

Plasmaterials, Inc.
 2268 Research Drive
 Livermore, CA 94550
 Ph: (925) 447-4030 Fx: (925) 447-4031
<http://plasmaterials.com>

SAFETY DATA SHEET

Section 1- IDENTIFICATION

PRODUCT NAME

Indium Tin Oxide (Synonyms: ITO)

SUPPLIER: Plasmaterials, Inc. 2268 Research Drive Livermore, CA 94550 Ph: 925-447-4030	RECOMMENDED USE: Laboratory Chemicals Scientific Research	EMERGENCY TELEPHONE NUMBERS US: 001-800-424-9300 Europe: 001-703-527-3887
--	---	---

Section 2- HAZARD(S) IDENTIFICATION

Classification:

Not a hazardous substance or mixture

LABEL ELEMENTS:

Not a hazardous substance or mixture

Hazard Statements:

Not a hazardous substance or mixture

Precautionary Statements: Not a hazardous substance or mixture

Hazards not otherwise classified (HNOC): None identified

Section 3- COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS-No	
Indium Tin Oxide	50926-11-9	
Hazardous Components	CAS-No	Concentration
Indium Oxide (Diindium Trioxide)	1312-43-2	70-99.9%
Tin Oxide	18282-10-5	0.1-30%

Section 4- FIRST AID MEASURES

INHALATION: Remove victim from exposure to fresh air. Give oxygen if breathing is difficult. If not breathing, give artificial respiration.

SKIN CONTACT: Wash off with soap and plenty of water.

EYE CONTACT: Flush eyes with lukewarm water, lifting upper and lower lids, for at least 15 minutes.

INGESTION: Rinse mouth with water. Never give anything by mouth to an unconscious person.

MOST IMPORTANT SYMPTOMS/EFFECTS: See Section 2 and/or Section 11

Indication of any immediate medical attention and special treatment needed: No data available

Section 5- FIREFIGHTING MEASURES

Suitable Extinguishing Media:

Carbon Dioxide (CO₂); Dry Chemical, Water Spray, alcohol-resistant foam

Unsuitable Extinguishing Media:

No Information Available

Specific Hazards Arising from the Chemical:

No data available

Protective Equipment & Precautions for Firefighters:

As in any fire, Firefighters must wear full face, self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective clothing to prevent contact with skin and eyes.

Section 6- ACCIDENTAL RELEASE MEASURES

Personal Precautions: Avoid dust formation. Avoid breathing dust, vapors, mist or gas. For personnel protection see Section 8.

Environmental Precautions: No information available

Methods for Containment & Clean Up: Sweep up and shovel. Keep in suitable, closed containers for disposal. For waste disposal see Section 13.

Section 7- HANDLING AND STORAGE

Handling: Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed. Avoid prolonged exposure.

Storage: Keep in a dry and well-ventilated place. Keep container tightly closed.

Section 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Diindium Trioxide	1312-43-2	TWA	0.100000 mg/m3	USA.ACGIH Threshold Limit Values (TLV)
	Remarks	Pulmonary edema Pneumonitis Dental erosion Malaise		
		TWA	0.100000 mg/m3	USA.NIOSH recommended exposure limits
		TWA	0.100000 mg/m3	USA.ACGIH Threshold Limit Values (TLV)
	Remarks	Pulmonary edema Pneumonitis Dental erosion Malaise		
		TWA	0.1 mg/m3	USA.NIOSH recommended exposure limits
Tin Oxide	18282-10-5	TWA	2.000000 mg/m3	USA.NIOSH recommended exposure limits
	Remarks	Also see specific listing for Tin (II) oxide (as Sn)		
		TWA	2.000000 mg/m3	USA Occupational exposure limits (OSHA)- Table Z-1 Limits for air contaminants
		TWA	2.000000 mg/m3	USA.ACGIH Threshold Limit Values (TLV)
	Remarks	Eye and Upper Respiratory Tract Irritation Headache Pneumoconiosis Nausea varies		
		TWA	2.000000 mg/m3	USA.ACGIH Threshold Limit Values (TLV)
	Remarks	Pneumoconiosis (or Stannosis) varies		
		TWA	2 mg/m3	USA.NIOSH recommended exposure limits
	Remarks	Also see specific listing for Tin (II) oxide (as Sn)		
		TWA	2 mg/m3	USA Occupational exposure limits (OSHA)- Table Z-1 Limits for air contaminants
		TWA	2 mg/m3	USA.ACGIH Threshold Limit Values (TLV)
	Remarks	Pneumoconiosis (or Stannosis) varies		
		PEL	2 mg/m3	California permissible exposure limits for chemical contaminants (Title 8 Article 107)

Engineering Measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

Personal Protective Equipment:

Eye/Face Protection: Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN166 (EU).

Skin and Body Protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove

removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Choose body protection in relation to its type, to the concentration and amount of the dangerous substances, and to the specific workplace. The type of protective equipment must be selected according to the concentration and amount of dangerous substance at the specific workplace.

