

SAFETY DATA SHEET

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006

Issuing Date 15-May-2009 Revision Date 05-May-2010

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY/UNDERTAKING

Product Name Titanium Dioxide
Synonyms Cristal 100, Cristal 113, Cristal 121, Cristal 122, Cristal 128, Cristal 134
Formula TiO₂

Recommended use White pigment that imparts opacity to surface coatings, plastics and paper.

Company

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2. HAZARDS IDENTIFICATION

These products are not classified as dangerous according to Directives 67/548/EEC and 1999/45/EC.
Not dangerous.

Most Important Hazards

Inhalation Inert nuisance dust. Temporary drying effect and/or irritation of mucous membranes may result from excessive exposure. Exposure to dust may aggravate pre-existing respiratory conditions.

Eyes Inert, foreign body hazard only.

Skin Non-corrosive and non-sensitising. Prolonged contact may result in rashes/irritations due to drying of the skin and/or mechanical abrasion related to skin-to-clothing contact or skin-to-skin contact.

Skin Absorption Not applicable.

Ingestion No adverse health effects anticipated by this route during proper industrial handling.

Properties Affecting Health Titanium dioxide is listed by IARC as possibly carcinogenic to humans (Group 2B). This listing is based on inadequate evidence of carcinogenicity in humans and sufficient evidence in animal studies.

Environmental Properties If released to the environment, will cause white staining of waterways, vegetation and soil.

Personal protective equipment Wear suitable gloves and eye/face protection.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	EC No	REACH Reg. No	Weight %	Classification
Titanium dioxide	13463-67-7	EEC No. 236-675-5	Not available	84-98	-
Amorphous Silica	7631-86-9	EEC No. 231-545-4	Not available	0-9	-
Aluminum hydroxide	21645-51-2	EEC No. 244-492-7	Not available	1-5	-

See Section 16 for Individual Compositions

Note

These products contain <1% organic additive(s)

4. FIRST AID MEASURES

Eye Contact	Wash off with plenty of water. If symptoms persist, call a physician.
Skin Contact	Wash skin with soap and water. Use of moisturizer may be helpful.
Ingestion	No adverse health effects anticipated by this route during proper industrial handling.
Inhalation	Move to fresh air.
Notes to Physician	None.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	No fire hazard.
Extinguishing media which must not be used for safety reasons	None.
Special Exposure Hazards Arising from the Substance/Preparation Including Combustion Products and Gases	Precautions against discharge of static electricity should be taken during powder handling operations.
Special Protective Equipment for Firefighters	Wear self-contained breathing apparatus and protective suit.

6. ACCIDENTAL RELEASE MEASURES

Environmental Precautions	Prevent product from entering drains.
Personal Precautions	Avoid inhalation of dust by arranging adequate ventilation, or use an appropriate dust mask. Avoid excessive contact with the skin.
Methods for Cleaning up	Use any feasible mechanical means (e.g. vacuuming, absorbent material).
Other Information	See Section 12 for additional information.

7. HANDLING AND STORAGE

Handling	Minimize inhalation of dust and contact with the skin.
Storage	Keep in a dry place. Can cause slippery condition if wet.
Specific Uses	Take precautions against the discharge of static electricity during powder handling operations.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits

Chemical Name	EU	The United Kingdom	France	Spain	Germany
Titanium dioxide 13463-67-7		STEL: 12 mg/m ³ STEL: 30 mg/m ³ TWA: 10 mg/m ³ TWA: 4 mg/m ³	VME: 10 mg/m ³	VLA-ED: 10 mg/m ³ VLA-ED	MAK: 1.5 mg/m ³
Amorphous Silica 7631-86-9		STEL: 18 mg/m ³ STEL: 7.2 mg/m ³ TWA: 2.4 mg/m ³ TWA: 6 mg/m ³			MAK: 4 mg/m ³ TWA: 4 mg/m ³
Aluminum hydroxide 21645-51-2		STEL: 12 mg/m ³ STEL: 30 mg/m ³ TWA: 10 mg/m ³ TWA: 4 mg/m ³			MAK: 1.5 mg/m ³ MAK: 4 mg/m ³

Chemical Name	Italy	Portugal	The Netherlands	Finland	Denmark
Titanium dioxide 13463-67-7		TWA: 10 mg/m ³	MAC: 10 mg/m ³ MAC		TWA: 6 mg/m ³
Amorphous Silica 7631-86-9					
Aluminum hydroxide 21645-51-2					

Chemical Name	Austria	Switzerland	Poland	Norway	Ireland
Titanium dioxide 13463-67-7	MAK: 6 mg/m ³ MAK (respirable fraction)	MAK: 3 mg/m ³ MAK (respirable)	NDS: 10.0 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³	TWA: 10 mg/m ³ TWA: 4 mg/m ³
Amorphous Silica 7631-86-9	MAK: 4 mg/m ³ MAK (inhalable fraction)	MAK: 4 mg/m ³ MAK (inhalable); 0.3 mg/m ³ MAK (respirable)		TWA: 1.5 mg/m ³ STEL: 3 mg/m ³	TWA: 2.4 mg/m ³ TWA: 6 mg/m ³
Aluminum hydroxide 21645-51-2		MAK: 3 mg/m ³ MAK (respirable)	NDS: 1.2 mg/m ³ NDS: 2.5 mg/m ³		

Chemical Name	Belgium	Czech Republic	Greece	Sweden	United States
Titanium dioxide 13463-67-7	TWA: 10 mg/m ³				TLV-TWA: 10 mg/m ³ TWA: 15 mg/m ³
Amorphous Silica 7631-86-9		TWA: 0.1 mg/m ³ TWA: 4.0 mg/m ³			
Aluminum hydroxide 21645-51-2		TWA: 10.0 mg/m ³			

Occupational Exposure Controls

Engineering Measures

Good natural ventilation will be sufficient in most circumstances. Local exhaust ventilation may be necessary if airborne dust concentration approaches the exposure limit (s).

