



Revision Date: April 1, 2019

SAFETY DATA SHEET

TITANIUM DIOXIDE USP FCC

1. PRODUCT INFORMATION AND COMPANY IDENTIFICATION

Product Name: Titanium Dioxide USP FCC K
INCI Name: Titanium Dioxide
CAS Number: 13463-67-7
Recommended Use: Colouring agents, Pigments, Cosmetics, Pharmaceutical, Food/feedstuff additives

Company: Chemistry Connection
253 Sturgis Road
Conway, AR 72034
(501) 470-9689

Emergency Contact: Chemtrec: 800-424-9300

2. HAZARD IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Other hazards

Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

3. COMPOSITION/INFORMATION ON INGREDIENTS

INCI NAME	CAS NO.	CONCENTRATION (%)
Titanium Dioxide	13463-67-7	95 - 100

4. FIRST AID MEASURES

General advice Do not leave the victim unattended.
Treat symptomatically.

Inhalation Remove person to fresh air. If signs/symptoms continue, get medical attention.
If unconscious, place in recovery position and seek medical advice.

Skin Contact Wash off with soap and water.

Eye Contact	Rinse immediately with plenty of water, also under the eyelids. Remove contact lenses. Protect unharmed eye. If eye irritation persists, consult a specialist.
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Ingestion	Rinse mouth with water. If conscious, make the victim drink the following: Give small amounts of water to drink. Do not induce vomiting without medical advice. Consult a physician if necessary.
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Most important symptoms and effects, both acute and delayed

Eye contact: Dust contact with the eyes can lead to mechanical irritation.
Inhalation may provoke the following symptoms: Symptoms of Overexposure
Inhalation of dust may cause shortness of breath, tightness of the chest, a sore throat and cough.

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

Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training.
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Notes to physician	No specific measures identified.
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5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media	Product is compatible with standard fire-fighting agents.
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Unsuitable Extinguishing Media	High volume water jet
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Specific hazards during Firefighting	No information available.
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Hazardous Combustion products	No hazardous combustion products are known
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Specific extinguishing methods	Cool containers/tanks with water spray.
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Further information	Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. No action shall be taken involving any personal risk or without suitable training.
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Special protective equipment for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

No action shall be taken involving any personal risk or without suitable training.

Prevent unauthorized persons entering the zone. Avoid dust formation.

Remove all sources of ignition.

Ventilate the area. Avoid breathing dust.

Keep people away from and upwind of spill/leak.

Only qualified personnel equipped with suitable protective equipment may intervene.

Never return spills in original containers for re-use.

Treat recovered material as described in the section "Disposal considerations".

For disposal considerations see section 13.

The danger areas must be delimited and identified using relevant warning and safety signs.

Environmental precautions

Try to prevent the material from entering drains or water courses.

If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up

Clean-up methods - small spillage

Clean up promptly by sweeping or vacuum.

Keep in suitable, closed containers for disposal.

Clean-up methods - large spillage Approach release from upwind.

Clean up promptly by sweeping or vacuum.

Avoid creating dusty conditions and prevent wind dispersal. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Technical Measures

Ensure that eyewash stations and safety showers are close to the workstation location.

Local/Total ventilation

Use only with adequate ventilation.

Advice on protection against fire and explosion

Normal measures for preventive fire protection.

Safe Handling

For personal protection see section 8. Avoid creating dust. Smoking, eating and drinking should be prohibited in the application area.

Manual handling guidelines should be adhered to when handling sacks.

In the manufacture of titanium dioxide, product is packaged at temperatures of approximately 100 to 120° C (212 to 248° Fahrenheit). When pigment is shipped shortly after manufacture, it may stay hot for a very long time depending on ambient temperatures and inventory storage practices.

Due to the potential of elevated pigment temperature, caution should be used while handling pigment and 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 leaflet "Tiotainer® Handling Guidelines".

Empty FIBC's by gravity only (do not empty pneumatically).

Remove all wrapping prior to emptying FIBC's.

In all cases, the protective cover or wrapping should remain in place during storage and only be removed immediately prior to use.

Care should be taken to avoid moisture, particularly with a partly used pallet of material.

