SAFETY DATA SHEET according to the Hazardous Products Regulations





Calcium / Magnesium Chloride Formulation

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SECTION 1. IDENTIFICATION

Product name	:	Calcium / Magnesium Chloride Formulation
Other means of identification	:	No data available

Manufacturer or supplier's details

Company name of supplier	:	Merck & Co., Inc
Address	:	126 E. Lincoln Avenue
		Rahway, New Jersey U.S.A. 07065
Telephone	:	908-740-4000
Emergency telephone	:	1-908-423-6000
E-mail address	:	EHSDATASTEWARD@merck.com

Recommended use of the chemical and restrictions on use

Recommended use	:	Veterinary product
Restrictions on use	:	Not applicable

SECTION 2. HAZARDS IDENTIFICATION

Reproductive toxicity	:	Category 1B

GHS label elements

Hazard pictograms	:



Signal Word	:	Danger
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Hazard Statements : H360FD May damage fertility. May damage the unborn child.

Precautionary Statements

Prevention:

:

P201 Obtain special instructions before use.P202 Do not handle until all safety precautions have been read and understood.P280 Wear protective gloves, protective clothing, eye protection and face protection.

Response:

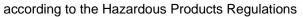
P308 + P313 IF exposed or concerned: Get medical attention.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents and container to an approved waste disposal plant.





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Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	Common Name/Synonym	CAS-No.	Concentration (% w/w)
Boric acid	No data availa- ble	10043-35-3	>= 3.4167 - <= 4.1
Magnesium chloride	Magnesium(2+) ion dichloride	7786-30-3	>= 2.8333 - <= 3.4

SECTION 4. FIRST AID MEASURES

General advice	:	In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled	:	If inhaled, remove to fresh air. Get medical attention.
In case of skin contact	:	In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	:	Flush eyes with water as a precaution. Get medical attention if irritation develops and persists.
If swallowed	:	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.
Most important symptoms and effects, both acute and delayed	:	May damage fertility. May damage the unborn child.
Protection of first-aiders	:	First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).
Notes to physician	:	Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Water spray Alcohol-resistant foam Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	None known.
Specific hazards during fire fighting	:	Exposure to combustion products may be a hazard to health.



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	Hazardous combustion prod- ucts	:	Carbon oxides Metal oxides Chlorine compour Boron oxides	nds
	Specific extinguishing meth- ods	:	cumstances and t Use water spray t	measures that are appropriate to local cir- he surrounding environment. o cool unopened containers. ged containers from fire area if it is safe to do
	Special protective equipment for fire-fighters	:	In the event of fire	e, wear self-contained breathing apparatus. ective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protec- tive equipment and emer- gency procedures	:	Use personal protective equipment. Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).
Environmental precautions	:	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g., by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

SECTION 7. HANDLING AND STORAGE

Technical measures	:	See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
Local/Total ventilation	:	If sufficient ventilation is unavailable, use with local exhaust ventilation.
Advice on safe handling	:	Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Avoid contact with eyes. Handle in accordance with good industrial hygiene and safety



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		assessment Keep container	d on the results of the workplace exposure r tightly closed. revent spills, waste and minimize release to the			
Cond	litions for safe storage	 Keep in properly labeled containers. Store locked up. Keep tightly closed. Store in accordance with the particular national regulations. 				
Mate	rials to avoid	: Do not store wi Strong oxidizin	ith the following product types: g agents ubstances and mixtures			

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components	CAS-No.	Value type (Form of exposure)	Control parame- ters / Permissible concentration	Basis
Boric acid	10043-35-3	TWA (Inhal- able)	2 mg/m ³ (Borate)	CA BC OEL
		STEL (Inhal- able)	6 mg/m ³ (Borate)	CA BC OEL
		TWAEV (in- halable dust)	2 mg/m ³	CA QC OEL
		STEV (inhal- able dust)	6 mg/m³	CA QC OEL
		TWA (Inhalable particulate matter)	2 mg/m ³ (Borate)	ACGIH
		STEL (Inhalable particulate matter)	6 mg/m ³ (Borate)	ACGIH
Magnesium chloride	7786-30-3	TWA	OEB 2 (>= 100 < 1000 μg/m3)	Internal

Ingredients with workplace control parameters

Engineering measures	:	Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip- less quick connections). All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment. Laboratory operations do not require special containment.

Personal protective equipment

Respiratory protection : If adequate local exhaust ventilation is not available or



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Hand	lter type protection aterial		
Eye p	protection	If the work en mists or aero Wear a faces	plasses with side shields or goggles. vironment or activity involves dusty conditions, sols, wear the appropriate goggles. hield or other full face protection if there is a lirect contact to the face with dusts, mists, or
	and body protection one measures	: If exposure to eye flushing s working place When using o Wash contam The effective engineering o appropriate d industrial hyg	or laboratory coat. chemical is likely during typical use, provide systems and safety showers close to the lo not eat, drink or smoke. inated clothing before re-use. operation of a facility should include review of ontrols, proper personal protective equipment, egowning and decontamination procedures, iene monitoring, medical surveillance and the strative controls.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Color	:	translucent, light yellow
Odor	:	No data available
Odor Threshold	:	No data available
рН	:	3.0 - 4.0
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	No data available
Flash point Evaporation rate	:	No data available No data available
	•	
Evaporation rate	:	No data available
Evaporation rate Flammability (solid, gas)	:	No data available Not applicable

