

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

1.1 Product identifier

Trade name **Potassium dichromate, Acculute Standard Volumetric Solution, Final Concentration 0.1N**

Stock number: 88598

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

Identified use: SU24 Scientific research and development

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Alfa Aesar GmbH & Co.KG
A Johnson Matthey Company
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300
Email: tech@alfa.com
www.alfa.com

Informing department: Product safety Tel + +049 (0) 7275 988687-0

1.4 Emergency telephone number:

Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)


Poison Information Center Mainz

www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240


SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008


 GHS03 flame over circle

Ox. Liq. 2 H272 May intensify fire; oxidiser.

 GHS06 skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 3 H331 Toxic if inhaled.

 GHS08 health hazard


Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Muta. 1B H340 May cause genetic defects.


Carc. 1B H350 May cause cancer.

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

STOT RE 1 H372 Causes damage to the lung, the kidneys, the liver, the heart, the reproductive system, the blood, the bladder and the endocrine system system through prolonged or repeated exposure. Route of exposure: Oral.

 GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

 GHS09 environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.

 GHS07

Acute Tox. 4 H312 Harmful in contact with skin.


Skin Sens. 1 H317 May cause an allergic skin reaction.

STOT SE 3 H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

 T+; Very toxic


R26: Very toxic by inhalation.

 T; Toxic


R45-46-60-61-48/23: May cause cancer. May cause heritable genetic damage. May impair fertility. May cause harm to the unborn child. Toxic: danger of serious damage to health by prolonged exposure through inhalation.

 C; Corrosive


R34: Causes burns.

 Xn; Harmful


R22: Harmful if swallowed.

 Xn; Sensitising


R42/43: May cause sensitisation by inhalation and skin contact.

 Xi; Irritant

R37: Irritating to respiratory system.

 O; Oxidising

R8: Contact with combustible material may cause fire.

 N; Dangerous for the environment

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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.

Other hazards that do not result in classification No information known.

Trade name **Potassium dichromate, Acculute Standard Volumetric Solution, Final Concentration 0.1N**

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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

GHS03 GHS05 GHS06 GHS08 GHS09

Signal word Danger**Hazard-determining components of labelling:**

Potassium dichromate

Hazard statements

- H272 May intensify fire; oxidiser.
 H301 Toxic if swallowed.
 H312 Harmful in contact with skin.
 H331 Toxic if inhaled.
 H314 Causes severe skin burns and eye damage.
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
 H317 May cause an allergic skin reaction.
 H340 May cause genetic defects.
 H350 May cause cancer.
 H360FD May damage fertility. May damage the unborn child.
 H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.
 H372 Causes damage to the lung, the kidneys, the liver, the heart, the reproductive system, the blood, the bladder and the endocrine system system through prolonged or repeated exposure. Route of exposure: Oral.
 H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

- P221 Take any precaution to avoid mixing with combustibles.
 P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/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.
 P405 Store locked up.
 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****Dangerous components:**

CAS: 7778-50-9 EINECS: 231-906-6	Potassium dichromate O T+ R26; T Carc. Cat. 2, Muta. Cat. 2, Repr. Cat. 2 R45-46-60-61-25-48/23; C R34; Xn R21; Xn R42/43; O R8; N R50/53 Ox. Sol. 2, H272; Acute Tox. 3, H301; Acute Tox. 2, H330; Resp. Sens. 1, H334; Muta. 1B, H340; Carc. 1B, H350; Repr. 1B, H360FD; STOT RE 1, H372; Skin Corr. 1B, H314; Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Acute Tox. 4, H312; Skin Sens. 1, H317	12,2%
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Additional information None known.

Non-Hazardous Ingredients

CAS: 7732-18-5 EINECS: 231-791-2	Water	87,8%
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SECTION 4: First aid measures**4.1 Description of first aid measures****General information**

Instantly remove any clothing soiled by the product.
 Remove breathing apparatus only after soiled clothing has been completely removed.
 In case of irregular breathing or respiratory arrest provide artificial respiration.

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
 Seek immediate medical advice.

After skin contact

Instantly wash with water and soap and rinse thoroughly.
 Seek immediate medical advice.

After eye contact Rinse opened eye for several minutes under running water. Then consult doctor.

