Titanium Dioxide R-5395

Prepared according to the UN GHS and REACH Annex II · Version 1.0 · 2026/10/14

1. Identification of the substance and of the company

1.1 Product identifier

Product: Titanium Dioxide R-5395

Substance: Titanium dioxide, rutile (sulfate process), surface-treated with alumina and zirconia

Colour Index: C.I. Pigment White 6, C.I. 77891

CAS No.: 13463-67-7

EC No.: 236-675-5

1.2 Relevant identified uses and uses advised against

Identified uses: White pigment for printing inks (solvent-based, water-based, UV/EB and inkjet); industrial and professional use. Use in coatings and plastics is possible, with limited suitability.

Uses advised against: None known.

1.3 Details of the supplier of the safety data sheet

Supplier: Formula Chemicals Co., Ltd.

Address: 18F, No. 178, Dayi Road, Shulin District, New Taipei City 23854, Taiwan

Website / e-mail: www.formula-chemicals.com · service@formula-chemicals.com

1.4 Emergency telephone number

Emergency telephone number: +886-922582639; +886-2-26685339

2. Hazards identification

2.1 Classification of the substance

Not classified as hazardous according to the UN Globally Harmonized System (GHS), Regulation (EC) No 1272/2008 (CLP) and the US OSHA Hazard Communication Standard (29 CFR 1910.1200).

Note: the harmonised EU classification of titanium dioxide powder as Carc. 2 (H351, by inhalation) introduced by Delegated Regulation (EU) 2020/217 was annulled by the General Court of the European Union on 23 November 2022; the annulment was upheld by the Court of Justice on 1 August 2025.

2.2 Label elements

No hazard pictogram, signal word, hazard statement or precautionary statement is required.

2.3 Other hazards

Dust may cause mechanical irritation of the eyes and of the respiratory tract. Titanium dioxide is listed by IARC in Group 2B (possibly carcinogenic to humans), and NIOSH considers ultrafine (including engineered nanoscale) titanium dioxide a potential occupational carcinogen (data are insufficient to classify fine titanium dioxide), both on the basis of lung tumours in rats exposed by inhalation to high dust concentrations; avoid generating and breathing dust (see Sections 8 and 11). The substance does not meet the PBT or vPvB criteria (REACH Annex XIII does not apply to inorganic substances).

3. Composition / information on ingredients

3.1 Substance

Component	CAS No.	EC No.	Content (w/w)	Classification
Titanium dioxide (rutile)	13463-67-7	236-675-5	≥ 95 %	Not classified
Surface treatment: aluminium oxide, zirconium dioxide; moisture and other minor constituents	1344-28-1; 1314-23-4	215-691-6; 215-227-2	≤ 5 % in total (individual amounts not stated)	Not classified

No component is present above a concentration that would require its listing as a hazardous ingredient.

4. First-aid measures

4.1 Description of first-aid measures

General advice: In case of doubt, or when symptoms persist, seek medical advice.

Inhalation: Move to fresh air. If symptoms persist, consult a doctor.

Skin contact: Wash with soap and water.

Eye contact: Rinse immediately with plenty of water for several minutes, holding the eyelids open. If irritation persists, seek medical attention.

Ingestion: Rinse mouth and drink water. No adverse effects are expected; if symptoms occur, consult a doctor.

4.2 Most important symptoms and effects, both acute and delayed

Dust may cause mechanical irritation of the eyes, nose and throat. No delayed effects are known under normal conditions of use.

4.3 Indication of immediate medical attention and special treatment needed

Treat symptomatically.

5. Fire-fighting measures

5.1 Extinguishing media: The product is not flammable. Use extinguishing media appropriate for the surrounding fire.

5.2 Special hazards arising from the substance: None. The product is inert, non-flammable and non-combustible.

5.3 Advice for fire-fighters: Wear self-contained breathing apparatus and protective clothing when fighting a fire in which the product is involved.

6. Accidental release measures

6.1 Personal precautions: Avoid generating and breathing dust. Ensure adequate ventilation and wear the protective equipment described in Section 8.

6.2 Environmental precautions: Prevent the product from entering drains, sewers and watercourses.

6.3 Methods for containment and cleaning up: Collect mechanically by vacuuming or sweeping without raising dust, and place in suitable closed containers for disposal. Wet product makes floors slippery.

6.4 Reference to other sections: See Section 8 for personal protection and Section 13 for disposal.

7. Handling and storage

7.1 Precautions for safe handling: Avoid generating dust; use local exhaust ventilation where dust is formed. Observe good industrial hygiene practice. Follow manual-handling guidance for 25 kg bags.

7.2 Conditions for safe storage: Store under normal temperatures, dry and protected from weather, in the original closed packaging. Keep away from strong acids.

7.3 Specific end uses: See Section 1.2.

8. Exposure controls / personal protection

8.1 Control parameters

Limit	Value	Basis
US OSHA PEL (8-h TWA)	15 mg/m³	Titanium dioxide, total dust
ACGIH TLV (8-h TWA), 2022	2.5 mg/m³ (fine particles); 0.2 mg/m³ (nanoscale particles)	Respirable fraction; A3
NIOSH REL (10-h TWA)	2.4 mg/m³ (fine); 0.3 mg/m³ (ultrafine)	NIOSH Current Intelligence Bulletin 63
DNEL, workers (long term, inhalation, local)	10 mg/m³	REACH registration data (titanium dioxide)
DNEL, general population (long term, oral)	700 mg/kg bw/day	REACH registration data (titanium dioxide)

National occupational exposure limits for dust apply where they are stricter.