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Vapo	r pressure	:	No data available	9	
Relati	Relative vapor density		No data available	9	
Relati	ve density	:	No data available	9	
Densi	ity	:	1.000 - 1.200 g/c	cm ³	
	ility(ies) ater solubility	:	No data available	9	
	ion coefficient: n- ol/water	:	Not applicable		
	gnition temperature	:	No data available	9	
Deco	Decomposition temperature		No data available		
Visco Vis	sity scosity, kinematic	:	No data available	9	
Explo	sive properties	:	Not explosive		
	zing properties	:	The substance o	r mixture is not classified as oxidizing.	
Moleo	cular weight	:	No data available	9	
Partic	le size	:	Not applicable		

SECTION 10. STABILITY AND REACTIVITY

Reactivity Chemical stability Possibility of hazardous reac- tions	:	Not classified as a reactivity hazard. Stable under normal conditions. Can react with strong oxidizing agents.
Conditions to avoid Incompatible materials Hazardous decomposition products	:	None known. Oxidizing agents No hazardous decomposition products are known.

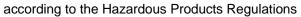
SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation Skin contact Ingestion Eye contact

Acute toxicity

Not classified based on available information.

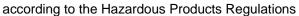




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ersion 4	Revision Date: 09/30/2023	SDS Numb 7665389-00		Date of last issue: 04/04/2023 Date of first issue: 12/10/2020
<u>Prod</u> Acute	<u>uct:</u> e oral toxicity		oxicity esti l: Calculatio	mate: > 2,000 mg/kg on method
Com	ponents:			
Borio	c acid:			
Acute	e oral toxicity	: LD50 (F	Rat): 3,450	mg/kg
Acute	e inhalation toxicity	Exposu Test atr Method	ment: The	h
Acute	e dermal toxicity			2,000 mg/kg substance or mixture has no acute dermal
Magr	nesium chloride:			
Acute	e oral toxicity	Method Assessi icity	ment: The	00 mg/kg est Guideline 423 substance or mixture has no acute oral to on data from similar materials
Acute	e dermal toxicity	Method Assess toxicity	ment: The	00 mg/kg est Guideline 402 substance or mixture has no acute dermal on data from similar materials
-	corrosion/irritation lassified based on ava	ilable informati	ion.	
<u>Com</u>	ponents:			
Borio	c acid:			
Spec Resu		: Rabbit : No skin	irritation	
Magr	nesium chloride:			
Spec Meth	od	: Regulat	tion (EC) N	nan epidermis (RhE) Io. 440/2008, Annex, B.46 maimilar matariala

- Regulation (EC) No. 440/2008, Annex, B.46 : Based on data from similar materials Remarks :
- Result : No skin irritation





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Serious eye damage/eye irritation

Not classified based on available information.

Components:

Boric acid:

Species	:	Rabbit
Result	:	No eye irritation

Magnesium chloride:

Species	:	Rabbit
Result	:	No eye irritation
Method	:	OECD Test Guideline 405
Remarks	:	Based on data from similar materials

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Components:

Boric acid:

Test Type	: Buehler Test	
Routes of exposure	: Skin contact	
Species	: Guinea pig	
Method	: OECD Test Guideline	406
Result	: negative	

Magnesium chloride:

Test Type :	Maximization Test
Routes of exposure :	Skin contact
Species :	Guinea pig
Method :	OECD Test Guideline 406
Result :	negative
Remarks :	Based on data from similar materials

Germ cell mutagenicity

Not classified based on available information.

Components:

Boric acid:

Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
		Test Type: In vitro mammalian cell gene mutation test Result: equivocal



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			Test Type: Chron Result: negative	nosome aberration test in vitro
Genot	oxicity in vivo	:	Test Type: Mamn cytogenetic assay Species: Mouse Application Route Result: negative	
Magn	esium chloride:			
-	oxicity in vitro	:	Test Type: In vitro Result: negative	o mammalian cell gene mutation test
			Method: OECD T Result: negative	nosome aberration test in vitro est Guideline 473 on data from similar materials
			Test Type: Bacter Result: negative	ial reverse mutation assay (AMES)
	nogenicity assified based on availa	ahla	information	
	onents:			
Boric				
Specie Applic	es ation Route sure time	:	Mouse Ingestion 103 weeks negative	
Magn	esium chloride:			
Specie Applic	es ation Route sure time t		Mouse Ingestion 18 Months negative Based on data fro	om similar materials
-	oductive toxicity amage fertility. May dar	mag	e the unborn child.	
Comp	oonents:	5		
Boric	acid:			
Effect	s on fertility	:	Test Type: Three Species: Rat Application Route Result: positive	generation reproduction toxicity study
Effect	s on fetal development	:	Test Type: Embry Species: Rabbit	ro-fetal development



