



Safety Data Sheet acc. to OSHA HCS

Printing date 05/04/2023

Revision date 05/04/2023

1 Identification

- **Product identifier**
- **Trade name:** Terpene Mixture 1 (CRM)
- **Article number:** 25928
- **Application of the substance / the mixture**
This product is for research use - Not for human or veterinary diagnostic or therapeutic use.
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Cayman Chemical Co.
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
USA
- **Information department:** Product safety department
- **Emergency telephone number:**
During normal opening times: +1 (734) 971-3335
US/CANADA: 800-424-9300
Outside US/CANADA: 703-741-5970

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS02 Flame

Flammable Liquids 2

H225 Highly flammable liquid and vapor.



GHS06 Skull and crossbones

Acute Toxicity - Oral 3

H301 Toxic if swallowed.

Acute Toxicity - Dermal 3

H311 Toxic in contact with skin.

Acute Toxicity - Inhalation 3

H331 Toxic if inhaled.



GHS08 Health hazard

Carcinogenicity 2

H351 Suspected of causing cancer.

Toxic to Reproduction 2

H361 Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity - Single Exposure 1 H370 Causes damage to the central nervous system and the visual organs.

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GHS07

Sensitization - Skin 1

H317 May cause an allergic skin reaction.

Aquatic Acute 3

H402 Harmful to aquatic life.

Aquatic Chronic 3

H412 Harmful to aquatic life with long lasting effects.

Label elements

GHS label elements

The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms



GHS02



GHS06



GHS07



GHS08

Signal word Danger

Hazard-determining components of labeling:

Methanol
 β -Myrcene
 Camphor
 β -Caryophyllene
 Eucalyptol
 (+)-3-Carene

Hazard statements

H225 Highly flammable liquid and vapor.
 H301+H311+H331 Toxic if swallowed, in contact with skin or if inhaled.
 H317 May cause an allergic skin reaction.
 H351 Suspected of causing cancer.
 H361 Suspected of damaging fertility or the unborn child.
 H370 Causes damage to the central nervous system and the visual organs.
 H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 P240 Ground/bond container and receiving equipment.
 P241 Use explosion-proof electrical/ventilating/lighting/equipment.
 P242 Use only non-sparking tools.
 P243 Take precautionary measures against static discharge.
 P260 Do not breathe dust/fume/gas/mist/vapors/spray.
 P264 Wash thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P271 Use only outdoors or in a well-ventilated area.
 P272 Contaminated work clothing must not be allowed out of the workplace.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P301+P310 If swallowed: Immediately call a poison center/doctor.
 P321 Specific treatment (see on this label).
 P330 Rinse mouth.

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P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P312 Call a poison center/doctor if you feel unwell.

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P370+P378 In case of fire: Use CO₂, powder or water spray to extinguish.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**

- **NFPA ratings (scale 0 - 4)**



Health = 2
Fire = 3
Reactivity = 0

- **HMIS-ratings (scale 0 - 4)**



Health = *2
Fire = 3
Reactivity = 0

- **Other hazards**

- **Results of PBT and vPvB assessment**

- **PBT:** Not applicable.

- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**

- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

CAS: 67-56-1 RTECS: PC1400000	Methanol	97.9%
CAS: 76-22-2 RTECS: EX1225000	Camphor	0.1%
CAS: 78-70-6 RTECS: RG5775000	(±)-Linalool	0.1%
CAS: 79-92-5 RTECS: EX1055000	(±)-Camphene	0.1%
CAS: 87-44-5 RTECS: DT8400000	β-Caryophyllene	0.1%
CAS: 106-25-2 RTECS: RG5840000	Nerol	0.1%
CAS: 123-35-3 RTECS: RG5365000	β-Myrcene	0.1%
CAS: 470-82-6 RTECS: OS9275000	Eucalyptol	0.1%

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CAS: 498-15-7	(+)-3-Carene	0.1%
CAS: 13877-91-3	β -Ocimene	0.1%
Other ingredients		
CAS: 77-53-2 RTECS: PB7728666	(+)-Cedrol	0.1%
CAS: 89-78-1 RTECS: OT0350000	(\pm)-Menthol	0.1%
CAS: 89-79-2 RTECS: OT0190000	(-)-Isopulegol	0.1%
CAS: 99-83-2 RTECS: OS8080000	α -Phellandrene	0.1%
CAS: 105-87-3 RTECS: RG5920000	Geranyl acetate	0.1%
CAS: 124-76-5 RTECS: NP7300000	Isoborneol	0.1%
CAS: 502-61-4	2,6,10 - Trimethyldodeca - 2,6,9,11 - tetraene	0.1%
CAS: 1139-30-6 RTECS: RP5530000	(-)-Caryophyllene oxide	0.1%
CAS: 3790-78-1	(Z)-3,7,11-Trimethyldodeca-1,6,10-trien-3-ol	0.1%
CAS: 4630-07-3 RTECS: QK0268000	(+)-Valencene	0.1%
CAS: 4695-62-9 RTECS: RB7875200	fenchone	0.1%
CAS: 23089-26-1	(-)- α -Bisabolol	0.1%

4 First-aid measures

Description of first aid measures

General information:

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

After inhalation:

Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably in side position for transportation.

