

TIN OXIDE (STANNIC OXIDE)

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

TIN OXIDE (STANNIC OXIDE)
Synonyms: Stannic oxide; Tin(IV) oxide; Tin dioxide
CAS: 18282-10-5

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Opacifier/glaze ingredient in ceramics and glass, polishing/abrasive compound, catalyst, raw material for electronic/conductive coating applications (e.g. tin oxide/ITO precursors), pigment and enamel manufacture. For industrial user only.
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

SURAJ CHEMICALS
No 92, Govindappa Naicken Street, Shiva Complex, Chennai – 600001, Tamil Nadu, India
Tel: +91 - 7092722822, +91 - 9840284032 / +91 - 44 - 25393652, 42130281
Email: sales@surajchemicals.com | Website: www.surajchemicals.com
GST No: 33ACEPV8190L1ZZ

1.4 Emergency phone number:

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).
Largely not classified as hazardous under GHS criteria. Tin(IV) oxide is a well-established, low-to-moderate-hazard inorganic solid; it does not meet the classification criteria for acute toxicity, skin/eye irritation or corrosion, sensitisation, carcinogenicity, mutagenicity, reproductive toxicity or aquatic toxicity based on currently available data.

2.2 GHS label elements, including precautionary statements:

GHS: No signal word, pictogram or hazard statement required.

Hazard statements:

None assigned.

Precautionary statements:

P260: Avoid breathing dust.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/eye protection.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P501: Dispose of contents/container in accordance with local/national regulations.

2.3 Other hazards which do not result in classification:

Fine powder may cause mechanical irritation of the respiratory tract and eyes through nuisance-dust effects; prolonged, heavy occupational dust exposure to inorganic tin compounds has been associated in the general literature with a benign pneumoconiosis (stannosis) without significant functional impairment. Not expected to meet PBT/vPvB criteria. Not self-classified for any additional hazard.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Tin(IV) Oxide (Stannic Oxide), SnO&sub2;
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 18282-10-5	Tin(IV) Oxide — Not classified	≥ 99% (typical commercial/technical grade)

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

No specific first-aid procedure required under normal conditions of use. If discomfort occurs, seek medical advice.

By inhalation:

Remove person to fresh air and keep comfortable for breathing. If coughing or respiratory discomfort persists, seek medical attention.

By skin contact:

Wash with plenty of soap and water. If irritation develops, seek medical advice.

By eye contact:

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation persists, consult a doctor.

By ingestion/aspiration:

Rinse mouth with water. Do not induce vomiting. Seek medical advice if discomfort occurs.

4.2 Most important symptoms/effects, acute and delayed:

Mechanical irritation of eyes, skin and respiratory tract possible from dust. No significant acute systemic effects expected. Chronic, heavy inhalation exposure to tin oxide dust may be associated with benign pulmonary deposits (stannosis) as noted generally in the literature for inorganic tin dusts.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

Not relevant

SECTION 5: FIRE-FIGHTING MEASURES

- 5.1 Suitable extinguishing media:**
Suitable: Non-combustible; use extinguishing media appropriate to the surrounding fire (water spray, foam, dry chemical powder, carbon dioxide).
Unsuitable: None known
- 5.2 Specific hazards arising from the chemical:**
Non-flammable, non-combustible inorganic solid. Does not support combustion. No decomposition hazard under normal fire conditions.
- 5.3 Special protective actions for fire-fighters:**
No special measures required. In case of surrounding fire, fire-fighters should wear self-contained breathing apparatus and full protective clothing as a general precaution.
- Additional provisions:**
Non-applicable

SECTION 6: ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment and emergency procedures:**
For non-emergency personnel:
Avoid generating and inhaling dust. Use appropriate personal protective equipment (see section 8).
For emergency responders:
No special equipment required beyond standard dust protection (respirator, gloves, eye protection).
- 6.2 Environmental precautions:**
Avoid release of large quantities of dust to the environment. Prevent entry into drains and watercourses where practicable, though material is not classified as an environmental hazard.
- 6.3 Methods and materials for containment and cleaning up:**
Sweep or vacuum up (avoid generating airborne dust) and place in a suitable, labelled container for reuse or disposal.
- 6.4 Reference to other sections:**
See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

