

 Zakłady Chemiczne „Police” S.A.	Safety Data Sheet <i>according to Regulation (EC) 1907/2006</i>	SDS-ZChP- 019/10 version 07	
	TYTANPOL® - Titanium dioxide	The date of:	
		<small>compilation</small> 02.11.2010	<small>revision</small> 02.07.2018

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

1.1. Product identifier

Product name	TYTANPOL®
Chemical name	Titanium dioxide
Product Codes (class)	R-001, R-002, R-003, R-210, R-211, R-213, R-220, R-310, RS, RD-5, A-11
Synonyms	Titanium Dioxide, Titanium White, Pigment White 6, C.I. No. 77891
Molecular formula	TiO ₂
CAS Number	13463-67-7
EC Number	236-675-5
Registration number	01-2119489379-17-0004

1.2. Relevant identified uses of the substance and uses advised against

Titanium dioxide is not classified as a dangerous substance according to Regulation (EC) No 1272/2008.

The most common use of titanium dioxide: as colouring and opacifying agent in the following industries: coatings and paints, printing, plastics, synthetic fibers, paper, rubber, ceramics, cement, cosmetics.

1.3. Details of the supplier of the safety data sheet

Grupa Azoty Zakłady Chemiczne „Police” S.A.

Internet: grupaazoty.com

Kuznicka 1, 72-010 Police, Poland

Phone no: + 48 91 317 1090

Tele-Fax no: + 48 91 317 3103

A person responsible for Safety Data Sheet e-mail: reach-sds@grupaazoty.com

1.4. Emergency telephone number

Chief Dispatcher Alarm telephone no: + 48 91 317 1616 (24h)
Telephone no: + 48 91 317 4201 (24h)

SECTION 2: Hazards identification

2.1. Classification of the substance

Titanium dioxide according to Regulation (EC) No 1272/2008 is not classified as dangerous.

Human Health effects

<i>Skin effect</i>	Skin is not penetrated, but prolonged contact can cause irritation.
<i>Eyes effect</i>	Feeling of a strange body in the eyes.
<i>Swallowing</i>	No hazard during normal industrial use.
<i>Inhalation</i>	Chemically neutral dust. Excessive exposure may cause temporary drying effect and/or irritation of mucous membranes.

2.2. Label elements

According to Regulation (EC) No 1272/2008 titanium dioxide is not classified as dangerous.

2.3. Other hazards

Titanium dioxide is neither a PBT nor a vPvB substance.

SECTION 3: Composition/information on ingredients**3.1. Substances**

Ingredient	%	CAS number	EC number (EINECS)
Titanium dioxide, TiO ₂	min 82	13463-67-7	236-675-5

SECTION 4: First aid measures**4.1. Description of first aid measures**

<i>Inhalation</i>	Move to a fresh air atmosphere. In case of persistent symptoms, consult a doctor. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and call a physician.
<i>Skin contact</i>	Wash with soap and water.
<i>Eye contact</i>	Rinse immediately with plenty of water. If irritation persists, seek medical attention.
<i>Swallowing</i>	Material is not toxic and not retained in the intestinal tract. However, if symptoms occur, consult a physician. No adverse health effects anticipated by this route, however, in the event of ingestion, increase intake of liquid in order to flush from the body. In case of persistent symptoms, consult a doctor.

4.2. Most important symptoms and effects, both acute and delayed

Acute and delayed symptoms and effects do not occur in normal conditions of use of (see section 11).

4.3. Indication of any immediate medical attention and special treatment needed

Medical assistance is needed in case of inhalation of large amounts of dust.

SECTION 5: Firefighting measures**5.1. Extinguishing media**

Suitable extinguishing media	Water and any media appropriate for burning materials.
Unsuitable extinguishing media	No data

5.2. Special hazards arising from the substance

TYTANPOL® pigments are non-flammable and does not increase fire hazard. Packing materials (paper, plastics) are flammable materials. Fire of packing materials extinguish with water.

Product is neutral, non flammable and non combustible.

5.3. Advice for firefighters

Usual protective equipment for fire fighters.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

In case of excessive dusting use dustproof goggles and dust mask protecting respiratory system.

Pigments are not irritating but can absorb moisture and natural oils from the surface of the skin. In case of prolonged exposure, use protective clothes and gloves.

Avoid generation of dust. Ensure adequate ventilation. Wear personal protective equipment.

6.2. Environmental precautions

Prevent run-off from entering ground to storm sewers and ditches connected with natural waterways.

6.3. Methods and material for containment and cleaning up

Use any feasible mechanical means (e.g. vacuum, sweeping) but avoid dusting during clean-up. Product can cause slippery conditions if wet. Even at low concentration, the product renders that discharged waste water is highly visible.

6.4. Reference to other sections

See section 13 for waste disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

TYTANPOL® pigments due to their fineness can be a source of dusting resulting in inhalation of dust. Transport and handling system should be designed to reduce the release of dust. Sufficient local and general ventilation is advised.

