



Powering Creation

Tytanpol®

Titanium dioxide



Since the 14th of July 2005, the shares of the Zakłady Chemiczne "Police" S.A. have been listed on the Stock Exchange in Warsaw. Another important step in the Company's operations in the capital market began on the 19th of August 2011, when the Zakłady Azotowe w Tarnowie-Mościcach S.A. acquired 66% shares of the Zakłady Chemiczne "Police" S.A. In this way, the Company entered the Grupa Kapitałowa Azoty Tarnów. In December 2012, as a part of the brand unification, all the companies of the Group have adopted the same logo, adding the prefix of "Grupa Azoty" to their names.



Grupa Azoty Zakłady Chemiczne "Police" S.A. continues its best traditions and adapts to needs of the modern market. Thanks to improving production and meeting the demand "Police" flexibly adjusts its offer to the market standards. Such activities cause that the Company is in lead not only on the Polish and European chemical market, but also worldwide. Grupa Azoty Zakłady Chemiczne "Police" S.A. is a leader in artificial fertilizers, titanium dioxide pigments and chemicals segments. It is distinguishable by a unique in Poland installation for titanium dioxide, scale of production of multi-component fertilizers, ammonia and acids: phosphoric and sulphuric. Grupa Azoty "Police" produces multi-component mineral fertilizers (leading products are fertilizers under the brand POLIFOSKA®), titanium dioxide pigments Tytanpol® as well as chemicals like FESPOL® – Iron (II) sulphate or AdBlue® (NOx) – urea solution.

The Company in Police derives much profit from the geographical location. The factory is situated directly at the estuary of the Odra river to the Bay of Szczecin and further to the Baltic Sea. The company possesses own specialised port infrastructure located in the direct neighbourhood of the company. The port in Police is a fourth sea port in Poland in terms of loaded cargo mass. Own sea and barge port gives great opportunity for export of the manufactured products. On the other hand, the city of Police is located near Szczecin, the capital of the West Pomerania.

For many years, economy goes hand in hand with ecology. Grupa Azoty Zakłady Chemiczne "Police" S.A., acting according to the rules of balanced development, systematically introduces unique technological solutions realising pro-ecological investments adjusting technology to the rigorous EU requirements. According to the company policy, aiming at minimalisation of environmental impact manifests in each planned investment and modernisation as well as in current functioning of all of the departments of the company. The company conducts systematic activities aiming at ensuring highest standards of safety and natural environment protection.

Tytanpol®

The production of pigments started in October 1977 on the basis of licence from a German company KRONOS-TITAN GmbH. Titanium dioxide pigments TYTANPOL® as produced only at the factory in Police on the basis of modern technology meeting all rigorous environmental requirements.

During previous years, aiming at improvements of quality and extended range of grades, most of the production lines were expanded and modernised.

Unique technological solutions were introduced (among others the newest filtration, grinding and pigment micronisation systems) and thanks to a new automatic packing line the aesthetics were improved and the packaging assortment was expanded.

Titanium dioxide TYTANPOL® is characterised by very good pigmentation properties. All its types are characterised by high brightness, ability to brighten, opacity, facility of dispersing, stability, application conformity and safety of usage. Production installation as well as the pigments meet the valid requirements of the European Union.

Our products meet the requirements concerning pigmentation products in direct contact with food or drinking water. Thanks to that they can be widely used and enjoy a good reputation in Europe and worldwide.

For many years Grupa Azoty Zakłady Chemiczne "Police" S.A. has been one of the largest Polish companies in the chemical industry. The factory in Police is one of the most significant corporations in the West Pomerania.

All the products of the company are manufactured and sold according to the integrated management system based on ISO 9001, ISO 14001, ISO 50001, ISO 45001 standards.

Grupa Azoty Zakłady Chemiczne "Police" S.A. is a company with enormous strategic significance for the West Pomerania and it strongly identifies with its surroundings. For years the company has played main part in the economy of the region realising development projects in cooperation with other entities including the local authorities. An example of the cooperation is the Police Seaport Ltd., the shareholders of which are the Grupa Azoty Zakłady Chemiczne "Police" S.A. and the Municipality of Police. The Company realises strategy of development in order to convert into generally accessible commercial port together with logistic centre localised on approximately 350 hectares of land available for investment.

