



Safety Data Sheet

Issue date 27-Jan-2015

Revision date 12-Dec-2016

Version 2

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

Product Identifier

Product name TiONA® 288
Synonyms Titanium dioxide

Recommended use of the chemical and restrictions on use

Recommended Use Pigment
Uses advised against For use in industrial installations only.

Details of the supplier of the safety data sheet

Supplier Address Cristal USA Inc.
20 Wight Avenue, Suite 100
Hunt Valley, MD, USA 21030
tele: 410-229-4400

Cristal USA Inc.
6752 Baymeadow Drive
Glen Burnie, MD, USA 21060
tele: 410-762-1000
fax: 410-762-1037

For further information, please contact

E-mail address Regulatory.query@cristal.com

24 Hour Emergency Phone Number

Emergency telephone Chemtrec (USA) 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.122)

Label Elements

EMERGENCY OVERVIEW

Not Hazardous

Hazard statements
None

Appearance	Powder	Physical State	solid	Odor	Odorless
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Precautionary Statements - Prevention

Not applicable

Precautionary Statements - Response

Not applicable.

Precautionary Statements - Storage

Not applicable

Precautionary Statements - Disposal

Not applicable.

Hazards not otherwise classified (HNOC)

Not applicable

Other Information**Other Hazards** None.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Titanium dioxide

Chemical name	CAS No	weight-%	Trade secret
Titanium dioxide	13463-67-7	>80%	*

*The exact percentage (concentration) of composition has been withheld as a trade secret. The product contains no substances which at their given concentration, are considered to be hazardous to health.

4. FIRST AID MEASURES

FIRST AID MEASURES

Eye Contact Rinse thoroughly with plenty of water, also under the eyelids. If eye irritation persists: Get medical advice/attention.

Skin contact Wash skin with soap and water. If skin irritation persists, call a physician.

Inhalation Remove to fresh air. If symptoms persist, call a physician.

Ingestion Rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.

Self-protection of the first aider Use personal protective equipment as required.

Most important symptoms and effects, both acute and delayed**Symptoms** None known.**Indication of any immediate medical attention and special treatment needed****Note to physicians** Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media None known based on information supplied.

Specific hazards arising from the chemical No information available.

Hazardous combustion products Non-combustible.

Explosion data

Sensitivity to Mechanical Impact Not impact sensitive.

Sensitivity to Static Discharge Not sensitive.

Protective equipment and precautions for firefighters As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with skin, eyes or clothing. Avoid creating dust. Use personal protective equipment as required.

For emergency responders Approach area from upwind. Use personal protection recommended in Section 8.

Environmental Precautions

Environmental Precautions Do not allow into any sewer, on the ground or into any body of water.

Methods and material for containment and cleaning up

Methods for Containment Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

Methods for cleaning up Pick up and transfer to properly labeled containers. Following product recovery, flush area with water.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Avoid contact with skin, eyes or clothing. Avoid generation of dust. Use personal protection recommended in Section 8.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place.

Packaging materials Product may be packaged in normal commercial packaging; paper or plastic material.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure guidelines Personal, workplace, and environmental monitoring may be carried out to prevent exposure above recommended limits.

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Alberta OEL	British Columbia OEL	Ontario TWA	Quebec OEL
Titanium dioxide 13463-67-7	TWA: 10 mg/m ³	TWA: 15 mg/m ³ total dust	IDLH: 5000 mg/m ³	TWA: 10 mg/m ³	TWA: 10 mg/m ³ TWA: 3 mg/m ³	TWA: 10 mg/m ³	TWA: 10 mg/m ³

		(vacated) TWA: 10 mg/m ³ total dust					
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Legend:

NIOSH *Immediately Dangerous to Life or Health*

Appropriate engineering controls

Engineering controls	Showers Eyewash stations Ventilation systems Extraction to remove dust at its source Ensure adequate ventilation, especially in confined areas
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Individual protection measures, such as personal protective equipment

Eye/face Protection	Wear safety glasses with side shields (or goggles).
Skin and Body Protection	Wear suitable protective clothing. Long sleeved clothing.
Respiratory protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General hygiene considerations	When using do not eat, drink or smoke. Take off all contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Handle in accordance with good industrial hygiene and safety practice.
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9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	solid	Appearance	Powder
Odor	Odorless	Color	white
Odor threshold	Not applicable		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	6 - 10	10g/100ml aqueous solution
Melting point/freezing point	1830 °C	Melting point / melting range
Boiling point / boiling range	2972 °C	-
Flash Point		Not applicable
Evaporation Rate		Not applicable
Flammability (solid, gas)		Not applicable
Flammability Limit in Air		Not applicable
Upper flammability limit:	Not applicable	
Lower flammability limit:	Not applicable	
Vapor pressure		Not applicable
Vapor Density		Not applicable
Specific gravity	4.0 - 4.2	-
Water solubility	Insoluble in water	-
Solubility in other solvents	Insoluble in common solvents	-
Partition coefficient		No data available
Autoignition Temperature		Not applicable
Decomposition temperature		Not applicable
Kinematic viscosity		Not applicable
Dynamic viscosity		Not applicable
Explosive properties	Not an explosive	
Oxidizing properties	None known	

Other Information

Softening point	No information available
Molecular weight	Not applicable
VOC content (%)	None
Density	~ 4 kg/L
Surface Area	No information available
Bulk Density	No information available

10. STABILITY AND REACTIVITY

Reactivity	None known based on information supplied.
Stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	None under normal processing
Conditions to Avoid	None known.
Incompatible Materials	None known based on information supplied
Hazardous decomposition products	None known based on information supplied.

