

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/EC REPRESENTATIVE/
MANUFACTURER****1.1. Product identifier**

IUPAC name:	Magnesium dichloride hexahydrate
Synonyms:	Magnesium chloride hexahydrate, the magnesium salt of hydrochloric acid hexahydrate, bischofite
EC number:	616-575-1
EC name:	Magnesium chloride
CAS number:	7791-18-6
CAS name:	Magnesium chloride
RTECS:	OM2975000
Technical name:	Bischofite (magnesium chloride)

1.2. Relevant identified uses of the substance

The substance is used in construction industry for production of magnesia cements (Sorel's cement), glass magnesium panels, xylolite slabs, glass magnesium roof tiles, foamed concrete (foamed magnesite) and gas concrete (gas magnesite) on the basis of magnesia binding material. It is also used in oil and gas industry as a component of drilling and killing fluids. Magnesium chloride is used in chemical industry for production of magnesium-containing compounds, including oxide, hydroxide, and magnesium metal, synthetic hydrotalcite, synthetic rubbers and thiocole, as well as fireproof materials and magnesium chlorate defoliant. The product is used in textile industry for the stabilization process at painting the product. It is used in agriculture as a fertilizer. The substance is also used for dust suppression, household and industrial sewage treatment, grinding materials production, and as a deicing agent.

The material is meant for deicing and snow cover control on road surfaces and in household: garages, car parkings, housing estates, yards, and entrances of multi-storey buildings. It is advantageous for ice buildup prevention. Magnesium chloride is recommended for use during snowfall at low temperatures on roads with high traffic intensity. Effective at temperatures from 0 to -30 °C.

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

Manufacturer:	JSC "NikoMag", Volgograd
Address (postal and legal):	40 let VLKSM str., 57, 400097, Volgograd, Russia
Telephone:	+7(8442) 40 63 03, +7(8442) 40 66 09
E-mail:	spk@kaustik.ru
EU representative:	Kaustik Europe b.v.
Address (postal and legal):	Wijnhaven 3-L, 3011 WG Rotterdam, The Netherlands
Telephone:	+31104111114; fax: +31104049922
E-mail:	office@kaustik-europe.com
Contact person:	Khodyrev Vladimir

1.4. Emergency telephone number

+7(8442) 406303 or +7(8442) 406992 from 8 a.m. till 5 p.m. Moscow time (UTC +3).

SECTION 2: HAZARDS IDENTIFICATION

Moderately hazardous product as per influence on the human organism (hazard class 3). In case of eye contact, may cause irritation. In case of improper storage, transportation, and accidents may contaminate natural environments.

2.1. Classification of the substance

According to Regulation (EC) №1272/2008 (CLP), it does not belong to hazardous substances or to persistent, bioaccumulative or toxic substances according to Regulation (EC) №1907/2006.

Hazard class and category: In case of eye contact it may cause serious injuries/irritation, class 2

Risk factors: **H319**: Causes serious eye irritation

2.2. Label elements:

Symbol:



Signal word: Attention

2.3. Other hazards

2.3.1. Data and findings regarding bioaccumulativity and toxicity (PBT) or persistence of a bioaccumulative substance (vPvB).

According to REACH regulation, PBT /vPvB assessments are not applicable to inorganic matters. Based on quantitative and qualitative model, bischofite (magnesium chloride) is neither persistent and bioaccumulative nor toxic.

2.3.2. Danger prevention measures:

Self-assessment

P264: Wash hands thoroughly after handling.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P302+P352: IF ON SKIN: Wash with plenty of soap and water.

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+ P313: If eye irritation persists: Get medical advice/attention.

P402+P403+P404: Store in dry, well-ventilated place, in closed container.

The above stated precautionary measures are applicable to industrial conditions. Other or additional precautionary measures may relate to professional and consumptive use of Bischofite (magnesium chloride).

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1. Substance

Chemical name (acc. to IUPAC)

Bischofite (magnesium chloride)

Chemical formula

 $MgCl_2 \cdot 6H_2O$

Composition general characteristics

Bischofite is produced in the process of comprehensive brine processing. The brine is recovered by means of underground dissolution of magnesium chloride through drilling holes, bored at the surface of Bischofite deposits.

Components

Components:	CAS№	EC№ (EINECS, EILINCS)	Mass fraction, %
Magnesium dichloride hexahydrate	7791-18-6	EC 616-575-1	97
Impurities	None	None	Up to 3

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

In case of inhalation:

Remove victim to fresh air, take off contaminated clothing, lay horizontally, keep at rest, keep warm. If necessary, seek medical attention.

