

MAGNESIUM OXIDE

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

MAGNESIUM OXIDE
Magnesia; Periclase (mineral form)
CAS: 1309-48-4

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: refractory and construction material manufacture, rubber and plastics filler/activator, animal feed and fertilizer additive, flue gas desulphurisation, water/effluent treatment (pH adjustment), chemical intermediate for other magnesium compounds. For industrial/commercial 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).

Not classified	Not classified as hazardous under GHS physical, health or environmental hazard core criteria based on available data
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2.2 GHS label elements, including precautionary statements:

GHS: No signal word (Not classified as hazardous)

Hazard statements:

None.

Precautionary statements:

P261: Avoid breathing dust.
P264: Wash hands thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.

2.3 Other hazards which do not result in classification:

Freshly formed magnesium oxide fume (e.g., from burning/welding magnesium metal, not applicable to this powder product as supplied) is a recognised cause of metal fume fever; this hazard relates to thermal fume generation, not to normal handling of the powder.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Magnesium Oxide
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 1309-48-4	Magnesium Oxide — Not classified under core GHS hazard categories	≥90% MgO (technical/industrial 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:

Request medical assistance immediately, showing the SDS of this product.

By inhalation:

Remove the person affected from the area of exposure and provide fresh air. Seek medical attention if irritation or discomfort persists.

By skin contact:

Wash affected skin with plenty of water.

By eye contact:

Rinse eyes with plenty of water for several minutes to remove particulate matter. Seek medical attention if irritation persists.

By ingestion/aspiration:

Rinse mouth with water. Not expected to require first-aid measures beyond general hygiene.

4.2 Most important symptoms/effects, acute and delayed:

Acute and delayed effects are indicated in sections 2 and 11.

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: Product is non-combustible; use extinguishing media appropriate to the surrounding fire
Unsuitable: None known

5.2 Specific hazards arising from the chemical:
Non-combustible, non-flammable inorganic solid. Does not itself burn or support combustion.

5.3 Special protective actions for fire-fighters:
No specific fire-fighting measures required for this product.

Additional provisions:
Use water spray to cool fire-exposed containers. Prevent fire-fighting water from entering drains or watercourses. Approach the fire from upwind where possible.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:
For non-emergency personnel:
Isolate leaks provided there is no additional risk for the people performing this task. Personal protection equipment must be used against potential contact with the spilt product (see section 8). Evacuate the area and keep out those who do not have protection.
For emergency responders:
Wear protective equipment. Keep unprotected persons away. See section 8.

6.2 Environmental precautions:
Not classified as an environmental hazard.

6.3 Methods and materials for containment and cleaning up:
Sweep or vacuum up dry material avoiding dust generation; collect in suitable containers for disposal or reuse.

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 inhaling dust. Provide adequate ventilation.
B. Technical recommendations for the prevention of fires and explosions:
Not flammable/combustible; no specific precautions required.
C. Technical recommendations on general occupational hygiene:
Do not eat, drink or smoke while handling. Wash hands after use.
D. Technical recommendations to prevent environmental risks:
Avoid unnecessary release of dust to the environment.

7.2 Conditions for safe storage, including any incompatibilities:
A. Specific storage requirements:

Minimum Temp.	Ambient (no specific limit)
Maximum Temp.	Ambient (no specific limit)
Maximum time	Indefinite under dry storage

B. General conditions for storage:
Store in closed containers/bags in a dry place; MgO reacts slowly with atmospheric moisture and CO2 to form magnesium hydroxide/carbonate over long storage. 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 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987):

Identification	Occupational Exposure Limit Type	Value
Magnesium Oxide (fume/dust) CAS: 1309-48-4	Time Weighted average concentration (8 hrs)	10 mg/m³ (general particulate-not-otherwise-classified guidance value)

8.2 Appropriate engineering controls:
It is recommended to use localized extraction in the work area as a collective protection measure to avoid exceeding occupational exposure limits, in addition to individual protective equipment (PPE) as needed. Consult the manufacturer's information leaflet for storage, use, cleaning and maintenance of PPE.

B. Respiratory protection:
Not normally required with adequate ventilation. Use a particulate filter respirator (FFP2/P2) where dust levels are elevated.

C. Specific protection for the hands:
Protective gloves recommended for prolonged/repeated handling.

D. Eye and face protection:
Safety glasses or goggles recommended where dust is generated.

E. Bodily protection:
Standard work clothing; coveralls recommended for dusty operations.

F. Additional emergency measures:
Emergency shower (ANSI Z358-1, ISO 3864-1:2011, ISO 3864-4:2011) and eyewash stations (DIN 12 899, ISO 3864-1:2011, ISO 3864-4:2011) should be available.

