Safety Data Sheet according to (EC) No 1907/2006 as amended

SDS No. : 47555
V007.2

BONDERITE M-FE 687

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

BONDERITE M-FE 687
UFI: 0RRG-XW53-G207-4042

1.2. Relevant identified uses of the substance or mixture and uses advised against

Intended use:
Phosphating Products for Metals

1.3. Details of the supplier of the safety data sheet

Henkel AG & Co. KGaA
Henkelstr. 67
40589 Düsseldorf

Germany

Phone: +49 211 797 0

SDSinfo.Adhesive@henkel.com
For Safety Data Sheet updates please visit our website www.mysds.henkel.com or www.henkel-adhesives.com.

1.4. Emergency telephone number

The Henkel information service also provides an around-the-clock telephone service on phone no.+49-(0)211-797-3350 for exceptional cases.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (CLP):

Corrosive to metals	Category 1
H290 May be corrosive to metals.	
Skin corrosion	Category 1
H314 Causes severe skin burns and eye damage.	
Serious eye damage	Category 1
H318 Causes serious eye damage.	

2.2. Label elements

Label elements (CLP):

Hazard pictogram:



Signal word:	Danger
Hazard statement:	H290 May be corrosive to metals. H314 Causes severe skin burns and eye damage.
Precautionary statement: Prevention	P260 Do not breathe mist/spray. P280 Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary statement: Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 Immediately call a POISON CENTER or doctor.

2.3. Other hazards

None if used properly.
The classification as corrosive H314 category 1 is due to the extreme pH.

Following substances are present in a concentration ≥ the concentration limit for depiction in Section 3 and fulfill the criteria for PBT/vPvB, or were identified as endocrine disruptor (ED):

This mixture does not contain any substances in a concentration ≥ the concentration limit for depiction in Section 3 that are assessed to be a PBT, vPvB or ED.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Declaration of the ingredients according to CLP (EC) No 1272/2008:

Hazardous components CAS No. EC No. REACH-Reg. No.	Concentration	Classification	Specific Conc. Limits, M-factors and ATEs	Add. Information
Phosphoric acid 7664-38-2 231-633-2 01-2119485924-24	5- < 10 %	Met. Corr. 1, H290 Skin Corr. 1B, H314 Acute Tox. 4, Oral, H302	Skin Corr. 1B; H314; C >= 25 % Eye Irrit. 2; H319; C 10 - < 25 % Skin Irrit. 2; H315; C 10 - < 25 % ===== oral:ATE = 1.500 mg/kg	EU OEL
Fluoroboric acid 16872-11-0 240-898-3 01-2119979570-28	1- < 5 %	Skin Corr. 1B, H314 Met. Corr. 1, H290	Skin Corr. 1B; H314; C >= 25 % Skin Irrit. 2; H315; C 10 - < 25 % Eye Irrit. 2; H319; C 10 - < 25 %	EU OEL
Nitric acid …% [C ≤ 70 %] 7697-37-2 231-714-2 01-2119487297-23	0,1- < 1 %	Met. Corr. 1, H290 Ox. Liq. 3, H272 Skin Corr. 1A, H314 Acute Tox. 3, Inhalation, H331	Skin Corr. 1B; H314; C 5 - < 20 % Skin Corr. 1A; H314; C >= 20 % Ox. Liq. 3; H272; C >= 65 % ===== inhalation:ATE = 2,65 mg/l;vapour	EU OEL EUEXPL1D
Boric acid 10043-35-3 233-139-2 01-2119486683-25	0,1- < 0,3 %	Repr. 1B, H360FD		SVHC

If no ATE values are displayed, please refer to LD/LC50 values in Section 11.

For full text of the H - statements and other abbreviations see section 16 "Other information".

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Move to fresh air, consult doctor if complaint persists.

Skin contact:
Immediately rinse with copious amounts of running water (for 10 minutes). Remove contaminated clothes. Put on a bandage with sterile gauze, seek medical attention in hospital.

Eye contact:
Immediately flush eyes with soft jet of water or eye rinse solution for at least 15 minutes. Hold eyelid wide-open. Seek a doctor/hospital, eye flushing should continue during transportation to a doctor.

Ingestion:
Rinse out mouth, drink 1-2 glasses of water, do not induce vomiting.
Immediate medical treatment necessary.

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

4.3. Indication of any immediate medical attention and special treatment needed
See section: Description of first aid measures

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media:
All common extinguishing agents are suitable.