Personal Protective Equipment

Respiratory Protection

Use an approved dust respirator if the exposure standard is, or may be, exceeded.

Eye Protection

Safety glasses with side-shields or goggles.

Skin and Body Protection

Wear protective gloves/clothing.

Hand Protection	Impervious gloves.
Other Protective Equipment	If dust levels are excessive use an approved dust respirator and eye protection.
Hygiene Measures	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.
Environmental Exposure Controls	Prevent product from entering drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

Important Health, Safety and Environmental Information

General Information

Physical State	Solid	Appearance	White
Odor	Odorless		
Flash Point	Not applicable.	Boiling Point/Boiling Range	Not applicable
pH	Not applicable	Autoignition Temperature	Not applicable
Vapor Pressure	Not applicable	VOC Content(%)	Cristal 100 and 128 <0.1% All others = 0%
Viscosity	Not applicable	Water Solubility	Insoluble in water
Specific Gravity	4.1g/cm ³	Oxidizing Properties	Not applicable
Evaporation Rate	Not applicable	Vapor Density	Not applicable
Flammability Limits in Air	Not applicable	Explosive Properties	Not applicable

Other Information

Melting Point/Range 1830°C

10. STABILITY AND REACTIVITY

Stability	Stable under normal conditions.
Conditions to Avoid	None.
Materials to Avoid	None.
Hazardous Decomposition Products	None.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Titanium dioxide	10000 mg/kg Oral LD50 (Rat)		
Amorphous Silica	5000 mg/kg Oral LD50 (Rat)	2000 mg/kg Dermal LD50 (Rabbit)	
Aluminum hydroxide	5000 mg/kg Oral LD50 (Rat)		

Chronic Toxicity

Corrosivity Individuals with sensitive skin may experience skin irritation on prolonged or repeated exposure.

Sensitization No sensitization responses were observed.

Target Organ Effects In lifetime inhalation studies of rats, airborne respirable-size titanium dioxide particles have been shown to cause lung tumors at concentrations associated with substantial particle lung burdens and consequential pulmonary overload and inflammation. However, other laboratory animals such as mice and hamsters did not develop lung tumors under similar testing with titanium dioxide. Furthermore, human epidemiology studies do not suggest an association between occupational exposure to titanium dioxide and risk for cancer.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Available evidence indicates that Titanium Dioxide does not cause any significant adverse environmental effects.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Microtox	Daphnia Magna (Water Flea)
Amorphous Silica	EC50 = 440 mg/L 72 h	LC50= 5000 mg/L Brachydanio rerio 96 h		EC50 = 7600 mg/L 48 h

Persistence and Degradability Titanium dioxide is persistent and does not biodegrade.

Bioaccumulative Potential Does not bioaccumulate.

Mobility There is no evidence of mobility of these products (solid particles).

13. DISPOSAL CONSIDERATIONS

Waste from Residues / Unused Products These products are not considered hazardous for disposal into sanitary landfill or industrial waste disposal landfill. Please review appropriate national and local waste regulations.

Contaminated Packaging Contaminated packages are not considered hazardous for disposal into sanitary landfill or industrial waste disposal landfill. Please review appropriate national and local waste regulations.

14. TRANSPORT INFORMATION

IMDG/IMO Not regulated

RID Not regulated

ADR Not regulated

ICAO Not regulated

IATA Not regulated

15. REGULATORY INFORMATION

These products are not classified as dangerous according to Directives 67/548/EEC and 1999/45/EC.

Labeling

Symbol(s) Not dangerous.

International Inventories

USA (TSCA) Complies
European Union (EINECS) Complies
Canada (DSL/NDL) Complies
Philippines (PICCS) Complies
Japan (ENCS) Complies
China (IECSC) Complies
Australia (AICS) Complies
Korea (KECL) Complies
New Zealand (NZIoC) Complies

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

PICCS - Philippines Inventory of Chemicals and Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

AICS - Australian Inventory of Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

16. OTHER INFORMATION

Composition/Information on Ingredients

Product Name	Appendix 1			Relative Density
	TiO ₂ (CAS No. 13463-67-7) (Einecs No. 236-675-5)	Aluminum Hydroxide (CAS No. 21645-51-2) (Einecs No. 244-492-7)	Amorphous Silica (CAS No. 7631-86-9) (Einecs No. 231-545-4)	
Cristal 100	94 - 97	2.0 - 4.0	-	4.1
Cristal 113	84 - 91	2.0 - 4.0	6.0 - 9.0	4.1
Cristal 121	92 - 96	3.0 - 5.0	1.0 - 2.0	4.1
Cristal 122	92 - 95	2.0 - 4.0	2.0 - 4.0	4.1
Cristal 128	94 - 97	2.0 - 4.0	-	4.1
Cristal 134	96 - 98	1.0 - 3.0	-	4.1

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Reason for Revision Rewrite due to entry into new M/SDS authoring system.

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Disclaimer

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