

 Zakłady Chemiczne „Police” S.A.	SAFETY DATA SHEET <i>according to Regulation (EC) 1907/2006</i>	SDS-ZChP- 025/10 Version 02			
	TYTANPOL® - Titanium dioxide pigments	Date of: <table border="1"> <tr> <td>compilation</td> <td>revision</td> </tr> <tr> <td>17.12.2020</td> <td>21.09.2021</td> </tr> </table>	compilation	revision	17.12.2020
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name	TYTANPOL®
Product Codes (class)	R-001, R-002, R-003, R-210, R-211, R-310

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

The most common uses are:

White pigment used as colouring and opacifying agent in the following industries: paints and varnishes, plastics, synthetic fibres, paper, rubber, ceramics, cement, cosmetics and printing. Uses advised against have not been identified.

1.3. Details of the supplier of the safety data sheet

Grupa Azoty Zakłady Chemiczne „Police” S.A.
Internet: grupaazoty.com

ul. Kuźnicka 1, 72-010 Police
Phone: + 48 91 317 1090
Telefax: + 48 91 317 3103

Person responsible for the safety data sheet: *e-mail: reach-sds@grupaazoty.com*

1.4. Emergency telephone number

Chief Dispatcher Emergency phone number: + 48 91 317 1616 (24h)
Phone: + 48 91 317 4201 (24h)

SECTION 2: Hazards identification

2.1. Classification of substance or mixture

According to Regulation (EC) no. 1272/2008 the mixture is not classified as hazardous.

Human health effects

Skin effects	Skin is not penetrated, but prolonged contact can cause irritation.
Eyes effect	Feeling of a chemically neutral body in the eyes.
Swallowing	No hazard during normal industrial use.
Inhalation	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 the mixture is not classified as hazardous.

Additional information:

EUH210 Safety data sheet available on request.

EUH212 Warning! Hazardous respirable dust may be formed when used.

Do not breathe dust.

2.3. Other hazards

Titanium dioxide is neither a PBT nor a vPvB substance.

Risk of atmosphere dusting.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Components which do not affect classification:

Component	% w/w	CAS number	WE number	Classification (Regulation (EC) no. 1272/2008)
Titanium dioxide (in powder form containing <1 % of particles with aerodynamic diameter $\leq 10 \mu\text{m}$)	min. 82	13463-67-7	236-675-5	-
Registration number: 01-2119489379-17-0004				
1,1,1-trimethylolpropane	max. 0,45	77-99-6	201-074-9	Repr. 2; H361fd
Registration number: 01-2119486799-10-XXXX				

Abbreviations are explained in Section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

<i>Inhalation</i>	Move or carry the victim from the dusty area to fresh air. Keep the warm and calm. If not breathing, irregular breathing or when breathing has ceased call a physician and designated personnel shall perform cardiopulmonary resuscitation.
<i>Skin contact</i>	Remove contaminated clothing and shoes, wash with soap and water.
<i>Eye contact</i>	Remove contact lenses. Immediately rinse with a lot of water for at least 15 minutes. If irritation persists, consult a doctor.
<i>Swallowing</i>	The material is non-toxic and does not persist in the digestive tract. No negative effects for the health after exposure through this route are expected, however in the case of ingestion increase intake of liquid to flush the substance from the organism. Should negative symptoms occur and persist, consult with 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

<i>Suitable extinguishing media</i>	Water and any media appropriate for burning materials.
<i>Unsuitable extinguishing media</i>	None

5.2. Special hazards arising from the substance or mixture

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. No hazardous combustion products.

5.3. Advice for firefighters

The product is neutral, does not burn and is non-flammable. Usual protective equipment for fire fighters.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid producing and inhaling dusts. In case of excessive dusting use dustproof goggles and dust mask protecting respiratory system. Provide adequate ventilation.

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.

6.2. Environmental precautions

Prevent run-off from entering ground to storm sewers and water bodies and waterways.

6.3. Methods and material for containment and cleaning up

Spilt titanium dioxide pigment waste shall be swept or collected with a shovel (avoiding dust formation) to a labelled container and transfer for recovery or neutralization following environmental protection regulations.

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 may cause dust formation due to their fine grain size. The transport and reloading system should be designed in such a manner to minimize dust release.

It is recommended to use an efficient local and general ventilation.

Pneumatic transport of the product and the use of plastic packaging (bags, film) can generate electrostatic discharges. Suitable precautions should be maintained when performing such 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), therefore care must be taken when handling these products, particularly when introducing them to production with solvents.

