



**MATERIAL SAFETY DATA SHEET**  
*according to 1907/2006/EC*

Date of issue: 20<sup>th</sup> August 2008

SDS-ZChP-019/08 (version 02)

Supersedes edition of: 1<sup>st</sup> June 2007

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**Titanium dioxide pigments are not classified as hazardous under Directive 1999/45/EC**

## 1 IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

### 1.1 Identification of the substance

Commercial product name	TYTANPOL <sup>®</sup>
Product code (grades)	R-001, R-002, R-003, R-210, R-211, R-213, R-310, RS, RD-5, A-11
Chemical name	Titanium Dioxide Pigments
Alternative names (synonyms)	Titanium Dioxide, Titanium White, Pigment White 6, C.I. No. 77891

### 1.2 Use of the substance

Colouring and pacifying in the following industries: paint & lacquer, plastics, synthetic fibres, paper, rubber, ceramics, cement, cosmetics.

### 1.3 Company identification

Producer: **Zakłady Chemiczne „POLICE” SA**  
**Kuźnicka Street 1, 72-010 Police, Poland**

Tel. +48 91 317 12 87; Fax +48 91 317 35 42

Internet: [www.zchpolice.com](http://www.zchpolice.com) e-mail: [kontakt@zchpolice.pl](mailto:kontakt@zchpolice.pl)

#### Person responsible for Safety Data Sheet:

Chief process engineer – Dr. eng. Henryk Gabryel Phone +48 91 317 11 45; Phone +48 91 317 44 00;  
e-mail: [hgabryel@zchpolice.com](mailto:hgabryel@zchpolice.com)

### 1.4 Emergency telephone

Emergency telephone number (24 h): **Tel. +48 91 317-16-16 or +48 91 317 42-01**

## 2 HAZARDS IDENTIFICATION

Titanium dioxide pigments are not classified as hazardous under Directive 67/548/EEC and Directive 1999/45/EC.

### Potential health effects

<b>Skin contact</b>	Not penetrating the skin, but prolonged contact can cause irritation.
<b>Eye contact</b>	Feeling of inert foreign body.
<b>Inhalation</b>	Chemically inert dust. Temporary drying effect and/or irritation of mucous membranes may result from excessive exposure.
<b>Ingestion</b>	No hazard during normal industrial use.



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**Carcinogenicity** Despite lack of sufficient evidence of carcinogenicity in humans titanium dioxide is listed by IARC as substance possibly carcinogenic to humans (Group 2B).  
Classification is based on positive results of inhalation studies of rats which have shown hazard of lung tumours due to exposure of pulmonary system to titanium dioxide particles during entire lifetime. The same studies performed of mice and hamsters have shown negative results (see section 11).

**3 COMPOSITION/INFORMATION ON INGREDIENTS**

Component & Formula	Weight %	CAS No.	EINECS No.
Titanium dioxide*, TiO <sub>2</sub>	80 – 99,5	13463-67-7	236-675-5
Aluminium hydroxide*, Al(OH) <sub>3</sub> (amorphous) (as Al <sub>2</sub> O <sub>3</sub> )	0 – 6,0	21645-51-2	244-492-7
Silicon dioxide*, SiO <sub>2</sub> (amorphous)	0 – 9,0	7631-86-9	231-545-4
Zirconium oxide*, ZrO <sub>2</sub> (amorphous)	0 – 1,0	1314-23-4	215-227-2
Aluminium phosphate, AlPO <sub>4</sub> (amorphous)	0 – 5,5	7784-30-7	232-056-9

*\*Substances have assigned workplace exposure limits in Community*

**4 FIRST-AID MEASURES**

**Eye contact** Immediately flush with plenty of water for at least 15 minutes.  
**Skin contact** Wash with soap and water.  
**Inhalation** Remove from dusty atmosphere to a fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and call a physician.  
**Ingestion** Material is not toxic and not retained in the intestinal tract. However, if symptoms occur, consult a physician.  
**Medical advice** Required in case of inhalation of larger amounts of dust.  
**Special measures** None required.

**5 FIRE-FIGHTING MEASURES**

**The product itself does not burn.**

**Suitable extinguishing media** Water and any media as appropriate for combustibles in area.  
**Extinguishing media which shall not be used for safety reasons** None.  
**Special exposure hazards arising from the material itself** TYTANPOL<sup>®</sup> pigments are non-flammable and does not increase fire hazard. The packing materials (paper, plastics) are flammable materials. The fire of packing materials extinguish with water.  
**Products of combustion** Non dangerous.  
**Special protective equipment for fire-fighters** Not required.



