water):	Not applicable
Vapor pressure:	
Density:	20°C Anatase 3,9 g/cm ³ (30 lbs/ U.S. gal.) Rutile 4,2 g/cm ³ (35 lbs/U.S. gal.)
Bulk density:	ca. 500-900 kg/m³ (4.2 - 7.5 lbs/U.S. gal.)
Vapor density	Not applicable.

Other information

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

10 Stability and reactivity

Reactivity	The substance is stable under normal use conditions.
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Chemical stability

Thermal decomposition / conditions to be avoided:	No decomposition under normal use conditions.
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Possibility of hazardous reactions	No dangerous reactions known
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Conditions to avoid	No further data; see Section 7.
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Incompatible materials: No further data; see Section 7.**Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

Information on toxicological effects

Acute toxicity:

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:

on the skin:

OECD 404:

No irritant effect.

Powderized material may dry and mechanically irritate skin.

on the eye:

OECD 405:

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 availableInhalative NOAEC 10 mg/m³ (rat) (90 d)

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.

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12 Ecological information

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)

Toxicity to sediment organisms

CAS: 13463-67-7 Titanium dioxide

NOEC ≥ 100,000 mg/kg dw (Hyaella azteca)
(semi-static, ASTM 1706)

Persistence and degradability Not relevant for inorganic substances.

Bioaccumulative potential Does not accumulate in organisms

Mobility in soil The substance is immobile in soil.

Other adverse effects No further relevant information available.

13 Disposal considerations

Waste treatment methods

Recommendation:

Disposal must be made according to all federal, state, and local
(municipal) regulations.

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Uncleaned packagings:
Recommendation:
**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.

Transport in bulk according to Annex II of
MARPOL73/78 and the IBC Code

Not applicable.

Special precautions for user

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):**
**Product contains traces of toxic chemicals subject to reporting
requirements of 40 CFR 372:**
CAS: 7439-92-1 Lead: <10 ppm
CAS: 7439-97-6 Mercury: <0.1 ppm
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.

OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
New Jersey Right-to-Know List:

All ingredients are listed.

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New Jersey Special Hazardous Substance List:

None of the ingredients is listed.

Pennsylvania Right-to-Know List:

All ingredients are listed.

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)

All components have the value A4 Not classifiable as human carcinogen.

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.

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Date of previous version

09/01/2022

Version number of previous version:

7.00

Date of preparation

10/14/2025

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
REL: Recommended Exposure Limit

* Data compared to the previous version altered.

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