Extinguishing media which must not be used for safety reasons:
None known

5.2. Special hazards arising from the substance or mixture
Formation of toxic gases is possible during heating or in fires.

5.3. Advice for firefighters
Wear protective equipment.
Wear self-contained breathing apparatus.

Additional information:
Cool endangered containers with water spray jet.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Avoid contact with skin and eyes.

6.2. Environmental precautions
Do not empty into drains / surface water / ground water.

6.3. Methods and material for containment and cleaning up
Dispose of contaminated material as waste according to Section 13.
Neutralize with acid-binding material (e.g. powdered limestone).
Take up with liquid-absorbing material (sand).

6.4. Reference to other sections
See advice in section 8

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid skin and eye contact.
Ensure that workrooms are adequately ventilated.
When diluting, always stir slowly the product into standing water.
See advice in section 8

Hygiene measures:
Wash hands before work breaks and after finishing work.
Do not eat, drink or smoke while working.
Wash contaminated clothing before reuse.
The workplace should be equipped with an emergency shower and eye-rinsing facility.

7.2. Conditions for safe storage, including any incompatibilities
Store only in the original container.
Store in a cool, frost-free place.
Keep container tightly sealed.
Keep container in a well ventilated place.
Do not use packing made of metal.
Must be stored in a room with spill collection facilities.
Keep only in original container.
Do not store together with strong bases or very alkaline substances.

7.3. Specific end use(s)
Phosphating Products for Metals

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure Limits

Valid for
Germany

Ingredient [Regulated substance]	ppm	mg/m³	Value type	Short term exposure limit category / Remarks	Regulatory list
Orthophosphoric acid 7664-38-2 [ORTHOPHOSPHORIC ACID]		2	Short Term Exposure Limit (STEL):	Indicative	ECTLV
Orthophosphoric acid 7664-38-2 [ORTHOPHOSPHORIC ACID]		1	Time Weighted Average (TWA):	Indicative	ECTLV
Orthophosphoric acid 7664-38-2			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900
Orthophosphoric acid 7664-38-2		2	Exposure limit(s):	2 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
Tetrafluoroboric acid 16872-11-0 [FLUORIDES, INORGANIC]		2,5	Time Weighted Average (TWA):	Indicative	ECTLV
Tetrafluoroboric acid 16872-11-0			Skin designation:	Can be absorbed through the skin.	TRGS 900
Tetrafluoroboric acid 16872-11-0			Short Term Exposure Classification:	Category II: substances with a resorptive effect.	TRGS 900
Tetrafluoroboric acid 16872-11-0		1	Exposure limit(s):	4 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
Nitric acid 7697-37-2 [NITRIC ACID]	1	2,6	Short Term Exposure Limit (STEL):	Indicative	ECTLV
Nitric acid 7697-37-2	1	2,6	Exposure limit(s):		TRGS 900
Boric acid 10043-35-3		0,5	Exposure limit(s):	2 If the AGW and BGW values are complied with, there should be no risk of reproductive damage (see Number 2.7).	TRGS 900
Boric acid 10043-35-3			Short Term Exposure Classification:	Category I: substances for which the localized effect has an assigned OEL or for substances with a sensitizing effect in respiratory passages.	TRGS 900

Predicted No-Effect Concentration (PNEC):

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
phosphoric acid 7664-38-2	sediment (freshwater)						no hazard identified
phosphoric acid 7664-38-2	sediment (marine water)						no hazard identified
phosphoric acid 7664-38-2	Air						no hazard identified
phosphoric acid 7664-38-2	Soil						no hazard identified
phosphoric acid 7664-38-2	Predator						no potential for bioaccumulation
Boric acid 10043-35-3	aqua (freshwater)		2,9 mg/l				
Boric acid 10043-35-3	aqua (marine water)		2,9 mg/l				
Boric acid 10043-35-3	Freshwater - intermittent		13,7 mg/l				
Boric acid 10043-35-3	sewage treatment plant (STP)		10 mg/l				
Boric acid 10043-35-3	Soil				5,7 mg/kg		

Derived No-Effect Level (DNEL):