8.2 Exposure controls

Engineering controls: General or local exhaust ventilation to keep airborne dust below the exposure limits.

Eye protection: Safety glasses with side shields or dust goggles where dust is generated.

Skin protection: Protective gloves and work clothing for prolonged contact.

Respiratory protection: An approved particulate respirator (e.g. P2 / N95) where dust concentrations may exceed the exposure limits.

Environmental exposure controls: Avoid release to drains and watercourses.

9. Physical and chemical properties

Property	Value
Physical state / form	Solid, powder
Colour	White
Odour	Odourless
pH (aqueous suspension)	6.0 – 9.0
Melting point	approx. 1,843 °C
Boiling point	approx. 3,000 °C
Relative density	4.1 (TDS); rutile TiO2 approx. 4.26 g/cm³
Particle characteristics	Average particle size 0.25 µm (TDS)
Solubility in water	Insoluble
Volatile matter at 105 °C	No data available
Flash point / flammability	Not applicable; non-flammable
Explosive properties	Not explosive
Oxidising properties	Not oxidising
Partition coefficient n-octanol/water	Not applicable (inorganic)

10. Stability and reactivity

10.1 Reactivity: No significant reactivity hazard, alone or in contact with water.

10.2 Chemical stability: Stable under normal conditions of storage and use.

10.3 Possibility of hazardous reactions: None known.

10.4 Conditions to avoid: Generation of dust; contact with incompatible materials.

10.5 Incompatible materials: Strong acids.

10.6 Hazardous decomposition products: None known.

11. Toxicological information

Acute oral toxicity: LD50 > 5,000 mg/kg (rat)

Acute inhalation toxicity: LC50 > 6.82 mg/L, 4 h (rat)

Skin corrosion / irritation: Not irritating (rabbit)

Serious eye damage / irritation: Not irritating (rabbit); dust may cause mechanical irritation

Respiratory or skin sensitisation: Not sensitising

Germ cell mutagenicity: Not mutagenic

Carcinogenicity: IARC Group 2B (possibly carcinogenic to humans), based on lung tumours in rats after chronic inhalation of high dust concentrations; epidemiological studies of exposed workers have not shown an increased cancer risk. Not classified (see Section 2.1).

Reproductive toxicity: Not classified

STOT – single and repeated exposure: Not classified

Aspiration hazard: Not applicable

Toxicokinetics: Negligible absorption by the oral and dermal routes; no significant accumulation in tissues after oral administration.

12. Ecological information

12.1 Toxicity: Fish LC50 > 1,000 mg/L, 96 h (Pimephales promelas); Daphnia EC50 > 100 mg/L, 48 h (Daphnia magna); algae EC50 61 mg/L, 72 h (Pseudokirchneriella subcapitata); bacteria EC50 > 1,000 mg/L (Escherichia coli).

12.2 Persistence and degradability: Inorganic substance; biodegradation testing is not relevant.

12.3 Bioaccumulative potential: Not bioaccumulative.

12.4 Mobility in soil: Insoluble; low mobility.

12.5 Results of PBT and vPvB assessment: Not applicable (inorganic substance).

12.6 Other adverse effects: None known.

13. Disposal considerations

Dispose of the product in accordance with local and national regulations, preferably by recycling or at an authorised landfill. Empty packaging is not hazardous and may be recycled or disposed of as non-hazardous waste.

14. Transport information

Regulation	Status
UN number / proper shipping name	Not applicable
Land (ADR/RID, US DOT)	Not regulated as dangerous goods
Sea (IMDG Code)	Not regulated as dangerous goods
Air (ICAO-TI / IATA-DGR)	Not regulated as dangerous goods
Marine pollutant	No

15. Regulatory information

EU: Not classified under Regulation (EC) No 1272/2008. Titanium dioxide is a REACH-registered substance (EC 236-675-5) and is not on the Candidate List of Substances of Very High Concern.

Inventories: Listed on the US TSCA Inventory, Canada DSL, Australia AIIC, Korea ECL, Japan ENCS and China IECSC.

USA – OSHA: Not classified as hazardous under 29 CFR 1910.1200; exposure limit in 29 CFR 1910.1000, Table Z-1.

USA – California Proposition 65: Titanium dioxide (airborne, unbound particles of respirable size) is listed as a chemical known to the State of California to cause cancer.

Transport: Not dangerous goods (Section 14).

16. Other information

Version: 1.0, 2026/10/14 (first Formula Chemicals edition for this grade)

Sources: Formula Chemicals technical data sheet; REACH registration data for titanium dioxide; OSHA, NIOSH (CIB 63), ACGIH (2022), IARC (Vol. 93) and EU case law on the classification of titanium dioxide.

Abbreviations: ACGIH: American Conference of Governmental Industrial Hygienists; DNEL: derived no-effect level; IARC: International Agency for Research on Cancer; NIOSH: US National Institute for Occupational Safety and Health; PEL: permissible exposure limit; REL: recommended exposure limit; TLV: threshold limit value; TWA: time-weighted average.

This data sheet was prepared by the Formula Chemicals Documentation Department. The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of Formula Chemicals Co., Ltd.'s knowledge; however, Formula Chemicals makes no warranty regarding the accuracy of such data or the results to be obtained from use thereof. Formula Chemicals assumes no responsibility for injury to recipient or to third persons or for any damage to any property, and recipient assumes all such risks. You are therefore advised to check that this sheet is the most recent issue.