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### 6 ACCIDENTAL RELEASE MEASURES

The accidental release of TYTANPOL<sup>®</sup> pigments will not create any personal or environmental hazards.

<b>Personal precautions</b>	In case of excessive dusting use dustproof goggles and dust mask protecting respiratory system (see section 8). Pigments are not irritating but can absorb moisture and natural oils from the surface of the skin. For prolonged exposure use protective cloths and gloves (see section 8).
<b>Environmental precautions</b>	Do not discharge to storm drain and natural watercourses (streams).
<b>Methods for cleaning up</b>	The spilled waste of titanium dioxide pigment sweep or collect by means of spatula (avoiding dust formation) into labelled container and assign respectively to recovery or rendering harmless. (see section 13).

### 7 HANDLING AND STORAGE

#### 7.1 Handling

The handling of TYTANPOL<sup>®</sup> pigments due to their fineness can be a source of dusting resulting in inhalation of fine particles.

Transport and handling system should be designed to minimise dust escape.

Sufficient local and general ventilation is advised.

Pneumatic transport of the product and removal of plastics (sacks (big bag) and over-wrapping film) may generate an electrostatic charge. One should take precautions during handling operations.

TYTANPOL<sup>®</sup> pigments can be packed without delay after production and depending on storage conditions may exhibit for a very long time elevated temperature (up to 70<sup>o</sup>C). One should be careful while handling pigment and particularly when incorporating it into solvent-based production.

**Caution: Material can cause slippery of surfaces when wet!**

#### 7.2 Storage

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

Pigmenting properties of product could be impaired by excessive compression 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.

#### 7.3 Specific uses

Not required.

### 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

#### 8.1 Exposure limit values

Specific occupational exposure limit values for titanium dioxide, which is the main component of TYTANPOL<sup>®</sup> pigments, relevant to different countries are attached in Annex 1 of this Safety Data Sheet.



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**8.2 Exposure controls**

**8.2.1 Occupational exposure controls**

**Individual protection measures**

Respiratory protection: Dust mask (recommended type FFP2 acc. to EN 149).

Hand protection: Gloves made of material impervious to shall be worn for prolonged exposure.

Eye protection: Dustproof goggles.

Skin protection: Protect skin by use of appropriate clothing, for example overalls.

**Personal Protective Equipment for First-Aiders**

If dust level is exceeded use an appropriate dust respirator and protective glasses (goggles).

**Collective protection measures**

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

**Specific hygiene measures**

Barrier cream should be applied over exposed parts of skin.

**8.2.2 Environmental exposure controls**

Do not discharge the products to storm drain or to natural watercourses.

**9 PHYSICAL AND CHEMICAL PROPERTIES**

**9.1 General information**

Appearance	Solid, white powder
Odour	Odourless

**9.2 Important health, safety and environmental information:**

pH value (aqueous suspension, 10% by weight)	7,0 – 9,2	(PN-EN ISO 787/9)
Temperatures		
- boiling / range of boiling temperatures	Not applicable	
- ignition (flash point)	Not applicable	
Flammability	Not flammable	
Explosive properties	Not applicable	
Oxidising properties	Not applicable	
Vapour pressure	Not applicable	
Specific Gravity/Relative Density	3,7 – 4,2 g/cm <sup>3</sup>	(PN-EN ISO 787/10)
Solubility		
- in water	Insoluble	
- partition coefficient (n-octanol/water)	Not applicable	
Viscosity	Not applicable	
Vapour density	Not applicable	
Evaporation rate	Not applicable	



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**9.3 Other information**

**Temperatures**

- **melting / range of melting temperatures** > 1800<sup>o</sup>C (3 272<sup>o</sup>F)
- **auto-ignition** Not applicable

**Tamped apparent density** 0,65 – 1,25 g/cm<sup>3</sup> (PN-EN ISO 787/11)

**Solubility**

- **in organic solvents** Insoluble
- **in fats** Insoluble

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**10 STABILITY AND REACTIVITY**

Stable in normal conditions.

**10.1 Conditions to avoid**

None. Decomposes above 1830<sup>o</sup>C (3 326<sup>o</sup>F)

**10.2 Materials to avoid**

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

**10.3 Hazardous decomposition products**

None.

