Safety Data Sheet
acc. to OSHA HCS (HazCom 2012)

Printing date 04/22/2024 Reviewed on 04/22/2024

1 Identification

· **Product identifier**

· **Trade name: Phosphate HR**

· **Catalogue number:** 00511981, 511980BT, 501980, 00511989BT, 00501980, 00511980BT

· **Application of the substance / the mixture:** Reagent for water analysis

· **Manufacturer/Supplier:**
Tintometer Inc.
6456 Parkland Drive
Sarasota, FL 34243
USA
phone: (941) 756-6410
fax: (941) 727-9654
www.lovibond.us
Made in Germany

· **Emergency telephone number:** + 1 866 928 0789 (English, French, Spanish)

2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS08 Health hazard

Toxic to Reproduction 1B H360 May damage fertility or the unborn child.

GHS05 Corrosion

Skin Corrosion 1A H314 Causes severe skin burns and eye damage.
Eye Damage 1 H318 Causes serious eye damage.

GHS07

Acute Toxicity - Inhalation 4 H332 Harmful if inhaled.

· **Label elements**
· **GHS label elements** The product is classified and labeled according to the Hazard Communication Standard (HCS).
· **Hazard pictograms**

GHS05 GHS07 GHS08

· **Signal word** Danger
· **Hazard-determining components of labeling:**
dipotassium disulfate
boric acid
ammonium meta-vanadate
sodium bisulfate
· **Hazard statements**
H332 Harmful if inhaled.
H314 Causes severe skin burns and eye damage.
H360 May damage fertility or the unborn child.

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· **Precautionary statements**

P280	Wear protective gloves/protective clothing/eye protection.
P201	Obtain special instructions before use.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P405	Store locked up.

· **Other hazards** No further relevant information available.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of inorganic compounds.
· **Composition and Information on Ingredients:**
Percent ranges are used due to the confidential product information.

CAS: 10043-35-3 EINECS: 233-139-2 Index number: 005-007-00-2 RTECS: ED 4550000	boric acid Toxic to Reproduction 1B, H360	40–50%
CAS: 7790-62-7 EINECS: 232-216-8	dipotassium disulfate Acute Toxicity - Inhalation 3, H331; Skin Corrosion 1A, H314; Eye Damage 1, H318	30–40%
CAS: 7681-38-1 EINECS: 231-665-7 Index number: 016-046-00-X RTECS: VZ1860000	sodium bisulfate Eye Damage 1, H318	5–10%
CAS: 7803-55-6 EINECS: 232-261-3 RTECS: YW 0875000	ammonium meta-vanadate Acute Toxicity - Oral 3, H301; Toxic to Reproduction 2, H361; Specific Target Organ Toxicity - Repeated Exposure 1, H372; Aquatic Chronic 2, H411; Acute Toxicity - Inhalation 4, H332; Eye Irritation 2A, H319	0.25–<1%

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

4 First-aid measures

· **Description of first aid measures**
· **General information:** Immediately remove any clothing soiled by the product.
· **After inhalation:**
Supply fresh air.
Get medical advice/attention.
· **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
Seek medical treatment.
· **After eye contact:** Rinse opened eye for several minutes (at least 15 min) under running water. Then consult a doctor.
· **After swallowing:**
Rinse out mouth and then drink 1-2 glasses of water.
Do not induce vomiting; immediately call for medical help.
· **Most important symptoms and effects, both acute and delayed**
burns
resorption
after inhalation:
mucosal irritations, cough, breathing difficulty
after swallowing:
sickness
vomiting
diarrhoea
strong caustic effect
after absorption of large amounts:
CNS disorders
ataxia (impaired locomotor coordination)
drop in temperature