Pneumatic transport of the product and usage of plastic packaging (sacks (big bag) and foil) may generate an electrostatic charge. Precautions should be followed when carrying out these activities. TYTANPOL® pigments can be packed without delay after production and depending on storage conditions may retain for a very long time elevated temperature (up to 70°C). Precautions should be followed while handling pigment and particularly when incorporating it into solvent-based production. Local exhaust ventilation may be needed. Reduce dust when product handling.

Caution: Material can cause slippery of surfaces when wet!

7.2. Conditions for safe storage, including any incompatibilities

Protect packed product from damage of packing materials. Store in a covered place, do not expose to the outdoor conditions - relative humidity of 70% should not be exceeded.

Pigmenting properties of product may get worse by excessive compression and for this reason during stacking do not exceed number of 2 layers of pallets.

Any unintentional contact with water should be avoided since moisture detrimentally affects the product. Avoid dust inhalation. Follow good industrial hygiene practice concerning chemicals handling. Handling systems and areas should be operated in order to reduce dust exposure.

7.3. Specific end use(s)

Titanium dioxide is not classified as a dangerous substance. Exposure scenarios have not been made.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

	Limit value - Eight hours mg/m ³	Limit value - Short term mg/m ³
Belgium	10	-
Denmark	6 (total dust)	12 (total dust)
France	11 (inhalable aerosol)	-
Poland	10	30
Latvia	10	36
Romania	10	-
United Kingdom	10 (inhalable aerosol)	25
Sweden	5 (inhalable aerosol)	-
Spain	10 (inhalable aerosol)	-

Source of information: <http://limitvalue.ifa.dguv.de/>

DNEL¹ for workers

Long-term - local effects	Inhalation	10 mg/m ³
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DNEL for the general population

Long-term - systemic effects	Oral	700 mg/m ³ bw/day
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PNEC²

PNEC aqua (freshwater)	0.127 mg/L
PNEC aqua (marine water)	1 mg/L
PNEC aqua (intermittent releases)	0.61 mg/L
PNEC STP	100 mg/L
PNEC sediment (freshwater)	1000 mg/L
PNEC sediment (marine water)	100 mg/L
PNEC to soil	100 mg/L

8.2. Exposure controls**Personal protection measures.**

Eye protection	Usage of dustproof goggles or glasses with side protections is recommended if dust concentration is likely to exceed the occupational exposure limit.
Hand protection	Prolonged exposure should be avoided by wearing suitable impervious protective gloves.
Skin protection	Respect main rules concerning protection clothes when chemicals handling. Protect skin by wearing appropriate clothes, for example overalls.
Respiratory protection	Usage of respiratory mask is recommended if dust concentration is likely to exceed the occupational exposure limit. An approved dust respirator is recommended as appropriate depending on dust levels and other workplace factors. Recommended dust mask (type FFP2 acc. to EN 149).

Personal Protective Equipment for First-Aiders

If allowed dust concentration limit is exceeded use an appropriate dust respirator and protective glasses (goggles).

Collective protection measures

Good ventilation shall be provided to keep dust concentration below the occupational exposure limit. If exposure limit is exceeded personal protection measures shall be applied.

Specific hygiene measures

Protective cream should be applied on exposed parts of skin.

Hygiene measures

Individuals having sensitive skin may find it beneficial to use a protective cream or moisturizer when excessive or prolonged contact with the skin is likely.

Environmental exposure controls

Do not allow material to contaminate ground water system.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Substance type	Inorganic substance
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¹ DNEL Derived No-Effect Level

² PNEC Predicted No-Effect Concentration

Appearance/physical state/colour	Solid, crystalline, white, odorless
Melting/freezing point	Anatase: 1560 °C, Rutile: 1843 °C, Brookite: 1825 °C.
Boiling point (at 1013 hPa)	Boiling point of titanium dioxide is ca. 3000°C.
Density at 20 °C	Anatase: 3.9 kg/L, Brookite: 4.17 kg/L, Rutile: 4.26 kg/L.
Water solubility	1µg/L at pH 6, 7 and 8
Boiling point	The solid substance decomposes before boiling
Surface tension	Not applicable to inorganic substance
Partition coefficient n-octanol/water	Not applicable to inorganic substance
Flash point	Not applicable to inorganic substance
Flammability	Non flammability
Explosive properties	No explosive properties
Self-ignition temperature	Not auto-ignite at temperatures melting
Oxidising properties	No oxidizing properties
Stability in organic solvents and identity of relevant degradation products	Not applicable to inorganic substance
Viscosity	Not applicable to solids

9.2. Other information

No other information.

SECTION 10: Stability and reactivity

10.1. Reactivity

Non reactive.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Unknown.

10.4. Conditions to avoid

Unknown.

10.5. Incompatible materials

Chemically non-active, insoluble in acids and bases (except of concentrated sulphuric acid and concentrated hydrofluoric acid).

