Periclase

Safety Data Sheet

according to the Federal Register / Vol. 89, No. 98 / Monday, May 20, 2024 / Rules and Regulations
Version 2.0

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SECTION 1: Identification

1.1 GHS Product identifier

Product Form:	Substance
Product Name:	98 1LS 98 3LS P98 1M 98 1LS MGG
Substance Name:	Magnesium oxide
Chemical Formula:	MgO
EC no.	215-171-9
CAS no.	1309-48-4

1.2 Other means of identification

Calcined brucite magnesia, calcined magnesia, calcined magnesite, magnesite burnt, periclase, oxomagnesia

1.3 Recommended use of the chemical and restrictions on use

For use in refractory applications.

1.4 Supplier's details

Name	Martin Marietta
Address	2700 Wycliff Road Suite 320 Raleigh NC 27607 USA
Telephone	(800) 648 - 7400

1.5 Emergency phone number

Available 24/7: U.S., CHEMTREC: 1-800-424-9300

Available 24/7: International, CHEMTREC: +1-703-527-3887

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

GHS classification in accordance with: OSHA (29 CFR 1910.1200, 2024)

Not classified.

2.2 GHS label elements, including precautionary statements

No labeling applicable.

2.3 Other hazards which do not result in classification

Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance type: Mono-constituent

Component	Identification	Weight %
Magnesium oxide	CAS no.: 1309-48-4 EC no.: 215-171-9	98 %
Oxides of silicon, iron, aluminum, and calcium		2 %

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

General advice: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

If inhaled: If inhaled and if breathing is difficult, remove victim to fresh air and keep at rest in a comfortable position for breathing.

In case of skin contact: Not expected to be an irritant. Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse.

In case of eye contact: Rinse immediately with plenty of water. Obtain medical attention if pain, blinking, or redness persists.

If swallowed: Rinse mouth. Do NOT induce vomiting.

4.2 Most important symptoms/effects, acute and delayed

Symptoms/effects: Not expected to present a significant hazard under anticipated conditions of normal use. Do not breathe dust.

Symptoms/effects after inhalation: Inhalation may cause irritation, cough, shortness of breath.

Symptoms/effects after skin contact: None under normal conditions.

Symptoms/effects after eye contact: May cause eye irritation.

Symptoms/effects after ingestion: Ingestion generally causes purging of the bowels. Swallowing large amounts may cause bowel obstruction.

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

No special procedures are required.

SECTION 5: Fire-fighting measures

5.1 Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Not combustible. If there is a fire close by, use suitable extinguishing agents: water fog, carbon dioxide, dry powder, foam.

Unsuitable extinguishing media: None known.

5.2 Specific hazards arising from the chemical

Fire hazard: If heated to decomposition (>1700 °C/3092 °F), magnesium oxide fumes may be generated.

Explosion hazard: Product is not explosive.

Reactivity: Reacts with Incompatible materials. See Section 7.

5.3 Special protective actions for fire-fighters

Firefighting instructions:	Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Do not allow run-off from firefighting to enter drains or water sources.
Protection during firefighting:	Do not enter fire area without proper protective equipment, including respiratory protection.

Further information

No additional risk management measures required.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment, and emergency procedures

General measures:	Avoid creating or spreading dust.
For non-emergency personnel:	Avoid contact with skin and eyes. Evacuate unnecessary personnel.
For emergency personnel:	Avoid contact with skin and eyes.

6.2 Environmental precautions

Prevent entry to sewers and public waters.

6.3 Methods and materials for containment and cleaning up

For containment:	Contain and collect as any solid.
Methods for cleaning up:	Sweep up spilled material without making dust.

Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Precautions for safe handling:	Provide good ventilation in process areas to prevent formation of dust.
Hygiene measures:	Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking, and when leaving work.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions:	Keep the container closed when not in use.
Incompatible materials:	ACID (strong) - vigorous reaction, heat generated. Chlorine Trifluoride - reacts violently, producing flames. Phosphorous Pentachloride - incandesces brilliantly. NOTE: Exposure to water may cause this product to slowly hydrate, during which heat may be generated (exothermic reaction).
Prohibitions on mixed storage:	Keep away from incompatible materials.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

CAS: 1309-48-4
Magnesium oxide (fume)
Cal/OSHA (US): 10 mg/m^3 PEL inhalation
US/OSHA (US): 15 mg/m^3 PEL inhalation

8.2 Appropriate engineering controls

Provide local exhaust or general room ventilation to minimize exposure to dust. Use engineering controls to eliminate or reduce exposure below exposure limits.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Safety glasses with side guards should be worn to prevent injury from airborne particles and/or other eye contact with this product. Where excessive dust may result, wear goggles.

Respiratory protection

In case of inadequate ventilation wear respiratory protection. Use an N95 respirator.

