HUNTSMAN
Enriching lives through innovation

SAFETY DATA SHEET

TIOXIDE® A-HR, A-HRF, A-PP2, R-FC5, R-HD2, R-XL, R-TC30, R-TC90,TR28, TR29, TR50, TR81, TR85, TR88, TR92

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

1.1 Product identifier

Product name : TIOXIDE® A-HR, A-HRF, A-PP2, R-FC5, R-HD2, R-XL, R-TC30, R-TC90, TR28, TR29, TR50, TR81, TR85, TR88, TR92

EC Number : 236-675-5.

REACH Registration number

Registration number	Legal entity
01-2119489379-17-0000	Tioxide Europe Ltd.
01-2119489379-17-0008	Tioxide Europe S.A.S.
01-2119489379-17-0009	Tioxide Europe S.L.
01-2119489379-17-0007	Tioxide Europe Srl
01-2119489379-17-0019	Tioxide Europe Ltd.- OR1
01-2119489379-17-0020	Tioxide Europe Ltd.- OR2
01-2119489379-17-0018	Sachtleben Pigment GmbH
01-2119489379-17-0005	Sachtleben Chemie GmbH
01-2119489379-17-0006	Sachtleben Pigments Oy

CAS Number : 13463-67-7

Product code : HP_Titanium Dioxide_TIOXIDE

Product description : Titanium dioxide pigment.

Product type : Powder.

Other means of identifiation : Pigment White 6, titanium dioxide, dioxotitanium, titanium oxide (TiO2)

Chemical Formula : O2-Ti

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

Product use : Pigment, opacifying agent

Uses advised against	Reason.
Do not use for cosmetics, food additives, drug additives, feed additives or permanent implant applications.	Due to the lack of related experience or data the supplier cannot approve this use.

1.3 Details of the supplier of the safety data sheet

Tioxide Europe Limited
Titanium House, Hanzard Drive
Wynyard Park TS22 5FD - United Kingdom.
Tel: +44 (0) 1740 66 15 00

Tioxide Europe S.A.S
1 rue des Garennes – BP 89
62102 Calais Cedex - France
Tel : + 33 (0)3 21 46 45 00

Tioxide Europe S.L.
Pol. Ind. Nuevo Puerto
C/ Gob. Angel Horcajadas, s/n
21810 Palos de la Frontera (Huelva) – Spain
Tel : + 34 95 937 92 00

Tioxide Europe S.r.l.
Località Casone, 58020 Scarlino (GR) – Italy
Tel : + 39 0566 71111

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

Sachtleben Pigment GmbH
Rheinuferstrasse 7-9
47829 Krefeld
Germany

Sachtleben Chemie GmbH
Dr. Rudolf-Sachtleben Str. 4
47198 Duisburg
Germany

Sachtleben Pigments Oy
Titaanitie,
28840, Pori,
Finland

e-mail address of person responsible for this SDS : Global_Product_EHS_HP@huntsman.com

National contact
See annex

1.4 Emergency telephone number

National advisory body/Poison Centre

Austria : VergiftungsInformationsZentrale
Tel.: +431 406 43 43

Czech Republic : Klinika nemocí z povolání, Toxikologické informační středisko (TIS),
Na Bojišti 1, 128 00 Praha 2
Telefon nepřetržitě: 224 964 234

France : ORFILA 01.45.42.59.59 - Hors de France : +33.(0)1.45.42.59.59

Hungary : Egészségügyi Toxikológiai Tájékoztató Szolgálat (ETTSZ)
H-1096 Budapest, Nagyvárad tér 2. 06-80-201-199

Supplier
Telephone number : +32 35 75 1234 (24H/24H)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mono-constituent substance.

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]
Not classified.

Classification according to Directive 67/548/EEC [DSD]
Not classified.

See Section 16 for the full text of the R phrases or H statements declared above.
See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms : -
Signal word : No signal word.
Hazard statements : No know significant effects or critical hazards.

Precautionary statements

Prevention : Not applicable.

Response : Not applicable.

Storage : Not applicable.

Disposal : Not applicable.

Supplemental label elements : Read safety data sheet. Avoid breathing dust.

Special packaging requirements

Containers to be fitted with child-resistant fastenings : Not applicable.

Tactile warning of danger : Not applicable.