In case of skin contact:

Take off contaminated clothing. Rinse skin with running water, using soap. If necessary, seek medical attention.

In case of eye contact:

Rinse with plenty of running water, also under the eyelids, for 10- 15 minutes.
If necessary, get medical attention of an ophthalmologist.

In case of ingestion:

Rinse oral cavity with water, drink plenty of water, activated carbon, sodium sulphate (1 table spoon per 0,5 l of water), sip vegetable oil. Seek medical attention.

First aid equipment (medicine chest):

Cotton, glass eye-bath, saline purge, activated carbon.

4.2. Most important symptoms and effects, both acute and delayed

In case of intoxication by inhalation:

In case of high concentrations inhalation: asthenia, headache, throat irritation, coughing, sneezing, running nose, sore throat, pain in chest, rough breathing, dyspnoea, heart rhythm disorder.

In case of skin contact:

Redness, dryness, itching possible.

In case oral intoxication (by swallowing):

Nausea, vomiting, stomachache, diarrhea.

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-inflammable and non-explosive. Use extinguishing measures, appropriate to main ignition source extinction.

Forbidden extinguishing measures:

No data available

5.2. Special hazards arising from the substance

Fire-and-explosion hazard general characteristics:

Non-inflammable and non-explosive product.

Fire-and-explosion hazard data

None, as the product is non-inflammable and non-explosive

Danger caused by combustion and/or thermal decomposition products:

At temperature above 10 °C water evaporation and dehydration occur, at temperature above 285 °C monohydrate converts to Mg(OH)Cl, which decomposes into magnesium oxide and hydrochloride at temperature above 500 °C. Magnesium oxide may cause slight eyes and skin irritation. The compound vapors inhalation causes brass founder's fever, which is accompanied by dry cough, metal aftertaste, shivering, and muscle weakness.

5.3. Advice for firefighters

As the product is non-flammable, use extinguishing measures for combustion sources. The combustion process can be involved packing

Personal protective equipment for fire extinction:

Fire-resistant suit completed with self-rescuer.

Specificity of firefighting:

Polymer packaging may be involved in combustion process.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedure

6.1.1. For non-emergency personnel

Notification for non-emergency personnel: «Avoid dust inhalation». Evacuate from hazardous location, provide emergency medical care, consult an expert.

6.1.2. Personal safety equipment

For emergency responders: protective suit completed with industrial filter respirator. For manufacturing personnel: working clothes and safety shoes, protecting from low-toxic solutions exposure, PVC gloves, protective glasses.

6.2. Environmental precautions

Isolate hazardous zone. Remove unauthorized people, not involved in ES response. Enter the accident zone equipped with means of personal protection. Keep upwind, avoid low places. Provide first medical care for victims. People in the affected area are to be directed to medical survey.

All emergency situations are to be reported to local agencies for consumer rights and human welfare protection, regional Committee for Environment and Natural Resources Protection, and regional Committee for Civil Defense and Emergency Situations.

6.3. Methods and materials for containment and cleaning up

Ref. Section 5. The product is non-combustible. Water and foam containers with product, located close to combustion area, preventing setting them on fire, tare integrity violation and product spillage.

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 means of protection:

Availability of general supply and exhaust ventilation of work rooms, where product is handled. Aerosol emission zones should be equipped with local exhaust system. Manufacturing equipment and supply lines should be tight, containers for product storage should be sealed. Dust formation suppression and prevention of dust dispersion in working zone air, wet cleaning.

Personal hygiene rules observance.

Maximum sealing of vessels, supply lines and other equipment; periodic control of hazardous substances content in the working area air; limit test of hazardous substances in industrial effluents; purification of production facilities air to permissible levels of hazardous substance content before release into the atmosphere.

Control of hazardous substance content in environmental medium. Industrial effluents analysis. Waste management according to national regulations and rules.

7.2. Conditions of safe storage, including any incompatibilities

Conditions and periods of safe storage:

Store in the closed, properly ventilated warehouse rooms or platforms designed for storage, which ensure prevention of moisture and direct sunlight ingress. Guaranteed shelf life – 1 year from the date of production.

Substances and materials, incompatible at storage:

Organic substances, acids, alkalis.

Safety measures and storage rules in household:

The product is not used in household.

Recommended materials for packaging:

Polyethylene and polypropylene bags with net weight 25 kg, special-purpose big bags with net weight 0,5-1 t, including under specific order. It may be agreed with customer to use other types of packaging, ensuring absolute safety of the product and its quality preservation.