Application

PAINTS AND OTHER COATINGS

Decorative, architectural paints

	R-001	R-002	R-003	R-210	R-211	RS	R-310	RD-5
Matt emulsion paints					●			
Semi-gloss emulsion paints	●	●	●	●	●			
Gloss emulsion paints	●	●	●	●				
Matt solvent paints				●	●			
Eggshell solvent paints	●	●	●	●	●			
Gloss solvent paints	●	●	●	●				
Primers, undercoats	●	●	●	●	●			●
Silicone resin paints			●	●	●			
Silicate paints and plasters			●	●	●			
Wood coatings	●	●	●	●				
Plasters, cement bound			●	●	●			
Plasters, polymer resin-bound			●	●	●			

Industrial paints

Automotive finishes, primer & undercoat	●		●	●				
Automotive finishes, OEM topcoat			●					
Automotive finishes, refinish topcoat	●		●	●				
Coil coatings	●		●	●				
Container coatings			●	●	●			
Can coatings	●		●	●				
Maintenance			●	●				
Marine paints			●	●	●			
Electrodeposition paints	●		●	●				
Domestic appliance	●	●	●	●				
High-solids coatings	●		●	●				
Acid-curing paints	●	●	●	●				
Radiation-curing paints	●		●	●				
Powder coatings, exterior			●	●				
Powder coatings, interior	●		●	●				
Epoxy systems			●	●	●			
Polyurethane systems	●		●	●	●			
Gel coatings	●	●	●	●	●			
Road marking paints	●		●	●				●

Printing inks

Matt flexographic					●			
Gloss flexographic	●		●					
Offset	●		●					
Screen	●		●					
Rotogravure	●		●					
UV cured	●		●					
Metal decorative	●		●					
Textile	●		●	●	●			

- Recommended
- Highly recommended

Powering Creation-Titanium Power

Application

PLASTICS AND RUBBER

Thermoplastics

Rigid PVC, exterior			●	●	●			
Rigid PVC, interior			●	●	●			
Plasticized (Flexible) PVC	●					●		
PVC plastisols	●					●		
Polyolefins	●					●		
Masterbatches	●					●		
Polystyrenes	●					●		
ABS/SAN	●					●		
Polyamides	●					●		
Polyacrylics	●					●		
Polycarbonates	●					●		
Other engineering plastics	●					●		

Thermosets

Epoxies	●		●			●		
Polyurethanes	●		●	●		●		
Unsaturated polyesters	●		●	●		●	●	
Formaldehyde resins & derivatives							●	

RUBBER

Elastomers, rubber	●					●		●
Floor coverings, linoleum	●		●	●		●		

PAPER

Paper pulp	●							
Paper coatings	●		●	●	●			
Wallpaper	●		●	●	●			
Waxed paper	●		●	●	●			
Decorative paper							●	
Laminated paper							●	

VITREOUS APPLICATIONS

Electroceramic, ceramics	●							
Vitreous enamels	●							
Glass, glass fibres, glazes	●							

MISCELLANEOUS APPLICATIONS

Food packaging	●		●	●	●	●		
Leather finishes	●		●	●		●		
Fibres	●							
Cosmetics, soap	●							●
White concrete	●							●
Fillers, mastics and stoppers	●			●	●			●
Sealants	●			●	●			●
Shoe cleaners	●							●
Welding rods	●		●					●
Adhesive	●							●

