Film developer
Very fine grain
Medium contrast

BERGGER BER49

1. Identification

Product identifier :	BERGGER Ber49
Application :	Photographic developer
Supplier :	BERGGER SAS, Les plaines de Rejatas, 87260 Vicq-sur-Breuilh
Tél. :	09 66 89 50 26
Emergency (France) :	+33 (0)1 45 42 59 59

2. Hazards identification

Part 1

Classification according to Regulation (EC) No 1272/2008

Muta. 2 H341 Suspected of causing genetic defects.
Carc. 2 H351 Suspected of causing cancer.
Eye Dam. 1 H318 Causes serious eye damage.
Aquatic Acute 1 H400 Very toxic to aquatic life.
Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H312 Harmful in contact with skin.
Skin Sens. 1 H317 May cause an allergic skin reaction.

Hazard pictograms

Signal word

Danger

Hazard-determining components of labelling
1,4-dihydroxybenzene (hydroquinone)
N,N-Diethyl - 1,4-phenylendiammoniumsulfat
boric acid

Hazard statements

H302+H312 Harmful if swallowed or in contact with skin.
H318 Causes serious eye damage.
H317 May cause an allergic skin reaction.
H341 Suspected of causing genetic defects.
H351 Suspected of causing cancer.
H400 Very toxic to aquatic life.
H360FD May damage fertility. May damage the unborn child.

Precautionary statements

P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
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/face protection.
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/doctor.
P308 + P313 If concerned or exposed Get medical advice/attention
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/ international regulations.

Other hazards
Results of PBT and vPvB assessment
· PBT: Not applicable.
· vPvB: Not applicable.

Parts 2 & 3

Classification according to Regulation (EC) No 1272/2008

Repr. 1B, H360FD May damage fertility. May damage the unborn child.

Hazard pictograms

Signal word

Danger

Hazard-determining components of labelling of part 2
boric acid

Hazard-determining components of labelling of part 3
disodium tetraborate pentahydrate

Hazard statements

H360FD May damage fertility. May damage the unborn child.

Precautionary statements

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/face protection.
P308 + P313 If concerned or exposed Get medical advice/attention
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/ international regulations.

Other hazards

Results of PBT and vPvB assessment
· PBT: Not applicable.
· vPvB: Not applicable.

3. Composition/information on ingredients

Part 1 - Mixtures

Mixture of the substances listed below with harmless additions.

Dangerous components		
CAS: 123-31-9 EINECS: 204-617-8 Index number: 604-005-00-4 Reg.nr.: 01-2119524016-51-xxxx	**1,4-dihydroxybenzene (hydroquinone)** Muta. 2, H341; Carc. 2, H351 Eye Dam. 1, H318 Aquatic Acute 1, H400 Acute Tox. 4, H302; Skin Sens. 1, H317	25-50%
CAS: 6065-27-6 EINECS: 227-995-6	**N,N-Diethyl-1,4-phenylendiammoniumsulfat** Acute Tox. 4, H302; Acute Tox. 4, H312	25-50%
CAS: 10043-35-3 EINECS: 233-139-2 Index number: 005-007-00-2 Reg.nr.: 01-2119486683-25-xxxx	**boric acid** Repr. 1B, H360FD	3-5%
SVHC		
CAS: 10043-35-3	**boric acid**	

Part 2 - Mixtures

Mixture of the substances listed below with harmless additions.

Dangerous components		
CAS: 10043-35-3 EINECS: 233-139-2 Index number: 005-007-00-2 Reg.nr.: 01-2119486683-25-xxxx	**boric acid** Repr. 1B, H360FD	<5,5%
SVHC		
CAS: 10043-35-3	**boric acid**	

Part 3 - Mixtures

Mixture of the substances listed below with harmless additions.

Dangerous components		
CAS: 12179-04-3 EINECS: 215-540-4 Index number: 005-011-02-9	**disodium tetraborate pentahydrate** Repr. 1B, H360FD	2-5%
SVHC		
CAS: 12179-04-3	**disodium tetraborate pentahydrate**	

4. First aid mesures

Part 1, 2 & 3

General information
Instantly remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 24 hours after the accident.

After inhalation Unlikely route of exposure as the product does not contain volatile substances. Move the exposed person to fresh air at once. Provide rest, warmth and fresh air. Get medical attention if any discomfort continues.

After skin contact Remove affected person from source of contamination. Remove contaminated clothing. Wash skin thoroughly with soap and water. Contact physician if irritation continues.

After eye contact Remove victim immediately from source of exposure. Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Contact physician if irritation persists.

After swallowing NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Remove victim immediately from source of exposure. Rinse mouth thoroughly. Drink a few glasses of water or milk. Provide rest, warmth and fresh air. Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs. Get medical attention.

