

Republic Unitary Enterprise
“Production Amalgamation “Belaruskali”

SAFETY DATA SHEET

MURIATE OF POTASH (MOP)

Soligorsk

Safety Data Sheet
SDS BY 600122610.001 – 2008

Filed in the National Register
NR SDS BY No. 7506050 14 00472

dated 27.02.2009

valid till 27.02.2014

PRODUCT NAME AND COMPOSITION:

Technical name (by TNLA)	Muriate of Potash (MOP)
Chemical name (by IUPAC)	Potassium Chloride
Commercial name	Muriate of Potash, various brands
Synonyms	Potassium salt of chlorhydric acid

CONVENTIONAL NAMES AND CODES OF TECHNICAL NORMAL LEGAL ACTS
(GOST, GOST RB, TU, ISO)

GOST 4568-95 "Muriate of Potash". Technical Specification
STO SPEKS 001 – 98 "Muriate of Potash supplied for export" Technical Specification
TU BY 00203950 – 09 – 94 "Muriate of Potash". Technical
TU BY 600122610.021 – 2006 "Muriate of Potash, technical, dust-free"
TU BY 600122610.011 – 2002 "Muriate of Potash, fine non-dusty agglomerated"
TU BY 600122610.010 – 2002 "Muriate of Potash granular"

OKP BY code
24.15.50.300

TN VED code
310 4

RPOHV: № and date

Hazards specification: MAC w.a., mg/m³ 5 Hazard class 3

Briefly (in words): substance with moderately hazardous effect on a human. Aerosol irritates skin, eyes and respiratory system. Can be dangerous for environment.
In detail: see the enclosed 16 sections of SDS.

Main hazardous components:	MAC w.a., mg/m³	Hazard class
Potassium Chloride	5	3
Sodium Chloride	5	3

Applicant party (approving party): RUE "PA "Belaruskali"
223710 city of Soligorsk, Minsk region, Korzha street, 5

Identification of applicant party: manufacturer, supplier, seller, exporter
OKPO code: 00203950 Contact phone in case of emergency: + 375 174 298432

Research organization: RUE "PA "Belaruskali"

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1. Product Identification (Name) and Composition of Ingredients

Technical name	Muriate of Potash		
Chemical name	Potassium chloride		
Molecular formula	KCl		
Composition by components (mass fraction, MAC w.a., class of hazard)	Mass fraction, %	MAC w.a.,mg/m ³ (aerosol)	Class of hazard
Potassium chloride	95-98	5	3
evaluated in K ₂ O	60-62		
Sodium Chloride	1-4	5	3
Additional information	Depending on mass fraction and particle size composition following types of muriate of potash are produced: 1. Muriate of Potash (for export) – STO SPEKS 001 – 98 2. Muriate of Potash – GOST 4568 – 95 3. Muriate of Potash, technical – TU BY 00203950 – 09 – 94; 4. Muriate of Potash, technical, dust-free – TU BY 600122610.021 – 2006; 5. Muriate of Potash, fine, non dusty agglomerated – TU BY 600122610.011 – 2002; 6. Muriate of Potash, granular – TU BY 600122610.010 – 2002;		
Degree of product hazard in general	Class of hazard 3 by aerosol influence on a human - substance with moderately hazardous effect on a human		

2. Identification of the Company-producer or Company-supplier

Producer or Supplier	RUE “PA “Belaruskali”
Mail address	Republic of Belarus, 223710, city of Soligorsk, Minsk region, Korzha street, 5
Contact telephone	+ 375 (174) 298677, + 375 (174) 298501 + 375 (174) 298432 (for extra consultations)
Fax	+ 375 (174) 298677
e-mail	info@kali.by

3. Identification and Origin of Hazard. Influence on a human

Common influence	Moderately hazardous influence on a human. Do not form toxic compounds in air. Operations with Muriate of Potash are radiation safe. Can irritate skin, eyes and upper respiratory tract.
Ways of contact	Aerosol inhalation, wet skin or eye contact, ingestion
Most injured internal organs and systems of a human	Nervous, respiratory and cardiovascular systems, gastrointestinal tract, liver, kidneys, electrolyte metabolism, skin, eyes

