Safety Data Sheet

Issuing Date	Revision Date	Revision Number
15-April-09	21-September-12	6

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name **Tiona® Titanium Dioxide**

Product code Tiona RCL-3, Tiona RCL-4, Tiona RCL-6, Tiona RCL-9, Tiona 188, Tiona 595, Tiona 596, Tiona 696, Tiona AT-1

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

Manufactured by Cristal USA Inc.
20 Wight Avenue, Suite 100
Hunt Valley, MD 21030

Company Switchboard Number 1-410-229-4400

Other Information E-mail contact: regulatory.query@cristal.com

Emergency Telephone Number Chemtrec: 1-800-424-9300

2. HAZARDS IDENTIFICATION

White odorless powder. Chemically stable and inert. Does not pose a fire hazard. May have a drying effect on mucous membranes and skin.

Appearance	Physical State	Odor
White	Solid	None

Potential Health Effects

Acute Toxicity

Skin Non-corrosive and non-sensitizing. 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.

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

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

Eyes Inert foreign body hazard only.

Chronic Toxicity

Chronic effects 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 sufficent evidence in experimental animals.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name Titanium Dioxide

Chemical Name	CAS-No.	Weight %
Titanium dioxide	13463-67-7	80-99
Amorphous Silica	7631-86-9	0-10
Aluminum hydroxide	21645-51-2	0-6 (as Al2O3)

4. FIRST AID MEASURES

Eye contact In the case of contact with eyes, rinse immediately 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.

Notes to physician None.

5. FIRE-FIGHTING MEASURES

Flammable Properties Not flammable.

Flash Point None.

Suitable Extinguishing Media No fire hazard.

Hazardous Combustion Products No hazardous decomposition products.

Protective Equipment and Precautions for Firefighters As in any fire, wear self-contained breathing apparatus and full protective gear.

NFPA Rating

Health Hazard	1
Flammability	0
Reactivity	0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Avoid inhalation of dust by arranging adequate ventilation and use of an appropriate dust mask. Avoid excessive contact with the skin.

Methods for Containment Prevent further leakage or spillage if safe to do so. Use dyking or absorbant to prevent run-off from entering waterways.

Methods for Cleaning Up Use any feasible mechanical means (e.g. vacuuming, sweeping) but avoid dusting during clean up.

7. HANDLING AND STORAGE

Handling Minimize breathing dust and contact with skin. Products supplied in groundable semi-bulk containers must be grounded to avoid discharge of static electricity while transporting the container or emptying its contents. Take suitable precautions against the discharge of static electricity during powder handling operations.

Storage Keep in a dry place. Can cause slippery condition if wet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL
Titanium dioxide 13463-67-7	TWA: 15 mg/m³	(vacated) TWA: 10 mg/m³

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.

Personal Protective Equipment

Eye/Face Protection Safety glasses with side-shields. Goggles.

Skin and Body Protection Wear protective gloves/clothing.

Respiratory Protection Use NIOSH approved dust or HEPA-type respirator if exposure limit(s) is or may be exceeded.

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White	**Odor**	None
Physical State	Solid	**pH**	Not applicable
Flash Point	None	**Autoignition Temperature**	Not applicable
Boiling Point/Range	Not applicable	**Melting Point/Range**	1830 °C
		Flammability Limits in Air	Not applicable
Explosion Limits	Not applicable		
Specific Gravity	3.7 - 4.2	**Molecular Weight**	79.9
Water Solubility	Insoluble in water	**Evaporation Rate**	Not applicable
Vapor Pressure	Not applicable	**Vapor Density**	Not applicable
VOC Content(%)	None		

10. STABILITY AND REACTIVITY

Stability Stable under normal conditions.

Incompatible Products None.

Conditions to avoid None.

Hazardous decomposition products None.

Hazardous Reactions None.

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Product information Refer to the table below.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Titanium dioxide	10000 mg/kg (Rat)		
Amorphous Silica	5000 mg/kg (Rat)	2000 mg/kg (Rabbit)	>2.2 mg/L (Rat) 4 h
Aluminum hydroxide	5000 mg/kg (Rat)		

Chronic effects 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 sufficent evidence in experimental animals.

Chemical Name	ACGIH	IARC	NTP	OSHA
Titanium dioxide		Group 2B		X

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 effects Refer to table below.

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 Product is not biodegradable.

Bioaccumulation/Accumulation Does not bioaccumulate.

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

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods This material, as supplied, is not a hazardous waste according to state and federal regulations (40 CFR 261).

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

DOT Not regulated

ICAO	Not regulated
IATA	Not regulated

15. REGULATORY INFORMATION

International Inventories

Tiona RCL-4 and Tiona 168 contain a non-hazardous organic (present at <1%) which is NOT listed on the country chemical inventories of China, Japan, Philippines & New Zealand.

Other than the special note above, the products on this SDS comply with the country chemical control inventories listed below.

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

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). These products do not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactivity Hazard	No

Clean Water Act
These products do not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
These products do not contain any substances regulated as hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act Amendments of 1990.

CERCLA
These products, as supplied, do not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of these products.

U.S. State Regulations

California Proposition 65
WARNING: These products contain a chemical known to the State of California to cause cancer. 'Titanium dioxide (airborne, unbound particles of respirable size)' is listed as a carcinogen. The listing does not cover titanium dioxide when it is not airborne and remains bound in a product matrix.

Chemical Name	CAS-No.	California Prop. 65
Titanium dioxide	13463-67-7	Titanium dioxide (airborne, unbound particles of respirable size)

U.S. State Right-to-Know Regulations

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Titanium dioxide	X	X	X		X
Amorphous Silica	X		X		

Other International Regulations

Mexico .

Chemical Name	Carcinogen Status	Exposure Limits
Titanium dioxide		Mexico: TWA 10 mg/m³ Mexico: STEL 20 mg/m³

Canada
These products have been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the CPR.

WHMIS Hazard Class
D2A Very toxic materials

16. OTHER INFORMATION

HMIS Rating

Health Hazard 1
Flammability Hazard 0
Physical Hazard 0

Personal Protection E

Note
This Personal Protection rating will generally suffice for normal operating conditions. Please note, however, that the type of personal protection utilized may change based on specific use conditions. Consult the Exposure Controls/Personal Protection section of this SDS.

Revision Date 21-September-12

Reason for revision Company Logo.

Disclaimer

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of SDS