Local exhaust ventilation systems may be necessary. Limit dust formation to the minimum and ensure systematic dust removal in production and storage rooms. Take precautions to prevent electrostatic discharge.

Note: If wet the product may result in slippery surfaces!

7.2. Conditions for safe storage, including any incompatibilities

Protect the packaged product against packaging damage, store in a covered place not exposed to outdoor conditions, with relative humidity not exceeding 70%. Pigmenting properties of product may be deteriorated by excessive compression and for this reason during stacking do not exceed number of 3 layers of pallets.

Any unintentional contact with water should be avoided since moisture detrimentally affects the product. Avoid breathing dust. 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)

The mixture is not classified as a dangerous substance. Exposure scenarios have not been made.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

a) Titanium dioxide:

	Limit value - Eight hours	Limit value - Short term
	mg/m ³	mg/m ³
<i>Belgium</i>	10	-
<i>Denmark</i>	6 (total dust)	12 (total dust)
<i>France</i>	11 (inhalable aerosol)	-
<i>Ireland</i>	10 (inhalable fraction), 4 (respirable fraction)	-
<i>Latvia</i>	10	-
<i>Poland</i>	10 (inhalable fraction),	-
<i>Romania</i>	10	15 (15 minutes average value)
<i>Spain</i>	10 (frazione di inalazione)	-
<i>Sweden</i>	5 (inhalable aerosol)	-
<i>Switzerland</i>	3 respirable aerosol	-
<i>USA - OSHA</i>	15 total dust	-
<i>United Kingdom</i>	10 (inhalable fraction), 4 (respirable fraction)	-

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

b) 1,1,1- trimethylolpropane:

	Limit value - Eight hours	Limit value - Short term
	mg/m ³	mg/m ³
<i>Sweden</i>	5 (total dust)	-

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

DNEL¹ values for employees

<i>Long-term exposure, systemic effects</i>	Inhalation	3,3 mg/m ³
	Skin	0.94 mg/kg b.w./day

DNEL values for the general population

<i>Long-term exposure, systemic effects</i>	Inhalation	0,58 mg/m ³
	Skin	0.34 mg/kg b.w./day
	Ingestion	0.34 mg/kg b.w./day

PNEC values²

<i>PNEC (environment - wastewater treatment plant))</i>	100 mg/l
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8.2. Exposure controls**Personal protection equipment**

<i>Eye or face protection</i>	It is recommended to use dustproof goggles or glasses with side protections (tightly fitting around the eyes).
<i>Skin protection</i>	Use protective clothing selected depending on the work performed and the related hazard, resulting from occupational risk assessment on the given work position.
<i>Hand protection</i>	Use protective gloves selected depending on the work performed and the related hazard, resulting from occupational risk assessment on the given work position.
<i>Respiratory protection</i>	Use protective masks selected depending on the work performed and the related hazard (dust concentration in the work environment), resulting from occupational risk assessment on the given work position. Recommended: Dust mask - FFP2 type according to PN-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 equipment

Use installation dust extraction systems and ensure efficient general ventilation and local exhaust ventilation maintaining dust concentration below the occupational exposure limit. If the concentration is exceeded, use personal protection equipment as above.

Personal hygiene measures

People with sensitive skin would benefit from using a barrier cream or lotion, in anticipation of excessive or prolonged skin contact.

Environmental exposure controls

Do not remove the substance to storm sewage and natural water courses. Prevent contamination of underground waters.

¹ DNEL Derived No-Effect Level

² PNEC Predicted No-Effect Concentration

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

<i>Appearance/physical state/colour/odour</i>	Solid (at temp. 20 °C, 101.3 kPa), white powder, odour barely perceptible		
<i>Melting point (at 1013 hPa)</i>	Rutile: 1843 °C		
<i>Boiling point (at 1013 hPa)</i>	3000 °C		
<i>Relative density at 20 °C</i>	Rutile: 4.26		
<i>Solubility in water</i>	Practically insoluble		
<i>Vapour pressure</i>	Not Applicable		
<i>Surface tension</i>	Not Applicable		
<i>Partition coefficient n-octanol/water</i>	Not applicable to inorganic substances		
<i>Flash point</i>	Not applicable to inorganic substances		
<i>Flammability</i>	Non-flammable		
<i>Explosive properties</i>	No explosive properties		
<i>Auto-ignition temperature</i>	Not Applicable		
<i>Oxidizing properties</i>	No oxidizing properties		
<i>Stability in organic solvents and identity of relevant degradation products</i>	Not applicable to inorganic substances		
<i>Dissociation constant</i>	Not Applicable		
<i>Viscosity</i>	Not applicable to a solid in room temperature		
<i>Particle characteristics</i>	Percentage of particles with aerodynamic diameter $\leq 10 \mu\text{m}$ (EN 15051-3 method):		
	Average (%)	Minimum (%)	Maximum(%)
	0,005	0,002	0,007

9.2. Other information

No further details.