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			Application Route Result: positive	e: Ingestion
Repro sessm	ductive toxicity - As- nent	:	fertility, based on	f adverse effects on sexual function and animal experiments., Clear evidence of an development, based on animal
Magn	esium chloride:			
Effects	s on fertility	:	reproduction/dev Species: Rat Application Route Method: OECD T Result: negative	oined repeated dose toxicity study with th elopmental toxicity screening test e: Ingestion Test Guideline 422 on data from similar materials
Effects	s on fetal development	:	Species: Rat Application Route Result: negative	C C C C C C C C C C C C C C C C C C C
			Remarks: Based	on data from similar materials
Not cla	-single exposure assified based on availa -repeated exposure	ıble		on data from similar materials
Not cla STOT	assified based on availa		information.	on data from similar materials
Not cla STOT Not cla	assified based on availa		information.	on data from similar materials
Not cla STOT Not cla Repea	assified based on availa -repeated exposure assified based on availa		information.	on data from similar materials
Not cla STOT Not cla Repea Comp Boric	assified based on availa -repeated exposure assified based on availa ated dose toxicity bonents: acid:		information.	on data from similar materials
Not cla STOT Not cla Repea Comp Boric Specie NOAE LOAE Applic	assified based on availa -repeated exposure assified based on availa ated dose toxicity conents: acid: as acid: as		information.	on data from similar materials
Not cla STOT Not cla Repea Comp Boric Specie NOAE LOAE Applic Expos	assified based on availa -repeated exposure assified based on availa ated dose toxicity conents: acid: as L L ation Route		information. information. Rat 100 mg/kg 334 mg/kg Ingestion	on data from similar materials

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity **Components:** Boric acid: Toxicity to fish LC50 (Pimephales promelas (fathead minnow)): 74 mg/l Exposure time: 96 h EC50 (Ceriodaphnia dubia (water flea)): 102 mg/l Toxicity to daphnia and other : aquatic invertebrates Exposure time: 48 h Toxicity to algae/aquatic EC50 (Pseudokirchneriella subcapitata (green algae)): 52.4 plants mg/l Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Pseudokirchneriella subcapitata (green algae)): 17.5 mg/l Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Danio rerio (zebra fish)): 6.4 mg/l Toxicity to fish (Chronic tox-Exposure time: 34 d icity) Method: OECD Test Guideline 210 Toxicity to daphnia and other : NOEC (Daphnia magna (Water flea)): 10.8 mg/l aquatic invertebrates (Chron-Exposure time: 21 d ic toxicity) Toxicity to microorganisms : EC10: 35.4 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Magnesium chloride: Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2,119.3 mg/l Exposure time: 96 h Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 548.4 mg/l aquatic invertebrates Exposure time: 48 h Toxicity to algae/aquatic ErC50 (Desmodesmus subspicatus (green algae)): > 100 mg/l plants Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Desmodesmus subspicatus (green algae)): > 100 mg/l Exposure time: 72 h Method: OECD Test Guideline 201

Toxicity to daphnia and other : EC10 (Daphnia magna (Water flea)): 321 mg/l aquatic invertebrates (Chron-Exposure time: 21 d ic toxicity) Toxicity to microorganisms : NOEC: > 900 mg/l



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		Exposure time Method: OEC	e: 3 h D Test Guideline 209
	stence and degradal ata available	bility	
Bioad	ccumulative potentia	I	
Com	ponents:		
Boric	acid:		
Bioac	cumulation	Bioconcentrat	inus carpio (Carp) ion factor (BCF): <= 3.2 D Test Guideline 305
	ion coefficient: n- ol/water	: log Pow: -1.09)
Mobi	lity in soil		
No da	ata available		
Othe	r adverse effects		
No da	ata available		

Disposal methodsWaste from residues: Do not dispose of waste into sewer.
Dispose of in accordance with local regulations.Contaminated packaging: Empty containers should be taken to an approved waste
handling site for recycling or disposal.
If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG Not regulated as a dangerous good

IATA-DGR Not regulated as a dangerous good

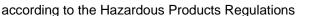
IMDG-Code Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable for product as supplied.

Domestic regulation

TDG

Not regulated as a dangerous good





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Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION

The ingredients of this product are reported in the following inventories:

DSL	:	not determined
AICS	:	not determined
IECSC	:	not determined

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH CA BC OEL CA QC OEL	:	USA. ACGIH Threshold Limit Values (TLV) Canada. British Columbia OEL Québec. Regulation respecting occupational health and safe- ty, Schedule 1, Part 1: Permissible exposure values for air- borne contaminants
ACGIH / TWA ACGIH / STEL CA BC OEL / TWA CA BC OEL / STEL CA QC OEL / TWAEV CA QC OEL / STEV	:	8-hour, time-weighted average Short-term exposure limit 8-hour time weighted average short-term exposure limit Time-weighted average exposure value Short-term exposure value

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR -Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China: IMDG - International Maritime Dangerous Goods: IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No



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1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Sources of key data used to compile the Material Safety Data Sheet	:	Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agen- cy, http://echa.europa.eu/
Revision Date Date format	:	09/30/2023 mm/dd/yyyy

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

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