

ZINC DUST

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

ZINC DUST
Zinc powder; Zinc metal, fine powder
CAS: 7440-66-6

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Galvanizing and metallising, zinc-rich anti-corrosive paints and primers, rubber vulcanisation activator, dry-cell/alkaline battery manufacture, chemical reducing agent, pyrotechnics/fireworks. 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
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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). Fine zinc powder/dust meets the criteria below; classification depends on particle size – coarser granular zinc (not a fine powder) may not meet the pyrophoric/water-reactive criteria.

Water-react. 1	Substances and mixtures which, in contact with water, emit flammable gases, Category 1, H260
Pyr. Sol. 1	Pyrophoric solids, Category 1, H250 (applicable to very fine/dry powder grades)
Aquatic Acute 1	Hazardous to the aquatic environment, acute hazard, Category 1, H400

2.2 GHS label elements, including precautionary statements:

GHS: Danger

Hazard statements:

Water-react. 1: H260 – In contact with water releases flammable gases which may ignite spontaneously.
Pyr. Sol. 1: H250 – Catches fire spontaneously if exposed to air (fine powder grades).
Aquatic Acute 1: H400 – Very toxic to aquatic life.

Precautionary statements:

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P222: Do not allow contact with air (pyrophoric grades).
P223: Keep away from any possible contact with water, because of violent reaction and possible flash fire.
P231+P232: Handle under inert gas. Protect from moisture.
P273: Avoid release to the environment.
P280: Wear protective gloves/eye protection.
P335+P334: Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
P370+P378: In case of fire: Use dry sand, dry chemical powder, or appropriate extinguishing agent for metal fires – NEVER use water.
P402+P404: Store in a dry place. Store in a closed container.
P501: Dispose of contents/container in accordance with local/national regulations.

2.3 Other hazards which do not result in classification:

Dust clouds of fine metal powder may present a dust explosion hazard under certain conditions (ignition source + sufficient concentration in confined space).

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Zinc metal, powder
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 7440-66-6	Zinc (metal dust) — Water-react. 1: H260; Pyr. Sol. 1: H250; Aquatic Acute 1: H400 – Danger	≥ 97%

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:

Request medical assistance, showing the SDS of this product, particularly in case of thermal/chemical burns.

By inhalation:

Remove the person affected from the area of exposure, provide fresh air and keep at rest. Seek medical attention if symptoms of metal fume effects (fever, chills) develop.

By skin contact:

Brush off loose particles – do not rub. In case of burns, cool the affected area with large amounts of water and seek medical attention.

By eye contact:

Rinse eyes thoroughly with lukewarm water for at least 15 minutes, holding eyelids open. Seek medical attention.

By ingestion/aspiration:

Rinse mouth with water. Do not induce vomiting. Seek medical attention if a significant quantity has been swallowed.

4.2 Most important symptoms/effects, acute and delayed:

Inhalation of freshly formed zinc oxide fume (e.g. from welding/cutting galvanised or zinc-coated materials) can cause "metal fume fever" – flu-like symptoms with delayed onset. Acute and delayed effects are further indicated in section 11.

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

Treat symptomatically. Metal fume fever is generally self-limiting; seek medical advice for persistent respiratory symptoms.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media:

Suitable: Dry sand, dry chemical powder (Class D metal fire extinguisher), dry dolomite/graphite powder.
Unsuitable: Water, foam, carbon dioxide, wet extinguishing agents – NEVER use water on burning zinc dust; contact with water generates flammable hydrogen gas and may cause violent spattering.

5.2 Specific hazards arising from the chemical:

Fine zinc powder/dust may be pyrophoric and can ignite spontaneously in air; in contact with water or acids it liberates flammable hydrogen gas which may ignite. Dust clouds in confined spaces present a dust explosion hazard. Burning zinc produces dense zinc oxide fume.

5.3 Special protective actions for fire-fighters:

Evacuate the area. Only trained personnel equipped with self-contained breathing apparatus and full protective clothing should intervene. Never apply water directly to burning metal.

Additional provisions:

If safe to do so, isolate undamaged containers from the fire area. Prevent fire-fighting run-off (if any alternative agent is used) from entering drains or water courses.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:

Eliminate all ignition sources. Avoid generating dust clouds. Use personal protective equipment described in section 8. Keep the spill dry – do not allow contact with water.

For emergency responders:

Wear antistatic protective equipment. Use non-sparking tools. Keep unprotected persons away.

6.2 Environmental precautions:

Prevent the product from entering drains, soil or water courses – very toxic to aquatic life and reacts with water to generate flammable gas.

6.3 Methods and materials for containment and cleaning up:

Collect using non-sparking tools into dry, labelled, closed metal containers. Do not use water or wet methods for clean-up. Cover with dry sand/inert dry material if ignition risk is suspected. Keep away from other combustibles.