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
phosphoric acid 7664-38-2	Workers	inhalation	Long term exposure - systemic effects		10,7 mg/m3	no hazard identified
phosphoric acid 7664-38-2	General population	inhalation	Long term exposure - systemic effects		4,57 mg/m3	no hazard identified
phosphoric acid 7664-38-2	General population	inhalation	Long term exposure - local effects		0,36 mg/m3	no hazard identified
phosphoric acid 7664-38-2	General population	oral	Long term exposure - systemic effects		0,1 mg/kg	no hazard identified
phosphoric acid 7664-38-2	Workers	inhalation	Long term exposure - local effects		1 mg/m3	no hazard identified
phosphoric acid 7664-38-2	Workers	inhalation	Acute/short term exposure - local effects		2 mg/m3	no hazard identified
Fluoroboric acid 16872-11-0	Workers	inhalation	Long term exposure - systemic effects		0,173 mg/m3	
Fluoroboric acid 16872-11-0	Workers	dermal	Long term exposure - systemic effects		0,046 mg/kg	
Fluoroboric acid 16872-11-0	General population	inhalation	Long term exposure - systemic effects		0,043 mg/m3	
Fluoroboric acid 16872-11-0	General population	dermal	Long term exposure - systemic effects		0,023 mg/kg	
Fluoroboric acid 16872-11-0	General population	oral	Long term exposure - systemic effects		0,023 mg/kg	
nitric acid 7697-37-2	Workers	inhalation	Acute/short term exposure - local effects		2,6 mg/m3	
nitric acid 7697-37-2	Workers	inhalation	Long term exposure - local effects		2,6 mg/m3	
nitric acid 7697-37-2	General population	inhalation	Acute/short term exposure - local effects		1,3 mg/m3	
nitric acid 7697-37-2	General population	inhalation	Long term exposure - local effects		1,3 mg/m3	
nitric acid 7697-37-2	Workers	inhalation	Long term exposure - systemic effects			
nitric acid 7697-37-2	Workers	inhalation	Acute/short term exposure - systemic effects			
nitric acid 7697-37-2	Workers	dermal	Long term exposure - systemic effects			
nitric acid 7697-37-2	Workers	dermal	Long term exposure - local effects			
nitric acid 7697-37-2	Workers	dermal	Acute/short term exposure - local effects			
nitric acid 7697-37-2	General population	inhalation	Long term exposure - systemic effects			
nitric acid 7697-37-2	General population	inhalation	Acute/short term exposure - systemic effects			
nitric acid 7697-37-2	General population	dermal	Long term exposure -			

			systemic effects			
nitric acid 7697-37-2	General population	dermal	Long term exposure - local effects			
nitric acid 7697-37-2	General population	dermal	Acute/short term exposure - local effects			
nitric acid 7697-37-2	General population	dermal	Acute/short term exposure - systemic effects			
nitric acid 7697-37-2	General population	oral	Long term exposure - systemic effects			
Boric acid 10043-35-3	Workers	inhalation	Long term exposure - systemic effects		8,3 mg/m3	
Boric acid 10043-35-3	Workers	dermal	Long term exposure - systemic effects		392 mg/kg	
Boric acid 10043-35-3	General population	inhalation	Long term exposure - systemic effects		4,15 mg/m3	
Boric acid 10043-35-3	General population	dermal	Long term exposure - systemic effects		196 mg/kg	
Boric acid 10043-35-3	General population	oral	Long term exposure - systemic effects		0,98 mg/kg	
Boric acid 10043-35-3	General population	oral	Acute/short term exposure - systemic effects		0,98 mg/kg	

Biological Exposure Indices:

Ingredient [Regulated substance]	Parameters	Biological specimen	Sampling time	Conc.	Basis of biol. exposure index	Remark	Additional Information
Tetrafluoroboric acid 16872-11-0 [Inorganic fluorine compounds (fluorides)]	Fluoride	Urine	Sampling time: End of shift.	4,0 mg/l	DE BGW		

8.2. Exposure controls:

Engineering controls:
Ensure good ventilation/suction at the workplace.

Respiratory protection:
In case of aerosol formation, we recommend wearing of appropriate respiratory protection equipment with ABEK P2 filter (EN 14387).
This recommendation should be matched to local conditions.

Hand protection:
Chemical-resistant protective gloves (EN 374). Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374): Polychloroprene (CR; >= 1 mm thickness) or natural rubber (NR; >=1 mm thickness) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Polychloroprene (CR; >= 1 mm thickness) or natural rubber (NR; >=1 mm thickness) This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

Eye protection:
Goggles which can be tightly sealed.
Protective eye equipment should conform to EN166.

