Material Safety Data Sheet
according to Regulation (EC) No. 1907/2006

Hakaphos® 20-19-19

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

1.1 Product identifier

Trade name : Hakaphos® 20-19-19

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

Use of the Substance/Mixture : Fertilizer

1.3 Details of the supplier of the safety data sheet

Company : COMPO EXPERT GmbH
Krögerweg 10
D-48155 Münster

Telephone : +49 (0) 251 29 79 81 – 000

Telefax : +49 (0) 251 29 79 81 - 111

E-mail address of person responsible for the SDS : info@compo-expert.com

1.4 Emergency telephone number

GBK GmbH - Global Regulatory Compliance - 24h
Telephone: +49 (0) 6132 - 84463

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard statements : Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

Supplemental Hazard Statements : EUH210 Safety data sheet available on request.

Further information : German "Hazardous Substances" legislation (Gefahrstoffverordnung) appendix I, No. 5 (Ammonium Nitrate group C III)

2.3 Other hazards

According to our experience and to the information provided to us, the product does not have any harmful effects if it is used and handled as specified.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature : Mixture of nutrient salts based on various inorganic salts.

Hazardous components

Chemical Name	CAS-No. EC-No. Registration number	Classification	Concentration (% w/w)
potassium nitrate	7757-79-1 231-818-8 01-2119488224-35-XXXX	Ox. Sol. 3; H272	>= 10 - <= 45
Boric acid	11113-50-1 234-343-4 01-2119486683-25-XXXX	Repr. 1B; H360FD	<= 0,2

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : Take off immediately all contaminated clothing.

If inhaled : Move to fresh air.
If symptoms persist, call a physician.
If unconscious place in recovery position and seek medical advice.

In case of skin contact : Wash off with soap and water.

In case of eye contact : Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed : Clean mouth with water and drink afterwards plenty of water.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Water
Water spray
Dry chemical

Unsuitable extinguishing media : Carbon dioxide (CO2)
Foam
Sand

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Can decompose at above 130 °C. Thermal decomposition products: Nitrogen monoxide, nitrogen dioxide, dinitrogen oxide, ammonia, chloride, hydrogen chloride.

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

Further information : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Remove all sources of ignition.

6.2 Environmental precautions

Environmental precautions : Do not empty into drains.
Retain and dispose of contaminated wash water.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Use mechanical handling equipment.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	not required under normal use
Advice on protection against fire and explosion	:	The product is not flammable.
Hygiene measures	:	Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	To maintain product quality, do not store in heat or direct sunlight. Keep away from sources of ignition - No smoking. Keep away from combustible material. Protect from contamination. Protect from moisture.
Storage class (TRGS 510)	:	5.1C, Ammonium nitrate and ammonium nitrate containing preparations

7.3 Specific end use(s)

Specific use(s)	:	Always read the label and product information before use.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Boric acid	11113-50-1	TWA	2,6 mg/m3	DE TRGS 900
		STEL	5,2 mg/m3	DE TRGS 900
			0,5 mg/m3	

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
potassium nitrate	Workers	Inhalation	Systemic effects	36,7 mg/m3
	Workers	Skin contact	Systemic effects	20,8 mg/kg

Remarks:	Exposure time: 1 d			
	Consumers	Ingestion	Systemic effects	12,5 mg/kg
Remarks:	Exposure time: 1 d			
	Consumers	Skin contact	Systemic effects	12,5 mg/kg
Remarks:	Exposure time: 1 d			
	Consumers	Inhalation	Systemic effects	10,9 mg/m3
Boric acid	Workers	Inhalation	Long-term exposure, Systemic effects	8,28 mg/m3
	Workers	Skin contact	Long-term exposure, Systemic effects	392 mg/kg
	Consumers	Ingestion	Short-term exposure, Systemic effects	0,98 mg/kg
	Consumers	Ingestion	Long-term exposure, Systemic effects	0,98 mg/kg
	Consumers	Inhalation	Long-term exposure, Systemic effects	4,15 mg/m3
	Consumers	Skin contact	Long-term exposure, Systemic effects	196 mg/kg

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
potassium nitrate	Fresh water	0,45 mg/l
	Marine water	0,045 mg/l
	Ceiling Limit Value	4,5 mg/l
	Sewage treatment plant	18 mg/l

8.2 Exposure controls

Personal protective equipment

Eye protection : In case of dust formation:

Tightly fitting safety goggles

Hand protection
Material : Gloves

Skin and body protection : Wearing of closed work clothing is recommended.