When transferring from one container to another apply earthing measures and use conductive hose material.

Conditions for safe storage

Store in accordance with the particular national regulations.

Keep only in the original container in a cool, well ventilated place away from oxidizing agents.

Keep in a dry place.

Keep cool. Protect from sunlight.

Eliminate all ignition sources if safe to do so. Keep container closed when not in use.

Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Use appropriate container to avoid environmental contamination.

When using standard pallets, those containing paper or plastics bags can be stacked to a maximum of 2 high.

Materials to avoid

No materials to be especially mentioned.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS No.	Exposure	Control parameters	Basis
Titanium Dioxide	13463-67-7	TWA (total dust)	15 mg/m ³	OSHA Z-1
		TWA	10 mg/m ³ (titanium dioxide)	ACGIH

Engineering measures

Ensure adequate ventilation, especially in confined areas. Use engineering controls to keep exposures below the OEL or DNEL

Personal protective equipment

Respiratory protection	General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.
Filter type	P2 filter
Hand protection	Use gloves approved to relevant standards e.g. EN 374 (Europe), F739 (US).
Remarks	For prolonged or repeated contact use protective gloves.
Eye 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. Ensure that eyewash stations and safety showers are close to the workstation location.
Skin and 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.
Protective measures	Wear suitable protective equipment.
Hygiene measures	<p>Handle in accordance with good industrial hygiene and safety practice.</p> <p>Smoking, eating and drinking should be prohibited in the application area.</p> <p>Wash face, hands and any exposed skin thoroughly after handling.</p> <p>Remove contaminated clothing and protective equipment before entering eating areas.</p> <p>Barrier creams may help to protect the exposed areas of skin, they should however not be applied once exposure has occurred.</p> <p>Wash hands before breaks and at the end of workday.</p>

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	powder
Colour	white
Odour	none
Odour Threshold	Not relevant
pH	6 - 9
Melting point/range	> 1,800 °C
Boiling point/boiling range	Not applicable
Flash point	Not applicable
Evaporation rate	No data is available on the product itself.
Flammability (solid, gas)	The product is not flammable.
Flammability (liquids)	No data is available on the product itself.
Upper explosion limit	No data is available on the product itself.
Lower explosion limit	No data is available on the product itself.
Vapour pressure	Not applicable
Relative vapour density	No data is available on the product itself.
Relative density	No data is available on the product itself.
Density	ca. 3.9 g/cm ³ (20 °C) Skeletal density
Water solubility	< 0.01 g/l (20 °C)
Solubility in other solvents	practically insoluble
Partition coefficient: n- octanol/water	Not applicable
Auto-ignition temperature	The product itself does not burn.
Thermal decomposition	No data is available on the product itself.
Self-Accelerating decomposition temperature	No data is available on the product itself.
Viscosity, kinematic	Not applicable
Explosive properties	Not explosive
Oxidizing properties	Not classified as oxidizing.
Molecular weight	Calculation method 79.88 g/mol
Particle size	466 nm

10. STABILITY AND REACTIVITY

Reactivity	No dangerous reaction known under conditions of normal use.
Chemical stability	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	Stable under recommended storage conditions. No hazards to be specially mentioned.
Conditions to avoid	No data available
Incompatible materials	None known.
Hazardous decomposition product	No hazardous decomposition products are known.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

No data is available on the product itself.

Acute toxicity

Acute oral toxicity Components	LD50 (Rat, female): > 5,000 mg/kg Method: OECD Test Guideline 425 Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	LC50 (Rat, male and female): 3.43 - 5.09 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	LD50 Dermal (Rabbit): > 10,000 mg/kg
Acute toxicity (other routes of administration)	No data available

Skin corrosion/irritation

Species	Rabbit
Assessment	No skin irritation
Method	OECD Test Guideline 404
Result	Normally reversible injuries

Serious eye damage/eye irritation

Species	Rabbit
Result	Normally reversible injuries
Assessment	No eye irritation
Method	OECD Test Guideline 405

Respiratory or skin sensitization

Test Type	Local lymph node assay (LLNA)
Exposure Routes	Skin
Species	Mouse
Assessment	Does not cause skin sensitization
Method	OECD test Guideline 429
Result	Does not cause skin sensitization
Exposure routes	Skin
Species	Guinea pig
Assessment	Does not cause skin sensitization
Method	OECD Test Guideline 406
Result	Does not cause skin sensitization

Assessment: No skin irritation, No eye irritation Does not cause skin sensitization. Does not cause respiratory sensitization.