7.3. Specific end use(s):

For more detailed information please contact the supplier.

Not intended for use as a food additive.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Operating zone parameters, subjected to obligatory control

Under manufacturing conditions it is recommended to control operating zone in terms of magnesium dichloride hexahydrate aerosol: MACw.z. = 2.0 mg/m³

8.1.2. Measures for ensuring content of hazardous substances in admissible concentrations

Supply and exhaust ventilation of work rooms, local exhaust systems. Monitoring of hazardous substances content in the working zone air. Hermetically sealed equipment, vessels and connection nodes should be provided in the rooms for product handling.

Regular dry dusting in manufacturing facilities. Maximum mechanization of manufacturing process.

8.2. Exposure controls

8.2.1. Means of personnel individual protection

General recommendations:

Avoid direct contact of the personnel with the product, use individual protection means; do not take food in the manufacturing facility during operation and in working clothes. Wash hands with warm water and soap before and after eating. All workers, involved in product handling, should undergo preemployment physical examination as well as periodic medical examinations.

Respiratory protection: filtrating respirator or other of similar function.

Protective clothing (material, type): dustproof overalls, protective shoes; hands protection: rubber gloves; eyes protection: protective goggles.

Individual protection means for use in household:

The product is not used in household.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Characteristic	
a) Physical state	Granules and flakes of light-grey colour
b) Odour	No specific odour.
c) Odor perception threshold	Not applicable
d) pH	4,5-7 (50 g/l, H ₂ O, 20 °C)
e) Melting/freezing point, °C	117 °C slow decomposition
f) Initial boiling point and boiling boundaries	Not applicable
g) Flash temperature	Not applicable
h) Evaporation rate	No data.
i) Flammability	No data.
j) Upper/lower flammability limits and explosive limits	No data.
k) Steam pressure	No data.
l) Vapor pressure	No data.
m) Density, g/cm ³	1.57
n) Solubility in water g/l (at 20 °C)	1.67
o) N-octanol/water partition coefficient:	No data.
p) Self-ignition temperature	No data.
q) Decomposition temperature	>117 °C
r) Viscosity	No data.
s) Explosive properties	Not classified as an explosive material.
t) Oxidizing properties	No oxidizing properties

SECTION 10: STABILITY AND REACTIVITY**10.1. Reactivity:**

Reacts with acids and alkalis

10.2. Chemical stability:

Stable under standard conditions of manufacturing, storage, transportation and handling

10.3. Possibility of hazardous reactions:

No data

10.4. Conditions causing hazardous changes:

Strong heating (decomposition at 117⁰C)

10.5. Incompatible materials:

No data.

10.6. Hazardous Decomposition Products:

In case of fire, refer to Section 5.

SECTION 11: TOXICOLOGICAL INFORMATION**11.1. Information on toxicological effects****General characteristics of exposure:**

Bischofite is referred to moderately hazardous substances regarding its effect on human organism. In case of getting into the gastrointestinal tract, it acts like osmotic laxative. Large doses intake is dangerous, paralysis of respiratory nerves and muscles, cardiac failure are registered.

Routes of exposure:

In case of dust and aerosols inhalation, ingestion (orally), skin and eyes contact.

Target organs, tissues and systems of human body:

Central nervous system, respiratory and cardiovascular systems, gastro-intestinal tract, liver, kidneys, peripheral blood morphological composition, mineral turnover.

Information on hazardous influence on health at direct contact with the product, impact consequences:

Bischofite irritates eye mucosa; repeated contact causes skin irritation; in case of aerosol inhalation, upper respiratory tract irritation is observed. Skin-resorbative effect is not determined.

Information on hazardous long-term exposure consequences for human organism:

General information on the product is not available.

Information is given on the principal component (85-92 %) – magnesium dichloride hexahydrate.

Magnesium chloride hexahydrate mutagen effect is determined in experimentation on hamsters (not confirmed by IARC); its embryotropic, honadotropic, teratogen, and carcinogen effects were not studied; weak cumulative properties.

Acute toxicity indices (DL₅₀), routes of exposure (intra-gastric, epidermic), animal specimen; CL₅₀, exposure period (h), animal specimen):

General information on the product is not available.

