SECTION 1: IDENTIFICATION OF THE SUBSTANCE/EC REPRESENTATIVE/ MANUFACTURER

1.1 Product identifiers

IUPAC name:	Magnesium oxide
Synonyms:	Periclase, magnesia, calcined magnesia
EC number:	215-171-9
EC name:	Magnesium oxide
CAS number:	1309-48-4
CAS name:	Magnesium oxide
RTECS:	OM3850000
Reference number:	01-2119488756-18-0034
Trade name:	Magnesium oxide grade А, Magnesium oxide grade Б, Magnesium oxide grade В, Magnesium oxide grade Д, Magnesium oxide grade Е, OxiMag «HA», OxiMag «HA-W», OxiMag «MA», OxiMag «LA», OxiMag «C», OxiMag «B», OxiMag «O», OxiMag «TS 50», OxiMag «TS 100», OxiMag «TS 200», OxiMag «TS 300», OxiMag «TS 400», OxiMag «TS 500», OxiMag «CGO», OxiMag «HIB», OxiMag «SP2», OxiMag «AK»

1.2 Relevant identified uses of the substance

Magnesium oxide is used as highly effective non-toxic inorganic filler and additive for production of virtually all types of plastics and rubber, in production of transformer steel. It is used as raw material in chemical, pharmaceutical and food industries.
The substance is intended for industrial use only. It has no use restrictions, when used as intended.

1.3 Details of the supplier of the safety data sheet /EC representative:

Manufacturer:	KAUSTIK JSC, Volgograd
Address (postal and registered office):	40 let VLKSM St., 57, Volgograd, 400097, Russia
Telephone:	+7(8442) 40 63 03, +7(8442) 40 66 10
E-mail:	spk@kaustik.ru
Contact name:	Aleksey Chebotarev
EC representative:	Kaustik Europe b.v.
Address (postal and registered office):	Wijnhaven 3-L, 3011 WG Rotterdam, The Netherlands
Telephone:	+31104111114; fax: +31104049922
E-mail:	office@kaustik-europe.com
Contact name:	Vladimir Khodyrev

1.4 Emergency telephone number

+7(8442) 406610 or +7(8442) 406750 from 8 a.m. to 5 p.m., Moscow time (UTC +3)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance

This substance is not classified as hazardous according to Regulation (EC) No. 1272/2008 (CLP) or persistent, bioaccumulative and toxic according to Regulation (EC) No. 1907/2006 (REACH).

2.2 Label elements:

Symbol: None
Signal word: None

2.3 Other Hazards
In case of eye contact, it may cause irritation of eyes, redness of mucous membrane, watering.
2.3.1 Data and findings regarding bioaccumulativity and toxicity (PBT) or persistence of a bioaccumulative substance (vPvB)
According to the REACH Regulation, PBT /vPvB assessment is not applicable to inorganic substances.
Magnesium oxide is not persistent, bioaccumulative or toxic based on quantitative and qualitative evidence presented.

2.3.2 Summary and overall Conclusions on endocrine disruptor (ED)
Magnesium oxide is not an endocrine disruptor as defined in Commission Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

Danger prevention measures:
If in eyes, carefully rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation persists, seek medical aid. Wash your hands after work.

SECTION 3: COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances
Chemical name (according to IUPAC) Magnesium oxide
Chemical formula MgO
General composition data:
Magnesium oxide is made by calcining magnesium hydroxide. Grades differ in the chemical activity.

Components

Ingredients:	CAS No.	EC No. (EINECS, EILINCS)	Content, wt. %
Magnesium oxide MgO	1309-48-4	EC 215-171-9	no less than 98

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures
If inhaled
Fresh air, rest, warm environment, drinking hot tea.

In case of skin contact
Remove contaminated clothes. Wash skin with running water and soap.

In case of eye contact
Rinse with plenty of water (remove contact lenses, if possible, without difficulty), then seek medical help.

In case of ingestion
If ingested, drink several glasses of water with 5-20 crushed activated carbon tablets, consult a doctor.

4.2 Most important symptoms and effects, both acute and delayed
In case of intoxication by inhalation:
When inhaling magnesium oxide mist, it causes a sore throat, cough, chest pain, difficulty breathing.
In case of skin contact:
No symptoms identified.
In case of eye contact:
Irritation of eyes, redness of mucous membrane, watering.
In case of intoxication by ingestion (if swallowed):
Swallowing of large quantities may cause abdominal pains, nausea, vomiting, diarrhea, drowsiness.