Typical chemical and physical data

	R-001	R-002	R-003	R-210	R-211	RS	R-310	RD-5
Type acc. ISO 591	R-2	R-2	R-2	R-2	R-2	R-1	R-3	R-1
Type acc. ASTM D-476	II	II	II, VII	II, VII	III, VI	II	III	I
Inorganic treatment	Al ₂ O ₃	Al ₂ O ₃	Al ₂ O ₃ ZrO ₂	Al ₂ O ₃ SiO ₂	Al ₂ O ₃ SiO ₂	Al ₂ O ₃	Al ₂ O ₃	-
Organic treatment	+	+	+	+	+	+	+	-
Specific density [g/cm ³]	4.1	4.0	4.1	4.0	3.9	4.1	3.8	4.2
Loose bulk density [g/cm ³]	0.56	0.55	0.54	0.55	0.52	0.52	0.47	0.43
Tamped apparent density [g/cm ³]	1.02	1.04	1.02	1.05	1.03	0.95	0.95	0.96
TiO ₂ content min. [% w/w]	95.0	92.0	94.0	94.0	92.0	98.0	88.0	98.0
Matter volatile at 105°C, max. [% w/w]	0.5	0.5	0.5	0.5	0.5	0.5	1.5	0.5
Matter soluble in water, max. [% w/w]	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.6
Residue on sieve of 45 µm max. [% w/w]	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Lightness	95.5	95.0	95.0	95.0	95.0	95.5	95.0	95.0
Full shade	-7.0	-7.0	-7.0	-7.0	-7.0	-7.0	-7.5	-7.8
Relative scattering power*	100	96	102	100	94	n.a.	n.a.	94
Lightening power	1850	1840	1850	1850	1800	1830	1830	1750
Undertone	3.5	3.5	3.25	2.5	2.5	3.5	2.0	2.2
pH value of aqueous suspension	7.5	7.5	7.5	7.7	7.8	7.5	7.5	7.5
Oil absorption [g/100 g]	21	23	21	24	28	18	21	18
Resistivity of aqueous extract. min. [Ω x cm]	12 000	8 000	8 000	8 000	8 000	8 000	3 000	2 000
Mean particle size [µm]	0.29	0.31	0.30	0.31	0.32	0.26	0.31	0.31
Chalk resistance	G	VG	VG	VG	VG	G	VG	M

n.a. – not applicable; M – moderate; G – good; VG – very good

*determination in relation to our internal standard of Tytanpol® R-001 in alkyd paste at pigment volume concentration PVC = 17%

Tytanpol® R-001

Product information

White powder with the crystallographic form of rutile, non-toxic, non-flammable and chemically inactive, surface treated with aluminium compounds and modified with hydrophilic organic compounds.

TYTANPOL® R-001 has very good optical properties (high level of gloss, low level of gloss haze, very good lightening power and opacity), is easily dispersed and durable to weathering conditions.



Application

TYTANPOL® R-001 is the pigment of broad application, particularly recommended for interior paints, both water and solvent borne (industrial, architectural, decorative), air-drying enamels, stoving enamels, high-solid paints, coil coatings and can coatings, wood coatings, powder coatings, road marking paints, high gloss printing inks. This pigment can be successfully utilised for pigmentation of plastics (flexible PVC, plastisols, polyolefins, unsaturated polyesters, polyester gel coats, vinyl flooring, linoleum, silicon goods, polyurethanes, polystyrenes), pigment concentrates and concentrates for tinting some of man-made fibres. This pigment has broad application in paper industry (pulp, paper coatings, wallpapers) and in leather industry. This grade is listed with NSF® certificate No. 14 as pigment approved for plastics piping components and related materials which have direct contact with potable water.

Typical chemical and physical data

Determined parameter	Test Method	Unit	Value
Titanium dioxide content	EN ISO 591-1	% w/w	min. 95.0
of which rutile	ASTM D3720-90	% w/w	min. 98.0
Matter volatile at 105°C	EN ISO 787-2	% w/w	max. 0.5
Residue on sieve of 45 microns	EN ISO 787-18	% w/w	max. 0.02
Lightness	ZN-ZChP 435:2016	[-]	95.5
Full shade (colour tinge of white system)	ZN-ZChP 435:2016	[-]	-7.0
Lightening power	ZN-ZChP 435:2016	[-]	1850
Undertone (colour tinge of grey system)	ZN-ZChP 435:2016	[-]	3.5
pH value of aqueous suspension	EN ISO 787-9	[-]	7.5
Oil absorption	EN ISO 787-5	[g/100 g of pig.]	21
Resistivity of aqueous extract	EN ISO 787-14	[Ω x cm]	min. 8 000

Tytanpol® R-002

Product information

White powder with the crystallographic form of rutile, non-toxic, non-flammable and chemically inactive, surface treated with aluminium compounds and modified with hydrophilic organic compounds.

TYTANPOL® R-002 has very good optical properties (high level of gloss, very good lightening power and opacity), is easily dispersed and durable to weathering conditions.



Application

TYTANPOL® R-002 is the pigment particularly recommended for high gloss paints and lacquers, mainly for indoor application, waterthinnable and solventborne (industrial, architectural, decorative), air-drying enamels, stoving enamels, emulsion paints and primers. This grade is particularly recommended to gel coats.