Magnesium dichloride hexahydrate:

DL₅₀ =7333-8100 mg/kg, intra-gastric, rats;

DL₅₀=4667-7600 mg/kg, epidermic, mice

CL₅₀ is not attained.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Environmental toxicity

Hygienic norms:

Components	MAC atm. air or SRLI atm. air, mg/m ³ (LC, hazard class)	MAC water or app. perm. level water, mg/l (LC, hazard class)	MAC fish industry or SRLI fish industry., mg/l (LC, hazard class)	MAC or app. perm. conc. in soil, mg/kg (LC)
Magnesium dichloride hexahydrate	0,1 (SRLI)	chlorides CL ⁻ : 350 (organic aftertaste, class 4)	Magnesium cation Mg ⁺ : 40 san. tox class 4); 940 at 13-18 %, (tox., class 4) (for seas and their individual parts); Chloride anion Cl ⁻ : 300 (san.-tox., ecol. class 4); 11900 at 12-18 % (toxicity., class 1) (for seas and their individual parts)	Not identified

12.2. Persistence and degradability

Biodegradability test methods are not applicable to inorganic compounds.

12.3. Bioaccumulative potential

No data available.

12.4. Mobility in soil

No data available.

12.5. Bioaccumulative potential and persistence assessment

PBT/vPvB (persistence, bioaccumulativity, toxicity/strong persistence, strong bioaccumulativity) assessment was not carried out, as chemical safety assessment is not required/was not carried out.

12.6. Other adverse effects

No data.

SECTION 13: DISPOSAL CONSIDERATIONS

Information on places and methods of neutralization, elimination or disposal of the substance (material) wastes, including packaging:

Wastes or spoilage should be collected from the accident site to hermetically sealed container, marked and sent for neutralization to industrial wastes landfill, disposal facilities or places, agreed with local agencies for consumer rights and human welfare protection.

Removal and neutralization of the product is carried out in accordance with national norms and regulations and current directives of federal or local executive authorities.

Safety measures at handling wastes, formed at use, storage, transportation etc.:

Safety measures at handling wastes are the same as recommended for product handling (See Sections 6-8)

Recommendations on disposal of wastes, formed at household use:

It is not used in household.

SECTION 14: TRANSPORT INFORMATION**Ground transport (ADR/RID)**

14.1. UN number	Not classified
14.2. Proper shipping name	Bischofite (magnesium chloride)
14.3. Transportation hazard category	Non-hazardous goods
14.4. Packing group	None
14.5. Environmental hazards	None
14.6. Special precautions for user	None

Air transport (ICAO/IATA)

14.1. UN number	Not classified
14.2. Proper shipping name	Bischofite (magnesium chloride)
14.3. Transportation hazard category	Non-hazardous goods
14.4. Packing 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. Proper shipping name	Bischofite (magnesium chloride)
14.3. Transportation hazard category	Non-hazardous goods
14.4. Packing 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. Proper shipping name	Bischofite (magnesium chloride)
14.3. Transportation hazard category	Non-hazardous goods
14.4. Packing group	None
14.5. Environmental hazards	None
14.6. Special precautions for user	None

Transport marking:

"Protect from moisture"

14.7. Bulk transportation under Annex II to the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78 and International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)

Not applicable

SECTION 15: REGULATORY INFORMATION

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

It is not regulated by international conventions and agreements (Montreal Protocol, Stockholm Convention etc).

According to water contamination hazard classification (WGK), the substance is referred to class 1 (low-hazardous for water).

15.2. Chemical safety assessment

Chemical safety assessment of this substance was not carried out.

SECTION 16: OTHER INFORMATION

Training advice

Read the safety data sheet before using the product.

Recommended restrictions on use:

No restrictions at intended application.

Advice on using information stated in the Safety Data Sheet

The European SDS format compliant with the applicable European legislation is not intended for use or 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 comprehensive. This applies to product which conforms to the specification, unless otherwise stated. Responsible executives, who receive this data sheet, must guarantee that every person, potential to use, treat, dispose or contact with the product in some other way, have read and understood the information described here properly. Note that appearance and content of safety data sheets even for the same product may vary in different countries to comply with requirements of different regulations.

Updated content of sections: 1.1, 3.1.

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

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Sources of basic information

1. Russian Safety Data Sheet–Bischofite (magnesium chloride) CJSC «NikoMag» (of 14 October 2015).
2. Regulation EC № 1272/2008 of the European Parliament and of the Council of 16.12.2008
3. Commission Regulation (EU) 2015/830 of 28 May 2015, amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation and Authorization of Chemicals (REACH)
4. ACGIH (American Conference of Governmental Industrial Hygienists) (2006).