4.3 Indication of any immediate medical attention and special treatment needed:
Not required

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing means
The product is non-combustible and non-explosive. Use suitable fire extinguishing media based on the source of ignition.
Forbidden extinguishing measures
None

5.2 Specific hazards arising from the substance
General fire and explosion safety description
Non-combustible, fire - and explosion-safe
Fire and explosion hazards
None, because the product is non-combustible and non-explosive.
Combustion and/or thermal degradation products hazard
Magnesium oxide is non-combustible and not subject to thermal degradation. The product package, however, may catch on fire.

5.3 Advice for firefighters
Personal protective equipment for fire-fighting
In case of fire, use common personal protective equipment.
Specific fire-fighting procedures
As the product is nonflammable, choose the appropriate fire extinguishing measures depending on the source of flame. The combustion may involve packing. Water ingress in products not recommended due to potential heat emissions and volume increase.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
6.1.1 For non-emergency personnel:
Production, storage and laboratory rooms must be equipped with suction and exhaust ventilation plus spot ventilation. Air-tight equipment and lines must be used. For any work related to the product output, use personal protection equipment and protective clothing.
Safety posters with warning signs must be put up in all production rooms.
Production rooms must have primary fire-fighting means (sand, extinguishers).
Workplace air quality must be regularly monitored for harmful substances.

6.1.2 Personal safety equipment
Persons exposed to the product must be provided with individual protection means: special clothing (cotton fabric suit); safety footwear (safety shoes, rubber boots); hand protection (gauntlets, rubber gloves); respiratory protective devices (respirators); safety goggles.

6.2 Environmental precautions
Air-tightness of the equipment ensures environmental protection at production, while air-tight containers must be used for shipment and storage.

6.3 Methods and materials for containment and cleaning up
6.3.1 Spill containment: Give notice to the local supervision agency. Do not touch the spillage. Avoid dusting. Take unaffected product packages away to a safe location if it can be done safely. Put the spilled product in a container and send it for disposal to the facilities approved by the local supervision agency. Wash the vehicles and solid surfaces with water.
6.3.2 Fire-fighting procedure: The product is non-combustible. Use suitable fire extinguishing media in the fire area based on the main source of ignition. Try to avoid water coming onto the product.

6.4 Reference to other sections
Treat recovered material as described in the sections 7,8,13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions
Safety measures and collective protective equipment
Production, storage and laboratory rooms must be equipped with suction and exhaust ventilation plus spot ventilation. Air-tight equipment and lines must be used. For any work related to the product output, use personal protection equipment and protective clothing.
Workplace air quality must be regularly monitored for harmful substances.

7.2 Conditions of safe storage, including incompatibilities
Conditions and periods of safe storage
Magnesium oxide must be kept in air-tight containers on pallets in indoor dry and ventilated storage areas away from humidity and at least one meter away from heating devices. The original marking on the package must be preserved.
Guaranteed shelf life:
- for Magnesium oxide grade А, Magnesium oxide grade Б, Magnesium oxide grade В, Magnesium oxide grade Д, Magnesium oxide grade Е, OxiMag «HA-W», OxiMag «MA», OxiMag «LA», OxiMag «O», OxiMag «TS 50», OxiMag «TS 100», OxiMag «TS 200», OxiMag «TS 300», OxiMag «TS 400», OxiMag «TS 500», OxiMag «CGO», OxiMag «HIB», OxiMag «SP2», OxiMag «AK» - is one year from the date of manufacture;
- for OxiMag «HA», OxiMag «C», OxiMag «B» - is two years from the date of manufacture/
Incompatible substances and materials
Do not store together with acids.
Safety measures and storage precautions for domestic use
The product is not designed for domestic use.
Recommended packaging materials
Magnesium oxide with net weight up to 50 kg shall be packed in paper or composite bags, in air-tight polyethylene valve bags, polypropylene valve bags with polyethylene lining, laminated polypropylene bags, or other bags according to the applicable regulatory documents.
Magnesium oxide with net weight to 1000 kg shall be packed in soft air-tight containers made of polypropylene fabric type MKR-1000, specially designed for loose and wet products according to the applicable regulatory documents.