After swallowing Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed

Causes severe skin burns.
 Causes serious eye damage.

4.3 Indication of any immediate medical attention and special treatment needed No further relevant information available.

SECTION 5: Firefighting measures**5.1 Extinguishing media**

Suitable extinguishing agents Product is not flammable. Use fire fighting measures that suit the surrounding fire.

For safety reasons unsuitable extinguishing agents Halocarbon extinguisher

5.2 Special hazards arising from the substance or mixture

This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

If this product is involved in a fire, the following can be released:

Potassium oxide

Chromium oxides

5.3 Advice for firefighters**Protective equipment:**

Wear self-contained breathing apparatus.

Wear full protective suit.

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

6.2 Environmental precautions:

Do not allow material to be released to the environment without proper governmental permits.

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

Do not allow to enter the ground/soil.

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Trade name **Potassium dichromate, Acculute Standard Volumetric Solution, Final Concentration 0.1N**

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6.3 Methods and material for containment and cleaning up:

Use neutralizing agent.
Dispose of contaminated material as waste according to item 13.
Ensure adequate ventilation.
Absorb with liquid-binding material.

Prevention of secondary hazards:

Acts as an oxidizing agent on organic materials such as wood, paper and fats
Keep away from combustible material.

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

Keep containers tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation/exhaustion at the workplace.
Open and handle container with care.

Information about protection against explosions and fires:

Substance/product can reduce the ignition temperature of flammable substances.
This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

7.2 Conditions for safe storage, including any incompatibilities

Storage

Requirements to be met by storerooms and containers: No special requirements.

Information about storage in one common storage facility:

Store away from flammable substances.
Store away from reducing agents.
Do not store with organic materials.
Store away from metal powders.
Do not store together with acids.
Water reacts with many metals to give hydrogen, often violently. Water also reacts violently with many reactive organic and inorganic chemicals.

Further information about storage conditions:

Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Store in a locked cabinet or with access restricted to technical experts or their assistants.

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

SECTION 8: Exposure controls/personal protection

Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

8.1 Control parameters

Components with critical values that require monitoring at the workplace:

7778-50-9 Potassium dichromate (12,2%)

MAK (Germany)	einatembare Fraktion; vgl.Abschn.XII
PEL (USA)	Long-term value: 0,005* mg/m ³ Ceiling limit: 0,1** mg/m ³ *as Cr(VI) **as CrO ₃ ; see 29 CFR 1910,1026
REL (USA)	Long-term value: 0,001 mg/m ³ as Cr; See Pocket Guide Apps. A and C
TLV (USA)	Long-term value: 0,05 mg/m ³ as Cr; BEI

Ingredients with biological limit values:

7778-50-9 Potassium dichromate (12,2%)

BEI (USA)	25 µg/L Medium: urine Time: end of shift at end of workweek Parameter: Total chromium (fume)
	10 µg/L Medium: urine Time: increase during shift Parameter: Total chromium (fume)

Additional information: No data

8.2 Exposure controls

Personal protective equipment

General protective and hygienic measures

The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Store protective clothing separately.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.

Breathing equipment: Use self-contained respiratory protective device in emergency situations.

Recommended filter device for short term use:

Use a respirator with organic vapor/acid gas cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards such as NIOSH (USA) or CEN (EU).

Protection of hands:

Check protective gloves prior to each use for their proper condition.
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Material of gloves Impervious gloves

Penetration time of glove material (in minutes) Not determined

Eye protection:

Tightly sealed safety glasses.
Full face protection

Body protection: Protective work clothing.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information

Appearance:

Form: Liquid

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Trade name **Potassium dichromate, Acculute Standard Volumetric Solution, Final Concentration 0.1N**

(Contd. of page 3)

Colour:	Orange
Smell:	Odourless
Odour threshold:	Not determined.
pH-value:	Not determined.
Change in condition	
Melting point/Melting range:	Not determined
Boiling point/Boiling range:	Not determined
Sublimation temperature / start:	Not determined
Inflammability (solid, gaseous)	Not determined.
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Self-inflammability:	Product is not selfigniting.
Danger of explosion:	Not determined.
Critical values for explosion:	
Lower:	Not determined
Upper:	Not determined
Steam pressure at 20 °C:	23 hPa
Density	Not determined
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with	
Water:	Fully miscible
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
dynamic:	Not determined.
kinematic:	Not determined.
Solvent content:	
Organic solvents:	0,0 %
Solids content:	12,2 %
9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity May intensify fire; oxidiser.