- 7.1 Precautions for safe handling:**
A. General precautions for safe use:
Avoid generating and breathing dust. Use with adequate local exhaust ventilation. Avoid unnecessary contact with eyes and prolonged skin contact.
B. Technical recommendations for the prevention of fires and explosions:
Not applicable – non-combustible. Follow standard dust-handling good practice for fine powders.
C. Technical recommendations on general occupational hygiene:
Do not eat, drink or smoke while handling. Wash hands and exposed skin after handling.
D. Technical recommendations to prevent environmental risks:
Avoid uncontrolled discharge of dust/powder to the environment. Use dust-collection systems where practicable.
- 7.2 Conditions for safe storage, including any incompatibilities:**
A. Specific storage requirements:
- | | |
|---------------|--|
| Minimum Temp. | Ambient |
| Maximum Temp. | Ambient |
| Maximum time | Typical value – refer to current specification sheet |
- B. General conditions for storage:**
Store in tightly closed containers/bags in a dry, well-ventilated area. For additional information see subsection 10.5.
- 7.3 Specific end use(s):**
Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

- 8.1 Control parameters:**
Substances whose occupational exposure limits have to be assessed in the workplace, per the Factories Act, 1948, as amended, and generally referenced international occupational exposure limits for tin, inorganic compounds (except SnH4):
- | Identification | Occupational Exposure Limit Type | Value |
|--|--------------------------------------|---|
| Tin Oxide (Stannic Oxide)
CAS: 18282-10-5 | Time Weighted average (8 hrs), as Sn | 2 mg/m³ (typical reference value for inorganic tin compounds) |
- 8.2 Appropriate engineering controls:**
Provide local exhaust ventilation and/or dust-collection systems to keep airborne dust concentrations below occupational exposure limits.
- B. Respiratory protection:**
Use a particulate (dust) respirator, e.g. FFP2/P2 or better, when exposure limits may be exceeded or in dusty conditions.
- C. Specific protection for the hands:**
Protective gloves recommended for prolonged or repeated handling.
- D. Eye and face protection:**
Safety glasses or goggles to prevent dust contact with eyes.
- E. Bodily protection:**
Standard work clothing; coveralls recommended in high-dust environments.
- F. Additional emergency measures:**
Eyewash station recommended in work areas with significant dust exposure.
- Environmental exposure controls:**
Avoid uncontrolled discharge of dust to the environment. See subsection 7.1.D.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

- 9.1 Information on basic physical and chemical properties:**

Appearance	
Physical state at 20°C	Solid (powder)
Appearance	Fine crystalline powder
Color	White to off-white / pale yellow

Odor	Odourless
Odour threshold	Not relevant *
Volatility	
Boiling point at atmospheric pressure	≈1800–1900°C (sublimes)
Vapour pressure at 20°C / 50°C	Negligible
Evaporation rate at 20°C	Not relevant *
Product Description	
Density / Relative density at 20°C	≈6.85–6.95 g/cm³
Dynamic / Kinematic viscosity	Not relevant *
Concentration	≥99% (typical)
pH	Not applicable (insoluble solid)
Vapour density at 20°C	Not relevant *
Partition coefficient n-octanol/water 20°C	Not relevant *
Solubility in water at 20°C	Insoluble/negligible
Decomposition temperature	Not relevant *
Melting point/freezing point	≈1630°C
Flammability	
Flash Point	Non-applicable
Flammability (solid, gas)	Non-flammable
Autoignition temperature	Not relevant *
Lower / Upper flammability limit	Not relevant *
Particle Characteristics	
Median equivalent diameter	Typical value – refer to current specification sheet

* Not relevant due to the nature of the product, not providing information on the properties of its hazards.