Respiratory protection : Particle filtering disposable mask DIN EN 149 with filter FFP2.

Environmental exposure controls

General advice : Do not empty into drains.
Retain and dispose of contaminated wash water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	crystalline
Colour	:	various
Odour	:	odourless
pH	:	ca. 5, Concentration: 100 g/l (20 °C)
Melting point/range	:	No data available
Boiling point/boiling range	:	Not applicable
Flash point	:	Not applicable
Evaporation rate	:	Not applicable
Flammability (solid, gas)	:	The product is not flammable.
Upper explosion limit	:	Not explosive
Lower explosion limit	:	Not explosive
Vapour pressure	:	Not applicable
Relative vapour density	:	Not applicable
Relative density	:	Not applicable

Bulk density	:	ca. 1.200 kg/m³
Solubility(ies)		
Water solubility	:	soluble
Partition coefficient: n-octanol/water	:	Not applicable
Decomposition temperature	:	ca. 130 °C To avoid thermal decomposition, do not overheat.
Viscosity		
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	Method: Manual of tests and criteria. Test O.1 (United Nations Recommendations on the Transport of Dangerous Goods). Not considered an oxidizing substance
Particle characteristics		
Particle Size Distribution	:	D50 = 400 µm D50 Tolerance range = 320 µm - 480 µm Measurement technique: Sieve analysis

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No decomposition if stored and applied as directed.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : No decomposition if stored and applied as directed.

10.4 Conditions to avoid

Conditions to avoid : Temperature 130 degrees Celsius
Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid	:	Acids Bases Organic materials Powdered metals

10.6 Hazardous decomposition products

Hazardous decomposition products	:	Nitrogen oxides (NOx) ammonia

SECTION 11: Toxicological information

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

Acute toxicity

Product:

Acute oral toxicity	:	Assessment: The substance or mixture has no acute oral toxicity Remarks: Calculation method

Components:

potassium nitrate:

Acute oral toxicity	:	LD50 (Rat): > 2.000 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): 0,527 mg/l
Acute dermal toxicity	:	LD50 (Rat): > 5.000 mg/kg

Boric acid:

Acute oral toxicity	:	LD50 (Mouse): 3.450 mg/kg LD50 (Rat): 2.660 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): 2 mg/l
Acute dermal toxicity	:	LD50 Dermal (Rabbit): > 2.000 mg/kg

Skin corrosion/irritation

Product:

Species: Rabbit
Method: OECD Test Guideline 404
Result: non-irritant

Components:

potassium nitrate:

Species: Rabbit
Result: No skin irritation

Boric acid:
Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation

Product:

Species: Rabbit
Method: OECD Test Guideline 405
Result: non-irritant

Components:

potassium nitrate:
Species: Rabbit
Result: No eye irritation

Boric acid:
Species: Rabbit
Method: OECD Test Guideline 405
Result: No eye irritation

Respiratory or skin sensitisation

Product:

Result: non-sensitizing

Components:

potassium nitrate:
Result: non-sensitizing

Boric acid:
Method: OECD Test Guideline 406
Result: non-sensitizing

germ cell mutagenicity

Product:

Genotoxicity in vitro : Remarks: Contains no hazardous ingredients according to GHS

Components:

potassium nitrate:

Genotoxicity in vitro	:	Remarks: No data available

Boric acid:

Genotoxicity in vitro	:	Test Type: Mammalian cell gene mutation assay Result: Mutagenicity tests revealed no genotoxic potential. Remarks: In vitro tests did not show mutagenic effects
Germ cell mutagenicity-Assessment	:	Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity

Product:

Remarks: Contains no ingredient listed as a carcinogen

Components:

potassium nitrate:
Remarks: Did not show carcinogenic effects in animal experiments.

Boric acid:
Species: Rat
Application Route: Oral
Method: OECD Test Guideline 451
Remarks: Animal testing did not show any carcinogenic effects.