10.2 Chemical stability Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided: No decomposition if used and stored according to specifications.

10.3 Possibility of hazardous reactions

Water reacts violently with alkali metals.

Reacts with alkaline earth metals

Water reacts with many metals to give hydrogen, often violently. Water is also incompatible with many reactive organic and inorganic chemicals.

Reacts with reducing agents

Reacts with flammable substances

10.4 Conditions to avoid No further relevant information available.

10.5 Incompatible materials:

Acids

Reducing agents

Flammable substances

Organic materials

Metal powders

10.6 Hazardous decomposition products:

Potassium oxide

Chromium oxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

Toxic if inhaled.

Toxic if swallowed.

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for components in this product.

LD/LC50 values that are relevant for classification:

7778-50-9 Potassium dichromate

Oral	LD50	25 mg/kg (rat)
Dermal	LD50	14 mg/kg (rabbit)

Skin irritation or corrosion: Causes severe skin burns.

Eye irritation or corrosion: Causes serious eye damage.

Sensitization:

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May cause an allergic skin reaction.

Germ cell mutagenicity:

May cause genetic defects.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for components in this product.

Carcinogenicity:

May cause cancer.

IARC-1: Carcinogenic to humans: sufficient evidence of carcinogenicity.

ACGIH A1: Confirmed human carcinogen: Agent is carcinogenic to humans based on epidemiologic studies of, or convincing clinical evidence in, exposed humans.

NTP-K: Known to be carcinogenic: sufficient evidence from human studies.

(inhalation) EPA-A: human carcinogen: sufficient evidence from epidemiologic studies to support a causal association between exposure and cancer.

(inhalation) EPA-K: Known human carcinogens.

(oral) EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.

(oral) EPA-CBD: Carcinogenic potential cannot be determined.

Reproductive toxicity:

May damage fertility or the unborn child.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for components in this product.

Specific target organ system toxicity - repeated exposure:

Causes damage to the lung, the kidneys, the liver, the reproductive system, the blood, the bladder and the endocrine system system through prolonged or repeated exposure. Route of exposure: Oral.

Specific target organ system toxicity - single exposure: May cause respiratory irritation.

Aspiration hazard: No effects known.

Subacute to chronic toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.

Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

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Trade name **Potassium dichromate, Acculute Standard Volumetric Solution, Final Concentration 0.1N**

(Contd. of page 4)

The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version:
Harmful
Corrosive
Irritant
Very toxic
Product is suspected to cause injury to foetus.
Carcinogenic
The product can cause inheritable damage.
May cause harm to the unborn child.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity: No further relevant information available.

12.2 Persistence and degradability No further relevant information available.

12.3 Bioaccumulative potential No further relevant information available.

12.4 Mobility in soil No further relevant information available.

Ecotoxicological effects:

Remark: Toxic for fish

Additional ecological information:

General notes:

Toxic for aquatic organisms

Do not allow material to be released to the environment without proper governmental permits.

Water danger class 3 (Self-assessment): extremely hazardous for water.

Do not allow product to reach ground water, water bodies or sewage system, even in small quantities.

Danger to drinking water if even extremely small quantities leak into soil.

Also poisonous for fish and plankton in water bodies.

Toxic to aquatic life.

May cause long lasting harmful effects to aquatic life.

Avoid transfer into the environment.

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6 Other adverse effects No further relevant information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recommendation

Hand over to disposers of hazardous waste.

Must be specially treated under adherence to official regulations.

Consult state, local or national regulations for proper disposal.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

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

SECTION 14: Transport information

UN-Number

ADR, IMDG, IATA

UN3287

14.2 UN proper shipping name

ADR

IMDG, IATA

3287 TOXIC LIQUID, INORGANIC, N.O.S. (Potassium dichromate)
TOXIC LIQUID, INORGANIC, N.O.S. (Potassium dichromate)

14.3 Transport hazard class(es)

ADR



Class

Label

IMDG, IATA

6.1 (T4) Toxic substances.