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cardiovascular disorders
fatigue
· **Danger:** Danger of pulmonary edema.
· **Indication of any immediate medical attention and special treatment needed:**
If swallowed or in case of vomiting, danger of entering the lungs.
Later observation for pneumonia and pulmonary edema.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
· **Special hazards arising from the substance or mixture**
The product is not combustible.
Formation of toxic gases is possible during heating or in case of fire.
In case of fire, the following can be released:
Sulfur oxides (SOx)
Nitrogen oxides (NOx)
smoke of metal oxide
Sodium oxide
Potassium oxide
· **Advice for firefighters**
· **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
· **Additional information**
Collect contaminated fire fighting water separately. It must not enter the sewage system.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
Ambient fire may liberate hazardous vapours.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
· **Advice for non-emergency personnel:**
Wear protective equipment. Keep unprotected persons away.
Avoid substance contact.
Ensure adequate ventilation
Use respiratory protective device against the effects of fume/dust/aerosol.
· **Advice for emergency responders:** Protective equipment: see section 8

· **Environmental precautions:** Do not allow product to reach sewage system or any water course.
· **Methods and material for containment and cleaning up:**
Ensure adequate ventilation.
Pick up mechanically.
Dispose contaminated material as waste according to section 13.
· **Reference to other sections**
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Precautions for safe handling**
· **Advice on safe handling:** Provide suction extractors if dust is formed.
· **Hygiene measures:**
Do not inhale dust / smoke / mist.
Do not get in eyes, on skin, or on clothing.
Take off immediately all contaminated clothing.
Store protective clothing separately.
Wash hands before breaks and at the end of work.
Do not eat, drink or smoke when using this product.

· **Conditions for safe storage, including any incompatibilities**
· **Requirements to be met by storerooms and receptacles:** Store in a cool location.
· **Information about storage in one common storage facility:** see chapter 10

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· **Further information about storage conditions:**
Store locked up or with access restricted to technical experts or their assistants.
Ensure that persons do not handle until all safety precautions have been read and understood.
Protect from heat and direct sunlight.
Store in cool, dry conditions in well sealed receptacles.
Protect from exposure to the light.
Protect from humidity and water.
This product is hygroscopic.
· **Recommended storage temperature:** 20°C +/- 5°C (approx. 68°F)

· **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:**
The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
At this time, the other constituents have no known exposure limits.

CAS: 10043-35-3 boric acid	
TLV (USA)	Short-term value: 6* mg/m³ Long-term value: 2* mg/m³ *as inhalable fraction, A4
EL (Canada)	Short-term value: 6 mg/m³ Long-term value: 2 mg/m³
EV (Canada)	Short-term value: 6 mg/m³ Long-term value: 2 mg/m³ inorganic, inhalable

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Engineering measures:**
Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.
See item 7.

· **Personal protective equipment:**
Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled.
· **Breathing equipment:** Use respiratory protective device against the effects of fume/dust/aerosol.
· **Recommended filter device for short term use:** Filter P3
· **Protection of hands:**
Acid resistant gloves
Preventive skin protection by use of skin-protecting agents is recommended.
After use of gloves apply skin-cleaning agents and skin cosmetics.
· **Material of gloves**
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.11 mm
· **Penetration time of glove material**
Value for the permeation: Level ≤ 1 (10 min)
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· **Eye protection:**
Tightly sealed goggles
Use protective goggles that have been tested and approved in accordance with government standards (like NIOSH).
· **Body protection:** Acid resistant protective clothing

· **Limitation and supervision of exposure into the environment:**
Do not allow product to reach sewage system or any water course.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **Appearance:**
· **Form / Physical state:** Tablets
· **Color:** Orange

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· **Odor:**	Odorless
· **Odor threshold:**	Not applicable.
· **pH-value:**	Not determined.
· **Melting point/freezing point:**	Not determined.
· **Initial boiling point and boiling range:**	Not determined.
· **Flash point:**	Not applicable.
· **Flammability (solid, gas):**	The product is not combustible.
· **Auto igniting:**	Not applicable.
· **Decomposition temperature:**	Not determined.
· **Auto-ignition temperature:**	Product is not self-igniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Flammability or explosive limits:**	
Lower:	Not applicable.
Upper:	Not applicable.
· **Oxidizing properties:**	none
· **Vapor Pressure:**	Not applicable (solid).
· **Density:**	Not determined.
· **Relative density:**	Not determined.
· **Vapor density:**	Not applicable.
· **Evaporation rate:**	Not applicable.
· **Solubility(ies)**	
· **Water:**	Soluble.
· **Partition coefficient (n-octanol/water):**	Not applicable (mixture).
· **Viscosity:**	
· **Kinematic:**	Not applicable (solid).
· **Other information**	
· **Solids content:**	100 %