5. Firefighting measures

Part 1

Suitable extinguishing agents
CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
For safety reasons unsuitable extinguishing agents Water with a full water jet.

Special hazards arising from the substance or mixture Can be released in case of fire
Carbon monoxide
Nitrogen oxides (NOx)

Advice for firefighters
Protective equipment
Do not inhale explosion gases or combustion gases.
Wear self-contained breathing apparatus.

Parts 2 & 3

Suitable extinguishing agents
CO2, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
For safety reasons unsuitable extinguishing agents Water with a full water jet.

Special hazards arising from the substance or mixture Can be released in case of fire
sulphur dioxide (SO2)

Advice for firefighters
Protective equipment
Do not inhale explosion gases or combustion gases.
At formation of toxic gases: Put on breathing apparatus.

6. Accidental release measures

Part 1

Personal precautions, protective equipment and emergency procedures
Wear protective clothing.
Avoid causing dust.

Environmental precautions:
Inform respective authorities in case product reaches water or sewage system.
Do not allow to enter drainage system, surface or ground water.

Methods and material for containment and cleaning up:
Dispose of contaminated material as waste according to item 13.

Reference to other sections
See Section 8 for information on personal protection equipment.

Parts 2 & 3

Personal precautions, protective equipment and emergency procedures
Wear protective clothing.

Environmental precautions:
Do not allow to enter drainage system, surface or ground water.

Methods and material for containment and cleaning up:
Collect mechanically.

Reference to other sections
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

7. Accidental release measures

Parts 1, 2 & 3

Precautions for safe handling
Open and handle container with care.
Prevent formation of dust.

Information about protection against explosions and fires: No special measures required.

Conditions for safe storage, including any incompatibilities
Requirements to be met by storerooms and containers: No special requirements.

Information about storage in one common storage facility:
Keep away from foodstuffs, beverages and food.

Further information about storage conditions:
Store in cool, dry conditions in well sealed containers.

Storage class LGK 13

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

8. Exposure controls/personal protection

Part 1

Control parameters

Components with limit values that require monitoring at the workplace:
123-31-9 1,4-dihydroxybenzene (hydroquinone)
WEL Long-term value: 0.5 mg/m³

Additional information:
The lists that were valid during the compilation were used as basis.

Exposure controls

General protective and hygienic measures
The usual precautionary measures should be adhered to general rules for handling chemicals.
Keep away from foodstuffs, beverages and food.
Take off immediately all contaminated clothing.
Wash hands during breaks and at the end of the work.
Avoid contact with the eyes and skin.
Do not eat, drink or smoke while working.

Personal protective equipment

Breathing equipment: Not required.

Protection of hands:
Protective gloves. The protective gloves to be used must comply with the specifications of the EC directive 89/686/EEC and the resultant standard EN 374.
This recommendation applies only to the product stated in the Safety Data Sheet and supplied by us as well as to the purpose specified by us.
Only use chemical-protective gloves with CE-labelling of category III.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves
Nitrile rubber, NBR
Butyl rubber, BR
Fluorocarbon rubber (Viton)
Chloroprene rubber, CR
Recommended thickness of the material: >= 0.5 mm

Penetration time of glove material
Value for permeation: Level £ <= (480 min)
The determined penetration times according to EN 374 part III are not performed under practical conditions. Therefore a maximum wearing time, which corresponds to 50% of the penetration time, is recommended.

For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:
Synthetic gloves

Value for permeation: Level:
>= 3 (60 min)

Not suitable are gloves made of the following materials:
Natural rubber, NR

Eye protection: Tightly sealed safety glasses.

Body protection: Protective work clothing.

Parts 2 & 3

Control parameters
Components with limit values that require monitoring at the workplace:
Additional information: The lists that were valid during the compilation were used as basis.

Exposure controls

General protective and hygienic measures
The usual precautionary measures should be adhered to general rules for handling chemicals.
Keep away from foodstuffs, beverages and food.
Take off immediately all contaminated clothing.
Wash hands during breaks and at the end of the work.
Avoid contact with the eyes and skin.
Do not eat, drink or smoke while working.

Personal protective equipment

Breathing equipment: Not required.
Protection of hands: Not required.
Eye protection: Not required.
Body protection: Not required.