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Product Information	Product does not present an acute toxicity hazard based on known or supplied information Information in this section is a summary of the conclusions of the chemical safety assessment conducted under REACH.
Inhalation	As a nuisance dust, prolonged exposures above recommended levels may cause adverse effects on the lung.
Eye Contact	No data available.
Skin contact	Titanium dioxide does not penetrate either intact or abraded human skin.
Ingestion	No data available.

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Titanium dioxide 13463-67-7	> 5000 mg/kg (Rat)	-	> 6,82 mg/L (Rat) 4 h

Information on toxicological effects

Symptoms	No information available.
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation	Titanium dioxide was not classifiable as a skin corrosive or irritant based on in vivo test results for titanium dioxide submitted in the European Union (REACH) joint submission registration dossier for the substance.
Serious eye damage/eye irritation	Titanium dioxide was not classifiable as an eye irritant based on in vivo test results for titanium dioxide submitted in the European Union (REACH) joint submission registration dossier for the substance.
Sensitization	No information available.

Germ Cell Mutagenicity	Titanium dioxide was negative when tested in vitro in bacterial reverse mutation assays and in mammalian cell gene mutation and clastogenicity assays as well as when tested in vivo.
Carcinogenicity	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 experimental animals. 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.

Chemical name	ACGIH	IARC	NTP	OSHA
Titanium dioxide 13463-67-7	-	Group 2B	-	X

Legend

IARC (International Agency for Research on Cancer)
Group 2B - Possibly Carcinogenic to Humans

OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Reproductive Toxicity	Titanium dioxide was not classifiable as a reproductive hazard based on in vivo test results for titanium dioxide submitted in the European Union (REACH) joint submission registration dossier for the substance.
Developmental Toxicity	None known.
Teratogenicity	None known.
STOT - single exposure	Titanium dioxide is not classifiable based on a lack of significant and/or severe toxic effects in humans or in experimental animals following acute exposures.
STOT - repeated exposure	Repeated inhalation exposures in rats to poorly soluble dusts such as titanium dioxide lead to a pattern of pulmonary effects including inflammation and fibrosis that are not observed in other rodent species, nonhuman primates, or humans under similar conditions. Therefore, titanium dioxide is not classifiable for repeated exposure.
Aspiration Hazard	Not applicable.
<u>Numerical measures of toxicity</u>	

12. ECOLOGICAL INFORMATION

Marine pollutant	No
<u>Ecotoxicity</u>	Titanium dioxide is of low acute aquatic toxicity.
<u>Persistence and degradability</u>	Not readily biodegradable. Persistent substance with a half life of more than 60 days.
<u>Bioaccumulation</u>	Material does not bioaccumulate.
<u>Mobility</u>	Not mobile.
<u>Other adverse effects</u>	No information available.
Ozone	Not applicable

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes	Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated packaging	Do not reuse container. Improper disposal or reuse of this container may be dangerous and illegal.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name	Not regulated
Marine pollutant	No

TDG

Proper Shipping Name	Not regulated
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MEX

Proper Shipping Name	Not regulated
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ICAO (air)

Proper Shipping Name	Not regulated
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IATA

Proper Shipping Name	Not regulated
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IMDG

Proper Shipping Name	Not regulated
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15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies
NIZIC	Complies
TCSI	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances
NZIoC - New Zealand Inventory of Chemicals
TCSI - Taiwan Chemical Substance Inventory

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does 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
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does 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 this material

US State Regulations**California Proposition 65**

This product contains the following Proposition 65 chemicals

Chemical name	California Proposition 65
Titanium dioxide - 13463-67-7	Carcinogen

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations

Chemical name	New Jersey	Massachusetts	Pennsylvania
Titanium dioxide 13463-67-7	X	X	X

16. OTHER INFORMATION

Prepared by	Product Stewardship Department
Issue date	27-Jan-2015
Revision date	12-Dec-2016
Revision note	SDS sections updated, 1, 4, 6, 7, 8, 9, 11, 12
Other Information	This product is a pigment intended for industrial use. This product is not intended for consumption, cosmetic, pharmaceutical or medical end use. Cristal will not knowingly sell product for use into these applications

The information provided in this Safety Data Sheet 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 guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered 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 materials or in any process, unless specified in the text.

End of Safety Data Sheet