Tytanpol® R-003

Product information

White powder with the crystallographic form of rutile, non-toxic, non-flammable and chemically inactive, surface treated with aluminium and zirconium compounds and modified with hydrophilic organic compounds.

TYTANPOL® R-003 has very good optical properties (high level of gloss, low level of gloss haze, very good lightening power and opacity), is easily dispersed and highly durable to weathering conditions.

Application

TYTANPOL® R-003 is the universal pigment, particularly recommended for high quality paints used indoors and outdoors, both water-thinnable and solvent-borne (industrial, architectural, decorative, repair), air-drying enamels, high-solid paints, coil coatings, can coatings, marine paints, powder coatings, road marking paints and radiation cured paints. This grade can be successfully utilised for pigmentation of plastics (PVC profiles, vinyl sidings, plastisols, polyolefins, unsaturated polyesters, polyurethanes, polystyrenes, epoxy compounds, linoleum) and both for wallpapers and paper coatings.

Typical chemical and physical data

Determined parameter	Test Method	Unit	Value
Titanium dioxide content	EN ISO 591-1	% w/w	min. 92.0
of which rutile	ASTM D3720-90	% w/w	min. 98.0
Matter volatile at 105°C	EN ISO 787-2	% w/w	max. 0.5
Residue on sieve of 45 microns	EN ISO 787-18	% w/w	max. 0.02
Lightness	ZN-ZChP 435:2016	[-]	95.0
Full shade (colour tinge of white system)	ZN-ZChP 435:2016	[-]	-7.0
Lightening power	ZN-ZChP 435:2016	[-]	1 840
Undertone (colour tinge of grey system)	ZN-ZChP 435:2016	[-]	3.5
pH value of aqueous suspension	EN ISO 787-9	[-]	7.5
Oil absorption	EN ISO 787-5	[g/100 g of pig.]	23
Resistivity of aqueous extract	EN ISO 787-14	[Ω x cm]	min. 8 000

Typical chemical and physical data

Determined parameter	Test Method	Unit	Value
Titanium dioxide content	EN ISO 591-1	% w/w	min. 94.0
of which rutile	ASTM D3720-90	% w/w	min. 98.5
Matter volatile at 105°C	EN ISO 787-2	% w/w	max. 0.5
Residue on sieve of 45 microns	EN ISO 787-18	% w/w	max. 0.02
Lightness	ZN-ZChP 435:2016	[-]	95.0
Full shade (colour tinge of white system)	ZN-ZChP 435:2016	[-]	-7.0
Lightening power	ZN-ZChP 435:2016	[-]	1 850
Undertone (colour tinge of grey system)	ZN-ZChP 435:2016	[-]	3,25
pH value of aqueous suspension	EN ISO 787-9	[-]	7.5
Oil absorption	EN ISO 787-5	[g/100 g of pig.]	21
Resistivity of aqueous extract	EN ISO 787-14	[Ω x cm]	min. 8 000

Tytanpol® R-210

Product information

White powder with the crystallographic form of rutile, non-toxic, non-flammable and chemically inactive, surface treated with aluminium and silicon compounds and modified with organic compounds.

TYTANPOL® R-210 has very good optical properties (high level of gloss, very good lightening power and opacity), is easily dispersed and highly durable to weathering conditions.



Tytanpol® R-211

Product information

White powder with the crystallographic form of rutile, non-toxic, non-flammable and chemically inactive, surface treated with aluminium and silicon compounds and modified with hydrophilic organic compounds.

TYTANPOL® R-211 has very good optical properties (very good lightening power and opacity), is easily dispersed and highly durable to weathering conditions. Taking advantage of so-called “dry hiding effect” this pigment is very efficient in paints of high pigment volume concentration.

Application

TYTANPOL® R-210 is the universal pigment utilised in applications where high durability, colour and gloss stability and chalking resistance are required. This pigment is particularly recommended for paints used indoors and outdoors, both water-thinnable and solvent-borne (industrial, architectural, decorative, repair), air-drying enamels, stoving enamels, paints for cargo containers, silicate and silicone paints, coil coatings, marine paints, radiation cured coatings, powder coatings, road marking paints. This grade is broadly utilised for pigmentation of plastics (PVC, floorings, linoleum, polyolefins, polyesters – including unsaturated ones, polycarbonates, polyacrylates, polyurethanes). This pigment is recommended for plasters, concrete products, silicon goods, sealants, rubber glues and both for wallpapers and paper coatings.