10 Stability and reactivity

· **Reactivity** see section "Possibility of hazardous reactions"
· **Chemical stability** Stable at ambient temperature (room temperature).
· **Possibility of hazardous reactions**
Aqueous solution reacts acidic.
Forms hydrogen in aqueous solution with metals (Danger of explosion!).
Aqueous solution reacts with metals.
Reacts with alkali (lyes).
Reacts with strong oxidizing agents.
Liberates acid in contact with water or alcohol.
Reacts with strong alkalis and oxidizing agents.
· **Conditions to avoid** Heating (decomposition)
· **Incompatible materials:** metals
· **Hazardous decomposition products:** see section 5

* 11 Toxicological information

· **Information on toxicological effects**

· **Acute toxicity:**
Classification according to calculation procedure.
Harmful if inhaled.

· **Acute toxicity estimate ($ATE_{(MIX)}$) - Calculation method:**		
Oral	GHS $ATE_{(MIX)}$	2561 mg/kg (.)
Inhalative	GHS $ATE_{(MIX)}$	1.3 mg/l/4h (dust)

· **LD/LC50 values that are relevant for classification:**		
CAS: 10043-35-3 boric acid		
Oral	LD50	2660 mg/kg (rat) (OECD 401) (GESTIS, ECHA registrant)

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Dermal	LD50.	>2000 mg/kg (rat) (ECHA, registrant: no deaths occurred.)
	LD_0	1500 mg/kg (child) (MERCK)
	NOAEL	9.6 mg/kg (rat) (NTP)
CAS: 7790-62-7 dipotassium disulfate		
Oral	LD50	2500 mg/kg (ATE) (Read across 7664-93-9: LD_{50}(rat) = 2140 mg/kg, ECHA)
Inhalative	LC50/4h	0.5 mg/l (ATE) (Aerosol) (Read across 7664-93-9: LD_{50} (rat, 4h) = ~ 850 mg/m³, ECHA)
CAS: 7681-38-1 sodium bisulfate		
Oral	LD50	2490 mg/kg (rat) (IUCLID)
Dermal	LD50.	>2000 mg/kg (rabbit)
CAS: 7803-55-6 ammonium meta-vanadate		
Oral	LD50	169 mg/kg (rat) (OECD 401) (Merck)
Dermal	LD50.	>2500 mg/kg (rat) (OECD402) (Registrant, ECHA: limit-test, all test animals survived at this concentration)
Inhalative	LC50/4h	2.51 mg/l (rat) (OECD 403) (Merck)

· **Primary irritant effect:**

· **on the skin:** Causes severe skin burns.
· **on the eye:**
Causes serious eye damage.
Risk of blindness!

· **Information on components:**		
CAS: 10043-35-3 boric acid		
Irritation of skin	OECD 404	(rabbit: no irritation) (Registrant, ECHA)
Irritation of eyes	OECD 492	(rabbit: slight irritation) (IUCLID)
CAS: 7681-38-1 sodium bisulfate		
Irritation of skin	OECD 404	(rabbit: no irritation)
Irritation of eyes	OECD 492	(rabbit: severe irritations)
CAS: 7803-55-6 ammonium meta-vanadate		
Irritation of skin	OECD 404	(rabbit: no irritation)
Irritation of eyes	OECD 405	(rabbit: irritation)

· **Sensitization:** Based on available data, the classification criteria are not met.

· **Information on components:**		
CAS: 10043-35-3 boric acid		
Sensitization	OECD 406	(guinea pig: negative)

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**
None of the ingredients is listed.

· **NTP (National Toxicology Program)**
None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**
None of the ingredients is listed.

· **Other information:** see section 8 / 15

· **Synergistic Products:** None

· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction):**
The following statements refer to the mixture:

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Toxic to Reproduction 1B

· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** Based on available data, the classification criteria are not met.
· **Reproductive toxicity** May damage fertility or the unborn child.

