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**

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 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.
The components mentioned in section 3 have not been included in the list established in accordance with Art. 59 sec. 1 of Regulation (EC) 1907/2006 as having endocrine disrupting properties, no information is available on their 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

3.2. 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 ≤ 10 µm)	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

Inhalation	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.
Skin contact	Remove contaminated clothing and shoes, wash with soap and water.
Eye contact	Remove contact lenses. Immediately rinse with a lot of water for at least 15 minutes. If irritation persists, consult a doctor.
Swallowing	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

Suitable extinguishing media	Water and any media appropriate for burning materials.
Unsuitable extinguishing media	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, dies 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/m³	mg/m³
Belgium	10	-
Denmark	6 (total dust)	12 (total dust)
France	11 (inhalable aerosol)	-
Ireland	10 (inhalable fraction), 4 (respirable fraction)	-
Latvia	10	-
Poland	10 (inhalable fraction),	-
Romania	10	15 (15 minutes average value)
Spain	10 (frazione di inalazione)	-
Sweden	5 (inhalable aerosol)	-
Switzerland	3 respirable aerosol	-
USA - OSHA	15 total dust	-
United Kingdom	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/m³	mg/m³
Sweden	5 (total dust)	-

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

DNEL[1] values for employees

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

DNEL values for the general population

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

PNEC values[2]

PNEC (environment - wastewater treatment plant))	100 mg/l

8.2. Exposure controls
Personal protection equipment

Eye or face protection	It is recommended to use dustproof googles or glasses with side protections (tightly fitting around the eyes).
Skin protection	Use protective clothing selected depending on the work performed and the related hazard, resulting from occupational risk assessment on the given work position.
Hand protection	Use protective gloves selected depending on the work performed and the related hazard, resulting from occupational risk assessment on the given work position.
Respiratory protection	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 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

Appearance/physical state/colour/odour	Solid (at temp. 20°C, 101.3 kPa), white powder, odour barely perceptible
Melting point (at 1013 hPa)	Rutile: 1843°C
Boiling point (at 1013 hPa)	3000°C
Relative density at 20°C	Rutile: 4.26
Solubility in water	Practically insoluble
Vapour pressure	Not Applicable
Surface tension	Not Applicable
Partition coefficient n-octanol/water	Not applicable to inorganic substances
Flash point	Not applicable to inorganic substances
Flammabilty	Non-flammable
Explosive properties	No explosive properties
Auto-ignition temperature	Not Applicable
Oxidizing properties	No oxidizing properties
Stability in organic solvents and identity of relevant degradation products	Not applicable to inorganic substances
Dissociation constant	Not Applicable
Viscosity	Not applicable to a solid in room temperature
Particle characteristics	Percentage of particles with aerodynamic diameter ≤ 10 µm (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 hazard classes as defined in Regulation (EC) No 1272/2008

a) Titanium dioxide

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

b) 1,1,1- trimethylolpropane

Acute toxicity	LD50 oral route	> 14,700 mg/kg b.w.
	LD50 skin	> 10,000 mg/kg b.w.
	LD50 (4h) inhalation	> 0.85 mg/l
Irritant/corrosive effects	on skin	not irritant
	to eyes	not irritant
	to respiratory tract	not irritant
Sensitizing effects	not sensitizing	
Mutagenic effects	Genotoxicity: negative. In vitro genotixicity, result negative.	
Carcinogenicity	Not classified based on available information.	
Reproductive toxicity	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:	

	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. 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. 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. 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.
Specific target organ toxicity (STOT) - single exposure (SE):	Not classified based on available information
Specific target organ toxicity (STOT) - repeated exposure (RE):	
Aspiration hazard	

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

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

Assessment of threat to aquatic environment (including sediment)

Short-term toxicity to fish	LC50[3] for fish (freshwater) > 1000 mg/l LC50 for fish (saltwater) > 10,000 mg/l
Chronic toxicity for fish	NOEC for fish (freshwater)≥ 500 - 1000 mg/l
Short-term toxicity to aquatic invertebrates	EC504/LC50 for freshwater invertebrates > 1000 mg/l EC50/LC50 for marine invertebrates > 10,000 mg/l
Chronic toxicity for aquatic invertebrates	EC50: > 10 mg/l for aquatic invertebrates (Daphnia magna)
Algae and aquatic plants	NOEC ≥ 100 mg/l for algae/cyanobacteria (freshwater) NOEC ≥ 5600 mg TiO2/l for algae/cynobacteria (marine waters)

[3] **LC50** Lethal concentration
[4] **EC50** Half maximal effective concentration

Benthic organisms	EC10/LC10 or NOEC (freshwater) > 100,000 mg/kg dry weight EC10/LC10 or NOEC (saltwater) > 14,989 mg/kg dry weight
Aquatic microorganisms (wastewater treatment plant)	EC10/LC10 or NOEC > 10,000 mg/l

Assessment of threat to terrestrial environment

Soil organisms, including microbes, plants and invertebrates	EC10/LC10 or NOEC > 1000 mg/kg dry weight

b) 1,1,1-trimethylolopropane – low toxicity for aquatic organisms

Toxicity for fish	LC50 (Alburnus alburnus (common bleak): > 1000 mg/l Exposure time: 96 h; Analytical observation: no; GLP: no
Toxicity for daphnia and other aquatic organisms:	EC50 (Daphnia magna): 13,000 mg/l Endpoint: Slowered movement; exposure time: 48 h; GLP: no; Comments: Freshwater
Toxicity for algae	EC50 (Pseudokirchneriella subcapitata): > 1000 mg/l Endpoint: Biomass; Exposure time: 72 h; GLP: no; Comments: Freshwater
Toxicity to microorganisms	EC50 (active sediment): > 1000 mg/l Exposure time: 3 h; Method: Regulation (EC) no. 440/2008, Annex, C.11; GLP: yes; Comments: Freshwater
Toxicity for daphnia and other aquatic invertebrates (Chronic toxicity)	NOEC: > 1000 mg/l Exposure time: 21 d; Species: Daphnia magna; 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-trimethylolopropane - 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-trimethylolopropane do not meet the criteria as PBT or vPvB substances.

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

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 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 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, 11, 12, 14, 15.