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Symptoms observed: In mild cases In acute cases	Respiratory tract, skin and eyes irritation Weakness, motion activity reduction, throat scratching, coughing, disturbance of breathing. In acute cases of high doses swallowing – burning pain in oral cavity.
Clinical presentation of acute poisoning	Nausea, vomiting, stomach pain, diarrhea, disturbance of heartbeats, dystaxia, convulsions.
Influence on environment (air, water, soil)	
Common influence	The product does not change its properties in the environment. Possible air, soil and water pollution.
Influence on environment	Improper handling, transportation and storage. Exceeding the agricultural chemistry rates of fertilizers application. Can influence the environment in case of emergency.
Influence observed Hygienic norms (MAC in working area, water, soil)	Change of organoleptic properties of water (foreign taste)/ MAC w.a. – 5 mg/m ³ hazard class 3 MAC atm.air, one-time – 300 mkg/ m ³ MAC daily average – 100 mkg/m ³ MAC annual average – 50 mkg/ m ³ , resorptive hazard class 4 MAC service water (chloride anion Cl ⁻) - 350 mg/l, organic taste, hazard class 4 MAC soil (by KCl) - 360 mg/kg, water migrated. MAC fishery potash-ion 50,0 mg/dm ³ , sanitary and toxic; for sea water basins 390 mg/l at 13-18%; toxic; MAC fishery chloride - ion – 300 mg/ dm ³ , sanitary – toxic, for sea water basins 11900 mg/l at 12-18%; toxic.
In case of skin contact	Rinse thoroughly with running water
In case of eye contact	Rinse thoroughly with plenty of water.
In case of swallowing	Rinse the stomach with plenty of warm water mixed with activated charcoal (1g/kg of body weight). Ask for medical assistance if necessary.

4. First-Aid Measures

In case of respiratory tract irritation	Take the injured person outside, provide warm and piece.
Contra-indications	No information
First-Aid means	Activated charcoal In case of acute poisoning use calcium containing preparations.

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5. Fire-Fighting Measures

Fire risk	Fire and explosion-proof
Common characteristics of fire and explosion hazards	Non-reachable
Recommended fire-fighting means	For packages (PP-bags) use any type of extinguishers, water or sand.
Forbidden fire-fighting means	No information
Personal protective measures and equipment (firemen and personnel protective measures)	Fire-protective uniform and safety device in accordance with TNLA
Possibility of thermal decomposition	No

6. Accidental Release Measures. Preventive measures

Common recommendations	Aspiration on reloading points. Ventilation of the production rooms. Air control.
Handling and storage	Avoid inhalation of aerosol. Store in warehouses protected from atmospherical condensation.
Personal protection	Avoid inhalation, eye and skin contacts. Use personal protective devices.
Environmental protection	Avoid dispersion in air, penetration in sewerage, subsoil and surface waters and soil in concentration exceeding the limits (see section 12 of Safety Data Sheet)
Utilization and disposal of waste	See section 13 of Safety Data Sheet
Transportation	Muriate of potash is transported either in bulk or in packages. Material packed in bags is transported by all transport means; material packed in containers is transported in open type railway wagons. (see section 14 of Safety Data Sheet).

Disposal measures

Necessary usual measures	Isolate a dangerous zone, send all unauthorized persons away of accident area, if necessary send them for medical checkup.
Leakage and spillage:	Collect the product in a dry way and take it out to a covered storehouse or to a site protected from moisture and atmospheric precipitation for further use as fertilizer. Prevent the product from entering into water courses and drains.
Fires:	Take out undamaged packs from the fire area if it is not dangerous. Extinguish the fire from maximal distance.
Personal and group protection means:	See SDS, Section 8.

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Emergency recovery: Put polluted residues of the product into special containers, paper or polypropylene bags and remove it to industrial wastes dump.
Wash the area with water.
Avoid the release of washing water into water courses and soil.

7. Handling and Storage

Personal and group protection measures: Suction-and-exhaust ventilating of working areas. Regular control of maximal allowable concentration of the product in air of working areas. Use personal protective equipment. Timely clean working areas; move away the spilled product; avoid dusting when packaging the product.

Storage conditions: Product to be stored in closed warehouses, protected from atmospheric precipitation and ground water.

Product packed in big-bags can be stored at open areas with hard surface and under shed.

Store at ambient temperatures.

Storage period: Guarantee period – 6 months since manufactured (GOST 4568).

Guarantee period of MOP for retail trade – 24 months since manufactured (GOST 4568).

Guarantee period – 1 year since dispatched (STO SPEKS 001).

Incompatible substances: Organic substances, acids and alkalies.

Product transportation recommendations: Avoid product spillages during bulk transportation by rail and water.

See section 14.

Materials recommended for safety packaging: Specialized big-bags, polypropylene bags with polyethylene inserts.

8. Exposure Control/Personal Protection

Working areas parameters to be unconditionally controlled:

MAC in w.a. – 5 mg/m³

Measures to assure the allowable concentration of harmful substances:

Installation and maintenance of failure-free operation of exhaust ventilation system and corresponding devices of dust collecting.

Control of KCl aerosol content in working areas air.

Mechanization of transport, prepackaging and packaging operations.

Personal protection

General recommendations: Use safety clothing and shoes to avoid direct contact with product.

Respiratory protection: Dust respirators according

Eye protection: Safety glasses according

Safety clothing: Special clothing according

9. Physical and chemical properties

Appearance: Fine product in small crystals from grayish-white to reddish-brown colour.
Granules of irregular form from grayish-white to reddish-brown colour.

Odour: Odourless.