Respiratory Protection: Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of Environment Exposure: No special environmental precautions required

Section 9- PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Solid

Odor: No information available

Odor Threshold: No information available

pH: No information available

Melting Point/Range: 1,630°C / 2,966°F (estimated)

Boiling Point/Range: No information available

Flash Point: No information available

Evaporation Rate: No information available

Flammability (solid,gas): No information available

Flammability or Explosive Limits:

Upper: No data available

Lower: No data available

Vapor Pressure: No information available

Vapor Density: No information available

Relative Density: 6.95 g/cm³ (estimated)

Water Solubility: No information available

Partition coefficient; n-octanol/water: No data available

Auto Ignition Temperature: No information available

Decomposition Temperature: No information available

Viscosity: No information available

Explosive Properties: No information available

Oxidizing Properties: No information available

Section 10- STABILITY AND REACTIVITY

Reactive Hazard: None known, based on information available.

Stability: Stable under recommended storage conditions.

Conditions to Avoid: Incompatible materials

Incompatible Materials: Strong oxidizing agents, potassium, chlorine, strong acids, aluminum, sodium/sodium oxides, magnesium

Hazardous Decomposition Products:

Hazardous decomposition products formed under fire conditions-Tin/Tin Oxides, Indium/Indium Oxides

Other decomposition products-No data available

Hazardous Polymerization: No information available

Hazardous Reactions: No information available

Section 11- TOXICOLOGICAL INFORMATION

Acute Toxicity: No information available

Inhalation: No information available

Dermal: No information available

Skin Corrosion/Irritation: No information available
Serious eye damage/irritation: No information available
Respiratory or Skin Sensitization: No information available
Carcinogenicity:

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	OSHA
Indium Tin Oxide	50926-11-9	Not Listed	Not Listed	Not Listed

Germ Cell Mutagenicity: No information available
Reproductive Effects: No information available
Development Effects: No information available
Specific Target Organ Toxicity – single exposure: No information available
Specific Target Organ Toxicity – repeated exposure: No information available
Aspiration Hazard: No information available
Additional Information:

-RTECS: Not available
 -Inorganic tin salts are poorly absorbed into the body. When parenterally administered tin salts are highly toxic. Tin oxide inhaled as a dust or fume leads to a benign pneumoconiosis with no sign of interference with pulmonary function. Deposited dust appears nodular with the particles being mostly extracellular. No necrosis, foreign-body giant-cell reaction, or collagen formation has been seen. Tin salts that have gained access to the blood stream are highly toxic and produce neurologic damage and paralysis. With most common tin salts, the toxicity profile is complicated by hydrolysis in body fluids producing un-physiologic pH values. The reported symptoms of hyperemia, vascular changes with bleeding in the central nervous system, liver, heart and other organs may be due to tin itself or to the un-physiological pH changes. Ingestion produces vomiting due to the gastric irritation from the activity and astringency of tin compounds. Injection of inorganic tin salts produces diarrhea, muscle paralysis and twitching.
 -To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

Section 12- ECOLOGICAL INFORMATION

Toxicity: No information available.
Persistence and Degradability: No information available
Bioaccumulation/Accumulation: No information available
Mobility in Soil: No information available
Results of PBT and vPvB assessment: PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.
Other Adverse Effects: No information available

Section 13- DISPOSAL CONSIDERATIONS

Waste Disposal Methods: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dispose of contaminated packaging as unused product. Dispose in accordance with all applicable regulations.

Section 14- TRANSPORT INFORMATION

DOT: Not regulated as dangerous goods
IATA: Not regulated as dangerous goods
IMDG/IMO: Not regulated as dangerous goods

Section 15- REGULATORY INFORMATION

US Federal Regulations:

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt.D): Not regulated

U.S. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): Not Listed

SARA 302 Extremely Hazardous Substance: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302

SARA 313 (TRI Reporting): 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

SARA 311/312 Hazardous Chemical: Chronic health hazard

SARA Hazard Categories:

Immediate Hazard: No

Delayed Hazard: No

Fire Hazard: No

Pressure Hazard: No

Reactive Hazard: No

CERCLA Hazardous Substance List (40 CFR 302.4): Not Listed

US California Proposition 65: This product does not contain any chemicals known to the State of California to cause cancer, birth defects or any other reproductive harm.

US Massachusetts RTK (Components):

Component	CAS No.	Revision Date
Tin(IV) Oxide	18282-10-5	2007-03-01

US New Jersey RTK (Components):

Component	CAS No.	Revision Date
Diindium Oxide	1312-43-2	
Tin(IV) Oxide	182825-10-5	2007-03-01

US Pennsylvania RTK:

Component	CAS No.	Revision Date
Diindium Oxide	1312-43-2	
Tin(IV) Oxide	182825-10-5	2007-03-01

Section 16- OTHER INFORMATION

The above information is accurate to the best of our knowledge. However, since data, safety standards and government regulations are subject to change, the conditions of handling and use, or misuse are beyond our control, Plasmaterials, Inc. makes no warranty, either expressed or implied, with respect to the completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Users should satisfy themselves that they have all current data relevant to their particular use.

The information in this SDS was obtained from sources, which we believe are reliable. However, the information is provided without any representation or warranty, expressed or implied, regarding the accuracy or correctness.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

REVISION: 05-10-17