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|  Zakłady Chemiczne „Police” S.A. | SAFETY DATA SHEET <i>according to Regulation (EC) 1907/2006</i> | SDS-ZChP- 033/24 Version 1 | |
| | TYTANPOL® - Titanium dioxide pigments TMP free | Date of: | |
| | | <i>compilation</i> 20.12.2024 | <i>revision</i> - |

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

1.1. Product identifier

| | |
|-------------------------------|--|
| <i>Trade name</i> | TYTANPOL® |
| <i>Chemical name</i> | Titanium dioxide |
| <i>Product Codes (class)</i> | R-001E, R-003E, R-210E, R-211E |
| <i>Commonly used synonyms</i> | Titanium white, titanium dioxide, PW 6, C.I. 77891 |
| <i>Chemical formula</i> | TiO ₂ |
| <i>CAS number</i> | 13463-67-7 |
| <i>WE number</i> | 236-675-5 |
| <i>Registration number</i> | 01-2119489379-17-0004 |

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

Only representative in the United Kingdom

Stewardship Solutions Ltd
Green Lowe Farm,
Shawclough Road,
Waterfoot,
Rossendale,
Lancashire,
BB4 9SA

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 substance is not classified as hazardous.

Human health effects

| | |
|---------------------|--|
| <i>Skin effects</i> | Skin is not penetrated, but prolonged contact can cause irritation. |
| <i>Eyes effect</i> | Feeling of a chemically neutral 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 the substance is not classified as hazardous.

2.3. Other hazards

Titanium dioxide is neither a PBT nor a vPvB substance.

The substance is not included in the list established in accordance with Article 59(1) of Regulation (EC) 1907/2006 for having endocrine disrupting properties, there is no information if the substance is a substance identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

Risk of atmosphere dusting.

SECTION 3: Composition/information on ingredients

3.1. Substances

| Component | % w/w | CAS number | WE number |
|--|---------|------------|-----------|
| Titanium dioxide, TiO ₂ (in powder form containing <1 % of particles with aerodynamic diameter ≤ 10 µm) | min. 92 | 13463-67-7 | 236-675-5 |

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. Consult doctor if symptoms persist. |
| <i>Skin contact</i> | Remove contaminated clothing and shoes, wash skin 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, non-flammable. Use standard protective equipment for firefighters.

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 entry into the ground, storm sewers, water reservoirs and watercourses.

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 charges. 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)

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

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| | Limit value - Eight hours | Limit value - Short term |
|-----------------------|---|---|
| | mg/m ³ | mg/m ³ |
| <i>Austria</i> | 5 (respirable fraction) | 10 (respirable fraction, 60 minutes average value) |
| <i>Belgium</i> | 10 | - |
| <i>Denmark</i> | 6 (total dust) | 12 (total dust) |
| <i>Finland</i> | 10 | |
| <i>France</i> | 11 (inhalable aerosol) | - |
| <i>Germany</i> | 0,3 (respirable fraction, except ultrafine particles, multiplied by the material density) | 2,4 (respirable fraction, except ultrafine particles, multiplied by the material density, 15 minutes average value) |
| <i>Ireland</i> | 10 (inhalable fraction), 4 (respirable fraction) | - |
| <i>Latvia</i> | 10 | - |
| <i>Norway</i> | 5 | - |
| <i>Poland</i> | 10 (inhalable fraction) | - |
| <i>Romania</i> | 10 | 15 (15 minutes average value) |
| <i>Spain</i> | 10 (inhalable fraction) | - |
| <i>Sweden</i> | 5 (inhalable aerosol) | - |
| <i>Switzerland</i> | 3 (respirable aerosol) | - |
| <i>USA - OSHA</i> | 15 (inhalable fraction) | - |
| <i>United Kingdom</i> | 10 (inhalable fraction), 4 (respirable fraction) | - |