Reproductive toxicity

Product:

Effects on fertility	:	Remarks: Contains no ingredient listed as toxic to reproduction
Effects on foetal development	:	Remarks: Contains no ingredient listed as toxic to reproduction

Components:

potassium nitrate:

Effects on fertility	:	Remarks: No toxicity to reproduction
Effects on foetal development	:	Remarks: Did not show teratogenic effects in animal experiments.

Boric acid:

Effects on foetal development	:	Remarks: Animal ingestion studies in several species, at high doses, indicate that borates cause reproductive and developmental effects.

Reproductive toxicity - Assessment : May damage fertility. May damage the unborn child.

STOT - single exposure

Product:

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

Components:

potassium nitrate:
Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Product:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Components:

potassium nitrate:
Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:

potassium nitrate:
Species: Rat
NOAEL: >= 1.500 mg/kg
Exposure time: 1 d

Aspiration hazard

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

11.2 Information on other hazards

Endocrine disrupting properties

No data available

Experience with human exposure

Product:

General Information : Danger of methaemoglobin formation.

Further information

Product:

Remarks: The toxicological data has been taken from products of similar composition.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Ecotoxicology Assessment
Toxicity Data on Soil : Not expected to adsorb on soil.

Components:

potassium nitrate:

Toxicity to fish : LC50 (Fish): > 100 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 490 mg/l
Exposure time: 48 h

Toxicity to algae : LC50 : >= 1.700 mg/l
Exposure time: 10 d

12.2 Persistence and degradability

Components:

potassium nitrate:

Biodegradability : Remarks: The methods for determining the biological degradability are not applicable to inorganic substances.

Boric acid:

Biodegradability : Remarks: Not applicable

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Does not accumulate in organisms.

Components:

potassium nitrate:

Bioaccumulation : Remarks: Does not bioaccumulate.

12.4 Mobility in soil

Product:

Distribution among environmental compartments : Remarks: Slightly mobile in soils

Components:

potassium nitrate:
Mobility : Remarks: No data available

Boric acid:
Mobility : Remarks: No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : Remarks: No data available

Components:

potassium nitrate:
Assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).. This substance is not considered to be very persistent and very bioaccumulating (vPvB)..

Boric acid:
Assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT)..
Remarks: Not applicable

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

Product:

Additional ecological information : Additional ecological information
The following ecotoxicological data refer to:
potassium nitrate

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Dispose of wastes in an approved waste disposal facility.

Contaminated packaging : Contaminated packaging should be emptied as far as

possible; then it can be passed on for recycling after being thoroughly cleaned.

SECTION 14: Transport information

14.1 UN number or ID number

Not regulated as a dangerous good

14.2 UN proper shipping name

Not regulated as a dangerous good

14.3 Transport hazard class(es)

Not regulated as a dangerous good

14.4 Packing group

Not regulated as a dangerous good

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Not applicable

14.7 Maritime transport in bulk according to IMO instruments

Remarks : Not relevant

SECTION 15: Regulatory information

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

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : contains Boric acid

Water contaminating class (Germany) : WGK 1 slightly water endangering

Other regulations : This product is subject to Regulation (EU) 2019/1148; suspicious transactions, disappearance or theft of the product must be reported to the relevant authority.

15.2 Chemical Safety Assessment

Not relevant

SECTION 16: Other information

Full text of H-Statements

H272	:	May intensify fire; oxidizer.
H360FD	:	May damage fertility. May damage the unborn child.

Full text of other abbreviations

Ox. Sol.	:	Oxidizing solids
Repr.	:	Reproductive toxicity

(Q)SAR - (Quantitative) Structure Activity Relationship; 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 the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; DIN - Standard of the German Institute for Standardisation; ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; 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; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; 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; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TRGS - Technical Rule for Hazardous Substances; UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative; DSL - Domestic Substances List (Canada); KECI - Korea Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); AICS - Australian Inventory of Chemical Substances; IECSC - Inventory of Existing Chemical Substances in China; ENCS - Existing and New Chemical Substances (Japan); ISHL - Industrial Safety and Health Law (Japan); PICCS - Philippines Inventory of Chemicals and Chemical Substances; NZIoC - New Zealand Inventory of Chemicals; TCSI - Taiwan Chemical Substance Inventory; CMR - Carcinogen, Mutagen or Reproductive Toxicant; GLP - Good Laboratory Practice

Further information

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 given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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