7.3 Specific end use(s)
Included as an ingredient in polymer products, chemical raw materials, food supplements used as prescribed by food producers.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters
8.1.1 Workplace Control Parameters
TLV = 4 mg/m^3, aerosol [5]
8.1.2 Engineering Controls to Keep Exposure Within Permissible Limits
Production, storage and laboratory rooms must be equipped with suction and exhaust ventilation plus spot ventilation.
Air-tight equipment and lines must be used.
Workplace air quality must be regularly monitored for magnesium oxide aerosol to be within TLV.

8.2 Exposure controls
8.2.1 Appropriate engineering controls
Avoid the formation of dust.
Observe the established rules of industrial hygiene and safety.
8.2.2 Personal Protection Means for Personnel
General guidelines: Compliance with industrial hygiene regulations.
Respiratory protection: any aerosol filtering type.
Protective clothing (material, type): special clothing (cotton fabric suit); clear lens safety goggles; rubber gloves.
Personal protective equipment for domestic use: Not used.
8.2.3 Environmental exposure controls
No special measures are required.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

	Index	
a)	Physical state	Solid substance
b)	Colour	White
c)	Odour	No specific odor
d)	Melting/freezing point, ºC	2800 ^{0}C
e)	Initial boiling point and boiling range, ºC	Do not apply to solids
f)	Flammability	Non inflammable
g)	Lower and upper explosion limit	Do not apply to solids
h)	Flash point	Do not apply
i)	Auto-ignition temperature	Do not apply
j)	Decomposition temperature	The substance is not self-reactive
k)	pH	Not defined. Exhibits alkaline properties
l)	Kinematic viscosity	Do not apply to solids
m)	Water solubility at 20 ºC, mg/l	It is slightly soluble in cold water.
n)	Partition coefficient: n-octanol/water	Not defined. When dissolved, the substance forms an inorganic ionic liquid
o)	Vapor pressure	Do not apply to solids
p)	Relative density, g/cm^3	3.58

q)	Relative vapour density	Do not apply to solids
r)	Particle characteristics	White powder
	Particle size distribution, μm:	1,5 – 30,0

9.2 Other information
Forms magnesium hydrate when in contact with water, increases in volume and leads to heat emissions.
Fat insoluble.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
The product reacts with acids. Magnesium oxide is hygroscopic; water contact leads to formation of magnesium hydroxide. If kept open, it will absorb CO_2 from air.

10.2 Chemical stability
The product is stable if operation and storage conditions are observed.

10.3 Possibility of hazardous reactions
Reacts with halogens and strong acids to form a violent reaction.

10.4 Conditions to avoid
Water contact leads to formation of magnesium hydroxide with an increase in volume and heat release.

10.5 Incompatible materials
Reacts with oxidizers, acids.

10.6 Hazardous decomposition products
None.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes

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

Acute toxicity (LD_{50}), route of entry (intragastric, cutaneous), animal; LC_{50}, exposure time (h), animal):
LD_{50} >5000 mg/kg, intragastric, rats [1].

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

Magnesium oxide is not an endocrine disruptor as defined in Regulations ((EC) No 1907/2006, (EC) No 2017/2100, (EC) No 2018/605).

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Hygienic regulations:

Components	TLV atmospheric air, mg/m^3 (LC, hazard class)	TLV water or approximate permissible level in water, mg/l (LC, hazard class)	TLV fishery or ASIL fishery, mg/l (LC, hazard class)
Magnesium oxide	TLV atmospheric air, 0,4/0,05, resorptive, hazard class 3;	TLV water, magnesium 50 mg/l, organoleptic – adds flavour, hazard class 3.	TLV fishery, magnesium 40 mg/l, sanitary-toxicological, hazard class 4; for sea water 940 mg/l, toxicological, hazard class 4.

Ecotoxicity indicators for magnesium oxide are absent, presented for calcium oxide [1]:
LC50 50.6 mg/l, 96 h, Oncorhynchus mykiss;
NOEC 33.3 mg/l, 48 h, Daphnia magna;
LC50 53.1 mg/l, 14 days, Crangon septemspinosa;
EC50 184,57 mg/l, 72 h., Demodesmus subspicatus.

12.2 Persistence and degradability
Migration and environmental conversion through biodegradation and other processes (carbonization, hydrolysis, etc.)

