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MATERIAL SAFETY DATA SHEET

Section 1- PRODUCT IDENTIFICATION

COMPOSITION In2O3-SnO2	PRODUCT NAME Indium Tin Oxide, ITO
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Section 2- HAZARDOUS INGREDIENTS

Note: Products under normal conditions do not represent an inhalation, ingestion or contact health hazard.

MATERIAL OR COMPONENT	CAS NUMBER	WT%	EXPOSURE LIMITS	
			OSHA PEL (Mg/M3)	ACGIH TLV(MG/M3)
Indium Oxide	1313-43-2	Varies	not set	0.1mg/m³ (as In)
Tin Oxide	18282-10-5	Varies	not set	2.0mg/m³ (as Sn)

Section 3- PHYSICAL DATA

MATERIAL IS (AT NORMAL CONDITIONS) <input type="checkbox"/> Liquid <input type="checkbox"/> Solid <input type="checkbox"/> Gas <input type="checkbox"/> Other	APPEARANCE AND ODOR Shades of gray & black
MELTING POINT (BASE METAL) Varies (SnO2: 1630)	SPECIFIC GRAVITY Varies (In2O3:7.179; SnO2: 6.95)

Section 4- FIRE AND EXPLOSION

Flash Point (Method Used) N/A	Flammable Limits Non-Flammable	LEL N.A.	UEL N.A.
EXTINGUISHING MEDIA Use dry chemical, Co2			
SPECIAL FIRED FIGHTING PROCEDURES Wear a self-contained breathing apparatus and full protective clothing to prevent contact with skin and eyes.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Material may emit toxic fumes if involved in fire.			

Section 5- REACTIVITY DATA

STABILITY

Stable

INCOMPATIBILITY (MATERIALS TO AVOID)

**Strong acids, strong bases
(SnO₂: ClF₃, HS₃, Al, KI, Mg, NA)**

CONDITIONS TO AVOID

Heat, incompatible materials

HAZARDOUS DECOMPOSITION PRODUCTS

In, Sn, SnO.

Section 6- HEALTH HAZARD GUIDE

MAJOR EXPOSURE HAZARD

Inhalation **Skin** **Skin Absorption** **Eye Contact** **Ingestion**

EFFECTS OF OVEREXPOSURE

INHALATION: In₂O₃: Inhalation of dusts of insoluble In₂O₃ for hours daily for three months by rats caused only inflammatory reaction with no fibrosis. SnO₂: Inhalation of SnO₂ dusts may cause irritation to the respiratory tract.

SKIN/EYE CONTACT: May be mechanically irritation to the skin and eyes. May cause redness and watering of eyes.

OTHER: Ingested In₂O₃ is harmless to rats. However, the ingestion of indium salt can be fatal. Metallic Sn and its inorganic salts are generally of low toxicity due to their poor alimentary absorption. Dusts of tin oxides have caused pneumoconiosis, which is relatively benign.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Respiratory disorders.

EMERGENCY & FIRST AID PROCEDURES

INHALATION: Remove from exposed area to fresh air immediately; give oxygen if breathing is difficult. Seek medical attention.

INGESTION: Give 1-2 glasses of milk or water and induce vomiting; seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person.

SKIN CONTACT: Brush material off skin and wash affected area with soap and water. Seek medical attention.

EYE CONTACT: Flush eyes with lukewarm water lifting up the upper and lower lids for at least fifteen minutes. Seek medical attention.

Section 7- SPILL OR LEAK PROCEDURES

SPILL OR LEAK PROCEDURES

Wear a self-contained breathing apparatus & full protective clothing. Isolate the area where the spill occurred and insure that proper ventilation is available. Vacuum the spill using a high efficiency unit and place in a container for proper disposal. Take care not to raise dust.

WASTE DISPOSAL METHODS

Dispose of in accordance with applicable federal, state and local regulations.

Section 8- SPECIAL PROTECTION

RESPIRATORY

Wear NIOSH approved dust-mist-fume cartridge respirator.

VENTILATION

Local Exhaust: Maintain below TLV for Sn and In. Handle in controlled atmosphere.

EYE PROTECTION & PROTECTIVE CLOTHING

Recommend: neoprene protective gloves & safety glasses. Wear protective clothing to prevent contamination of skin and clothes.

Section 9- SPECIAL PRECAUTIONS

WORK/HYGIENIC/MAINTENANCE PRACTICES:

Store in tightly closed containers in a cool, dry place. Wash hands and face thoroughly after handling and before meals.

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