SECTION 10: Stability and reactivity**10.1. Reactivity**

Non-reactive mixture .

10.2. Chemical stability

Mixture is stable in normal conditions .

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

None.

10.5. Incompatible materials

Chemically non-reactive, insoluble in acids and bases (with the exception for concentrates sulphuric acid and concentrated hydrofluoric acid).

10.6. Hazardous decomposition products

None known.

SECTION 11: Toxicological information**11.1. Information on toxicological effects****a) Titanium dioxide**

<i>Acute toxicity</i>	oral route	not observed
<i>Irritant/corrosive effects</i>	on skin	not irritant
	to eyes	
	to respiratory tract	
<i>Sensitizing effects</i>	not sensitizing	
<i>Repeated dose toxicity</i>	oral route	not observed
	on skin	
	to respiratory tract	
<i>Mutagenic effects</i>	Genotoxicity: negative	
<i>Carcinogenicity</i>	not observed or no testing available	
<i>Reproductive toxicity</i>	not observed or no testing available	

b) 1,1,1- trimethylolpropane

<i>Acute toxicity</i>	LD50 oral route	> 14,700 mg/kg b.w.
	LD50 skin	> 10,000 mg/kg b.w.
	LD50 (4h) inhalation	> 0.85 mg/l
<i>Irritant/corrosive effects</i>	on skin	not irritant
	to eyes	not irritant
	to respiratory tract	not irritant
<i>Sensitizing effects</i>	not sensitizing	
<i>Mutagenic effects</i>	Genotoxicity: negative. In vitro genotoxicity, result negative.	
<i>Carcinogenicity</i>	Not classified based on available information.	
<i>Reproductive toxicity</i>	Suspected of damaging fertility. Suspected of damaging the unborn child. Effect on fertility: Species: Rat, males and females; dose administration route: Oral; Dose: 12.5 - 50 - 200 - 800 mg/kg; General toxicity parents: NOAEL: 200 mg/kg b.w.; General toxicity F1: NOAEL: 800 mg/kg of body weight; Fertility: NOAEL: 800 mg/kg b.w.; Method: Testing directive 422 OECD; GLP: yes. Effect on foetus development:	

	<p>Species: Rat, female; dose administration route: Oral; Duration of individual experiments: 15 d; General toxicity in mothers: NOAEL: 100 mg/kg b.w.; Developmental toxicity: NOAEL: 100 mg/kg b.w.; Method: Testing directive 414 OECD; GLP: yes.</p> <p>Species: Rabbit, female; dose administration route: Oral; Duration of individual experiments: 22 d; General toxicity in mothers: NOAEL: ≥ 450 mg/kg b.w.; Developmental toxicity: NOAEL: ≥ 450 mg/kg b.w.; Method: Testing directive 414 OECD; GLP: yes.</p> <p>Species: Rat, males and females; dose administration route: Oral; General toxicity in mothers: NOAEL: 800 mg/kg b.w.; Developmental toxicity: NOAEL: 800 mg/kg b.w.; Method: Testing directive 422 OECD; GLP: yes.</p> <p>Toxicity to reproduction - Assessment: Some evidence of negative impact on sexual and reproductive functions based on animal studies. Some evidence of negative impact on development based on animal studies.</p>
<i>Specific target organ toxicity (STOT) - single exposure (SE):</i>	Not classified based on available information
<i>Specific target organ toxicity (STOT) - repeated exposure (RE):</i>	
<i>Aspiration hazard</i>	

SECTION 12: Ecological information

12.1. Toxicity

a) Titanium does not meet toxicity criterion (T).