12.3 Bioaccumulative potential
Magnesium oxide is not persistent, bioaccumulative or toxic based on quantitative and qualitative evidence presented.

12.4 Mobility in soil
The product dust may contaminate atmosphere, soil and water bodies if handling and storage rules are disrespected. Flavour detection threshold in water is 195 mg/l. For most agricultural crops, magnesium content of more than 2.5% is considered excess.
Magnesium oxide may contaminate the environment as a result of improper storage and handling, or in case of emergency. It may cause alkalinization of water, rendering it inhospitable to aquatic life.

12.5 Results of PBT and vPvB assessment
According to the REACH Regulation, PBT /vPvB assessment is not applicable to inorganic substances.

12.6 Endocrine disrupting properties
Magnesium oxide is not an endocrine disruptor.

Other adverse effects:
The product changes organoleptic, physical and chemical properties of water, adds specific flavour to water.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:
Treat recovered material as described in the sections 7, 8.
The production process excludes any waste subject to special transportation or landfilling rules.
Waste water resulting from magnesium oxide production must be recovered into the process or sent to biological treatment plants.
Spills must be collected into a container and sent for removal to the locations approved by the local supervision agencies.
The package used is disposable and subject to removal at the locations approved by the local supervision agencies.

Waste handling precautions for waste resulting from product use, storage, transportation, etc.
See Sections 6-8. Waste handling precautions are the same as for the product itself.

Guidelines for disposal of waste resulting from domestic usage of the product:
Not applicable.

SECTION 14: TRANSPORTATION INFORMATION

Ground transport (ADR/RID)

14.1	**UN number**	Not classified
14.2	**UN proper shipping name**	Magnesium oxide (type)
14.3	**Transport hazard**	Non-hazardous goods
14.4	**Packaging group**	None
14.5	**Environmental hazards**	None
14.6	**Special precautions for user**	None

Water transport (ADN)

14.1	**UN number**	Not classified
14.2	**UN proper shipping name**	Magnesium oxide (type)
14.3	**Transport hazard**	Non-hazardous goods
14.4	**Packaging group**	None
14.5	**Environmental hazards**	None
14.6	**Special precautions for user**	None

Maritime transport (IMDG)

14.1	**UN number**	Not classified
14.2	**UN proper shipping name**	Magnesium oxide (type)
14.3	**Transport hazard**	Non-hazardous goods
14.4	**Packaging group**	None
14.5	**Environmental hazards**	None
14.6	**Special precautions for user**	None

Air transport (ICAO)

14.1	**UN number**	Not classified
14.2	**UN proper shipping name**	Magnesium oxide (type)
14.3	**Transport hazard**	Non-hazardous goods
14.4	**Packaging group**	None
14.5	**Environmental hazards**	None
14.6	**Special precautions for user**	None

Transport marking:
"Protect from moisture"

14.7 Bulk transportation according to IMO instruments (Chapter VI or Chapter VII of SOLAS, Annex II or Annex V of MARPOL, the IBC Code, the IMSBC Code, and the IGC Code or its earlier versions, namely EGC Code or GC Code)
Not applicable

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/ legislation specific for the substance

- This product is not controlled under international conventions and agreements (Montreal Protocol, Stockholm Convention, etc.).
- According to Section 10 of Annex V to Regulation (EC) No. 1907/2006, magnesium oxide is exempted from registration.
- Storage class pursuant to TRGS 510-13.
- EU. Plastic Food Contact Materials (FCMs) per Regulation 10/2011/EU (Union List), Directive 282/2008/EC on Recycled Plastic FCMs, 28 March 2008, amended by Regulation 2015/1906/EU, 23 October 2015 - - the substance is allowed for use.
- EU. Union List of Authorised Substances: Annex I, Plastics Food Contact Regulation 10/2011/EU, as amended by Regulation 2020/1245/EU, 3 September 2020 - the substance is allowed for use.

15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out for this substance.

SECTION 16: OTHER INFORMATION

Training Advice

Read the safety data sheet before using the product.

Recommended Restrictions on Use

No restrictions if used as intended.

Advice on Using the Information Stated in the Safety Data Sheet

The European SDS format compliant with the applicable European legislation is not intended for use nor distribution in countries outside the European Union with the exception of Norway and Switzerland. Safety datasheets applicable in other countries/regions are available upon request.

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene as well as protection of human welfare and the environment.

