

# SAFETY DATA SHEET

SDS No. 5010-0136

Revised date March 4, 2019

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## 1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : Titansphere Phos-TiO  
NAME OF SUPPLIER : GL Sciences Inc.  
ADDRESS : 22-1 Nishishinjuku 6-chome Shinjuku-ku Tokyo 163-1130, Japan  
CHARGE SECTION : International Sales Section  
TELEPHONE No. : +81-3-5323-6620  
FACSIMILE No. : +81-3-5323-6621  
PRODUCT No. : 5010-21270~5010-21273, 5010-21280~5010-21283, 5010-21290, 5010-21291,  
5010-21300~5010-21303, 5010-21305~5010-21312, 5010-21315~5010-21317  
SDS No. : 5010-0136  
Research use only.

## 2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION : Carcinogenicity : Category 2  
Specific target organ toxicity (Repeated exposure) : Category 1 (Respiratory tract)  
Hazardous to the aquatic environment - Chronic hazard : Category 4

HAZARD SYMBOL :



SIGNAL WORD : Danger

HAZARD STATEMENTS :

H351 Suspected of causing cancer  
H372 Cause damage to respiratory tract through prolonged or repeated exposure  
H413 May cause long lasting harmful effects to aquatic life

PRECAUTIONARY STATEMENTS :

P202 Do not handle until all safety precautions have been read and understood.  
P260 Do not breathing dust/fume/gas/mist/vapours/spray.  
P264 Wash hands thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P273 Avoid release to the environment.  
P308+P313 IF exposed or concerned: Get medical attention.  
P314 Get medical attention if you feel unwell.  
P405 Store locked up.  
P501 Dispose of contents/container in accordance with all applicable regulations.

MOST IMPORTANT HAZARDS : eye irritation, redness, skin irritation, mucous irritation

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME : Titanium dioxide(IV)  
SYNONYMS : Titanium Oxide, Titania  
CONTENT : > 99.0 %(T)  
FORMULA WEIGHT : 79.88  
CHEMICAL FORMULA : TiO<sub>2</sub>  
CAS EN : 13463-67-7  
TSCA INVENTORY : Listed  
EINECS No : 236-675-5

**4. FIRST AID MEASURES**

GENERAL ADVICE	: Wash off immediately with soap and plenty of water. In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit. Use personal protective equipment.
INHALATION	: Move victim to fresh air. If breathing is difficult, give oxygen. If irritation persists, consult a physician.
SKIN CONTACT	: Remove contaminated clothes and shoes, rinse skin with plenty of water or shower. Use soap to help assure removal. If irritation persists, consult a physician.
EYE CONTACT	: Remove any contact lenses at once. Flush eyes well with flooding large amounts of running water for at least 15 minutes. Assure adequate flushing by separating the eyelids with sterile fingers. If irritation persists, consult a physician.
INGESTION	: Rinse mouth, give plenty of water to dilute the substance. Do not induce vomiting. Never give anything by mouth to an unconscious person. Consult a physician.

**5. FIRE FIGHTING MEASURES**

EXTINGUISHING MEDIA	: Powder, foam (alcohol foam), carbon dioxide, water spray.
DISABLED EXTINGUISHING MEDIA	: Straight stream.
FIRE & EXPLOSION HAZARDS	: Toxic, irritating, fumes or smoke may be emitted.
SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS	: Firemen should wear normal protective equipment(full bunker gear) and positive-pressure self-contained breathing apparatus.

**6. ACCIDENTAL RELEASE MEASURES**

PERSONAL PRECAUTIONS	: Remove ignition sources and ventilate the area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid raising dust and avoid contact with skin and eyes.
ENVIRONMENTAL PRECAUTIONS	: Prevent spills from entering sewers, watercourses or low areas.
METHODS FOR CLEAN UP	: Do not touch spilled material without suitable protection. After material is completely picked up, wash the spill site with soap and water and ventilate the area. Pull all wastes in a plastic bag for disposal and seal it tightly. Remove, clean, or dispose contaminated clothing.

**7. HANDLING AND STORAGE**

HANDLING	: Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Handle this product with suitable protection. After using this product, dispose of contents/container in accordance with all applicable regulations and appropriate ways.
STORAGE	: Store away from sunlight, heat and all ignition sources in well-ventilated dry place. Keep container tightly closed.
INCOMPATIBLE PRODUCTS	: Strong bases