2.3 Other hazards

Substance meets the criteria for PBT according to regulation (EC) No. 1907/2006, Annex XIII : Not applicable.

SECTION 2: Hazards identification

Substance meets the criteria for vPvB according to regulation (EC) No. 1907/2006, Annex XIII : Not applicable.

Other hazards which do not result in classification : Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

SECTION 3: Composition/information on ingredients

Substance /mixture : Mono-constituent substance.

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
Titanium dioxide	CAS : 13463-67-7 EC : 236-675-5 RRN : 01-2119489379-17	60 - 100	Not classified.	Not classified.	[2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard.
[2] Substance with a workplace exposure limit.
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1207/2006, Annex XIII.
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1207/2006, Annex XIII.

Occupational exposure limits, if available, are listed in Section 8.

SECTION 4: First aid measures

4.1 Description of first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

Skin contact : Wash skin with soap and water.

Ingestion : Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Exposure to dust may aggravate pre-existing respiratory conditions.

SECTION 4: First aid measures

Skin contact : The product is not irritant but as with all fine powders can absorb moisture and natural oils from the surface of the skin during prolonged exposure.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : No significant irritation expected other than mechanical irritation.

Inhalation : Dust may induce mild and temporary upper respiratory irritation with cough and shortness of breath.

Skin contact : Individuals with sensitive skin may experience skin drying on prolonged or repeated exposure.

Ingestion : No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : Treat symptomatically.

Specific treatment : No specific treatment.

SECTION 5: Fire fighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : No specific fire or explosion hazard.

Hazardous combustion products : Decomposition products may include the following materials: metal oxide/oxides.

5.3 Advice for firefighters

Hazards from the substance or mixture : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Avoid breathing dust. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in « For non emergency personnel ».

6.2 Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

SECTION 6: Accidental release measures

6.3 Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Vacuum or sweep up material and place in a designated, labelled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labelled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid breathing dust.
Manual handling guidelines should be adhered to when handling sacks. In the manufacture of titanium dioxide, product is packed at temperature of approximately 100 to 120℃. When product is shipped shortly after manufacture, it may stay hot for a very long time depending on the ambient temperatures and inventory storage practices. Due to the potential of elevated temperature, caution should be used while handling pigment in solvent applications. Each work environment must be assessed to determine hazards.
Emptying of flexible intermediate bulk containers (FIBC's) can generate static electricity. Customers using FIBC's should consult HUNTSMAN Pigments leaflet "Tiotainer® Handling Guidelines". Empty FIBC's by gravity only (do not empty pneumatically). Remove all wrapping prior to emptying FIBC's.
Offloading from bulk tankers can generate static electricity. Systems should be adequately earthed and provide an earthing point for tankers.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Individuals having sensitive skin may find it beneficial to use a barrier cream or moisturizer when excessive or prolonged contact with the skin is likely. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area . Store in original container protected from direct sunlight in a dry, cool and well ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
When using standard pallets, those containing paper or plastics bags can be stacked to a maximum of 3 high. However when CP1 pallets are used, or in the case of FIBC's they should only be stacked to a maximum of 2 high with the exception of TIOXIDE® R-XL and TIOXIDE® TR50 which should not be more than one high. In all cases, the protective cover or wrapping should remain in place during storage and only be removed immediately prior use. Care should be taken to avoid moisture, particularly with a party used pallet of material.

7.3 Specific end use(s)

Recommendations : Not available.
Industrial sector specific solutions : None.

SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
Europe Titanium dioxide	**ACGIH TLV (United States, 2/2010).** TWA: 10 mg/m³ 8 hour(s).
Austria Titanium dioxide	**GKV_MAK (Austria, 9/2007).** TWA: 5 mg/m³ 8 hour(s). Form: respirable dust. STEL: 10 mg/m³, 2 times per shift, 60 minute(s). Form: respirable dust.
Belgium Titanium dioxide	**Lijst Grenswaarden / Valeurs Limites (Belgium, 6/2009).** TWA: 10 mg/m³ 8 hour(s).
Bulgaria Titanium dioxide	**РБ МТСП и МЗ Наредба №13/2003 (Bulgaria, 8/2007).** Limit value 8 hours: 10 mg/m³ 8 hour(s). Form: Resparable dust
Croatia Titanium dioxide	**Dangerous Substance Exposure Limit Values in the Workplace (OELS), Annexes 1 and 2, Narodne Novine, 13/09, 30 January 2009** Respirable Dust :Short-term (15 min) : 4 mg/m3 Total Dust :Short-term (15 min) : 10 mg/m3
Czech Republic No exposure limits value known.	
Denmark Titanium dioxide	**Arbejdstilsynet (Denmark, 3/2008). Notes: calculated as Ti** TWA: 6 mg/m³, (calculated as Ti) 8 hour(s).
Estonia Titanium dioxide	**Sotsiaalminister (Estonia, 10/2007).** TWA: 5 mg/m³ 8 hour(s).
Finland Titanium dioxide	**Työterveyslaitos, Sosiaali- ja terveysministeriö (Finland, 7/2009).** TWA: 10 mg/m³ 8 hour(s).
France titanium dioxide	**INRS (France, 12/2007). Notes: indicative exposure limits** TWA: 10 mg/m³, (as Ti) 8 hour(s).
Germany Titanium dioxide	**TRGS900 AGW (Germany, 2/2010).** TWA: 3 mg/m³ 8 hour(s). Form: alveolate fraction PEAK: 6 mg/m³ 15 minute(s). Form: alveolate fraction TWA: 10 mg/m³ 8 hour(s). Form: inhalable fraction PEAK: 20 mg/m³ 15 minute(s). Form: inhalable fraction
Greece Titanium dioxide	**PD 90/1999 (Greece, 8/2007).** TWA: 10 mg/m³ 8 hour(s). Form: inhalable fraction TWA: 5 mg/m³ 8 hour(s). Form: respirable fraction
Hungary Dust	**25/2000. (IX. 30.) EüM-SzCsM együttes rendelet** Egyéb.Inert porok (Inert Dust) : Totalis : 10 mg/m3 Respirabilis : 6 mg/m3
Ireland Titanium dioxide	**NAOSH (Ireland, 8/2007).** OELV-8hr: 10 mg/m³ 8 hour(s). Form: inhalable dust OELV-8hr: 4 mg/m³ 8 hour(s). Form: respirable dust
Italy Titanium dioxide	**ACGIH TLV (United States, 2/2010).** TWA: 10 mg/m³ 8 hour(s).
Latvia Titanium dioxide	**LV Nat. Standardisation and Meterological Centre (Latvia, 5/2007).** TWA: 10 mg/m³ 8 hour(s).
Lithuania Titanium dioxide	**Del Lietuvos Higienos Normos (Lithuania, 10/2007).** TWA: 5 mg/m³ 8 hour(s).

SECTION 8: Exposure controls/personal protection

Occupational exposure limits

Netherlands Titanium dioxide No binding exposure limits value known.	**Indicative exposure limits :** **Nationale MAC-Lijst 2007** MAC-waarden TGG 8h : 10 mg/m3, inhaleerbaar stof MAC-waarden TGG 8h : 5 mg/m3, respirabel stof
Norway Titanium dioxide	**Arbeidstilsynet (Norway, 3/2009).** TWA: 5 mg/m³ 8 hour(s).
Poland Titanium dioxide	**Ministra Pracy i Polityki Społecznej (Poland, 7/2009).** TWA: 10 mg/m³ 8 hour(s). Form: total dust
Portugal Titanium dioxide	**Instituto Português da Qualidade (Portugal, 3/2007).** TWA: 10 mg/m³ 8 hour(s).
Romania Titanium dioxide	**Ministerul Muncii, Solidarității Sociale şi Familiei, şi Ministerul Sănătății Publice (Romania, 10/2006).** VLA: 10 mg/m³ 8 hour(s). Short term: 15 mg/m³ 15 minute(s).
Slovakia Titanium dioxide	**Nariadenie Vlády Slovenskej republiky (Slovakia, 6/2007).** TWA: 1.5 mg/m³ 8 hour(s). Form: respirable aerosols
Slovenia No exposure limits value known.	
Spain Titanium dioxide	**INSHT (Spain, 3/2010).** TWA: 10 mg/m³ 8 hour(s).
Sweden Titanium dioxide	**AFS 2005:17 (Sweden, 6/2007).** TWA: 5 mg/m³ 8 hour(s). Form: total dust
Switzerland Titanium dioxide	**SUVA (Switzerland, 1/2009). Oxygen Depletion [Asphyxiant].** TWA: 3 mg/m³ 8 hour(s). Form: respirable dust
Turkey No exposure limit value known.	
United Kingdom (UK) Titanium dioxide	**EH40/2005 WELs (United Kingdom (UK), 8/2007).** TWA: 10 mg/m³ 8 hour(s). Form: inhalable dust TWA: 4 mg/m³ 8 hour(s). Form: respirable dust