Skin protection:
Protective clothing that covers arms and legs.
Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

Advices to personal protection equipment:

The information provided on personal protective equipment is for guidance purposes only. A full risk assessment should be conducted prior to using this product to determine the appropriate personal protective equipment to suit local conditions. Personal protective equipment should conform to the relevant EN standard.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Delivery form	liquid
Delivery form	liquid
Colour	Colourless / Colorless, Light yellow
Colour	Colourless / Colorless, Light yellow
Odor	Neutral
Odor	Neutral
Physical state	liquid
Melting point	Not applicable, Product is a liquid
Solidification temperature	< 0 °C (< 32 °F) Aqueous solution
Initial boiling point	> 100 °C (> 212 °F)no method / method unknown Aqueous solution
Flammability	Not applicable Aqueous solution
Explosive limits	Not applicable, The product is not flammable., Aqueous solution
Flash point	Not applicable, Aqueous solution
Auto-ignition temperature	Not applicable, Aqueous solution, The product is not flammable.
Decomposition temperature	Not applicable, Substance/mixture is not self-reactive, no organic peroxide and does not decompose under foreseen conditions of use
pH (20 °C (68 °F); Conc.: 1,0 % product; Solvent: Water)	3,0 - 4,0 Supplier method
pH (20 °C (68 °F); Conc.: 100 % product)	1,8 - 2 Supplier method
Viscosity (kinematic) (40 °C (104 °F);)	1,5 - 4 mm2/s
Solubility (qualitative) (20 °C (68 °F); Solvent: Water)	Soluble
Partition coefficient: n-octanol/water	Not applicable Mixture
Vapour pressure (20 °C (68 °F))	23,4 hPa Values referring to water
Vapour pressure (50 °C (122 °F))	123,5 hPa
Density (20 °C (68 °F))	1,330 - 1,350 g/cm3 Density, oscillation
Relative vapour density: (20 °C)	< 1
Particle characteristics	Not applicable Product is a liquid

9.2. Other information

Other information not applicable for this product

SECTION 10: Stability and reactivity

10.1. Reactivity
Reaction with strong bases

10.2. Chemical stability
Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions
See section reactivity

10.4. Conditions to avoid
No decomposition if used according to specifications.

10.5. Incompatible materials
See section reactivity.

10.6. Hazardous decomposition products
None if used for intended purpose.
In case of fire toxic gases can be released.

SECTION 11: Toxicological information

General toxicological information:
The classification as corrosive H314 category 1 is due to the extreme pH.

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute oral toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Based on available data, the classification criteria are not met.

Hazardous substances CAS-No.	Value type	Value	Species	Method
Phosphoric acid 7664-38-2	Acute toxicity estimate (ATE)	1.500 mg/kg		Expert judgement
Boric acid 10043-35-3	LD50	3.450 mg/kg	rat	not specified

Acute dermal toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Based on available data, the classification criteria are not met.

Hazardous substances CAS-No.	Value type	Value	Species	Method
Boric acid 10043-35-3	LD50	> 2.000 mg/kg	rabbit	not specified

Acute inhalative toxicity:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Based on available data, the classification criteria are not met.

Hazardous substances CAS-No.	Value type	Value	Test atmosphere	Exposure time	Species	Method
Nitric acid …% [C ≤ 70 %] 7697-37-2	Acute toxicity estimate (ATE)	2,65 mg/l	vapour			Expert judgement

Skin corrosion/irritation:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Phosphoric acid 7664-38-2	corrosive	24 h	rabbit	not specified
Nitric acid …% [C ≤ 70 %] 7697-37-2	corrosive			not specified
Boric acid 10043-35-3	not irritating		rabbit	not specified

Serious eye damage/irritation:

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
Nitric acid …% [C ≤ 70 %] 7697-37-2	corrosive			not specified
Boric acid 10043-35-3	not irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitization:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Based on available data, the classification criteria are not met.

Hazardous substances CAS-No.	Result	Test type	Species	Method
Boric acid 10043-35-3	not sensitising	Buehler test	guinea pig	OECD Guideline 406 (Skin Sensitisation)

Germ cell mutagenicity:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Based on available data, the classification criteria are not met.