Application

TYTANPOL® R-211 is the pigment recommended for semi-matt and matt applications, where high durability to weathering conditions, colour retention and high chalk resistance are required. This pigment is recommended for paints used indoors and outdoors, both water-thinnable and solvent-borne (industrial, architectural, decorative), air-drying enamels, high PVC paints, paints for cargo containers, silicate and silicone paints, matt printing inks and textile paints. This grade is recommended for pigmentation of plastics (PVC), plasters, concrete products, sealants, adhesives, wallpapers, paper coatings and paper pulp.



Typical chemical and physical data

Determined parameter	Test Method	Unit	Value
Titanium dioxide content	EN ISO 591-1	% w/w	min. 94.0
of which rutile	ASTM D3720-90	% w/w	min. 98.5
Matter volatile at 105°C	EN ISO 787-2	% w/w	max. 0.5
Residue on sieve of 45 microns	EN ISO 787-18	% w/w	max. 0.02
Lightness	ZN-ZChP 435:2016	[-]	95,0
Full shade (colour tinge of white system)	ZN-ZChP 435:2016	[-]	-7,0
Lightening power	ZN-ZChP 435:2016	[-]	1 850
Undertone (colour tinge of grey system)	ZN-ZChP 435:2016	[-]	2.5
pH value of aqueous suspension	EN ISO 787-9	[-]	7.7
Oil absorption	EN ISO 787-5	[g/100 g of pig.]	24
Resistivity of aqueous extract	EN ISO 787-14	[Ω x cm]	min. 8 000

Typical chemical and physical data

Determined parameter	Test Method	Unit	Value
Titanium dioxide content	EN ISO 591-1	% w/w	min. 92.0
of which rutile	ASTM D3720-90	% w/w	min. 98.5
Matter volatile at 105°C	EN ISO 787-2	% w/w	max. 0.5
Residue on sieve of 45 microns	EN ISO 787-18	% w/w	max. 0.02
Lightness	ZN-ZChP 435:2016	[-]	95.0
Full shade (colour tinge of white system)	ZN-ZChP 435:2016	[-]	-7.0
Lightening power	ZN-ZChP 435:2016	[-]	1 800
Undertone (colour tinge of grey system)	ZN-ZChP 435:2016	[-]	2.5
pH value of aqueous suspension	EN ISO 787-9	[-]	7.8
Oil absorption	EN ISO 787-5	[g/100 g of pig.]	28
Resistivity of aqueous extract	EN ISO 787-14	[Ω x cm]	min. 8 000

Tytanpol® RS

Product information

White powder with the crystallographic form of rutile, non-toxic, non-flammable and chemically inactive, surface treated with aluminium compounds and modified with hydrophobic organic compounds.

TYTANPOL® RS thanks to unique physical and chemical properties exhibits ease of processing by colouring of plastics. As a consequence of low moisture content creates no problems by processing at high temperatures and does not cause lacing in plastic films. Relatively small particle size and specific nature of its surface facilitates extremely easy wetting and dispersing in polymer matrix. Tytanpol® RS has good optical properties, assures high whiteness, neutral shade and opacity of pigmented goods. This grade offers moderate resistance to weathering conditions.

Application

TYTANPOL® RS is the pigment particularly recommended for production of masterbatches and for colouring of broad palette of plastics: flexible PVC, polyethylene (especially LLDPE), polypropylene and other polyolefins, plastisols, ABS, SAN, polystyrene, acrylics, epoxies, polyesters, polyurethanes, polyamides, polycarbonates, elastomers, rubber goods, silicones, linoleum, flooring plates and some of man-made fibres.

This grade is especially suitable for pigmenting plastic films. This grade is listed with NSF® certificate No. 14 as pigment approved for plastics piping components and related materials which have direct contact with potable water.



Tytanpol® R-310

Product information

White, fine powder with the crystallographic form of rutile, non-toxic, non-flammable and chemically inactive, surface treated with aluminium compounds and modified with hydrophilic organic compounds and readily dispersible.

TYTANPOL® R-310 is the pigment highly surface treated and readily dispersible. Ensures high opacity and whiteness of decorative papers with excellent lightfastness.

Application

TYTANPOL® R-310 is the special grade particularly recommended for production of decorative paper, laminated paper and pigmentation of melamine-urea resins, formaldehyde resins or unsaturated polyester resins.