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**11 TOXICOLOGICAL INFORMATION**

Titanium dioxide the main component of TYTANPOL<sup>®</sup> pigments and other substances listed in point 3 are not dangerous substances.

The toxicological data given for main component – titanium dioxide.

**Acute toxicity:**

LD<sub>50</sub> > 10 000 mg/kg oral – tests on rats

LD<sub>50</sub> > 10 000 mg/kg dermal - tests on rabbits

LC<sub>50</sub> / 4h > 6,82 mg/l inhalation - tests on rats

**Corrosive / irritating action:**

Skin irritation: Persons with sensitive skin may experience skin irritation on prolonged or repeated exposure.

Eye irritation: Slight physical irritation.

**Sensitisation:**

No evidence of skin or respiratory tract sensitisation.

**Repeated dose toxicity:**

No evidence of repeated dose toxicity.



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**Chronic toxicity:**

As a result of lifetime inhalation studies of rats, have been stated that suspended in the air titanium dioxide particles of inhalable sizes cause pulmonary stress and TiO<sub>2</sub> dust overload followed by lung tumours.

The same studies done for other laboratory animals (mice, hamsters) have not caused development of cancer.

The human epidemiology studies have not shown association between occupational exposure to titanium dioxide pigments and risk of cancer.

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**12 ECOLOGICAL INFORMATION**

The ecological data given for main component – titanium dioxide.

**12.1 Ecotoxicity of titanium dioxide**

<b>Aquatic organisms:</b> Ide ( <i>Leuciscus idus</i> )	LC <sub>0</sub> (48h) > 1000 mg/l
Eurasian minnow ( <i>Phoxinus phoxinus</i> )	LC <sub>50</sub> (96h) > 1000 mg/l

<b>Soil organisms:</b> Bacteria ( <i>Pseudomonas fluorescens</i> )	EC <sub>0</sub> (24h) > 10000 mg/l
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**12.2 Mobility**

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

**12.3 Persistence and degradability**

Stable, does not decompose.

**12.4 Bioaccumulative potential**

TYTANPOL<sup>®</sup> pigments do not bioaccumulate.

**12.5 Results of PBT assessment**

Not applicable.

**12.6 Other adverse effects**

Not present.

*REMARK: According to German regulations on substances dangerous to water titanium dioxide pigments are classified as **not dangerous to water - nwg** („Nicht Wassergefährdend“).*

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**13 DISPOSAL CONSIDERATIONS**

Wastes of the product and packing material shall be disposed according to national or local regulations. In case of lack of regulations or procedures see given below indications.

**Disposal of product and packaging**

The waste of titanium dioxide pigment and packaging wastes remove according to environmental regulations (including both wastes and packaging regulations) and assign respectively to recovery or rendering harmless.



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**14 TRANSPORT INFORMATION**

Titanium dioxide pigments are not listed as dangerous or harmful materials. There are no special requirements in national or international regulations concerning marine, road, railway or aircraft transportation.

**ADR/RID** product is not classified as dangerous for transportation  
**IMO-IMDG** product is not classified as dangerous for transportation  
**IATA-ICAO** product is not classified as dangerous for transportation

UN/NA I.D. Number:	None
Hazard class:	None
Packing group:	None
Proper/Technical Shipping Name:	Titanium dioxide
DOT Shipping Name:	None
Item No.:	None
Marine Pollutant Status:	Not applicable
IMFG	Not applicable
IMO	Not applicable
U.K. Emergency Action Code:	Not applicable
Cargo Aircraft:	Not applicable
Passenger Aircraft:	Not applicable
ERG Number:	None

**TYTANPOL® titanium dioxide pigments does not require special labelling according to Directive 67/548/EEC.**

**15 REGULATORY INFORMATION**

**Titanium dioxide pigments are not classified as dangerous according to Directive 67/548/EEC and Directive 1999/45/EC.**

- Regulation (EC) no 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation 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/EC and 2000/21/EC.

Germany - according to German regulations on substances dangerous to water titanium dioxide pigments are classified as **not dangerous to water - nwg** („Nicht Wassergefährdend“).

Titanium dioxide is listed in EINECS (EC), TSCA (USA), DSL (Canada), AICS (Australia), MITI-IEC (Japan). Titanium dioxide is not listed in KECI/ECL (Korea). Not known is status of titanium dioxide in PICCS (Philippines) and CICS (China).