Hazardous substances CAS-No.	Result	Type of study / Route of administration	Metabolic activation / Exposure time	Species	Method
Phosphoric acid 7664-38-2	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Phosphoric acid 7664-38-2	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Phosphoric acid 7664-38-2	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Nitric acid …% [C ≤ 70 %] 7697-37-2	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Nitric acid …% [C ≤ 70 %] 7697-37-2	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Nitric acid …% [C ≤ 70 %] 7697-37-2	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Boric acid 10043-35-3	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Boric acid 10043-35-3	negative	sister chromatid exchange assay in mammalian cells	with and without		not specified
Boric acid 10043-35-3	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Boric acid 10043-35-3	negative	oral: gavage		mouse	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)

Carcinogenicity

No data available.

Reproductive toxicity:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Based on available data, the classification criteria are not met.

Hazardous substances CAS-No.	Result / Value	Test type	Route of application	Species	Method
Phosphoric acid 7664-38-2	NOAEL P 500 mg/kg NOAEL F1 500 mg/kg	one-generation study	oral: gavage	rat	OECD Combined Repeated Dose and Reproductive / Developmental Toxicity Screening Test (Precursor Protocol of GL 422)
Nitric acid …% [C ≤ 70 %] 7697-37-2	NOAEL P >= 1.500 mg/kg	screening	oral: gavage	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Boric acid 10043-35-3	NOAEL P 100 mg/kg NOAEL F1 100 mg/kg NOAEL F2 100 mg/kg	three-generation study	oral: feed	rat	not specified

STOT-single exposure:

No data available.

STOT-repeated exposure:

The mixture is classified based on threshold limits referring to the classified substances present in the mixture.

Based on available data, the classification criteria are not met.

Hazardous substances CAS-No.	Result / Value	Route of application	Exposure time / Frequency of treatment	Species	Method
Phosphoric acid 7664-38-2	NOAEL 250 mg/kg	oral: gavage	6 w daily	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Nitric acid …% [C ≤ 70 %] 7697-37-2	NOAEL 1.500 mg/kg	oral: gavage	28 d daily	rat	OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
Boric acid 10043-35-3	NOAEL 100 mg/kg	oral: feed	2 y daily	rat	not specified

Aspiration hazard:

No data available.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

For the following ingredient(s) information on adverse health effects caused by endocrine disrupting properties is publicly available on the ECHA website:

Substances identified as ED according to EU REACH SVHC list: https://echa.europa.eu/candidate-list-table

Hazardous components	CAS No.	Link ECHA website
Boric acid	10043-35-3	

SECTION 12: Ecological information

General ecological information:

Do not empty into drains / surface water / ground water.
Locally harmful for aquatic and landliving organisms because of low pH and corrosive properties.
Inorganic product: Decomposition not affected.

12.1. Toxicity

Toxicity (Fish):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Phosphoric acid 7664-38-2	LC50	> 100 mg/l	96 h	Oncorhynchus mykiss	OECD Guideline 203 (Fish, Acute Toxicity Test)
Fluoroboric acid 16872-11-0	LC50	1.300 mg/l	96 h	Brachydanio rerio (new name: Danio rerio)	OECD Guideline 203 (Fish, Acute Toxicity Test)
Nitric acid …% [C ≤ 70 %] 7697-37-2	LC50	12,5 mg/l	96 h	Salmo gairdneri (new name: Oncorhynchus mykiss)	OECD Guideline 203 (Fish, Acute Toxicity Test)
Boric acid 10043-35-3	LC50	455 mg/l	96 h	Pimephales promelas	other guideline:
Boric acid 10043-35-3	NOEC	36,6 mg/l	34 d	Danio rerio (reported as Brachydanio rerio)	OECD Guideline 210 (fish early lite stage toxicity test)

Toxicity (aquatic invertebrates):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Phosphoric acid 7664-38-2	EC50	> 100 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Fluoroboric acid 16872-11-0	EC50	> 100 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Nitric acid …% [C ≤ 70 %] 7697-37-2	EC50	4,6 mg/l	48 h	Ceriodaphnia dubia	other guideline:
Boric acid 10043-35-3	EC50	520 mg/l	48 h	Ceriodaphnia dubia	other guideline:

Chronic toxicity (aquatic invertebrates):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Fluoroboric acid 16872-11-0	NOEC	188 mg/l	21 d	Daphnia magna	other guideline:
Boric acid 10043-35-3	NOEC	61,6 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)