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

DNEL¹ for workers

| | | |
|------------------------------|------------|-------------------------------|
| Acute - systemic effects | Dermal | - |
| Acute - systemic effects | Inhalation | - |
| Acute - local effects | Dermal | - |
| Acute - local effects | Inhalation | - |
| Long-term - systemic effects | Dermal | - |
| Long-term - systemic effects | Inhalation | - |
| Long-term - local effects | Inhalation | DNEL = 1,25 mg/m ³ |
| Long-term - local effects | Dermal | - |
| Local effects | Eyes | - |

DNEL for the general population

| | | |
|---------------------------------------|------------|------------------------------|
| Acute - systemic effects | Dermal | - |
| Acute - systemic effects | Inhalation | - |
| Acute - systemic effects | Oral | - |
| Acute - local effects | Dermal | - |
| Acute - local effects | Inhalation | - |
| Long-term exposure - systemic effects | Dermal | - |
| Long-term exposure - systemic effects | Inhalation | - |
| Long-term exposure - systemic effects | Oral | - |
| Long-term exposure - local effects | Inhalation | DNEL = 210 µg/m ³ |
| Long-term exposure - local effects | Dermal | - |
| Local effects | Eyes | - |

PNEC²

| | |
|------------------------------------|---|
| Freshwater | - |
| Marine water | - |
| Fresh water - intermittent release | - |
| Soil | - |
| Sediments (freshwater) | - |
| Sediments (marine water) | - |
| Air | - |
| Sewage treatment plant | - |

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 EN 149. |

¹ DNEL Derived No-Effect Level² PNEC Predicted No-Effect Concentration

Personal protective equipment for first-aiders

If allowed dust concentration limit is exceeded use respiratory protective equipment and dust goggles or glasses with side walls (tightly fitting to the eyes).

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 sewage and natural water courses. Prevent contamination of underground waters.

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

| | | | |
|--|--|-------------|------------|
| Physical state | Solid (at temp. 20°C, 101,3 kPa), | | |
| Colour | white powder | | |
| Odour | barely perceptible | | |
| Melting point/freezing point | Rutile: 1843°C (at 1013 hPa) | | |
| Boiling point or initial boiling point and boiling range | 3000°C (at 1013 hPa) | | |
| Flammability | Non-flammable | | |
| Lower and upper explosion limit | No explosive properties | | |
| Flash point | Not applicable to inorganic substances | | |
| Auto-ignition temperature | Not Applicable | | |
| Decomposition temperature | Not Applicable | | |
| pH | 6,5 - 8,5 | | |
| Kinematic viscosity | Not applicable to solids in room temperature | | |
| Solubility | Practically insoluble (<1,51 µg/l at temp. 19,9°C) | | |
| Partition coefficient n-octanol/water (log value) | Not applicable to inorganic substances | | |
| Vapour pressure | Not applicable - solid with melting point of over 300°C | | |
| Density and/or relative density | Rutile: 4,26 (at temp. 20°C) | | |
| Relative vapour density | Not applicable to solids | | |
| Particle characteristics | Percentage of particles with aerodynamic diameter ≤ 10 µm (EN 15051-3 method): | | |
| | Average (%) | Minimum (%) | Maximum(%) |
| | 0,005 | 0,004 | 0,007 |

9.2. Other information

| | |
|--------------------------------|---------------|
| Explosive properties | Non-explosive |
| Oxidizing properties | Non-oxidizing |
| Solubility in organic solvents | Insoluble |

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

Non-reactive substance.

10.2. Chemical stability

Substance 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 (except concentrated sulfuric acid and concentrated hydrofluoric acid).

10.6. Hazardous decomposition products

None known.