· **STOT (specific target organ toxicity) -single exposure** Based on available data, the classification criteria are not met.
· **STOT (specific target organ toxicity) -repeated exposure** Based on available data, the classification criteria are not met.

· **Aspiration hazard** Based on available data, the classification criteria are not met.

· **Information on components:**
CAS 10043-35-3: evaluation for carcinogenicity: negative in animals (NTP)

CAS: 10043-35-3 boric acid	
OECD 471	(negative) (Bacterial Reverse Mutation Test - Ames test)
OECD 476	(negative) (In Vitro Mammalian Cell Gene Mutation Test) (mouse lymphomea test)
OECD 414	(negative) (oral, rat) (ECHA, registrant: no evidence of developmental toxicity up to 55 mg/kg bw. At 76 mg/kg bw there was reduced fetal bodyweight, short and wavy ribs, and these effects disappeared during the postnatal period.)
OECD 474	(negative) (in vivo, mice)
CAS: 7803-55-6 ammonium meta-vanadate	
OECD 471	(negative) (Bacterial Reverse Mutation Test - Ames test)

· **Additional toxicological information:**
In case of an acute molybdenum(VI) intoxication: diarrhoea, anaemia, fatigue, loss of appetite. Toxic effect on liver and kidneys after
high doses.
CAS 10043-35-3: Absorption through gastro-intestinal tract, mucous membranes
Boric acid / Borate may cause developmental changes based on published data, at doses many times in excess of those that could occur through inhalation of dust in occupational settings.
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

CAS: 10043-35-3 boric acid
. (source: GESTIS) Main toxic effects: Acute: Slightly irritating to the eyes and skin; gastrointestinal disturbances, CNS-effects and (later) skin damage after massive poisoning Chronic: Irritation to the mucous membranes following inhalative exposure, effects to the gastrointestinal tract and CNS Further Information (Merck): "Toxicity reported for borates in humans: ingestion or absorption may cause nausea, vomiting, diarrhea, abdominal cramps, anderythematous lesions on the skin and mucous membranes. Other symptoms include: circulatory collapse, tachycardia, cyanosis, delirium, convulsions, and coma. Death has been reported to occur in infants from less than 5 grams and in adults from 5 to 20 grams." "Liver - Irregularities - Based on Human Evidence"

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**	
CAS: 10043-35-3 boric acid	
EC50	133 mg/l/48h (Daphnia magna) (ECOTOX)
LC50	50–100 mg/l/96h (rainbow trout) (ECOTOX)
CAS: 7681-38-1 sodium bisulfate	
EC50	190 mg/l/48h (Daphnia magna) (IUCLID)

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CAS: 7803-55-6 ammonium meta-vanadate	
NOEC	0.87 mg/l (fish) (30d) (ECHA: Clarias batrachus)
LC50	2.6 mg/l/96h (fish) (ECOTOX: Ictalurus catus)

· **Bacterial toxicity:**
sulfates toxic > 2.5 g/l

CAS: 7681-38-1 sodium bisulfate	
EC10	>1000 mg/l (Pseudomonas putida) (16 h)

· **Other information:**
Toxic for fish:
Sulfates > 7 g/l
molybdenum compounds in general: > 25 mg/l
NH_4^+ > 0.3 mg/l
· **Persistence and degradability** .
· **Other information:**
Mixture of inorganic compounds.
Methods for the determination of biodegradability are not applicable to inorganic substances.
· **Bioaccumulative potential**
Pow = n-octanol/wasser partition coefficient
log Pow < 1 = Does not accumulate in organisms.

CAS: 10043-35-3 boric acid	
log Pow	-1.09 (.) (OECD 107, 22°C) (Merck)

· **Mobility in soil** No further relevant information available.
· **Other adverse effects**
Depending on the concentration, phosphorus and/or nitrogen compounds may contribute to the eutrophication of water supplies.
Avoid transfer into the environment.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Hand over to hazardous waste disposers.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**	
· **DOT, IMDG, IATA**	UN1759
· **UN proper shipping name**	
· **DOT**	Corrosive solids, n.o.s. (dipotassium disulfate)
· **IMDG, IATA**	CORROSIVE SOLID, N.O.S. (dipotassium disulfate)
· **Transport hazard class(es)**	
· **DOT**	