10.6. Hazardous decomposition products

Unknown.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	LD50 ³ (oral)	> 5000mg/kg bw
Irritation/Corrosivity	Skin	not irritating
	Eye	not irritating
	Respiratory	not irritating
Sensitization	not sensitizing	
Repeated dose toxicity	NOAEL ⁴ (oral)	3500 mg/kg bw/day (chronic rat)
	NOAEC (inhalation) Target organ	10 mg/m ³ (chronic rat)

³ LD50 Median Lethal Dose

⁴ NOAEL No Observed Adverse Effect Level

	- respiratory lung
Mutagenicity	Genetic toxicity: negative
Carcinogenicity	Detailed epidemiological investigations have shown no causative link between titanium dioxide exposure and cancer risk in humans. At workplace exposure concentrations, no lung cancer hazard has been observed.
Toxicity for reproduction	Based on the weight of evidence from the available long-term toxicity/carcinogenicity studies in rodents and the relevant information on the toxicokinetic behavior in rats it is concluded that TiO ₂ does not present a reproductive toxicity hazard.

SECTION 12: Ecological information

12.1. Toxicity

Titanium dioxide does not fulfill the T criteria.

Aquatic compartment (including sediment)

Short-term toxicity to fish	LC50 ⁵ for freshwater fish: 1000 mg/L LC50 for marine water fish: 10000 mg/L
Short-term toxicity to aquatic invertebrates	EC50 ⁶ /LC50 for freshwater invertebrates: 1000 mg/L EC50/LC50 for marine water invertebrates: 10000 mg/L
Algae and aquatic plants	EC50/LC50 for freshwater algae: 61 mg/L (<i>Pseudokirchneriella subcapitata</i>) EC50/LC50 for marine water algae: 10000 mg/L (<i>Skeletonema costatum</i>) EC10/LC10 or NOEC ⁷ for freshwater algae: 12.7 mg/L EC10/LC10 or NOEC for marine water algae: 5600 mg/L
Toxicity to aquatic micro-organisms	EC50/LC50 for aquatic micro-organisms: 1000 mg/L EC10/LC10 or NOEC for aquatic micro-organisms: 1000 mg/L
Sediment organisms	EC50/LC50 for freshwater sediment: 100000 mg/kg sediment dw (<i>Hyalella azteca</i>). EC50/LC50 for marine water sediment: 14989 mg/kg sediment dw (<i>amphipod volutator Corophium</i>). EC10/LC10 or NOEC for freshwater sediment: 100000 mg/kg sediment dw

Terrestrial compartment

Toxicity to terrestrial arthropods	Long-term EC10/LC10 or NOEC for soil arthropods: 1000 mg/kg soil dw
Toxicity to terrestrial plants	Long-term EC10/LC10 or NOEC for terrestrial plants: 100000 mg/kg soil dw
Toxicity to soil micro organisms	Long-term EC10/LC10 or NOEC for soil micro-organisms: 10000 mg/kg soil dw

12.2. Persistence and degradability

Titanium dioxide does not fulfill the P or vP criteria.

12.3. Bioaccumulative potential

Titanium dioxide does not fulfill the B or vB criteria.

12.4. Mobility in soil

Titanium dioxide pigments have very limited mobility, since they are insoluble in water and other solvents.

12.5. Results of PBT and vPvB assessment

Titanium dioxide is neither a PBT nor a vPvB substance.

⁵ LC50 Lethal concentration

⁶ EC50 Half maximal effective concentration

⁷ NOEC No Observed Effect Concentration

12.6. Other adverse effects

No data.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Remove the waste of titanium dioxide pigment and packaging wastes according to environmental regulations (including both wastes and packaging regulations) and transfer adequately to the recovery or disposal.

Not classified as hazardous waste.

In case of spill of titanium dioxide - see Section 6 of the safety data sheet.

SECTION 14: Transport information

Titanium dioxide is not classified, that means they are not considered as dangerous materials according to Orange Book of UN and international transport codes, eg. RID (railway), ADR (roads transport) and IMDG (see transport).

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

Not applicable.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Not applicable.

14.6. Special precautions for user

Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.

SECTION 15: Regulatory information

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

- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18th December 2006 concerning Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EEC and 2000/21/EC. (*Official Journal of the European Union of 30.12.2006, L 396. with later changes*)
- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (*Official Journal of the European Union of 31.12.2008, L 353. with later changes*)

15.2. Chemical safety assessment

The chemical safety assessment has been made.

SECTION 16: Other information

Tytanpol® Titandioxid pigments are not classified as hazardous to water according to the German Regulation on Substances Hazardous to Water (VwVwS).

International Agency for Research on Cancer (IARC) has classified titanium dioxide in to Group 2B "*Possibly carcinogenic to humans*". This classification is based on the IARC rules which state: there is "*Sufficient evidence of carcinogenicity: ...if... two or more independent studies in one species of animals carried out at different times or in different laboratories or under different protocols*" show evidence of tumors. The IARC expert group judged three studies on rats as qualifying.

However there is no evidence that titanium dioxide itself has toxic properties that would lead to cancer, nor that it presents a carcinogenic risk to humans at exposures experienced in the workplace.

Training Employees should be trained in the scope of proper substance handling. Read the safety data sheet before use.

Changes Section 1, 8.