9. Physical and chemical properties

Information on basic physical and chemical properties			
	Part 1	**Part 2**	**Part 3**
Appearance			
Form	**Solid**	**Solid**	**Solid**
Colour	**Whitish**	**Whitish**	**Whitish**
Odour	**Odourless**	**Odourless**	**Odourless**
Change in condition			
Melting point / Melting range	**> 170 °C**	**Not determinated**	
Boiling point / Boiling range	**Not determinated**	**Not determinated**	
Flash point	**Not applicable**	**Not applicable**	
Ignition temperature	**515 °C**	**Not determinated**	
Self-inflammability	**Product is not selfigniting.**		
Danger of explosion	**Product is not explosive.**		
Density	**Not determinated**	**Not determinated**	
Solubility in / Miscibility with			
Water at 20°C	**~ 50 g/l**	**~ 100 g/l**	**~ 100 g/l**
Viscosity			
dynamic	**Not applicable**		
Solvent content			
Solids content	**100.0%**	**100.0%**	**100.0%**
Other information	**No further relevant information available.**		

10. Stability and reactivity

Part 1

Reactivity

Chemical stability
Thermal decomposition / conditions to be avoided:
No decomposition if used according to specifications.

Possibility of hazardous reactions No dangerous reactions known

Conditions to avoid No further relevant information available.

Incompatible materials: No further relevant information available.

Hazardous decomposition products: No dangerous decomposition products known

Parts 2 & 3

Reactivity

Chemical stability
Thermal decomposition / conditions to be avoided:
No decomposition if used according to specifications.

Possibility of hazardous reactions Reacts with acids releasing sulphur dioxide

Conditions to avoid No further relevant information available.

Incompatible materials: No further relevant information available.

Hazardous decomposition products: No dangerous decomposition products known

11. Toxicological information

Part 1

Information on toxicological effects

Acute toxicity **LD/LC50 values that are relevant for classification:**		
123-31-9 1,4-dihydroxybenzene (hydroquinone)		
Oral Dermal	LD50 LD50	320 mg/kg (rat) >900 mg/kg (rat)
10043-35-3 boric acid		
Oral	LD50	2660 mg/kg (rat)

Primary irritant effect:
on the skin: No irritant effect.
on the eye: Strong irritant with the danger of severe eye injury.
Sensitisation: Sensitization possible by skin contact.

Subacute to chronic toxicity:
Limited evidence of a carcinogenic effect.
Possible risk of irreversible effects.

Additional toxicological information:
The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Mixtures as issued in the latest version:
Harmful
Irritant
Hydroquinone has been included in the German «TRGS 905» (Technical Rules for Dangerous Substances/Index of carcinogen and mutagen substances or substances dangerous to

reproductive systems), and has been classified as «Category 3» of carcinogen and mutagen substances (3 = category of lowest dangerousness). The according EU committees have not yet evaluated this classification.

CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)
Muta. 2, Carc. 2

Part 2

Information on toxicological effects

Acute toxicity **LD/LC50 values that are relevant for classification:**		
10043-35-3 boric acid		
Oral	LD50	2660 mg/kg (rat)

Primary irritant effect:
on the skin: No irritant effect.
on the eye: No irritant effect.
Sensitisation: No sensitizing effect known.

Additional toxicological information:
The product is not subject to classification according to the calculation method of the General EC Classification Guidelines for Mixtures as issued in the latest version.
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

Part 3

Information on toxicological effects

Acute toxicity **LD/LC50 values that are relevant for classification:**		
12179-04-3 disodium tetraborate pentahydrate		
Oral	LD50	2660 mg/kg (rat)

Primary irritant effect:
on the skin: No irritant effect.
on the eye: No irritant effect.
Sensitisation: No sensitizing effect known.

Additional toxicological information:
The product is not subject to classification according to the calculation method of the General EC Classification Guidelines for Mixtures as issued in the latest version.
When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

12. Ecological informations

Part 1

Toxicity

Aquatic toxicity		
123-31-9 1,4-dihydroxybenzene (hydroquinone)		
EC50/48 h IC50/72 h LC50/96 h	0.29 mg/l (Daphnia magna) 0.335 mg/l (Selenastrum capricornutum) 0.044 mg/l (Pimephales promelas)	
10043-35-3 boric acid		
EC50/48 h LC50/96 h	133 mg/l (Daphnia magna) 50 - 100 mg/l (Onchrohynchus mykiss)	

Persistence and degradability Not determined

Bioaccumulative potential Not determined

Behaviour in environmental systems: Not determined

Mobility in soil No further relevant information available.

Ecotoxical effects: No further relevant information available.

Remark: Very toxic for fish

Additional ecological information:
General notes: Water-hazard class 3 (german regulation) Highly water-endangering. Do not allow product to reach ground water, water bodies or sewage system, even in small quantities. Also poisonous for fish and plankton in water bodies. Very toxic for aquatic organisms

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

Other adverse effects No further relevant information available.

Part 2

Toxicity

Aquatic toxicity		
10043-35-3 boric acid		
EC50/48 h LC50/96 h	133 mg/l (Daphnia magna) 50 - 100 mg/l (Onchrohynchus mykiss)	

Persistence and degradability Not determined

Bioaccumulative potential Not determined

Behaviour in environmental systems: Not determined

Mobility in soil No further relevant information available.