· **Class**	8 Corrosive substances

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· **Label**	8
· **IMDG, IATA**	
	
· **Class**	8 Corrosive substances
· **Label**	8
· **Packing group**	
· **DOT, IMDG, IATA**	II
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Corrosive substances
· **Hazard identification number (Kemler code):**	80
· **EMS Number:**	F-A,S-B
· **Segregation groups**	(SGG1) Acids, (SGG2) ammonium compounds
· **Stowage Category**	A
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **DOT**	
· **Quantity limitations**	On passenger aircraft/rail: 15 kg On cargo aircraft only: 50 kg
· **IMDG**	
· **Limited quantities (LQ)**	1 kg
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 500 g

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (Extremely hazardous substances):**
None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

CAS: 7803-55-6	ammonium meta-vanadate

· **TSCA (Toxic Substances Control Act):**
All components have the value ACTIVE.

· **Hazardous Air Pollutants**
None of the ingredients is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**
None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **New Jersey Right-to-Know List:**

CAS: 7803-55-6	ammonium meta-vanadate

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· **New Jersey Special Hazardous Substance List:**
None of the ingredients is listed.

· **Pennsylvania Right-to-Know List:**

CAS: 7803-55-6	ammonium meta-vanadate

· **Pennsylvania Special Hazardous Substance List:**

CAS: 7803-55-6	ammonium meta-vanadate	E

· **EPA (Environmental Protection Agency)**

CAS: 10043-35-3	boric acid	I (oral)

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

· **Information about limitation of use:**
Observe national regulations where applicable:
Employment restrictions concerning young persons must be observed.
Employment restrictions concerning pregnant and lactating women must be observed.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

* 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**
H301 Toxic if swallowed.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H331 Toxic if inhaled.
H332 Harmful if inhaled.
H360 May damage fertility or the unborn child.
H361 Suspected of damaging fertility or the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

· **Recommended restriction of use:** professional/industrial use only

· **Version number / date of revision:** 59 / 04/22/2024

· **Abbreviations and acronyms:**
OECD: Organisation for Economic Co-operation and Development
STOT: specific target organ toxicity
SE: single exposure
RE: repeated exposure
EC50: half maximal effective concentration
IC50: half maximal inhibitory concentration
NOEL or NOEC: No Observed Effect Level or Concentration
ACGIH® - American Conference of Governmental Industrial Hygienists
•A1 - Confirmed human carcinogen
•A2 - Suspected human carcinogen
•A3 - Confirmed animal carcinogen with unknown relevance to humans
•A4 - Not classifiable as a human carcinogen
•A5 - Not suspected as a human carcinogen
IARC - International Agency for Research on Cancer
•Group 1 - Carcinogenic to humans
•Group 2A - Probably carcinogenic to humans
•Group 2B - Possibly carcinogenic to humans
•Group 3 - Not classifiable as to carcinogenicity to humans
•Group 4 - Probably not carcinogenic to humans
NTP - National Toxicology Program, U.S. Department of Health and Human Services
•Group K - Known to be Human Carcinogens
•Group R - Reasonably Anticipated to be Human Carcinogens
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value

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PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Toxicity - Inhalation 3: Acute toxicity – Category 3
Acute Toxicity - Inhalation 4: Acute toxicity – Category 4
Skin Corrosion 1A: Skin corrosion/irritation – Category 1A
Eye Damage 1: Serious eye damage/eye irritation – Category 1
Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A
Toxic to Reproduction 1B: Reproductive toxicity – Category 1B
Toxic to Reproduction 2: Reproductive toxicity – Category 2
Specific Target Organ Toxicity - Repeated Exposure 1: Specific target organ toxicity (repeated exposure) – Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

· **Sources**
Data arise from safety data sheets, reference works and literature.
GESTIS- Stoffdatenbank (Substance Database, Germany)
ECHA: European CHemicals Agency http://echa.europa.eu
IUCLID (International Uniform Chemical Information Database)
ECOTOX Database
NTP (National Toxicology Program)

· *** Data compared to the previous version altered.**