Assessment of threat to aquatic environment (including sediment)

<i>Short-term toxicity to fish</i>	LC50 ³ for fish (freshwater) > 1000 mg/l LC50 for fish (saltwater) > 10,000 mg/l
<i>Chronic toxicity for fish</i>	NOEC for fish (freshwater) $\geq 500 - 1000$ mg/l
<i>Short-term toxicity to aquatic invertebrates</i>	EC50 ⁴ /LC50 for freshwater invertebrates > 1000 mg/l EC50/LC50 for marine invertebrates > 10,000 mg/l
<i>Chronic toxicity for aquatic invertebrates</i>	EC50: > 10 mg/l for aquatic invertebrates (Daphnia magna)
<i>Algae and aquatic plants</i>	NOEC ≥ 100 mg/l for algae/cyanobacteria (freshwater) NOEC ≥ 5600 mg TiO ₂ /l for algae/cyanobacteria (marine waters)
<i>Benthic organisms</i>	EC10/LC10 or NOEC (freshwater) > 100,000 mg/kg dry weight EC10/LC10 or NOEC (saltwater) > 14,989 mg/kg dry weight
<i>Aquatic microorganisms (wastewater treatment plant)</i>	EC10/LC10 or NOEC > 10,000 mg/l

³ LC50 Lethal concentration

⁴ EC50 Half maximal effective concentration

Assessment of threat to terrestrial environment

<i>Soil organisms, including microbes, plants and invertebrates</i>	EC10/LC10 or NOEC > 1000 mg/kg dry weight
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b) 1,1,1-trimethylolpropane - low toxicity for aquatic organisms

<i>Toxicity for fish</i>	LC50 (<i>Alburnus alburnus</i> (common bleak): > 1000 mg/l Exposure time: 96 h; Analytical observation: no; GLP: no
<i>Toxicity for daphnia and other aquatic organisms:</i>	EC50 (<i>Daphnia magna</i>): 13,000 mg/l Endpoint: Slowed movement; exposure time: 48 h; GLP: no; Comments: Freshwater
<i>Toxicity for algae</i>	EC50 (<i>Pseudokirchneriella subcapitata</i>): > 1000 mg/l Endpoint: Biomass; Exposure time: 72 h; GLP: no; Comments: Freshwater
<i>Toxicity to microorganisms</i>	EC50 (active sediment): > 1000 mg/l Exposure time: 3 h; Method: Regulation (EC) no. 440/2008, Annex, C.11; GLP: yes; Comments: Freshwater
<i>Toxicity for daphnia and other aquatic invertebrates (Chronic toxicity)</i>	NOEC: > 1000 mg/l Exposure time: 21 d; Species: <i>Daphnia magna</i> ; GLP: no; Comments: Freshwater

12.2. Persistence and biodegradability

Titanium dioxide does not fulfill persistent (P) nor very persistent (vP) criteria.

1,1,1-trimethylolpropane - biodegradability:

Result: Not easily biodegradable.

Biodegradation: 6%; Exposure time: 28 d; Method: Testing directive 301E OECD; GLP: yes; Test type: oxygen; Result: Undergoes natural biodegradation. Biodegradation: 100%; Exposure time: 28 d; Method: Testing directive 302B OECD; GLP: yes.

12.3. Bioaccumulative potential

Titanium dioxide does not fulfill the B and vB criteria.

1,1,1-trimethylolpropane:

Bioaccumulation: Species: *Cyprinus carpio*; Bioconcentration factor (BCF): < 17; Method: Testing directive 305C OECD; GLP: yes.

Partition coefficient: n-octanol/water: log Pow: -0.47 (26°C) Method: measured

12.4. Mobility in soil

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

1,1,1-trimethylolpropane - Distribution between environmental components - Koc: 1.499, log Koc: 0.176.

12.5. Results of PBT and vPvB assessment

Titanium dioxide and 1,1,1-trimethylolpropane do not meet the criteria as PBT or vPvB substances.

12.6. Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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

Packaging not classified as hazardous waste.

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

SECTION 14: Transport information

The mixture is not classified, i.e. it is not considered a hazardous material in accordance with the UN Orange Book and international transport codes e.g. RID (railway), ADR (road transport) and IMDG (sea 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 users

Not applicable.

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

Not applicable.

SECTION 15: Regulatory information

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

EU Regulations

- 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 (with later changes).
- Regulation (EC) No. 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (with later changes).

15.2. Chemical safety assessment

Chemical safety assessment for titanium dioxide was carried out.

SECTION 16: Other information

Full text of H-statements	H361fd- Suspected of damaging fertility. Suspected of damaging the unborn child.
Full text of other acronyms	Repr. 2 - Harmful to reproduction category 2
Trainings	Personnel with direct contact with the mixture shall be familiarized with this safety data sheet
Revisions	Sections: 1, 2, 3, 9, 16.