Ecotoxical effects: No further relevant information available.

Additional ecological information:
General notes: Water hazard class 1 (German Regulation) (Self-assessment): Weakly water-endangering.

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

Other adverse effects No further relevant information available.

Part 3

Toxicity
Aquatic toxicity Not determined

Persistence and degradability Not determined

Bioaccumulative potential Not determined

Behaviour in environmental systems: Not determined

Mobility in soil No further relevant information available.

Ecotoxical effects: No further relevant information available.

Additional ecological information:
General notes: Water hazard class 1 (German Regulation) (Self-assessment): Weakly water-endangering.

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

Other adverse effects No further relevant information available.

13. Disposal considerations

Parts 1, 2 & 3

Waste treatment methods
Recommendation
Must not be disposed of together with household garbage. Do not allow product to reach sewage system. Must be specially treated under adherence to official regulations.

European waste catalogue
09 01 01* water-based developer and activator solutions

Uncleaned packagings
Recommendation:
Non contaminated packagings can be used for recycling.
Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.

14. Transport information

Part 1

UN-Number **ADR, IMDG, IATA**	 UN3077
UN proper shipping name **ADR** **IMDG, IATA**	 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (1,4-dihydroxybenzene (hydroquinone)) ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (hydroquinone)
Transport hazard class(es) **ADR, IMDG, IATA**  **Class** **Label**	 9 Miscellaneous dangerous substances and articles. 9
Packing group **ADR, IMDG, IATA**	 III
Environmental hazards **Marine pollutant** **Special Marking (ADR)** **Special Marking (IATA)**	 Symbol (fish and tree) Symbol (fish and tree) Symbol (fish and tree)
Special precautions for user **Kemler number**	Warning: Miscellaneous dangerous substances and articles. 90

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable
Transport/Additional information: **ADR** **IMDG** **IATA**	These substances when transported in single or combination packagings containing a net quantity per single or inner packaging of 5 l or less for liquids or having a net mass of 5 kg or less for solids, are not subject to any other provisions of these Regulations provided the packagings meet the general. See the following notes. Goods are not subject to the provisions in accordance with the special provision 375 ADR. Goods are not subject to the provisions in accordance with 2.10.2.7 IMDG-Code. Goods are not subject to the provisions in accordance with the special provision 197 IATADGR.
UN «Model Regulation»	UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (1,4-dihydroxybenzene (hydroquinone)), 9, III

Parts 2 & 3

UN-Number **ADR, IMDG, IATA**	Void
UN proper shipping name **ADR, IMDG, IATA**	Void
Transport hazard class(es) **ADR, IMDG, IATA** **Class** **Label**	Void
Packing group **ADR, IMDG, IATA**	Void
Environmental hazards	Not applicable
Special precautions for user	Not applicable
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not dangerous according to the above specifications.
UN «Model Regulation»	-

15. Regulatory information

Part 1

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

Information about limitation of use
Employment restrictions concerning pregnant and lactating women must be observed.

Class	Share in %
I	95.2

Water hazard class: Water danger class 3 (Self-assessment): highly water-endangering.

Other regulations, limitations and prohibitive regulations
Substances of very high concern (SVHC) according to REACH, Article 57
10043-35-3 boric acid

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

Part 2

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

Water hazard class: Water hazard class 1 (Self-assessment): weakly water-endangering.

Other regulations, limitations and prohibitive regulations
Substances of very high concern (SVHC) according to REACH, Article 57
10043-35-3 boric acid

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

Part 3

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

Water hazard class: Water hazard class 1 (Self-assessment): weakly water-endangering.

Other regulations, limitations and prohibitive regulations
Substances of very high concern (SVHC) according to REACH, Article 57
12179-04-3 disodium tetraborate pentahydrate

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

16. Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases for the part 1
H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H341 Suspected of causing genetic defects.
H351 Suspected of causing cancer.
H360FD May damage fertility. May damage the unborn child.
H400 Very toxic to aquatic life.

Relevant phrases for the parts 2 & 3
H360FD May damage fertility. May damage the unborn child.

Department issuing data specification sheet:
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Calbe Chemie GmbH
Stadtfeld 31
D-39240 Calbe
e-mail: info@calbe-chemie.de
www.calbe-chemie.de

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the
International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
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
Repr. 1B: Reproductive toxicity, Hazard Category 1B

Sources
applicable EEC directives: 1907/2006, 1272/2008
Internal physical tests of Calbe Chemie Laboratory, MSDS of the ingredients,
Information system on hazardous substances of the German Social Accident Insurance (GESTIS-database on hazardous substances), http://www.dguv.de/ifa/en/gestis/stoffdb/index.jsp)