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Derived effect levels

Product/ingredient name	Type	Exposure	Value	Population	Effect
Titanium dioxide	DNEL DNEL	Long term Inhalation Long term Oral	10 mg/m3 700 mg/kg bw/day	Workers Consumers	Local Systemic

DNEL Summary : DNEL Long term inhalation (10mg/m3) – Nuisance dust.

SECTION 8: Exposure controls/personal protection

Predicted effect concentrations

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
Titanium dioxide	PNEC	Fresh water	>1 mg/l	Assessment Factors
	PNEC	Fresh water sediment	>= 1000 mg/kg	Assessment Factors
	PNEC	Marine	0.127 mg/l	Assessment Factors
	PNEC	Marine water sediment	>= 100 mg/kg	Assessment Factors
	PNEC	Soil	100 mg/kg	Assessment Factors
	PNEC	Sewage plant treatment	100 mg/kg	Assessment Factors
	PNEC	Secondary poisoning	1667 mg/kg food	Assessment Factors

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Individuals having sensitive skin may find it beneficial to use a barrier cream or moisturizer when excessive or prolonged contact with the skin is likely. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If operating conditions cause high dust concentrations to be produced, use dust goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Use gloves approved to relevant standards e.g. EN 374 (Europe), F739 (US).
Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material and dexterity. Always seek advice from glove suppliers. Additional information can be found for instance at www.gisbau.de.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators.
Recommended : Wear a respirator conforming to EN140 with type P2 filter or better.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	: Solid. [Powder.]
Colour	: White.
Odour	: Slight.
Odour threshold	: None.
pH	: Not applicable.
Melting point/freezing point	: 1560 to 1843°C
Initial boiling point and boiling range	: Not applicable.
Flash point	: Not applicable.
Evaporation rate	: Not applicable.
Flammability (solid, gas)	: Not applicable.
Burning time	: Not applicable.
Burning rate	: Not applicable.
Upper/lower flammability or explosive limits	: Not applicable.
Vapour pressure	: Not applicable.
Vapour density	: Not applicable.
Relative density	: Not applicable.
Solubility(ies)	: Insoluble in water and solvents.
Partition coefficient n-octanol/water	: Not applicable.
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: Not applicable.
Viscosity	: Not applicable.
Explosive properties	: Not applicable.
Oxidising properties	: None.

9.2 Other Information

Density : 3.5 to 4.2 g/cm3 [20°C (68°F)]

No additional information

SECTION 10: Stability and reactivity

10.1 Reactivity	: Not reactive.
10.2 Chemical stability	: The product is stable.
10.3 Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
10.4 Conditions to avoid	: None known.
10.5 Incompatible materials	: None known.
10.6 Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced. At high temperature, decomposition products could include trace of alpha-ethyl acrolein and formaldehyde.

SECTION 11: Toxicological information

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Endpoint	Species	Dose	Exposure
Titanium dioxide	LC50 Inhalation dusts and mists LD50 Oral	Rat Rat	>6.82 mg/L >5000 mg/kg	4 hours -

Conclusion/Summary : Not classified.

Irritation/corrosion

Product/ingredient name	Test	Species	Result
Titanium dioxide	OECD 404 Acute Dermal irritation/corrosion OECD 405 Acute Eye irritation/corrosion	Rabbit Rabbit	Non irritant Non irritant

Conclusion/Summary
Respiratory : Based on available data, the classification criteria are not met.

Sensitizer

Product/ingredient name	Test	Route of exposure	Species	Result
Titanium dioxide	OECD 429 Skin Sensitisation: Local Lymph Node Assay OECD 406 Skin Sensitisation	Skin Skin	Mouse Guinea Pig	Not sensitizing Not sensitizing

Conclusion/Summary
Respiratory : Based on available data, the classification criteria are not met.