Typical chemical and physical data

Determined parameter	Test Method	Unit	Value
Titanium dioxide content	EN ISO 591-1	% w/w	min. 98.0
of which rutile	ASTM D3720-90	% w/w	min. 97.0
Matter volatile at 105°C	EN ISO 787-2	% w/w	max. 0.5
Residue on sieve of 45 microns	EN ISO 787-18	% w/w	max. 0.02
Lightness	ZN-ZChP 435:2016	[-]	95.5
Full shade (colour tinge of white system)	ZN-ZChP 435:2016	[-]	-7.0
Lightening power	ZN-ZChP 435:2016	[-]	1 830
Undertone (colour tinge of grey system)	ZN-ZChP 435:2016	[-]	3.5
pH value of aqueous suspension	EN ISO 787-9	[-]	7.5
Oil absorption	EN ISO 787-5	[g/100 g of pig.]	18
Resistivity of aqueous extract	EN ISO 787-14	[Ω x cm]	min. 8 000

Typical chemical and physical data

Determined parameter	Test Method	Unit	Value
Titanium dioxide content	EN ISO 591-1	% w/w	min. 88.0
of which rutile	ASTM D3720-90	% w/w	min. 98.5
Matter volatile at 105°C	EN ISO 787-2	% w/w	max. 1.5
Residue on sieve of 45 microns	EN ISO 787-18	% w/w	max. 0.02
Lightness	ZN-ZChP 435:2016	[-]	95.0
Full shade (colour tinge of white system)	ZN-ZChP 435:2016	[-]	-7.5
Lightening power	ZN-ZChP 435:2016	[-]	1 830
Undertone (colour tinge of grey system)	ZN-ZChP 435:2016	[-]	2.0
pH value of aqueous suspension	EN ISO 787-9	[-]	7.5
Oil absorption	EN ISO 787-5	[g/100 g of pig.]	21
Resistivity of aqueous extract	EN ISO 787-14	[Ω x cm]	min. 3 000

Tytanpol® RD-5

Product information

White powder with crystallographic form of rutile, non-toxic, non-flammable, chemically inactive and non-surface treated with the high content of titanium dioxide.

TYTANPOL® RD-5 has good optical properties and is readily dispersible. Does not contain organic substances.



Supplementary information

Packing and storage conditions for TYTANPOL® pigments

TYTANPOL® pigments are available in the following packing sizes:

- standard 25 kg paper bags;
- big-bags (FBCs) 500 kg or 1000 kg;
- silo-trucks;
- other packing materials according to order of customer (eg. polyethylene bags, soluble paper bags).

Pigment should be kept in original packing materials, under the roof, in dry storerooms. It is allowed to pile pallets up to maximum three levels.

The application properties of titanium white do not change during storage and transportation if appropriate conditions are ensured. On the other hand if product is stack piled too high or exposed to elevated humidity, the pigmenting properties (dispersibility and optical properties) can permanently deteriorate.



Application

This pigment is not recommended for applications where good weather resistance is required.

TYTANPOL® RD-5 is the pigment particularly recommended for ceramics, porcelain, welding rods, glass fibres, vitreous enamels, road marking paints, distempers, bitumen, lubricants, waxes, putties, stoppers and concrete products. This grade is also used for the production of cosmetics and soaps. After prior agreement of quality requirements with the producer this grade can be used to make ceramics, welding electrodes and fluxes.

Typical chemical and physical data

Determined parameter	Test Method	Unit	Value
Titanium dioxide content	EN ISO 591-1	% w/w	min. 98.0
of which rutile	ASTM D3720-90	% w/w	min. 97.5
Matter volatile at 105°C	EN ISO 787-2	% w/w	max. 0.5
Residue on sieve of 45 microns	EN ISO 787-18	% w/w	max. 0.02
Lightness	ZN-ZChP 435:2016	[-]	95.0
Full shade (colour tinge of white system)	ZN-ZChP 435:2016	[-]	-7.8
Lightening power	ZN-ZChP 435:2016	[-]	1 750
Undertone (colour tinge of grey system)	ZN-ZChP 435:2016	[-]	2.2
pH value of aqueous suspension	EN ISO 787-9	[-]	7.5
Oil absorption	EN ISO 787-5	[g/100 g of pig.]	18
Resistivity of aqueous extract	EN ISO 787-14	[Ω x cm]	min. 2 000



REACH

TYTANPOL® pigments meet all requirements of REACH Regulation 1907/2006/EC, as amended.