9.2 Other information:

Explosive properties	Not relevant *
Oxidising properties	Not an oxidiser
Corrosive to metals	Not corrosive
Heat of combustion	Not relevant *
Surface tension at 20°C	Not relevant *
Refraction index	Not relevant *

SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity:**
Chemically inert and highly stable under normal conditions of storage, handling and use. Amphoteric; can react with strong acids and strong bases at elevated temperature/concentration.
- 10.2 Chemical stability:**
Chemically stable under the indicated conditions of storage, handling and use.
- 10.3 Possibility of hazardous reactions:**
Under the specified conditions, hazardous reactions are not expected.
- 10.4 Conditions to avoid:**

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable

10.5 Incompatible materials:

Strong Acids (conc., hot)	Strong Bases (conc., hot)	Water	Combustible Materials	Reducing Agents
May react slowly at elevated temperature	May react slowly at elevated temperature	No reaction	No reaction	No significant reaction expected

- 10.6 Hazardous decomposition products:**
None expected under normal conditions of use.

SECTION 11: TOXICOLOGICAL INFORMATION

- 11.1 Information on toxicological effects:**
Tin(IV) oxide is of low acute and chronic toxicity. In case of excessive or prolonged exposure, the following effects may be noted depending on the means of exposure:
- A. Ingestion (acute effect):**
Low acute oral toxicity. Not expected to be harmful if swallowed in small amounts.
- B. Inhalation (acute effect):**
May cause mechanical irritation of the respiratory tract at high dust concentrations. Not classified as an acute inhalation hazard. Chronic, heavy occupational dust exposure to inorganic tin compounds has been associated in the general literature with benign pulmonary deposits (stannosis) without significant impairment of lung function.
- C. Contact with skin and eyes (acute effect):**
Not irritating to skin. May cause mechanical/dust irritation to eyes.
- D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):**
Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data. IARC: Not listed.
- E. Sensitizing effects:**
Classification criteria for respiratory or skin sensitisation are not met based on available data.
- F. Specific target organ toxicity (STOT) – single exposure:**
Classification criteria are not met based on available data.
- G. Specific target organ toxicity (STOT) – repeated exposure:**
Classification criteria are not met based on available data.
- H. Aspiration hazard:**

Not applicable (solid).

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
Tin Oxide (Stannic Oxide) CAS: 18282-10-5	LD50 oral: >2000 mg/kg (practically non-toxic, typical for insoluble tin oxides)	Rat
	LD50 dermal: Not established – low hazard expected	–

SECTION 12: ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment.

12.1 Toxicity:

Acute Toxicity	Species	Genus
LC50: >100 mg/L (typical, low toxicity expected – insoluble solid)	Non-applicable	Fish
EC50: Not established – low toxicity expected	Non-applicable	Crustacean

12.2 Persistence and degradability:

Inorganic solid; the concept of biodegradability is not applicable. Highly insoluble and chemically inert – not expected to be bioavailable at significant concentrations.

12.3 Bioaccumulative potential:

Not expected to bioaccumulate, owing to very low water solubility.

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Not relevant	Not relevant	Low mobility (insoluble)	Low mobility (insoluble)

12.5 Results of PBT and vPvB assessment:

Not applicable; does not meet PBT/vPvB criteria.

12.6 Other adverse effects:

Not described

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Dispose of as inert/non-hazardous industrial solid waste in accordance with local and national regulations, preferably via a licensed waste handler, or recycle/reuse where feasible. Avoid generating dust during disposal operations.
Refer to national and local regulations on waste management.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023):

14.1 UN number	Not applicable – not classified as dangerous goods
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22):

14.1 UN number	Not applicable – not classified as dangerous goods
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	N/A
14.5 Marine pollutant	No
14.6 Special precautions for user	Non-applicable
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024):

14.1 UN number	Not applicable – not classified as dangerous goods
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	N/A
14.5 Environmental hazard	No
14.6 Special precautions for user	Non-applicable
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations specific for the product in question:

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation:

Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

Not classified – no hazard statements assigned.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

The United Nations Economic Commission for Europe (UNECE); publicly available GHS classification references for CAS 18282-10-5.

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | IARC: International Agency for Research on Cancer

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET