

**Safety data sheet
according to 1907/2006/EC, Article 31**

Printing date 12.05.2015

Version 7

Revision: 12.05.2015

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

- **1.1 Product identifier**
- **Trade name: R 40 Developer**

- **Article number:** 00055, 01204, 02055
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
To this day we do not have any information about the identified use at the moment. These data are available we will add these to the safety data sheet.
- **Application of the substance / the mixture**
Photochemicals
Photographic developer
Reserved for industrial and professional use.
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
ADEFO-CHEMIE GmbH
Justus-von-Liebig-Str. 24-26
D-63128 Dietzenbach
Tel.: +49 6074 84239-0
Fax: +49 6074 84239-63
E-Mail: service@adefo-chemie.de
www.adefo-chemie.de
- **Informing department:**
Tel.: +49 6074 84239-0
Fax: +49 6074 84239-63
E-Mail: kr@calbe-chemie.de
- **1.4 Emergency telephone number:** Tel.: 0700-24112112 (CAL)

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**
Skin Irrit. 2 H315 Causes skin irritation.
Eye Dam. 1 H318 Causes serious eye damage.
Skin Sens. 1 H317 May cause an allergic skin reaction.
Muta. 2 H341 Suspected of causing genetic defects.
Carc. 2 H351 Suspected of causing cancer.
Aquatic Acute 1 H400 Very toxic to aquatic life.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**
Xn; Harmful
R40-68: Limited evidence of a carcinogenic effect. Possible risk of irreversible effects.
Xi; Irritant
R36/38: Irritating to eyes and skin.
Xi; Sensitising
R43: May cause sensitisation by skin contact.
N; Dangerous for the environment
R50: Very toxic to aquatic organisms.
- **Information concerning particular hazards for human and environment:**
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.
- **Classification system:**
The classification is in line with current EC lists. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

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- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



GHS05 GHS07 GHS08 GHS09

- **Signal word** Danger
- **Hazard-determining components of labelling:**
1,4-dihydroxybenzene (hydroquinone)
- **Hazard statements**
H315 Causes skin irritation.
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.
- **Precautionary statements**
P280 Wear protective gloves / eye protection.
P273 Avoid release to the environment.
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.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
- **2.3 Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

- **3.2 Mixtures**
- **Description:** 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) ☒ Xn R22-40-68 ☒ Xi R41 ☒ Xi R43 ☒ N R50 Carc. Cat. 3, Muta. Cat. 3 ☒ Muta. 2, H341; Carc. 2, H351 ☒ Eye Dam. 1, H318 ☒ Aquatic Acute 1, H400 ☒ Acute Tox. 4, H302; Skin Sens. 1, H317	2.0-5.0%
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CAS: 111-42-2 EINECS: 203-868-0 Index number: 603-071-00-1 Reg.nr.: 01-2119488930-28-xxxx	2,2'-iminodiethanol Xn R22-48/22 Xi R38-41 STOT RE 2, H373 Eye Dam. 1, H318 Acute Tox. 4, H302; Skin Irrit. 2, H315	2.0-5.0%
CAS: 584-08-7 EINECS: 209-529-3 Reg.nr.: 01-2119532646-36-xxxx	potassium carbonate Xi R36/37/38 Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	2.0-5.0%
CAS: 497-19-8 EINECS: 207-838-8 Index number: 011-005-00-2 Reg.nr.: 01-2119485498-19-xxxx	sodium carbonate Xi R36 Eye Irrit. 2, H319	2.0-5.0%
CAS: 111-46-6 EINECS: 203-872-2 Index number: 603-140-00-6 Reg.nr.: 01-2119457857-21-xxxx	2,2'-oxybisethanol Xn R22 Acute Tox. 4, H302	0.5-2.0%
CAS: 139-89-9 EINECS: 205-381-9 Reg.nr.: 01-2119972845-22-xxxx	Hydroxyethylethylenediaminetriacetic acid, trisodium salt, solution Xi R36/38 Skin Irrit. 2, H315; Eye Irrit. 2, H319	0.5-2.0%
CAS: 1310-58-3 EINECS: 215-181-3 Index number: 019-002-00-8 Reg.nr.: 01-2119487136-33-xxxx	potassium hydroxide C R35 Xn R22 Met. Corr. 1, H290; Skin Corr. 1A, H314 Acute Tox. 4, H302	0.5-2.0%
CAS: 10043-35-3 EINECS: 233-139-2 Index number: 005-007-00-2 Reg.nr.: 01-2119486683-25-xxxx	boric acid T Repr. Cat. 2 R60-61 Repr. 1B, H360FD	0.5-2.0%

SVHC

10043-35-3 | boric acid

 • **Additional information** For the wording of the listed risk phrases refer to section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures
General information

Instantly remove any clothing soiled by the product.
 Personal protection for the First Aider.

 • **After inhalation** Supply fresh air.

After skin contact

Instantly wash with water and soap and rinse thoroughly.
 If skin irritation continues, consult a doctor.

After eye contact

Rinse opened eye for several minutes under running water (at least 15 minutes).
 Remove contact lenses, if present and easy to do.
 Use eye protection.
 Call a doctor immediately.

After swallowing

Rinse out mouth and then drink plenty of water.

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- Do not induce vomiting; instantly call for medical help.
- **4.2 Most important symptoms and effects, both acute and delayed**
No known symptoms to date.
- **4.3 Indication of any immediate medical attention and special treatment needed**
Symptomatic treatment
No further relevant information available.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents**
CO₂, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
Use fire fighting measures that suit the environment.
- **For safety reasons unsuitable extinguishing agents** Water with a full water jet.
- **5.2 Special hazards arising from the substance or mixture**
Can be released in case of fire
sulphur dioxide (SO₂)
Carbon monoxide
- **5.3 Advice for firefighters**
- **Protective equipment:**
Do not inhale explosion gases or combustion gases.
At formation of toxic gases:
Put on breathing apparatus.
- **Additional information** The product is not flammable

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective clothing.
- **6.2 Environmental precautions:** Do not allow to enter drainage system, surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose of contaminated material as waste according to item 13.
Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.
- **6.4 Reference to other sections**
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for information on disposal.

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
Do not handle until all safety precautions have been read and understood.
- **Information about protection against explosions and fires:**
No special measures required.
The product is not flammable
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage**
- **Requirements to be met by storerooms and containers:**
Store only in the original container.
Keep container tightly closed in a cool, well-ventilated place.

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- **Information about storage in one common storage facility:**
Keep away from foodstuffs, beverages and food.
Do not store together with acids.
Store away from oxidising agents.
- **Further information about storage conditions:**
Protect from heat and direct sunlight.
Store in a cool place.
- **Recommended storage temperature:** 5-25 °C
- **Storage class**
LGK 12
(German Technical Rule for Hazardous Substance – TRGS 510)
- **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see section 7.
- **8.1 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**111-46-6 2,2'-oxybisethanol**WEL Long-term value: 101 mg/m³, 23 ppm**1310-58-3 potassium hydroxide**WEL Short-term value: 2 mg/m³

- **Additional information:** The lists that were valid during the compilation were used as basis.
- **8.2 Exposure controls**
- **Personal protective equipment**
- **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 contaminated clothing before reuse.
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.
- **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**

	Thickness (mm)	Breakthrough time (min)
Nitril rubber	0,38	> 480
Neoprene	0,65	> 240
Butyl rubber	0,36	> 480

Avoid natural rubber gloves.

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As protection from splashes gloves made of the following materials are suitable:

Synthetic gloves

Value for permeation: Level:

≥ 3 (60 min)

• **Eye protection:** Safety glasses• **Body protection:** Protective work clothing.**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****General Information****Appearance:****Form:**

Fluid

Colour:

Colourless

• **Odour:**

Not characteristic

• **Odour threshold:**

Not determined.

• **pH-value at 20 °C:**

11.1

Change in condition**Melting point/Melting range:**

Not determined

Boiling point/Boiling range:

> 100 °C

• **Flash point:**

Not applicable

• **Ignition temperature:****Decomposition temperature:**

Not determined.

• **Self-inflammability:**

Product is not selfigniting.

• **Danger of explosion:**

Product is not explosive.

Critical values for explosion:**Lower:**

Not determined.

Upper:

Not determined.

• **Vapour pressure at 20 °C:**

23 hPa

• **Density at 20 °C**1.254 g/cm³• **Relative density**

Not determined.

• **Vapour density**

Not determined.

• **Evaporation rate**

Not determined.

Solubility in / Miscibility with**Water:**

miscible

• **Partition coefficient (n-octanol/water):** Not determined.**Viscosity:****dynamic:**

Not determined.

kinematic:

Not determined.

9.2 Other information

No further relevant information available.

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SECTION 10: Stability and reactivity

- **10.1 Reactivity**
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions** Reacts with strong acids
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:** No dangerous decomposition products known

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity**

- **LD/LC50 values that are relevant for classification:**

123-31-9 1,4-dihydroxybenzene (hydroquinone)

Oral	LD50	320 mg/kg (rat)
Dermal	LD50	>900 mg/kg (rat)

111-42-2 2,2'-iminodiethanol

Oral	LD50	1600 mg/kg (rat)
Dermal	LD50	12200 mg/kg (rabbit)

584-08-7 potassium carbonate

Oral	LD50	> 2000 mg/kg (rat)
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497-19-8 sodium carbonate

Oral	LD50	4000 mg/kg (rat)
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111-46-6 2,2'-oxybisethanol

Oral	LD50	12565 mg/kg (rat)
Dermal	LD50	11890 mg/kg (rabbit)

139-89-9 Hydroxyethylethylenediaminetriacetic acid, trisodium salt, solution

Oral	LD50	> 5000 mg/kg (rat)
------	------	--------------------

1310-58-3 potassium hydroxide

Oral	LD50	365 mg/kg (rat)
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- **Primary irritant effect:**
- **Skin corrosion/irritation** Irritant to skin and mucous membranes.
- **Serious eye damage/irritation** Strong irritant with the danger of severe eye injury.
- **Subacute to chronic toxicity:**
Limited evidence of a carcinogenic effect.
Possible risk of irreversible effects.

- **Additional toxicological information:**

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.

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:
Irritant

This statement was deduced from the properties of the single components.

- **Sensitisation** May cause sensitisation by skin contact.

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 · **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
 Muta. 2, Carc. 2

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SECTION 12: Ecological information

 · **12.1 Toxicity**

 · **Aquatic toxicity:**
123-31-9 1,4-dihydroxybenzene (hydroquinone)

EC50/48 h	0.29 mg/l (Daphnia magna)
IC50/72 h	0.335 mg/l (Selenastrum capricornutum)
LC50/96 h	0.044 mg/l (Pimephales promelas)

111-42-2 2,2'-iminodiethanol

LC50/96 h	1460 mg/l (Pimephales promelas)
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584-08-7 potassium carbonate

EC50/48 h	380-820 mg/l (Daphnia magna)
LC50/96 h	310-750 mg/l (Pimephales promelas)

497-19-8 sodium carbonate

LC50/96 h	300 mg/l (Lepomis macrochirus)
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111-46-6 2,2'-oxybisethanol

EC50/48 h	> 10000 mg/l (Daphnia magna)
LC50/96 h	75200 mg/l (Pimephales promelas)

1310-58-3 potassium hydroxide

LC50/96 h	80 mg/l (Gambusia affinis)
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10043-35-3 boric acid

EC50/48 h	133 mg/l (Daphnia magna)
LC50/96 h	50 - 100 mg/l (Onchrohynchus mykiss)

 · **12.2 Persistence and degradability** Not determined

 · **12.3 Bioaccumulative potential** Not determined

 · **Behaviour in environmental systems:** Not determined

 · **12.4 Mobility in soil** No further relevant information available.

 · **Ecotoxicological effects:** No further relevant information available.

 · **Behaviour in sewage processing plants:** Not determined

 · **Additional ecological information:**

 · **General notes:**

At present there are no ecotoxicological assessments.

This statement was deduced from the properties of the single components.

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

Do not allow product to reach ground water, water bodies or sewage system.

 · **12.5 Results of PBT and vPvB assessment**

 · **PBT:** Not applicable.

 · **vPvB:** Not applicable.

 · **12.6 Other adverse effects** No further relevant information available.

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SECTION 13: Disposal considerations

13.1 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.

Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.

European waste catalogue

09 01 01*	water-based developer and activator solutions
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Uncleaned packagings:
Recommendation:

Non contaminated packagings can be used for recycling.

Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.

Packagings that cannot be cleaned are to be disposed of in the same manner as the product.

EAK-No. 15 01 10

Recommended cleaning agent: Water, if necessary with cleaning agent.

SECTION 14: Transport information

14.1 UN-Number
ADR, IMDG, IATA

UN 3082

14.2 UN proper shipping name
ADR

 ENVIRONMENTALLY HAZARDOUS
SUBSTANCE, LIQUID, N.O.S. (1,4-
dihydroxybenzene (hydroquinone))

IMDG, IATA

 ENVIRONMENTALLY HAZARDOUS
SUBSTANCE, LIQUID, N.O.S. (hydroquinone)

14.3 Transport hazard class(es)
ADR, IMDG, IATA

Class

9 Miscellaneous dangerous substances and articles.

Label

9

14.4 Packing group
ADR, IMDG, IATA

III

14.5 Environmental hazards:

Product contains environmentally hazardous substances: 1,4-dihydroxybenzene (hydroquinone)

Marine pollutant:

Yes

Special marking (ADR):

Symbol (fish and tree)

Special marking (IATA):

Symbol (fish and tree)

Symbol (fish and tree)

14.6 Special precautions for user

Warning: Miscellaneous dangerous substances and articles.

Kemler Number:

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· EMS Number:	F-A,S-F
· 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	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.
· ADR	
· Transport category	3
· Tunnel restriction code	E
· IATA	
· Remarks:	Packing Instruction PAX / CAO 964
· UN "Model Regulation":	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (1,4-dihydroxybenzene (hydroquinone)), 9, III

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** None of the ingredients is listed.

- **National regulations**

Class	Share in %
I	4.8
NK	5.5

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

SECTION 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**

H290	May be corrosive to metals.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.

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- H335 May cause respiratory irritation.
- H341 Suspected of causing genetic defects.
- H351 Suspected of causing cancer.
- H360FD May damage fertility. May damage the unborn child.
- H373 May cause damage to organs through prolonged or repeated exposure.
- H400 Very toxic to aquatic life.
-
- R22 Harmful if swallowed.
- R35 Causes severe burns.
- R36 Irritating to eyes.
- R36/37/38 Irritating to eyes, respiratory system and skin.
- R36/38 Irritating to eyes and skin.
- R38 Irritating to skin.
- R40 Limited evidence of a carcinogenic effect.
- R41 Risk of serious damage to eyes.
- R43 May cause sensitisation by skin contact.
- R48/22 Harmful: danger of serious damage to health by prolonged exposure if swallowed.
- R50 Very toxic to aquatic organisms.
- R60 May impair fertility.
- R61 May cause harm to the unborn child.
- R68 Possible risk of irreversible effects.

• **Recommended restriction of use** No public product, only for commercial use

• **Abbreviations and acronyms:**

- RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
- IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
- ICAO: International Civil Aviation Organisation
- ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)
- 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
- Met. Corr. 1: Corrosive to metals, Hazard Category 1
- Acute Tox. 4: Acute toxicity, Hazard Category 4
- Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A
- Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
- Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1
- Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
- Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
- Muta. 2: Germ cell mutagenicity, Hazard Category 2
- Carc. 2: Carcinogenicity, Hazard Category 2
- Repr. 1B: Reproductive toxicity, Hazard Category 1B
- STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
- STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2
- Aquatic Acute 1: Hazardous to the aquatic environment - AcuteHazard, Category 1

• **Sources**

- applicable EEC directives:
 - 1907/2006
 - 1272/2008
- Internal physical tests, 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>

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