Mutagenicity

Conclusion/Summary : Not mutagenic in a standard battery of genetic toxicological tests.

Carcinogenicity

Conclusion/Summary : Titanium Dioxide: based on the results of chronic inhalation studies (with positive results only in a single species - rat), IARC has concluded that: "There is inadequate evidence in humans for the carcinogenicity of titanium dioxide. " but that : "There is sufficient evidence in experimental animals for carcinogenicity of titanium dioxide". IARCs overall evaluation was that "titanium dioxide is possibly carcinogenic to humans (Group 2B)."

Huntsman has examined all of the available animal carcinogenicity and mechanistic data together with workplace epidemiology data for titanium dioxide and concludes that the weight of scientific evidence indicates that there is no causative link between titanium dioxide exposure and cancer risk in humans and that workplace exposures in compliance with applicable exposure standards will not result in lung cancer or chronic respiratory diseases in humans.

Reproductive toxicity

Conclusion/Summary : Based on available data, the classification criteria are not met.

Teratogenicity

Conclusion/Summary : Based on available data, the classification criteria are not met.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Titanium dioxide	Not classified Not classified	Inhalation Oral	

SECTION 11: Toxicological information

Specific target organ toxicity (repeated exposure

Product/ingredient name	Category	Route of exposure	Target organs
Titanium dioxide	Not classified Not classified Not classified	Inhalation Oral Dermal	

Aspiration hazard

Product/ingredient name	Result
Titanium dioxide	Based on available data, the classification criteria are not met.

Information on the likely routes of exposure : Routes of exposure anticipated: Inhalation, oral, dermal.

Potential acute health effects

Inhalation : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs. Exposure to dust may aggravate pre-existing respiratory conditions.

Ingestion : No known significant effects or critical hazards.

Skin contact : The product is not irritant but as with all fine powders can absorb moisture and natural oils from the surface of the skin during prolonged exposure.

Eye contact : Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation : Dust may induce mild and temporary upper respiratory irritation with cough and shortness of breath.

Ingestion : No specific data.

Skin contact : Individuals with sensitive skin may experience skin drying on prolonged or repeated exposure.

Eye contact : No significant irritation expected other than mechanical irritation.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : None known.

Potential delayed effects : None known.

Long term exposure

Potential immediate effects : None known.

Potential delayed effects : None known.

Potential chronic health effect

Product/ingredient name	Test	Result type	Result	Target organ
Titanium dioxide	Chronic toxicity Oral Repeated dose Rat Chronic toxicity Inhalation Repeated dose Rat	NOAEL NOAEC	3500 mg/kg bw/d 10 mg/m3	- Lungs

Conclusion/Summary : Based on available data, the classification criteria are not met.

SECTION 11: Toxicological information

General : Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.

Carcinogenicity : Tumor produced in rats on inhalation of very hig concentrations are believed to be the result of prolonged “lung overload” and are not considered relevant to human.

Mutagenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Toxicokinetics

Absorption : No evidence of human skin penetration.

Distribution : Not expected to accumulate in tissues.

Metabolism : Not metabolised in the human body.

Elimination : Excreted via faeces.

Other information : Not available.

SECTION 12: Ecological information

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

12.1 Toxicity

Product/ingredient name	Test	Endpoint	Exposure	Species	Result
Titanium dioxide	OECD 203	Acute LC50	96 hours	Fish	>100 mg/L
	OECD 203	Acute LC50	96 hours	Fish	>10000 mg/L
	OECD 202	Acute LC50	48 hours	Daphnia	> 100 mg/L

Conclusion/Summary : Based on available data, the classification criteria are not met.

12.2 Persistence and degradability

Conclusion/Summary : Not applicable, inorganic substance/preparation.

12.3 Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
Titanium dioxide	-	-	Low

12.4 Mobility in soil

Soil/water partition coefficient : Not available.

Mobility : The product has low mobility in soil. Insoluble in water.

12.5 Mobility in soil

PBT : Not applicable.

vPvB : Not applicable.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Hazardous waste : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 91/689/EEC. If processed, other waste codes may applied depending on the industrial activity.

European waste catalogue (EWC)

Waste code	Waste description
06 11	Wastes from the manufacture of inorganic pigments and opacifiers.
06 11 99	Wastes not otherwise specified.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	14.1 UN-Number	14.2 UN proper shipping name
ADR/RID	Not regulated.	-
ADN/ADNR	Not regulated.	-
IMDG	Not regulated.	-
IATA	Not regulated.	-

	ADR	ADN/ADNR	IMDG	IATA
14.3 Transport hazard class(es)	-	-	-	-
14.4 Packaging group	-	-	-	-
14.5 Environmental hazards	No.	No.	No.	No.
14.6 Special precautions for user	Not available.	Not available.	Not available.	Not available.
Additional information	-	-	-	-

RID : Not regulated.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not regulated.

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII – Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Other EU regulations

Europe inventory : This material is listed or exempted.

Black List Chemicals : Not listed.

Priority List Chemicals : Not listed.

Integrated pollution prevention and control list (IPPC) – Air : Not listed.

Integrated pollution prevention and control list (IPPC) - water : Not listed.

National regulations

Germany

Storage code : 13

Hazard Class for water : nwg Appendix No. 3.

Technical instruction on air quality control : TA-Luft Number 5.2.1

Romania

Legislatie in domeniul securitatii, sanatatii si protectiei in munca

: Legea nr. 90/1996 – Legea Protectiei Muncii, republicata in M.O. nr. 47 din 29 ianuarie 2001.

: Norme Generale de Protectie a Muncii emise prin Ordinul Ministrului Muncii si Protectiei Sociale nr. 508/20.11.2002 si Ordinul Ministrului Sanatatii si Familiei nr. 933/25.11.2002.

: Legea securitatii si sanatatii in munca nr. 319/2006.

Legislatie in domeniul deseurilor, substantelor si preparatelor periculoase

: Ordonanta de urgenta a Guvernului nr. 78/2000, aprobata prin Legea nr. 426/2001, privind regimul deşeurilor, modificata si completata cu OU nr. 61/2006 aprobata prin Legea 27/2007.

: O.U.G. nr. 195/22.12.05 privind protectia mediului, aprobată prin Legea nr. 265/29.06.2006 cu modificările si completările ulterioare.

: H.G. nr. 621/23.06.05, privind gestionarea ambalajelor si deseurilor de ambalaje, cu modificările si completările ulterioare.

: Legea 465/2001 pentru aprobarea OUG nr. 16/2001 privind gestionarea deseurilor industriale.

: HG nr. 856/2002 privind evidenta gestiunii deseurilor si pentru aprobarea listei cuprinzand deseurile, inclusiv deseurile periculoase.

: HG 92/23.01.2003 pentru aprobarea Normelor Metodologice privind clasificarea, etichetarea, ambalarea preparatelor chimice periculoase.

: Legea nr. 263/2005 pentru modificarea si completarea Legii nr. 360/2003 privind regimul substantelor si preparatelor chimice periculoase.

: HG 1408/04.11.2008 privind clasificarea, ambalarea si etichetarea substantelor periculoase.

SECTION 15: Regulatory information

International regulations

Chemical Weapons Convention List Schedule I Chemicals : Not listed.

Chemical Weapons Convention List Schedule II Chemicals : Not listed.

Chemical Weapons Convention List Schedule III Chemicals : Not listed.

15.2 Chemical Safety Assessment : Not applicable.

SECTION 16: Other information

Revision comments : Revision according to EU Regulation (EC) No. 453/2010.

❖ Indicates information that has changed from previously issued version.

Abbreviations and Acronyms : ATE = Acute Toxicity Estimate.
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008].
DNEL = Derived No Effect Level.
EUH statement = CLP-specific Hazard statement.
PNEC = Predicted No Effect Concentration.
RRN = REACH Registration Number.

Key literature references and sources for data : IUCLID Dossier.

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Not classified.

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Not classified.	

Europe

Full text of abbreviated H statements : Not applicable.

Full text of classifications [CLP/GHS] : Not applicable.

Full text of abbreviated R phrases : Not applicable.

Full text of classifications [DSD/DPD] : Not applicable.

Further information : No known significant effects or critical hazards.
Canada : IARC decision (Group2b) leads directly to labelling with a D2A classification in Canada under their W.H.M.I.S. scheme. Such labelling is not required in other countries.

MSDS no. : HP_Titanium Dioxide_TIOXIDE
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Version : SDS/Generic/English/TiO2/REV05.1 – 15/12/2014

SECTION 16: Other information

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