SECTION 11: Toxicological information**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

| | | |
|--|----------------------------------|--|
| <i>Acute toxicity</i> | Oral | Not observed LD50 > 5000 mg/kg bw |
| | Dermal | No information available |
| | Inhalation | Not observed LC50 > 6.82 mg/L (rat) |
| <i>Skin corrosion/irritation</i> | Skin | Not irritant |
| | Eyes | Not irritant |
| | Respiratory tract | Not irritant |
| <i>Respiratory or skin sensitisation</i> | Skin | Not sensitizing |
| | Respiratory tract | |
| <i>Repeated dose toxicity</i> | Oral | Not observed NOAEL 3500 mg/kg bw/d |
| | Skin | Not observed |
| | Respiratory tract | Not observed |
| <i>Germ cell mutagenicity</i> | Genotoxicity: negative | |
| <i>Carcinogenicity</i> | Oral | Not observed |
| | Skin | No information available |
| | Respiratory tract | Not observed |
| <i>Reproductive toxicity</i> | Effect on fertility; oral | Not observed |
| | Effect on fertility; skin | No information available |
| | Effect on fertility; respiratory | Not observed |

| | | |
|---|---|--|
| | tract | |
| | Effect on developmental toxicity, oral | Not observed NOAEL = 1000 mg/kg bw/d (subacute, rat) |
| | Effect on developmental toxicity, respiratory tract | No information available |
| | Effect on developmental toxicity, skin | No information available |
| <i>Specific target organ toxicity (STOT)-single exposure (SE)</i> | Not classified | |
| <i>Specific target organ toxicity (STOT)-repeated exposure (RE)</i> | Not classified | |
| <i>Aspiration hazard</i> | Not classified | |

11.2. Information on other hazards

No information is available on endocrine disrupting properties according to the criteria set out in the relevant Regulations ((EC) No 1907/2006, (EU) 2017/2100, (EU) 2018/605).

SECTION 12: Ecological information

12.1. Toxicity

Titanium dioxide 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) > 10000 mg/L |
| <i>Chronic toxicity for fish</i> | NOEC ≥ 160 - 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 > 10000 mg/L |
| <i>Chronic toxicity for aquatic invertebrates</i> | EC50: > 10 mg/L for aquatic invertebrates (<i>Daphnia magna</i>) |
| <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>Effects on aquatic plants other than algae</i> | Nanoparticle TiO ₂ shows low toxic potential for aquatic plants. A similarly low potential can be safely assumed for microparticle TiO ₂ . |
| <i>Benthic organisms</i> | EC10/LC10 or NOEC (freshwater) > 100000 mg/kg dry weight EC10/LC10 or NOEC (saltwater) > 14989 mg/kg dry weight |

³ LC50 Lethal concentration

⁴ EC50 Half maximal effective concentration

| | |
|--|-----------------------|
| <i>Aquatic microorganisms (wastewater treatment plant)</i> | NOEC \geq 1000 mg/L |
|--|-----------------------|

Assessment of threat to terrestrial environment

| | |
|---|-----------------------------------|
| <i>Soil organisms, including microbes, plants and invertebrates</i> | NOEC \geq 1000 mg/kg dry weight |
|---|-----------------------------------|

12.2. Persistence and biodegradability

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

12.3. Bioaccumulative potential

Titanium dioxide does not fulfill the B and vB criteria.

12.4. Mobility in soil

Titanium dioxide pigments have very low mobility, because 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.

12.6. Endocrine disrupting properties

No information is available on endocrine disrupting properties according to the criteria set out in the relevant Regulations ((EC) No 1907/2006, (EU) 2017/2100, (EU) 2018/605).

12.7. Other adverse effects

No data available.

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

Titanium dioxide pigment waste and packaging waste must be disposed of in accordance with environmental protection regulations, including waste and packaging regulations, and handed over for recovery or disposal to entities with appropriate permits.

Packaging not classified as hazardous waste.

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

SECTION 14: Transport information

Substance 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) i IMDG (sea transport)

14.1. UN number or ID 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. Maritime transport in bulk according to IMO instruments

Not applicable.

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance****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 has been performed.

SECTION 16: Other information**Trainings**

Personnel with direct contact with the Substance shall be familiarized with this safety data sheet

Revisions

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