Germ cell mutagenicity

Genotoxicity in vitro

Test Type: Ames test Concentration: 100 - 200 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: In vitro mammalian cell gene mutation test
Concentration: 31 - 500 µg/L
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro Concentration:
125 - 2500 µg/L
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Test Type: Micronucleus test Species: Mouse (males) Application
Route: Inhalation Exposure time: 5 consecutive days Dose: 0.8,
7.2, and 28.5 mg/m³ Method: OECD Test Guideline 474 Result:
negative

Test Type: Micronucleus test Species: Rat (male and female)
Application Route: Oral Exposure time: once
Dose: 500, 1000, and 2000 mg/kg bw
Method: OECD Test Guideline 474 Result: negative

Germ cell mutagenicity-
Assessment Tests on bacterial or mammalian cell cultures did not show
mutagenic effects., Animal testing did not show any mutagenic
effects.

Carcinogenicity

Species	Rat, (male and female)
Application Route	Oral
Exposure time	103 weeks
Dose	0, 25000, 50000 ppm
Frequency of treatment	7 days/week
NOAEL	> 50.000 ppm

Method	No information available.
Remarks	<p>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)."</p> <p>Examination 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.</p>
Carcinogenicity - Assessment	Not classifiable as a human carcinogen.
IARC	Group 2B: Possibly carcinogenic to humans
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
<u>Reproductive Toxicity</u>	
Effects on fertility	No data available
Effects on fetal development	<p>Species: Rat, male and female Application Route: Oral</p> <p>Dose: 100, 300, and 1000 mg/kg bw/</p> <p>Duration of Single Treatment: 20 d Frequency of Treatment: 7 days/week</p> <p>General Toxicity Maternal: No observed adverse effect level: 1,000 mg/kg body weight</p> <p>Developmental Toxicity: No observed adverse effect level: 1,000 mg/kg body weight</p> <p>Method: OECD Test Guideline 414</p> <p>Result: No adverse effects</p>

Reproductive toxicity - Assessment No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Repeated dose toxicity

Species: Rat, male and female

: 3500 mg/m³

Application Route: Ingestion Test atmosphere: dust/mist Exposure time: 2 yr

Number of exposures: 5 d Method: Chronic toxicity

Species: Rat, male and female

: 10 - 50 mg/m³

Application Route: Inhalation Exposure time: 2 yr

Number of exposures: 6 hours/day, 5 days/week

Method: Chronic toxicity

Repeated dose toxicity - Assessment No skin irritation, No eye irritation
No adverse effect has been observed in chronic toxicity tests.

Aspiration toxicity

No data available

Experience with human exposure

General information No data available

Inhalation No data available

Skin Contact No data available

Eye Contact No data available

Ingestion No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further Information

No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Toxicity to fish	LC50 (Cyprinodon variegatus (sheepshead minnow)): > 10,000 mg/l Exposure time: 96 h Test Type: semi-static test Test substance: Marine water Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	No data available
Toxicity to algae	No data available
M-Factor (Acute aquatic toxicity)	No data available
Toxicity to fish (Chronic toxicity)	No data available
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	No data available
M-Factor (Chronic aquatic toxicity)	No data available
Toxicity to microorganisms	No data available
Toxicity to soil Dwelling organisms	No data available
Plant toxicity	NOEC: 100,000 mg/kg Exposure time: 480 h
Sediment toxicity	(Gammarus pulex (Amphipod)): > 100000 mg/kgsedimentdw Study: Acute Test Type: semi-static test Water: Fresh water Exposure duration: 28 d Method: ASTM Method, other (Gammarus pulex (Amphipod)): 100000 mg/kgsedimentdw Study: Chronic Test Type: semi-static test Water: Fresh water Exposure duration: 28 d Method: ASTM Method, other

(Gammarus pulex (Amphipod)): 14989 mg/kg sediment dw Study:
Acute
Test Type: semi-static test Water: Marine water Exposure
duration: 10 d

Toxicity to terrestrial organisms	NOEC: 10,000 mg/kg Exposure time: 672 h
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Acute aquatic toxicity	No data available
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Chronic aquatic toxicity	No data available
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Toxicity Data on Soil	No data available
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Other organisms relevant to the environment	No data available
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Persistence and degradability

Biodegradability	Remarks: The methods for determining biodegradability are not applicable to inorganic substances.
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Biochemical Oxygen Demand (BOD)	No data available
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Chemical Oxygen Demand (COD)	No data available
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BOD/COD	No data available
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ThOD	No data available
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BOD/ThOD	No data available
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Dissolved organic carbon (DOC)	No data available
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Physico-chemical removability	No data available
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Stability in water	No data available
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Photodegradation	No data available
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Impact on Sewage Treatment	No data available
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Bioaccumulative potential

Bioaccumulation	Species: Oncorhynchus mykiss (rainbow trout) Bioconcentration factor (BCF): 19 - 352 Exposure time: 14 d Test substance: Fresh water Method: semi-static test Remarks: Does not bioaccumulate.
Partition coefficient: n-octanol/water	Not applicable

Mobility in soil

Mobility	No data available
Distribution among environmental compartments	No data available
Stability in soil	No data available

Other adverse effects

Environmental fate and pathways	No data available
Results of PBT and vPvB assessment	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
Endocrine disrupting potential	No data available
Adsorbed organic bound halogens (AOX)	Remarks: Product does not contain any organic halogens.

Hazardous to the ozone layer

Ozone-Depletion Potential	Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
Additional ecological information	No data available
Global warming potential (GWP)	No data available

13. DISPOSAL CONSIDERATIONS

Waste from residues	<p>The product should not be allowed to enter drains, water courses or the soil.</p> <p>This material and its container must be disposed of in a safe way.</p> <p>In accordance with local and national regulations. Dispose of wastes in an approved waste disposal facility. If recycling is not practicable, dispose of in compliance with local regulations.</p>
Contaminated package	<p>Empty containers should be taken to an approved waste handling site for recycling or disposal.</p>

14. TRANSPORT INFORMATION

IATA	Not regulated as dangerous goods
IMDG	Not regulated as dangerous goods
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable for product as supplied.	
<u>National Regulations</u>	
DOT	Not regulated as dangerous goods

15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

SARA 311/312 Hazards	No SARA Hazards
SARA 313	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

California Prop. 65	<p>WARNING! This product contains a chemical known to the State of California to cause cancer., Titanium dioxide (airborne, unbound particles of respirable size) is known to the state of California to cause cancer. This listing does not cover titanium dioxide when it remains bound within a product matrix</p> <p>Titanium Dioxide 13463-67-7</p>
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The components of this product are reported in the following inventories:

CH INV	On the inventory, or in compliance with the inventory
TSCA	On the inventory, or in compliance with the inventory
DSL	All components of this product are on the Canadian DSL
AICS	On the inventory, or in compliance with the inventory
NZIoC	On the inventory, or in compliance with the inventory
ENCS	On the inventory, or in compliance with the inventory
KECI	On the inventory, or in compliance with the inventory
PICCS	On the inventory, or in compliance with the inventory
IECSC	On the inventory, or in compliance with the inventory
TCSI	On the inventory, or in compliance with the inventory
Inventories	AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

TSCA - 5(a) Significant New Use Rule List of Chemicals

No substances are subject to a Significant New Use Rule.

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpart D)

No substances are subject to TSCA 12(b) export notification requirements.

16. OTHER INFORMATION

NFPA	Health hazards	<input type="text" value="1"/>	Flammability	<input type="text" value="0"/>	Instability	<input type="text" value="0"/>	Physical & Chemical	<input type="text" value="-"/>
HMIS	Health hazards	<input type="text" value="1"/>	Flammability	<input type="text" value="0"/>	Physical hazards	<input type="text" value="0"/>	Personal Protection	<input type="text" value="-"/>

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