SECTION 9: Physical and chemical properties

Appearance, such as physical state and color	Powder
Odor	Odorless
Odor threshold	Not Applicable
pH	10.3 (saturated aqueous solution)
Melting point and freezing point	2,825 °C (5,177 °F) / No data available
Initial boiling point and boiling range	3,600 °C (6,512 °F)
Flash point	Product does not sustain combustion.
Evaporation rate	Not applicable
Flammability, in the case of solids and gases	Not applicable
Lower and upper explosion limit or lower and upper flammability limit	Not applicable
Vapor pressure	No data available.
Relative vapor density	Not applicable
Relative density	3.580 g/cm^3
Solubility	Water: 86 mg/L at 30 °C
Partition coefficient — n-octanol/water (logarithmic value)	No data available.
Auto-ignition temperature	Not applicable
Decomposition temperature	>1700 °C (3092 °F)
Viscosity	Not applicable

Additional properties

Physical state	Solid
Color	White
Explosive properties	Product is not explosive.

Further safety characteristics (supplemental)

VOC Content: 0%

SECTION 10: Stability and reactivity

10.1 Reactivity

Reacts with: Incompatible materials.

10.2 Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4 Conditions to avoid

Keep/Store away from incompatible materials.

10.5 Incompatible materials

ACID (strong) - vigorous reaction, heat generated.
Chlorine Trifluoride - reacts violently, producing flames.
Phosphorous Pentachloride - incandesces brilliantly.
NOTE: Exposure to water may cause this product to slowly hydrate, during which heat may be generated (exothermic reaction).

10.6 Hazardous decomposition products

If magnesium oxide is heated to the point of volatilization (i.e. >1700 C), magnesium oxide fumes may be generated.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

Acute toxicity (oral): Not classified (Based on available data, the classification criteria are not met)

LD50 oral rat: 3870 – 3990 mg/kg

ATE US (oral): 3870 mg/kg body weight

Acute toxicity (dermal): Not classified (Based on available data, the classification criteria are not met)

Acute toxicity (Inhalation): Not classified (Based on available data, the classification criteria are not met)

Skin corrosion/irritation: Not classified (Based on available data, the classification criteria are not met)

Serious eye damage/irritation: Not classified (Based on available data, the classification criteria are not met)

Respiratory or skin sensitization: Not classified (Based on available data, the classification criteria are not met)

Germ cell mutagenicity: Not classified (Based on available data, the classification criteria are not met)

Carcinogenicity: Not classified (Based on available data, the classification criteria are not met)

Reproductive toxicity: Not classified (Based on available data, the classification criteria are not met)

Aspiration hazard: Not classified (Based on available data, the classification criteria are not met)

Specific target organ toxicity (STOT)

STOT - single exposure: Not classified (Based on available data, the classification criteria are not met)

STOT - repeated exposure: Not classified (Based on available data, the classification criteria are not met)

Additional information

Likely routes of exposure: Dermal; Inhalation

Symptoms/effects: Not expected to present a significant hazard under anticipated conditions of normal use. Do not breathe dust.

Symptoms after inhalation: Inhalation may cause irritation, cough, shortness of breath.

Symptoms after skin contact: None under normal conditions.

Symptoms after eye contact: May cause eye irritation.

Symptoms/effects after ingestion: Ingestion generally causes purging of the bowels. Swallowing large amounts may cause bowel obstruction.

SECTION 12: Ecological information

Toxicity

LC50 fish 1: 1355 mg/l

EC50 Daphnia 1: 190 mg/l

Persistence and degradability

Not established.

Bioaccumulative potential

Not established.

Mobility in soil

No additional information is available.

SECTION 13: Disposal considerations

Disposal methods

Waste disposal recommendations: Dispose in a safe manner in accordance with local/national regulations.

Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information

DOT (US)

Not regulated.

IMDG

Not regulated.

IATA

Not regulated.

SECTION 15: Regulatory information

Component	CAS no.	EC no.	TSCA (US)[1]	pfas[2]	Canada[3]	CLP[4]	Csm[5]	SVHC[6]
Magnesium oxide	1309-48-4	215-171-9	P	-	D	-	-	-

[1] TSCA (US): "P"—Public list, "C"—Confidential list
[2] pfas: Per- and polyfluoroalkyl substances (any pfas listing)
[3] Canada: "D"—Canadian Domestic Substances List, "N"—Canadian Non-Domestic Substances List
[4] CLP: EU table of harmonized entries, (EC) No. 1272/2008, Annex VI
[5] Csm: "p"—EU prohibited in cosmetics list, (EC) No. 1223/2009, Annex II, "r"—EU restricted in cosmetics list, (EC) No. 1223/2009, Annex III
[6] SVHC: EU Substances of Very High Concern Candidate List.

