

1 Identification

Product identifier
Trade name:
KRONOS Titanium Dioxide (grades containing TMP)
Product Codes
**KRONOS 1071; KRONOS 2043; KRONOS 2047;
 KRONOS 2056; KRONOS 2064; KRONOS 2066;
 KRONOS 2075; KRONOS 2076; KRONOS 2160;
 KRONOS 2225; KRONOS 2300; KRONOS 2310;
 KRONOS 2360; KRONOS 2365; KRONOS 2450;
 KRONOS 2800; KRONOS 2900**
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**
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

3 Composition/information on ingredients

Chemical characterization: Mixtures
Dangerous components:
CAS: 77-99-6
Trimethylolpropane (TMP)
≤ 0.45%
EINECS: 201-074-9  Reproductive toxicity 2, H361
Additional information
**Certain manufacturers of TMP self-classified the substance as a
 category 2, suspected human reproductive toxicant (Repr. 2, H361
 Suspected of damaging fertility or the unborn child), under the
 European Union's REACH regulation based on their interpretation**

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 of the results of an OECD 443 Extended One-Generation Reproduction Toxicity study in rats commissioned by those manufacturers. See Section 11 for additional information.

4 First-aid measures

Description of first aid measures
General information

No special measures required.

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.

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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 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:**

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit. At this time, the remaining constituent has no known exposure limits.

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* 5 mg/m³
*total dust, ** inhalable 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 irritant but as with all fine powders can absorb moisture and natural oil from the surface of the skin during prolonged exposure. Prolonged exposure and potential skin absorption of TMP should be avoided by wearing suitable protective gloves and clothing that covers the arms.
Store protective clothing separately.

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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 potential skin absorption of TMP 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.
Eye protection:	Safety glasses
Body protection:	Wear long-sleeved 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):	6.0 - 9.5
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/m ³ (4.2 - 7.5 lbs/U.S. gal.)
Vapor density	Not applicable

Other information

Appearance:	
Form:	Powder

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

 Danger of explosion:
 Evaporation rate

 Product is not explosive.
 Not applicable.

10 Stability and reactivity

Reactivity The substance is stable under normal use conditions.

Chemical stability

 Thermal decomposition /
 conditions to be avoided:

No decomposition under normal use conditions.

 Possibility of hazardous
 reactions

No dangerous reactions known

Conditions to avoid

No further data; see Section 7.

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: 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 (TMP)

Oral LD50 14,700 mg/kg (rat)

Dermal LD50 > 10,000 mg/kg (rabbit)

 Inhalative LC50 850 mg/m³ (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

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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)

CAS: 77-99-6 Trimethylolpropane (TMP)

Oral NOAEL 67 mg/kg (rat)
subchronic 90-days study**Additional toxicological information:****Trimethylolpropane (TMP)**

Certain manufacturers of TMP self-classified the substance as a Category 2, suspected human reproductive toxicant (Repr. 2, H361 Suspected of damaging fertility or the unborn child) under the European Union's (EU) REACH regulation based on their interpretation of the results of an OECD 443 Extended One-Generation Reproduction Toxicity study in rats commissioned by those manufacturers. Taking into consideration the data from the study, the group also determined a new EU Derived No Effect Level (DNEL) for workers of 0.94 mg/kg/d (systemic, long-term, dermal route). TMP is contained in the specified TiO₂ products at less than 0.45 %. See Section 8 for recommended exposure control/personal protection.

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.

12 Ecological information**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)

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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 (Hyalella azteca)
 (semi-static, ASTM 1706)

Persistence and degradability CAS: 13463-67-7 Titanium dioxide: not relevant for inorganic substances.

Other information: CAS: 77-99-6 Trimethylolpropane: not easily biodegradable

Bioaccumulative potential Does not accumulate in organisms

Mobility in soil The product is immobile in soil.

Other adverse effects No further relevant information available.

13 Disposal considerations
Waste treatment methods

 Recommendation: Material is not a hazardous waste.
 Disposal must be made according to all federal, state, and local (municipal) regulations.

Uncleaned packagings:

 Recommendation: Material is not a hazardous waste.
 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

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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.

New Jersey Special Hazardous Substance List:

None of the ingredients is listed.

Pennsylvania Right-to-Know List:

CAS: 13463-67-7 Titanium dioxide

Pennsylvania Special Hazardous Substance List:

None of the ingredients is listed.

Carcinogenic categories**EPA (Environmental Protection Agency)**

None of the ingredients is listed.

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TLV (Threshold Limit Value Notation established by ACGIH)

CAS: 13463-67-7 Titanium dioxide: 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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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
Reproductive toxicity 2: Reproductive toxicity – Category 2

* Data compared to the previous version altered.

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