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:

Keep away from water, moisture, acids and oxidisers. Avoid generating dust clouds; use grounded/bonded equipment to prevent static discharge. Handle under inert atmosphere where pyrophoric-grade material is used.

B. Technical recommendations for the prevention of fires and explosions:

Eliminate ignition sources (sparks, open flame, static electricity, friction, hot surfaces). Use explosion-proof electrical equipment and dust extraction systems rated for combustible metal dust where applicable. Bond and ground equipment.

C. Technical recommendations on general occupational hygiene:

Do not eat, drink or smoke while handling. Wash hands thoroughly after handling.

D. Technical recommendations to prevent environmental risks:

Prevent release of dust/powder to the environment; keep away from drains and water courses.

7.2 Conditions for safe storage, including any incompatibilities:

A. Specific storage requirements:

Storage temperature	Ambient, dry conditions, away from heat sources
Storage condition	Tightly closed containers, under dry/inert conditions as per grade
Shelf life	Typical value – refer to current specification sheet

B. General conditions for storage:

Store in a cool, dry, well-ventilated place away from moisture, acids, alkalis, oxidisers and sources of ignition. Keep containers tightly closed and away from incompatible materials (section 10).

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:

Occupational exposure limits applicable to zinc metal dust/fume (as published in widely referenced international OEL lists, used here as reference guidance):

Identification	Occupational Exposure Limit Type	Value
Zinc, as dust CAS: 7440-66-6	Time Weighted average concentration (8 hrs)	5 mg/m³ (respirable)
	Short-term exposure limit (as zinc oxide fume, 15 min)	10 mg/m³

8.2 Appropriate engineering controls:

Use local exhaust ventilation and dust extraction designed for combustible dust (explosion-proof, with appropriate grounding/bonding) to keep exposure below the limits in 8.1 and to minimise dust cloud formation.

B. Respiratory protection:

Use a particulate filtering respirator where dust/fume exposure limits may be exceeded.

C. Specific protection for the hands:

Protective gloves (e.g. leather or cotton for handling; chemical-resistant gloves if moisture/acid contact is possible).

D. Eye and face protection:

Safety glasses or goggles to protect against dust/particulate.

E. Bodily protection:

Antistatic protective clothing recommended to minimise static discharge risk around fine metal powder.

F. Additional emergency measures:

Dry powder fire extinguishers (Class D) should be available near storage/handling areas; water-based emergency showers/eyewash should NOT be used to extinguish a metal fire but remain available for personal decontamination after exposure.

Environmental exposure controls:

Avoid environmental spillage of the product and its container. 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 (fine powder)
Appearance	Fine metallic powder
Color	Blue-grey to grey
Odor	Odorless
Odour threshold	Not applicable
Volatility	
Boiling point at atmospheric pressure	907°C
Vapour pressure at 20°C	Negligible
Evaporation rate at 20°C	Not relevant (solid)
Product Description	
Density / Relative density at 20°C	7.14 g/cm³
Bulk density	Typical value – refer to current specification sheet
pH	Not applicable (insoluble metal)
Solubility in water at 20°C	Insoluble (reacts slowly, forming hydrogen gas and zinc hydroxide)
Partition coefficient n-octanol/water	Not applicable (metal)
Decomposition temperature	Not applicable
Melting point/freezing point	419.5°C
Flammability	
Flash Point	Not applicable (solid metal)
Flammability (solid, gas)	Flammable solid; fine powder may be pyrophoric
Autoignition temperature	Typical value – refer to current specification sheet (dust cloud autoignition generally > 400°C)
Lower / Upper flammability limit	Dust cloud: Typical value – refer to current specification sheet
Particle Characteristics	
Median particle size	Typical value – refer to current specification sheet

Values above are typical for the commercial grade; properties such as pyrophoricity and dust explosibility are strongly particle-size dependent – refer to current specification sheet for the specific grade supplied.

9.2 Other information:

Explosive properties	Dust cloud explosion hazard possible in confined spaces with an ignition source
Oxidising properties	Not an oxidiser (zinc itself is a reducing agent)
Corrosive to metals	Not relevant (is itself a metal)
Self-heating	Fine powder grades may self-heat/self-ignite in air
Water reactivity	Reacts with water, especially in presence of acid/alkali, liberating flammable hydrogen gas, H260

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:

Reacts with acids and alkalis to liberate flammable hydrogen gas. Fine powder may react with atmospheric moisture/oxygen; very fine/dry grades can be pyrophoric. Violent reaction possible with strong oxidisers and halogens.

10.2 Chemical stability:

Stable under dry, inert storage conditions as per grade specification; not stable in the presence of moisture, acids, alkalis or strong oxidisers.