Environmental exposure controls:
Avoid environmental spillage of both 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 (powder)
Appearance	Fine powder
Color	White to off-white
Odor	Odourless

Odour threshold	Not relevant *
Volatility	
Boiling point at atmospheric pressure	~3600°C (literature)
Vapour pressure at 20°C	Negligible
Evaporation rate at 20°C	Not relevant (solid)
Product Description	
Density / Relative density at 20°C	3.58 g/cm³ (literature)
Dynamic / Kinematic viscosity	Not applicable (solid)
Concentration	See section 3
pH	~10–11 (aqueous slurry, alkaline; literature)
Vapour density at 20°C	Not relevant (solid)
Partition coefficient n-octanol/water 20°C	Not applicable (inorganic solid)
Solubility in water at 20°C	Very slightly soluble (practically insoluble; reacts slowly to form Mg(OH)2)
Decomposition temperature	Not relevant (thermally stable to very high temperature)
Melting point/freezing point	2852°C (literature)
Flammability	
Flash Point	Non-applicable (inorganic solid)
Flammability (solid, gas)	Non-flammable
Autoignition temperature	Non-applicable
Lower / Upper flammability limit	Non-applicable
Particle Characteristics	
Median equivalent diameter	Available on request (grade dependent)

* Not relevant due to the non-volatile, odourless nature of this inorganic oxide.

9.2 Other information:

Explosive properties	Not relevant (non-explosive)
Oxidising properties	Non-oxidising
Corrosive to metals	Not corrosive
Heat of combustion	Not relevant (non-combustible)
Surface tension at 20°C	Not relevant (solid)
Refraction index	1.736 (literature)

SECTION 10: STABILITY AND REACTIVITY

- 10.1 Reactivity:**
Chemically unreactive under normal conditions. Reacts slowly with water to form magnesium hydroxide (mildly exothermic) and with atmospheric CO2 to form magnesium carbonate over time.
- 10.2 Chemical stability:**
Chemically stable; thermally stable to very high temperatures.
- 10.3 Possibility of hazardous reactions:**
No hazardous reactions expected under normal conditions of use.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Slow reaction with CO2/moisture over time	Not applicable	Stable	Slow hydration to Mg(OH)2 on prolonged moisture contact

10.5 Incompatible materials:

Strong Acids	Interhalogens
Reacts (neutralisation, exothermic)	Avoid contact

- 10.6 Hazardous decomposition products:**
None under normal conditions; thermally stable metal oxide.

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; used as a dietary/antacid supplement at controlled doses; large doses may have a mild laxative effect.
- B. Inhalation (acute effect):**
Dust may cause mechanical irritation of the respiratory tract; freshly generated MgO fume (from thermal/welding processes, not applicable to this powder) is associated with metal fume fever.
- C. Contact with skin and eyes (acute effect):**
May cause mild mechanical irritation to skin and eyes as a particulate; not classified as an irritant.
- D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):**
Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data.
- E. Sensitizing effects:**
Not known to be a skin or respiratory sensitiser.
- 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 relevant (solid).
- Product-specific toxicological information:**

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Identification	Acute Toxicity	Genus
Magnesium Oxide CAS: 1309-48-4	LD50 oral: >5,000 mg/kg (practically non-toxic, literature)	Rat

SECTION 12: ECOLOGICAL INFORMATION

Not classified as hazardous to the aquatic environment.

12.1 Toxicity:

Identification	Acute Toxicity	Genus
Magnesium Oxide CAS: 1309-48-4	Low acute toxicity expected; may transiently raise pH in poorly buffered water at high loading; specific LC50/EC50 not established for this grade	Fish / Crustacean

12.2 Persistence and degradability:

Inorganic substance; concept of biodegradability is not applicable.

12.3 Bioaccumulative potential:

Not expected to bioaccumulate.

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Not applicable	Not applicable	Low mobility (practically insoluble)	Low mobility

12.5 Results of PBT and vPvB assessment:

Non-applicable (inorganic substance).

12.6 Other adverse effects:

No significant adverse effects expected under normal use conditions; excessive loading may raise local pH.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Dispose of as general industrial (non-hazardous) solid waste in accordance with local regulations, or recover for reuse where practicable. Avoid generating airborne dust during disposal.
Refer to national and local regulations on waste management (Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016, as amended).

SECTION 14: TRANSPORT INFORMATION

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

14.1 UN number	Not regulated
14.2 UN proper shipping name	Not classified as dangerous goods for transport
14.3 Transport hazard class(es)	–
14.4 Packing group	–
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 regulated
14.2 UN proper shipping name	Not classified as dangerous goods for transport
14.3 Transport hazard class(es)	–
14.4 Packing group	–
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 air (IATA/ICAO 2024):

14.1 UN number	Not regulated
14.2 UN proper shipping name	Not classified as dangerous goods for transport
14.3 Transport hazard class(es)	–
14.4 Packing group	–
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

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
Public Liability Insurance Act, 1991

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 applicable – product not classified as hazardous under core GHS categories.

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:

United Nations GHS (Rev. 8); ECHA Classification & Labelling Inventory; publicly available peer-reviewed and regulatory toxicological/ecotoxicological literature for this 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 | COD: Chemical Oxygen Demand | BOD5: 5-day biochemical oxygen demand | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | 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