**8. EXPOSURE CONTROL/PERSONAL PROTECTION**

ENGINEERING MEASURES	: Use exhaust ventilation to keep airborne concentrations below exposure limits. Use only with adequate ventilation.
VENTILATION	: Local Exhaust ; Necessary, Mechanical(General) ; Recommended
PERSONAL PROTECTION	
RESPIRATORY PROTECTION	: Safety mask(Use respirators approved under appropriate government standards and follow all regulations.)
HAND PROTECTION	: Protective gloves
EYE PROTECTION	: Safety glasses(goggles)
SKIN PROTECTION	: Protective clothing
CONTROL PARAMETERS	
ACGIH	: 10mg/m <sup>3</sup> ; (TiO <sub>2</sub> )
OSHA PEL	: 8H 15mg/m <sup>3</sup> ,total dust 8H 5mg/m <sup>3</sup> , resp. fraction ; (TiO <sub>2</sub> )
NIOSH REL	: No data available

**9. PHYSICAL AND CHEMICAL PROPERTIES**

APPEARANCE	: White ~ slightly light yellow
PHYSICAL STATE	: Powder
ODOR	: Odorless
pH	: No data available
BOILING POINT	: > 3,000 °C (decomposition)
MELTING POINT	: 1,640 °C
FLASH POINT	: No data available
EXPLOSIVE LIMITS	: No data available
VAPOR PRESSURE	: No data available
VAPOR DENSITY	: No data available
SPECIFIC GRAVITY	: 3.9
SOLUBILITY IN	
Water	: Insoluble
Organic solvent	: Insoluble
PARTITION COEFFICIENT ; n-octanol/water	: No data available
AUTOIGNITION TEMPERATURE	: No data available

**10. STABILITY AND REACTIVITY**

REACTIVITY	: Stable under recommended storage conditions.
CHEMICAL STABILITY	: Stable under recommended storage conditions.
CONDITION TO AVOID	: Sunlight, heat, open flames, high temperature, diffusion of particulates
INCOMPATIBLE MATERIALS	: Strong oxidizers, strong acids, strong bases
HAZARDOUS DECOMPOSITION PRODUCTS	: CO, CO <sub>2</sub>

**11. TOXICOLOGICAL INFORMATION**

ACUTE TOXICITY -oral-	: rat: LD50>2,000 - 20,000 mg/kg(SIDS(2015),HSDB(Access on May 2016), Environmental Risk Assessment for Chemical Substances Vol.8 (Ministry of the Environment(2010))
ACUTE TOXICITY -dermal-	: hamster: LD50>10,000mg/kg(HSDB(Access on May 2016), Environmental Risk Assessment for Chemical Substances Vol. 8 (Ministry of the Environment(2010))
ACUTE TOXICITY -inhalation: Dusts and mists	: rat: LC>5.09mg/L(SIDS,2015)
SKIN CORROSION/IRRITATION	: rabbits: slight or no irritation in skin irritation tests (SIDS,2015)
EYE DAMAGE/EYE IRRITATION	: rabbit: eye irritation test (OECD TG 405) , mild conjunctival redness was observed in 2 out of 3 animals 24 hours after the application, but disappeared within 48 hours, and there is a report that slight irritation was observed 24 hours after the application, but no irritation was observed after 48 and 72 hours (SIDS (2015)).
SENSITIZATION	: In skin sensitization, both a skin sensitization test using the guinea pigs (Buehler method, OECD TG 406) and a skin sensitization test using mice (LLNA method, OECD TG 429) were negative, and it was judged that this substance doesn't have skin sensitizing potential (SIDS (2015)).
GERM CELL MUTAGENICITY	: As for in vivo, it was reported that micronucleus tests using peripheral erythrocytes or bone marrow cells of mice were negative, an hprt gene mutation assay using alveolar cells of rats was positive, a chromosomal aberration test using mouse bone marrow cells and a DNA damage test in rat lungs were negative(SIDS(2015), National Institute of Advanced Industrial Science and Technology(2011),DFGOT(2014), Environmental Risk Assessment for Chemical Substances Vol. 8(Ministry of the Environment,2010), IARC 93(2010)). As for in vitro, negative results were reported in all of bacterial reverse mutation tests, micronucleus tests, chromosome aberration tests, and mouse lymphoma assays using cultured mammalian cells(SIDS(2015), OEL Documentations(Japan Society For Occupational Health(JSOH),2013), National Institute of Advanced Industrial Science and Technology(2011), IARC 93(2010), Environmental Risk Assessment for Chemical Substances Vol. 8(Ministry of the Environment,2010), DFGOT(2014)). In addition, it is evaluated in SIDS(2015) that it is not possible to conclude on the genotoxicity of this substance because positive in vivo findings are not by standard tests.