USA - SARA Title III:

- Section 302/304: No Extremely Hazardous Substances
- Section 311/312: Reporting requirements are applicable for titanium dioxide
- Section 313: No section 313 chemicals



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USA - Hazardous Air Pollutants or Extremely Hazardous Air Pollutants: None

USA - California "Proposition 65" Chemicals: None

USA - PA and NJ Right-To-Know: No listed substances

USA - CONEG: The sum of the concentration levels of lead, cadmium, mercury and hexavalent chromium present in the products does not exceed one hundred (100) parts per million (ppm) by weight, on a dried-weight basis.

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**16 OTHER INFORMATION**

**Risk Phrase Codes (R phrases)** – None applicable

**Description of risk (R phrases)** – ----

**Safety Phrase Codes (S phrases)** - None applicable

**Description of safety (S phrases)** – -----

**USA - Hazardous Materials Identification System (HMIS):**

Health - 0

Flammability - 0

Reactivity - 0

Personal protection - E

**Training advice**

The personnel being in direct contact with product have to read this Material Safety Data Sheet.

**Recommended restrictions on use:**

- do not use as direct additive to food (*without written permission of the producer*)
- do not use as additive to pharmaceuticals (*without written permission of the producer*)
- do not use as additive to medical goods (prosthesis, implants etc.)

**Technical contact point:**

Application Laboratory, Phone +48 (91) 317 34 94; Fax. +48 (91) 317 22 76

**Reason for issue of this data sheet:**

Periodical review of Safety Data Sheet. Incorporation into MSDS header the 1907/2006/EC Regulation.

**Literature:**

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans VOLUME 93: CARBON BLACK, TITANIUM DIOXIDE AND NON-ASBESTIFORM TALC\* Lyon, France: 7-14 February 2006

**These data are based on our present best knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.**



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**ANNEX 1**

<b>Occupational exposure limits at workplace (titanium dioxide)</b>			
<b>Country</b>	<b>Type of limit</b>	<b>Value</b>	<b>Date</b>
Argentina	CMP	10 mg/m <sup>3</sup>	2003
Australia	TLV -TWA	10 mg/m <sup>3</sup>	1995
Austria	MAK ( <i>Jahresmittelwert, A Anteil</i> )	6 mg/m <sup>3</sup>	2003
Belgium	TWA	10 mg/m <sup>3</sup> ,	2002
Bulgaria	TLV (ACGIH)* TWA	10 mg/m <sup>3</sup>	1996
Denmark	TWA	6 mg(Ti)/m <sup>3</sup> ,	2002
Estonia	NDS	5 mg/m <sup>3</sup>	1998
Finland	HTP ( <i>8h epäorgaaninen pöly</i> )	10 mg/m <sup>3</sup>	
France	VME	10 mg/m <sup>3</sup>	2006
Netherlands	MAC	10 mg (Ti)/m <sup>3</sup>	1979
Germany	MAK ( <i>Jahresmittelwert, E-Staub</i> )	4 mg/m <sup>3</sup>	2006
	MAK ( <i>Schichtmittelwert, A -Staub</i> )	3 mg/m <sup>3</sup>	2006
Korea	TLV (ACGIH)* TWA	10 mg/m <sup>3</sup>	1996
New Zealand	TLV (ACGIH)* TWA	10 mg/m <sup>3</sup>	1996
Norway	TWA	5 mg/m <sup>3</sup>	2003
Philippines	TWA	15 mg/m <sup>3</sup>	JAN 1993
Poland	NDS (TWA)	10 mg(Ti)/m <sup>3</sup>	2002
	NDS (STEL)	30 mg(Ti)/m <sup>3</sup>	
Switzerland	MAK ( <i>alveolengängig</i> )	3 mg/m <sup>3</sup>	2007
Sweden	NGV (LLV)	5 mg/m <sup>3</sup>	2005
Turkey	TWA	15 mg/m <sup>3</sup>	JAN 1993
Singapore	TLV (ACGIH) TWA	10 mg/m <sup>3</sup>	1996
Great Britain	TWA (total inhalable)	10 mg/m <sup>3</sup>	2005
	TWA (respirable)	4 mg/m <sup>3</sup>	2005
Vietnam	TLV (ACGIH)* TWA	10 mg/m <sup>3</sup>	1996

TLV - The Threshold Limit Values

TWA - Time-Weighted Average

STEL - Short Term Exposure Limit

MAK - Maximale Arbeitsplatz-Konzentration – Maximum Workplace Concentration (Germany, Austria, Switzerland)

MAC - MAC-waarde – Limit of exposition at workplace (Netherlands)