Responsible executives, who receive this data sheet, must guarantee that every person, which might use, treat, dispose of or otherwise contact with the product, have read and understood the information described here properly. Note that appearance and content of Safety Data Sheets for the same product may vary in different countries to comply with requirements of different regulations.

Updated the content of the sections

Version 1.3 revision date 01.08.2017

- In clause 1.3, the postal address of the Sole Representative has been changed.
- Information on air transportation has been added to item 14.

Version 1.4 revision date 15.09.2020

- In clause 1.1, the trademark sign has been changed, the trade names of the product have been added.
- In clause 3.1, the general composition data have been changed.

Version 1.5 revision date 01.06.2022

- In clause 1.1 the list of trade names of products has been expanded.
- In clause 1.2, non-recommended methods of using the substance have been added.
- Information concerning endocrine disruptors has been added to clause 2.3.2.
- Information on first aid measures has been updated in clause 4.1.
- Information on symptoms and consequences has been updated in clause 4.2.
- The recommendations for firefighters have been updated in clause 5.3.
- Added clause 8.2.1 appropriate engineering controls.
- Clause 8.2.3 environmental exposure controls has been added.
- In clause 9.1, the information on basic physical and chemical properties is brought into line with Commission Regulation (EU) 2020/878 of June 18, 2020.
- Information on other physico-chemical properties has been updated in clause 9.2.
- Information about endocrine disruptors has been added to clause 11.2.
- Section 12.1 provides updated ecotoxicity data.
- Added clause 12.6 endocrine disruptive properties.
- In clause 14.7, the regulatory documents are updated, in accordance with which bulk transportation is carried out.
- In clause 15.1, the regulatory information for the substance has been updated.
- In section 16, the source of the main data is supplemented.

Version 1.6 revision date 21.10.2022

- In clause 7.2, information on the shelf life of products has been updated.

Key or legend to abbreviations and acronyms used in the safety data sheet

ADN	European Agreement on the International Carriage of Dangerous Goods by Inland Waterways
ADR	Agreement on the International Carriage of Dangerous Goods by Road
CAS number	is a unique numerical identifier for chemical compounds, polymers , biological nucleotide or amino acid sequences, mixtures and alloys , listed in the Chemical Abstracts Service registry
CFR	Code of Federal Regulations
CLP	is a European Union regulation from 2008, which aligns the European Union system of classification, labelling and packaging of chemical substances and mixtures to the Globally Harmonised System (GHS)
EC50	Median effectivel concentration
EGC	The Code for Existing Ships Carrying Liquefied Gases in Bulk
ED	Endocrine disruptor
EINECS, ELINCS	European Community Number (EC)
ERC	Environmental release category
ES	The exposure scenario
GC	The Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk
IBC	The International Code for the Construction and Equipment of Ships carrying dangerous Chemicals in Bulk
ICAO	Technical Instructions for The Safe Transport of Dangerous Goods by AIR
IGC	the International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk
IMDG	International Maritime Dangerous Goods
IMO	The International Maritime Organization
IMSBC	The International Maritime Solid Bulk Cargoes Code
IUPAC	is a system for naming chemical compounds according to the International Union of Pure and Applied Chemistry
LC50	Median lethal concentration
LD50	Lethal dose
MARPOL	Consolidated edition, 2006
NOEC	The experimental concentration, which is slightly lower than the lowest tested concentration, causing a statistically significant negative effect
PBT	Persistent, bioaccumulative and toxic substances
RID	International Regulations Concerning the Carriage of Dangerous Goods by Rail
RTECS	Register of Toxic Effects of Chemical Compounds
SOLAS	The International Convention for the Safety of Life at Sea, 1974
TRGC	The Technical Rules for Hazardous Substances
vPvB	Very persistent and very bioaccumulative substances

Sources of Basic Information

1. Safety Data Sheet for Magnesium oxide of KAUSTIK JSC (issued in 2022).
2. Regulation (EC) No. 1272/2008 of the European Parliament and of the Council dated 16.12.2008
3. Commission Regulation (EU) No 830/2015 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)
4. Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
5. International Chemical Safety Cards (ICSCs) https://www.ilo.org/dyn/icsc/showcard.display?p_lang=ru&p_card_id=0504&p_version=2
6. European Chemicals Agency Registered Substance Information Database (ECHA). https://echa.europa.eu/information-on-chemicals.

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