US Regulations

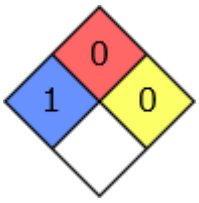
Regulation	Applicability
SARA 302 Components	No chemicals in this material [Magnesium oxide] are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	This material [Magnesium oxide] does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
SARA 311/312 Hazards	No SARA Hazards for: Magnesium oxide.
California Proposition 65	**CA WARNING** This product can expose you to Lead, Nickel, and Arsenic compounds, which are known to the State of California to cause cancer and developmental, male or female reproductive toxicity. For more information go to www.P65Warnings.ca.gov.
Massachusetts Right To Know Components (105 CMR 670)	Chemical name: MAGNESIUM OXIDE FUME CAS number: 1309-48-4
Pennsylvania Right To Know Components	Chemical name: MAGNESIUM OXIDE (MGO) CAS number: 1309-48-4
New Jersey Right To Know Components	Common name: MAGNESIUM OXIDE CAS number: 1309-48-4

International Regulations

Jurisdiction	List	Comment
Asia Pacific	Asia - PAC	
Australia	Australian Inventory of Chemical Substances (AICS)	CR No: 6315
	National Pollutant Inventory	Magnesium oxide fume
	Priority Existing Chemicals	
China	Inventory of Existing Chemical Substance (IECSC)	
Japan	Existing and New Chemical Substances (ENCS)	# 1-465; inorganic compounds
Korea	Chemical Inventory of Korea (KECI)	KE-22728
New Zealand	Inventory of Chemicals	HSNO approval
Philippines	Inventory of Chemicals and Chemical Substances (PICCS)	
Europe	EEC International Cosmetics Ingredient Inventory (INCI)	absorbent/buffering/opacifying/additives
	EU REACH	Exempt
	EU Inventory of Existing Commercial Chemical Substances (EINECS)	215-171-9
	German Water Hazard Class Substance List	5208 Classification: VwVwS
	Switzerland Giftliste	G-2368
Canada	Canadian Domestic Substance List (DSL)	
	WHMIS Ingredient List	
United States	ACGIH Threshold Limit Values (TLV)	
	EPA Pesticide Inert Ingredients	
	FDA Priority-based Assessment of Food Additives (PAFA	
	FDA Regulations	Use as colorant.
	High Production Volume Chemicals (HPV)	
	National Toxicology Program Technical Reports List	
	NIOSH Hazard, Toxicology, and Use Information	
	NIOSH Health Hazards	
	NIOSH Recommended Exposure Limits	10 mg/m3

	OSHA Permissible Exposure Limits	8-hour TWA: total particulates 15 mg/m3
	Toxic Substances Control Act (TSCA) Inventory	
	Toxic Inventory Update Rule	
	TSCA Section 8A-Preliminary Assessment Information Rule (PAIR)	
Other	Health Hazards	RETECS: OM3850000
	High Production Volume Chemicals: ICCA	
	High Production Volume Chemicals: OECD	

NFPA Rating



NFPA Health Hazard: 1 – Materials that may cause irritation or minor injury.

NFPA Fire Hazard: 0 – Materials that will not burn under typical fire conditions including intrinsically noncombustible materials such as concrete, stone, and stand.

NFPA Reactivity: 0 – Material that in themselves are normally stable, even under fire conditions.

SECTION 16: Other information

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Revision date: 05/03/2026

Data sources:

ACGIH 2000
Chemical Inspection & Regulation Service; accessed at http://www.cirs-reach.com/Inventory/Global_Chemicalical_Inventories.html.
Ind. Exposure & Control Techn. for OSHA Regulated Substances - MgO (fume) March, 1969, pp. 1181 - 1184.
Krister Forsberg and S. Z. Mansdorf, "Quick Selection Guide to Chemical Protective Clothing", Fifth Edition.
NIOSH Occupational Health Guide for Chemical Substances - Vol. II September 1978.
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on the classification, labelling, and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC and amending Regulation (EC) No 1907/2006.
TRECS, June 1998
Sax - 8th ED. TSCA Chemical Substance Inventory. Accessed at http://www.epa.gov/oppt/existingchemicals/pubs/tscainventory/howto.html.
US National Library of Medicine National Institutes of Health Haz-Map. Accessed at http://hazmap.nlm.nih.gov.

Abbreviations and acronyms:

ACGIH: American Conference of Government Industrial Hygienists
ATE: Acute Toxicity Estimate
CAS: Chemical Abstract Service number
EC50: Environmental Concentration associated with a response by 50% of the test population.
GHS: Globally Harmonized System
LD50: Lethal Dose for 50% of test population.
OSHA: Occupational Safety & Health Administration
TSCA: Toxic Substances Control Act
TWA: Time Weighted Average

16.1 Further information/disclaimer

Disclaimer: The information contained in this document applies to this specific material as supplied and Martin Marietta believes that the information contained in this SDS is accurate. The suggested precautions and recommendations are based on recognized good work practices and experience as of the date of publication. They are not necessarily all-inclusive or fully adequate in every circumstance as not all use circumstances can be anticipated. It may not be valid for this material if it is used in combination with other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for one's own particular use. Since the actual use of the product described herein is beyond our control, Martin Marietta assumes no liability arising out of the use of the product by others. Appropriate warnings and safe handling procedures should be provided to handlers and users. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulation, rules or insurance requirement. However, products must not be used in a manner which could result in harm.

16.2 Preparation information

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