Toxicity (Algae):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Phosphoric acid 7664-38-2	EC50	> 100 mg/l	72 h	Desmodesmus subspicatus	OECD Guideline 201 (Alga, Growth Inhibition Test)
Phosphoric acid 7664-38-2	NOEC	100 mg/l	72 h	Desmodesmus subspicatus	OECD Guideline 201 (Alga, Growth Inhibition Test)
Fluoroboric acid 16872-11-0	EC50	> 100 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Fluoroboric acid 16872-11-0	NOEC	100 mg/l	72 h	Pseudokirchneriella subcapitata	OECD Guideline 201 (Alga, Growth Inhibition Test)
Boric acid 10043-35-3	EC50	299,6 mg/l	72 h	Pseudokirchneriella subcapitata (reported as Raphidocelis subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Boric acid 10043-35-3	EC10	200,12 mg/l	72 h	Pseudokirchneriella subcapitata (reported as Raphidocelis subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)

Toxicity (microorganisms):

The mixture is classified based on calculation method referring to the classified substances present in the mixture.

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Phosphoric acid 7664-38-2	IC50	270 mg/l	3 h	activated sludge	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
Fluoroboric acid 16872-11-0	EC50	2.490 mg/l			not specified
Nitric acid …% [C ≤ 70 %] 7697-37-2	EC50	> 1.000 mg/l	3 h	activated sludge	OECD Guideline 209 (Activated Sludge, Respiration Inhibition Test)
Boric acid 10043-35-3	EC0	20 mg/l	16 h	Pseudomonas putida	DIN 38412, part 8 (Pseudomonas Zellvermehrungshemm-Test)

12.2. Persistence and degradability

No data available.

12.3. Bioaccumulative potential

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	Bioconcentration factor (BCF)	Exposure time	Temperature	Species	Method
Boric acid 10043-35-3	< 0,1	90 d	12 °C	Oncorhynchus tschawytscha	not specified

12.4. Mobility in soil

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	LogPow	Temperature	Method
Boric acid 10043-35-3	-1,09	22 °C	EU Method A.8 (Partition Coefficient)

12.5. Results of PBT and vPvB assessment

The table below presents the data of the classified substances present in the mixture.

Hazardous substances CAS-No.	PBT / vPvB
Phosphoric acid 7664-38-2	According to Annex XIII to Regulation (EC) No 1907/2006, a PBT and vPvB assessment shall not be conducted for inorganic substances.
Fluoroboric acid 16872-11-0	According to Annex XIII to Regulation (EC) No 1907/2006, a PBT and vPvB assessment shall not be conducted for inorganic substances.
Nitric acid …% [C ≤ 70 %] 7697-37-2	According to Annex XIII to Regulation (EC) No 1907/2006, a PBT and vPvB assessment shall not be conducted for inorganic substances.
Boric acid 10043-35-3	According to Annex XIII to Regulation (EC) No 1907/2006, a PBT and vPvB assessment shall not be conducted for inorganic substances.

12.6. Endocrine disrupting properties

For the following ingredient(s) information on adverse health effects caused by endocrine disrupting properties is publicly available on the ECHA website:

Substances identified as ED according to EU REACH SVHC list: https://echa.europa.eu/candidate-list-table

Hazardous components	CAS No.	Link ECHA website
Boric acid	10043-35-3	

12.7. Other adverse effects

If acidic or alkaline products are discharged into wastewater installations care must be taken that the discharged wastewater has a pH in the range pH 6 - 10, as pH variations could cause disorders in wastewater channels and biological sewage treatment plants. The local discharge regulations take precedence.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product disposal:
In consultation with the responsible local authority, must be subjected to special treatment.

Waste code

The valid EWC waste code numbers are source-related. The manufacturer is therefore unable to specify EWC waste codes for the articles or products used in the various sectors. The EWC codes listed are intended as a recommendation for users. We will be happy to advise you.
EWC/EAK 070608

SECTION 14: Transport information

14.1. UN number or ID number

ADR	3264
RID	3264
ADN	3264
IMDG	3264
IATA	3264

14.2. UN proper shipping name

ADR	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Phosphoric acid,Tetrafluoroboric acid)
RID	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Phosphoric acid,Tetrafluoroboric acid)
ADN	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Phosphoric acid,Tetrafluoroboric acid)
IMDG	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Phosphoric acid,Tetrafluoroboric acid)
IATA	Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid,Tetrafluoroboric acid)

14.3. Transport hazard class(es)

ADR	8
RID	8
ADN	8
IMDG	8
IATA	8

14.4. Packing group

ADR	II
RID	II
ADN	II
IMDG	II
IATA	II

14.5. Environmental hazards

ADR	not applicable
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

14.6. Special precautions for user

ADR	not applicable Tunnelcode: (E)
RID	not applicable
ADN	not applicable
IMDG	not applicable
IATA	not applicable