Molecular mass: 75,543

Melting temperature: 768-776°C

Boiling temperature: 1406-1430°C

Thermal capacity: 0,16 cal/(g·°C)

Density of single crystals: 1,98-1,99 g/cm³

pH: 5,5-8,8 (50000 mg/l of water)

Water solubility, mg/l H₂O: 330000-342000 (20°C)
560000-562000 (100°C)

Solubility in other solvents: Slightly soluble in liquid ammonia and ethanol.
Insoluble in most organic solvents and fats.

10. Stability and reactivity

Stability: Chemically stable substance

Reactivity: Reacts with acids and alkalies.

Substances to avoid: Organic substances, acids, alkalies.

Hazardous decomposition products: None

Useful agrochemical life: Not limited.

11. Toxicological information:

Human exposure: Moderately hazard substance.

Ingestion toxicity (mg/kg) (tested animals: white rats):

	DL ₁₆	DL ₅₀	DL ₈₄
	690 mg/kg	744 vg/kg	810 mg/kg

Toxicity Test data

Concentration of minimal toxicity (effect thresholds, their dimensionality, way and time of injection, type of animals, humans):

MChr-10 mg/m³ (neuromuscular irritability effect).
 EC-51-152 mg/m³, inh., 6 months, rats (decline in body weight increase, increase in neuromuscular irritability, potassium and chlorine concentration, cholinesterase activity, reduction of sodium concentration in blood)
 ED-60 mg/kg, intra-stomach, 1 day, woman (nausea, vomiting, blood coagulation failure).

Information on dangerous remote effects of human exposure (influence on reproduction function, carcinogenicity, accumulation capacity, irritability etc.):

Skin-resorbative and sensitizing actions.
 Mutagenicity: not confirmed by IARC (International Agency for Research on Cancer). Embryotropic, gonadotropic, teratogenic and cancerogenic effects have not been studied.
 Not cumulative in terms of mortality effects evidence (cumulation coefficient: > 5), shows general toxicological nature of action with changes mostly in functional state of liver, nephroses and circumferential blood system.
 Moderately irritates eyes mucosa and classified as grade 2 in terms of irritant action intensity.

12. Ecological information

Evaluation of possible ecological effect (air, soil, water, biota)

Can pollute the environment in case of violation of storage and transportation rules.
 Extremely stable in abiotic conditions.
 Destructive for water organisms.

Most important characteristics of influence on environment

Hygienic regulations (MAC of product in atmospheric air, water, soil)

MAC w.a. – 5 mg/m³, hazard class 3
 MAC atm. air, one-time - 300 mkg/m³, MAC daily average – 100 mkg/m³,
 MAC annual average - 50 mkg/m³, resorbative, hazard class 4,
 MAC service water (chloride anion Cl⁻) – 350 mg/l, organic taste, hazard class 4
 MAC soil (by KCl) – 360,0 mg/kg
 water migrated

Ecotoxicity indices

CL50 (mg/k)	Acute toxicity for fish Species	Exposure time (h)
2300	Leuciscus idus	48
373	Phoxinus phoxinus	12-29
10000	Gambusia affinis	24
4200	Gambusia affinis	48
74,6	Diplodus cervinus	4,5-15,0

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2010	Lepomis macrochirus	96
5500	Lepomis macrochirus	24
12500	Cyprinus carpio	5

Transformation in environment No transformation.

13. Disposal Considerations

Safety measures when handling waste material generated as the result of utilization, storage, transportation, emergencies, etc: Same safety measures as for product handling (see sections 6 and 7 of Safety Data Sheet).

Information on places and methods of treatment, recycling and disposal of product wastes, including packing: Spilled muriate of potash can be used as normal product. Empty packages are to be recycled at public waste disposal sites.

14. Transportation information

Transport name (subject to type range): Various types of muriate of potash

Means of transportation: Goods transportation is effected in accordance with the rules valid for a corresponding mean of transportation

Hazard classification: Product is not classified as dangerous, it is not within the rules of GOST 19433; but when transported by inland water ways the product being a corrosive substance of low effect is classified as dangerous (hazard class 9.1).
Appropriate marking is not required.

Transport marking: Transport marking is made according to GOST 14192 with application of the sign "Keep dry", and the sign "Protect from the sun" is applied if packages are made from polymeric materials.

Emergency card: Not required.

Hazard information when transported by railway: Danger code is not determined.

15. Regulatory information**National legislation**

Laws of the Republic of Belarus

“Environment Protection Act”

“Consumers Protection Act”

“Plants Protection Act”

Documents controlling the humans and environment requirements (certificates):

Certificates of conformity.

International legislation

Warning marking (danger symbols, risk level, etc):

Safety factor: S:22-24/25.

Do not inhale the product aerosol. Avoid all contacts with eyes and skin.

16. Other information

Use recommendations

Used as fertilizer for direct soil application, as well as raw material for dry binding while chemical products producing.

Use restrictions:

No restrictions.