Handling and safety of titanium dioxide utilization

TYTANPOL® pigments are suitable for use in products intended for direct contact with food. Titanium dioxide pigments are safe in transportation, application and disposal. They are not considered as dangerous materials according to Orange Book of UN and international transport codes, eg. RID (railway), ADR (road transport) and IMDG (maritime transport).

TYTANPOL® pigments are not classified as hazardous according to European legislation - Regulation (EC) No. 1272/2008.

Because of submicron size of particles, titanium dioxide pigments exhibit natural tendency to form dust. In case of exposure to dusting one should be aware of inhalation of fine particles of titanium dioxide pigments applying respiratory protection measures recommended in SDS. A short contact of the pigment with skin or eyes does not cause irritation. Prolonged exposure should be avoided to protect tissues from drying out by contact with fine particles.

There are not known cases of acute or chronic detrimental health effects, which can be related with titanium dioxide. The detailed information concerning safety of use for TYTANPOL® titanium dioxide pigments is given in Safety Data Sheet delivered on any request of end-user.

The most up to date version of SDS is available at website www.tytanpol.com

Standards and classification

- No. EC (EINECS): 236-657-5
- CAS No.: 13463-67-7
- REACH Reg. No.: 01-2119489379-17-0004
- Colour Index: 777891 PW6
- Standard: PN-EN ISO 591-1:2002
- Internal standard*: ZN-ZChP 435:2016

*available at web site:

www.tytanpol.com

Regulatory requirements

European Community

TYTANPOL® pigments fulfil the following regulations being in force in the European Community:

- EINECS (European Inventory of Existing Commercial Chemical Substances);
- ELINCS (European List of New Chemical Substances);
- Commission Regulation (EU) No. 10/2011 of 14 January 2011 on plastic materials and articles intended to come into contact with food;
- European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste with amendments (in scope of concentration levels of heavy metals present in packaging - the sum of concentration levels of lead, cadmium, mercury and hexavalent chromium present in packaging or packaging components shall not exceed 100 ppm);
- Council of Europe Resolution AP (89) 1 on the use of colourants in plastic materials coming into contact with food;
- Council Directive 88/378/EEC of 3 May 1988 concerning the safety of toys with amendments;
- European Standard EN 71-3 concerning safety of toys;
- BgVV (Germany) recommendation IX (01.06.1994) "Farbmittel zum Einfärben von Kunststoffen und anderen Polymeren für Bedarfsgegenstände" concerning colorants for colouring plastics and other polymers for commodities.

United States of America

TYTANPOL® pigments fulfil the following regulations being in force in the USA:

- TSCA (Toxic Substances Control Act);
- CONEG Regulation (Coalition of North-eastern Governors) concerning total content of heavy metals (as lead, cadmium, mercury and hexavalent chromium) lower than 100 ppm;
- FDA (Food and Drug Administration) – certification is not required for titanium dioxide:
 - CFR (21) section 175.300 (Resinous and polymeric coatings);
 - CFR (21) section 176.170 (Components of paper and paperboard in contact with aqueous and fatty foods);
 - CFR (21) section 176.180 (Components of paper and paperboard in contact with dry food);
 - CFR (21) section 178.3297 (Colorants for polymers);
- NSF® (National Sanitation Foundation) Standard NSF/ANSI 14 Plastics Piping System Components and Related Materials concerning requirements for pigments in contact with potable water;
- Requirements of ASTM F963 Standard Consumer Safety Specification for Toy Safety (concerning content of heavy metals in pigments used for colouring of toys).

The above given regulations does not exemplify all legal regulations concerning titanium dioxide pigments.

Further (more detailed) information on technical questions is provided by Application Laboratory (see contact details on the cover).



Notes

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The information provided in this publication, concerning TYTANPOL® titanium dioxide pigments do not constitute requirements but solely specify their typical properties and applications.

Although all data contained therein is true, accurate and given in a good faith and according to our best knowledge, we do not guarantee its completeness. Since the conditions of use of pigments are beyond our control, this information may not constitute a guarantee in the legal sense.

The presented information is valid as on the day of publishing of presentation. The most valid data is available on our web page www.tytanpol.com

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