10.3 Possibility of hazardous reactions:

Contact with water/moisture, acids or alkalis can generate flammable hydrogen gas, which may accumulate and present an explosion hazard in confined spaces.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Avoid impact/friction (static/spark risk)	Danger of spontaneous ignition (fine powder grades)	Avoid heat sources	Not applicable	Avoid all contact with moisture

10.5 Incompatible materials:

Water / Moisture	Acids / Alkalis	Strong Oxidisers / Halogens
Avoid all contact (H260)	Avoid contact (evolves H2 gas)	Avoid direct contact (risk of violent reaction)

10.6 Hazardous decomposition products:

Hydrogen gas (on contact with water/acids/alkalis). Zinc oxide fume (on combustion/high-temperature exposure).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result depending on the means of exposure:

A. Ingestion (acute effect):

Low acute oral toxicity for the metal itself; large doses may cause gastrointestinal discomfort.

B. Inhalation (acute effect):

Inhalation of freshly generated zinc oxide fume (e.g. during hot work) is the primary concern and can cause metal fume fever – transient flu-like symptoms (fever, chills, metallic taste) typically resolving within 24–48 hours.

C. Contact with skin and eyes (acute effect):

Mechanical/particulate irritation possible; not expected to be corrosive to intact skin. Eye contact may cause mechanical irritation.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):

Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data. Not listed by IARC.

E. Sensitizing effects:
Not known to be a skin or respiratory sensitiser.

F. Specific target organ toxicity (STOT) – single exposure:
Metal fume fever reported following acute inhalation of zinc oxide fume (see B above).

G. Specific target organ toxicity (STOT) – repeated exposure:
Classification criteria are not met based on available data.

H. Aspiration hazard:
Not applicable (solid metal powder).

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
Zinc (metal dust) CAS: 7440-66-6	LD50 oral: > 2000 mg/kg bw (low acute toxicity)	Rat
	LC50 inhalation (zinc oxide fume, 4h): > 5 mg/L	Rat

SECTION 12: ECOLOGICAL INFORMATION

Very toxic to aquatic life.

12.1 Toxicity:

Identification	Acute Toxicity	Species	Genus
Zinc (as Zn ion) CAS: 7440-66-6	LC50: 0.09 – 1.1 mg/L (96h, as Zn)	Oncorhynchus mykiss	Fish
	EC50: 0.07 – 0.6 mg/L (48h, as Zn)	Daphnia magna	Crustacean

12.2 Persistence and degradability:
Inorganic substance; the concept of biodegradability is not applicable. Zinc metal oxidises/dissolves slowly to zinc ions in the environment.

12.3 Bioaccumulative potential:
Zinc is an essential trace element for most organisms; bioaccumulation is physiologically regulated but may occur at elevated environmental concentrations.

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Not relevant	Not relevant	Low (as metal)	Moderate (as dissolved ion)

12.5 Results of PBT and vPvB assessment:
Not applicable (inorganic substance).

12.6 Other adverse effects:
Toxic to aquatic organisms; prevent release to water courses.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Dispose of via a licensed waste disposal contractor as hazardous waste, in accordance with local and national regulations. Do not dispose of in regular waste streams where contact with moisture may occur. Keep dry until disposal. Do not discharge to drains or water courses.
Refer to national and local regulations on waste management.

SECTION 14: TRANSPORT INFORMATION

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

14.1 UN number	UN1436
14.2 UN proper shipping name	ZINC DUST / ZINC POWDER
14.3 Transport hazard class(es)	4.3 (Labels: 4.3; additionally Class 4.2 for pyrophoric grades)
14.4 Packing group	II or III, grade-dependent
14.5 Environmental hazard	Yes
14.6 Special precautions for user	Physico-chemical properties: see section 9; keep dry during transport
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG):

14.1 UN number	UN1436
14.2 UN proper shipping name	ZINC DUST / ZINC POWDER
14.3 Transport hazard class(es)	4.3 (subsidiary 4.2 for pyrophoric grades)
14.4 Packing group	II or III, grade-dependent
14.5 Marine pollutant	Yes
14.6 Special precautions for user	EmS Codes: F-G, S-K
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

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

14.1 UN number	UN1436
14.2 UN proper shipping name	ZINC DUST / ZINC POWDER
14.3 Transport hazard class(es)	4.3 (subsidiary 4.2 for pyrophoric grades)
14.4 Packing group	II or III, grade-dependent
14.5 Environmental hazard	Yes
14.6 Special precautions for user	Forbidden on passenger and cargo aircraft for certain packing groups – confirm with current grade/packing group
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)

The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996

Petroleum and Explosives Safety Organisation (PESO) regulations, as applicable to combustible metal powders

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:

H250: Catches fire spontaneously if exposed to air.

H260: In contact with water releases flammable gases which may ignite spontaneously.

H400: Very toxic to aquatic life.

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:

Personnel handling zinc dust should be trained on combustible dust/metal fire hazards, 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 the listed CAS number.

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