- CARCINOGENICITY** : In a large scale cohort study in Europe, a slightly increased risk of lung cancer in occupational exposure to this substance was indicated, however, dose- response relationship was not observed in the exposed group. In addition, in cohort studies and a case-control study in North America, an association between exposure of this substance and carcinogenesis was not shown, and it is concluded that the evidence in humans for the carcinogenicity is limited. As for experimental animals, an increase in the incidences of lung adenomas and squamous cell carcinomas was seen in the high concentration group (250 mg/m<sup>3</sup>) in one study using rats exposed by inhalation for 2 years (IARC 93(2010), SIDS(2015)). In addition, also in a study in which rats were exposed by inhalation to ultrafine particles(P25) of this substance for 2 years, an increase in incidence of lung tumors (benign squamous cell tumors, squamous cell carcinomas, adenomas, and adenocarcinomas) in exposed group (32/100 vs control group 1/217) was observed, but no increase in tumor incidence was observed in a mice study. Other than this, an increase in incidence of benign and malignant lung tumors was observed in a test using rats in which titanium oxide was administered by intratracheal instillation. On the other hand, no increase in tumor was observed in any of the tests using rats or mice dosed orally, subcutaneously, or intraperitoneally. From the above, IARC classified it in Group 2 based on the sufficient evidence of carcinogenicity in experimental animals(IARC 93(2010)). In addition, the Japan Society For Occupational Health(JSOH)classified it in Group 2B as a provisional classification (Recommendation of Occupational Exposure (2015)).
- REPRODUCTIVE TOXICITY** : In a reproduction/developmental toxicity screening test (OECD TG 421) using rats, no adverse effects on fertility of parental animals, survival and development up to 4 days after delivery of offspring were observed even up to at a dose of 1,000 mg/kg/day administered by gavage (SIDS (2015)).
- SPECIFIC TARGET ORGAN TOXICITY - single exposure -**  
: Classification not possible due to lack of data.
- SPECIFIC TARGET ORGAN TOXICITY - repeated exposure -**  
: There is no information on humans. As for experimental animals, in a 2-year inhalation toxicity test using rats, increases in leukocyte and neutrophil counts, and increase in pneumonia, tracheitis, and rhinitis with squamous metaplasia in the anterior nasal cavity were observed at 10 mg/m<sup>3</sup> which is in the range of Category 1, and in a 24-month inhalation toxicity study using rats, lung fibrosis, minor changes in cytologic pattern in bronchoalveolar lavage fluid(BALF), a slight increase in polymorphonuclear leukocyte count, increase in macrophage and hyperplasia of the lung-associated lymph nodes were observed at 5 mg/m<sup>3</sup> (SIDS(2015)). Besides, as for oral route, no effects were observed even at doses corresponding to "Not classified" in 13-week or 103-week repeated dose toxicity tests using rats or mice dosed by feeding (Environmental Risk Assessment for Chemical Substances Vol. 8(Ministry of the Environment,2010)).
- ASPIRATION TOXICITY** : Classification not possible due to lack of data.

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## 12. ECOLOGICAL INFORMATION

- Hazardous to the aquatic environment - Acute hazard –**  
: algae (*Pseudokirchneriella subcapitata*) 72h EL50 (growth rate) > 100 mg/L  
crustacea (*Daphnia magna*) 48-hour EL50 > 100 mg/L  
fish (*Oryzias latipes*) 96-hour LL50 > 100 mg/L(all SIDS, 2015).
- Hazardous to the aquatic environment - Chronic hazard –**  
: Reliable chronic toxicity data were not obtained. It is poorly water-soluble (insoluble in water, ICSC, 2002), but due to the unknown environmental behavior of the inorganic compound.
- BIODEGRADABILITY** : Poorly water-soluble
- BIOACCUMULATION POTENTIAL** : No data available
- MOBILITY IN SOIL** : No data available
- OTHER ADVERSE EFFECTS** : Not listed in Montreal Protocol list.

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**13. DISPOSAL INFORMATION**

Dispose in a hazardous-waste site in accordance with all applicable regulations. Any disposal practice must be in compliance with country, local, state, and federal laws and regulations (contact country, local or state environment agency for specific rules).

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**14. TRANSPORT INFORMATION**

IATA : Not regulated  
ADR/RID : Not regulated  
DOT : Not regulated  
MARINE POLLUTANT : No

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**15. REGULATORY INFORMATION**

For classification and labeling of chemicals in accordance with the applicable rules and regulations in the EU or each country, refer to GHS classification of this product (See Section 2).

US REGULATION : OSHA HCS 2012/29 CFR 1910.1200  
EU REGULATION : CLP Regulation ((EC) No. 1272/2008)

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**16. OTHER INFORMATION****NOTICE:**

The information contained in the SDS description is applicable exclusively to the chemical substance identified herein and for its intended use as an analytical reference standard or reagent and to the unit quantity intended for that purpose. The information does not relate to, and may not be appropriate for, any application or larger quantity of the substance described. Our products are intended for the use by individuals possessing sufficient technical skill and qualification on use the material potential hazardous chemical. Accordingly, no representation or warranty, express or implied, with respect to merchantability and fitness for a particular purpose is made with respect to the information contained herein.

**Attention:**

This product in terms of chemical identity and the unit amount provide is intended for use in chemical analysis and not for human consumption, nor any other purpose.