6.1



Class

Label

6.1 Toxic substances.

6.1

Packing group

ADR, IMDG, IATA

III

14.5 Environmental hazards:

Marine pollutant:

No

14.6 Special precautions for user

Kemler Number:

EMS Number:

Warning: Toxic substances.

60

F-A,S-A

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Code

Not applicable.

Transport/Additional information:

ADR

Excepted quantities (EQ):

Limited quantities (LQ)

Transport category

Tunnel restriction code

E1

5L

2

E

UN "Model Regulation":

UN3287, TOXIC LIQUID, INORGANIC, N.O.S. (Potassium dichromate), 6.1, III

SECTION 15: Regulatory information

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

Australian Inventory of Chemical Substances

All ingredients are listed.

Standard for the Uniform Scheduling of Medicines and Poisons

None of the ingredients is listed.

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Trade name Potassium dichromate, Acculute Standard Volumetric Solution, Final Concentration 0.1N

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National regulations

Information about limitation of use:

Workers should not be exposed to the hazardous materials contained in this preparation. Exceptions can be made by the authorities in certain exceptional cases.

Employment restrictions concerning young persons must be observed.
Employment restrictions concerning women of child-bearing age must be observed.
For use only by technically qualified individuals.

Classification according to VbF: Not applicable

Water hazard class: Water danger class 3 (Self-assessment): extremely hazardous for water.

Other regulations, limitations and prohibitive regulations

ELINCS (European List of Notified Chemical Substances)

None of the ingredients is listed.

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.

7778-50-9 | Potassium dichromate | 12,2%

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

None of the ingredients is listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use)

7778-50-9 | Potassium dichromate | 12,2%

REACH - Pre-registered substances

All ingredients are listed.

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

SECTION 16: Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Relevant phrases

- H272 May intensify fire; oxidiser.
- H301 Toxic if swallowed.
- H312 Harmful in contact with skin.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H330 Fatal if inhaled.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H340 May cause genetic defects.
- H350 May cause cancer.
- H360FD May damage fertility. May damage the unborn child.
- H372 Causes damage to the lung, the kidneys, the liver, the heart, the reproductive system, the blood, the bladder and the endocrine system system through prolonged or repeated exposure. Route of exposure: Oral.
- H400 Very toxic to aquatic life.
- H410 Very toxic to aquatic life with long lasting effects.
- R21 Harmful in contact with skin.
- R25 Toxic if swallowed.
- R26 Very toxic by inhalation.
- R34 Causes burns.
- R42/43 May cause sensitisation by inhalation and skin contact.
- R45 May cause cancer.
- R46 May cause heritable genetic damage.
- R48/23 Toxic: danger of serious damage to health by prolonged exposure through inhalation.
- R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- R60 May impair fertility.
- R61 May cause harm to the unborn child.
- R8 Contact with combustible material may cause fire.

Department issuing SDS: Global Marketing Department

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 Organization
- ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (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 Harmonized 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)
- VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)
- LC50: Lethal concentration, 50 percent
- LD50: Lethal dose, 50 percent
- vPvB: very Persistent and very Bioaccumulative
- ACGIH: American Conference of Governmental Industrial Hygienists (USA)
- OSHA: Occupational Safety and Health Administration (USA)
- NTP: National Toxicology Program (USA)
- IARC: International Agency for Research on Cancer
- EPA: Environmental Protection Agency (USA)
- Ox. Liq. 2: Oxidising Liquids, Hazard Category 2
- Ox. Sol. 2: Oxidising Solids, Hazard Category 2
- Acute Tox. 3: Acute toxicity, Hazard Category 3
- Acute Tox. 4: Acute toxicity, Hazard Category 4
- Acute Tox. 2: Acute toxicity, Hazard Category 2
- Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
- Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1
- Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
- Muta. 1B: Germ cell mutagenicity, Hazard Category 1B
- Carc. 1B: Carcinogenicity, Hazard Category 1B
- Repr. 1B: Reproductive toxicity, Hazard Category 1B
- STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
- STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1
- Aquatic Acute 1: Hazardous to the aquatic environment - Acute Hazard, Category 1
- Aquatic Chronic 1: Hazardous to the aquatic environment - Chronic Hazard, Category 1
- Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2