14.7. Maritime transport in bulk according to IMO instruments

not applicable

SECTION 15: Regulatory information

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

Ozone Depleting Substance (ODS) (Regulation (EC) No 2024/590):	Not applicable
Prior Informed Consent (PIC) (Regulation (EU) No 649/2012):	Not applicable
Persistent organic pollutants (Regulation (EU) 2019/1021):	Not applicable

VOC content (2010/75/EU)	0 %

National regulations/information (Germany):

WGK:	WGK 1: slightly hazardous to water (Ordinance on facilities for handling substances that are hazardous to water (AwSV)) Classification according to AwSV, Annex 1 (5.2)
Storage class according to TRGS 510:	8B

15.2. Chemical safety assessment

A chemical safety assessment has not been carried out.

SECTION 16: Other information

The labelling of the product is indicated in Section 2. The full text of all abbreviations indicated by codes in this safety data sheet are as follows:

H272 May intensify fire; oxidizer.
H290 May be corrosive to metals.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H331 Toxic if inhaled.
H360FD May damage fertility. May damage the unborn child.

Abbreviations and acronyms:

ADG(-Code): Australian Dangerous Goods (Code)
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR : European Agreement concerning the International Carriage of Dangerous Goods by Road
ASTM: American Society for Testing and Materials
ATE: acute toxicity estimate
AS: Australian Standard
AwSV: Ordinance on Installations for the Handling of Substances Hazardous to Water
CAS: Chemical Abstract Service
CLP: Regulation (EC) No 1272/2008
CMR: cancerogenic, mutagenic or reprotoxic
DIN: German Institute for Standardization
ECx: Effective concentration (x% effective level)
ECHA: European Chemicals Agency
EC-Nummer: Substance number in the EU-inventories EINECS/ELINCS
ECTLV: European community threshold limit value
ED:Substance identified as having endocrine disrupting properties
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
EN : European Standard
ENCS: Japanese chemical inventory
EPA: US Environmental Protection Agency
EU: European Union
EU EXPLD1: Substance listed in Annex I, Reg (EC) No. 2019/1148
EU EXPLD2: Substance listed in Annex II, Reg (EC) No. 2019/1148
EWC: European Waste Catalogue
GHS: Globally Harmonised System for Classification and Labelling of Chemicals
GLP: Good Laboratory Practice
HSNO: Hazardous Substances and New Organisms
IARC: International Agency for Research of Cancer
IATA: International Air Transport Association
IBC-Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IC50: half maximal inhibitory concentration
ICAO: International Civil Aviation Organization
IMDG-Code: International Maritime Code for Dangerous Goods
IMO: International Maritime Organization
ISO: International Standardization Organisation
LC50: Median lethal concentration
LD50: Median lethal dose
MARPOL: International Convention for the Prevention of Marine Pollution from Ships
n.o.s.: not otherwise specified
NO(A)EC: No (adverse) effect concentration
NO(A)EL: No (adverse) effect level
NZS: New Zealand Standard
OECD: Organisation for Economic Co-operation and Development
OEL: Occupational Exposure Limit
OPPT: US EPA Office of Pollution Prevention and Toxics
OPPTS: US EPA Office of Prevention, Pesticides and Toxic Substances
PBT: Persistent, bioaccumulative, toxic
(Q)SAR: (Quantitative) structure–activity relationship
REACH: Regulation (EC) No. 1907/2006
RID: Regulations concerning the International Transport of Dangerous Goods by Rail
SADT: Self Accelerating Decomposition Temperature

SDS: Safety Data Sheet
STOT: Specific Target Organ Toxicity
STOT SE: Specific Target Organ Toxicity - single exposure
STOT RE: Specific Target Organ Toxicity - repeated exposure
SUSMP: Standard for the Uniform Scheduling of Medicines and Poisons
SVHC: Substance of very high concern (REACH Candidate List)
TRGS: German Technical Rules for hazardous substances
UN: United Nations
VOC: Volatile Organic Compound
814.018 VOC Reg CH: Swiss Ordinance 814.018 on the Incentive Tax on Volatile Organic Compounds
vPvB: Very persistent, very bioaccumulative
VwVwS: Administrative Regulation on Substances Hazardous to Waters
WGK: Water hazard class

Further information:

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