After skin contact:

Immediately wash with water and soap and rinse thoroughly.

After eye contact:

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

After swallowing:

Do not induce vomiting; immediately call for medical help.

Information for doctor:

Most important symptoms and effects, both acute and delayed

No further relevant information available.

Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5 Fire-fighting measures

Extinguishing media

Suitable extinguishing agents:

CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

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- **Special hazards arising from the substance or mixture**
67-56-1 During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
- **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 disposal information.
- **Protective Action Criteria for Chemicals**

- **PAC-1:**

67-56-1	Methanol	530 ppm
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- **PAC-2:**

67-56-1	Methanol	2,100 ppm
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- **PAC-3:**

67-56-1	Methanol	7200* ppm
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7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.
- **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:** Store in accordance with information listed on the product insert.
- **Requirements to be met by storerooms and receptacles:** Store in a cool location.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:**
Keep receptacle tightly sealed.
Store in cool, dry conditions in well sealed receptacles.

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

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see section 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**
The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
At this time, the other constituents have no known exposure limits.

67-56-1 Methanol

PEL	Long-term value: 260 mg/m ³ , 200 ppm
REL	Short-term value: 325 mg/m ³ , 250 ppm Long-term value: 260 mg/m ³ , 200 ppm Skin
TLV	Short-term value: 250 ppm Long-term value: 200 ppm Skin; BEI

76-22-2 Camphor

PEL	Long-term value: 2 mg/m ³
REL	Long-term value: 2 mg/m ³
TLV	Short-term value: 3 ppm Long-term value: 2 ppm A4

- **Ingredients with biological limit values:**

67-56-1 Methanol

BEI	15 mg/L Medium: urine Time: end of shift Parameter: Methanol (background, nonspecific)
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- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
- **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
- **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

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Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- **Material of gloves**

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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- **Penetration time of glove material**

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

9 Physical and chemical properties

- **Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form:

Liquid

Color:

According to product specification

- **Odor:**

Alcohol-like

- **Odor threshold:**

Not determined.

- **Formulation**

A solution in methanol

- **pH-value:**

Not determined.

- **Change in condition**

Melting point/Melting range:

-98 °C (-144.4 °F)

Boiling point/Boiling range:

64.7 °C (148.5 °F)

- **Flash point:**

9.7 °C (49.5 °F)

- **Flammability (solid, gaseous):**

Highly flammable.

- **Auto igniting:**

455 °C (851 °F)

- **Decomposition temperature:**

Not determined.

- **Ignition temperature:**

Product is not selfigniting.

- **Danger of explosion:**

Product is not explosive. However, formation of explosive air/ vapor mixtures are possible.

- **Explosion limits:**

Lower:

5.5 Vol %

Upper:

44 Vol %

- **Vapor pressure at 20 °C (68 °F):**

128 hPa (96 mm Hg)

- **Density at 20 °C (68 °F):**

0.79 g/cm³ (6.59255 lbs/gal)

- **Relative density**

Not determined.

- **Vapor density**

Not determined.

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· Evaporation rate	Not determined.
· Solubility in / Miscibility with Water at 20 °C (68 °F):	1000 g/l
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
· Solvent content:	
Organic solvents:	97.9 %
VOC content:	97.90 %
	979.0 g/l / 8.17 lb/gal
Solids content:	1.5 %
· Other information	No further relevant information available.

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **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:** oxidizing agents, reducing agents
- **Hazardous decomposition products:** carbon dioxide, carbon monoxide

11 Toxicological information

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

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

ATE (Acute Toxicity Estimate)

Oral	LD50	102 mg/kg (rat)
Dermal	LD50	307 mg/kg (rabbit)
Inhalative	LC50/4 h	3.17 mg/l (rat)

67-56-1 Methanol

Oral	LD50	100.1 mg/kg (rat) (Expert judgment) Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2) Symptoms: Nausea, Vomiting
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Dermal	LD50	300.1 mg/kg (rabbit) (Expert judgment) Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
Inhalative	LC50/4 h	3.1 mg/l (rat) (Expert judgment) Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2) Symptoms: Irritation symptoms in the respiratory tract.

78-70-6 (±)-Linalool

Oral	LD50	2,200 mg/kg (mouse) 2,790 mg/kg (rat)
Dermal	LD50	3 g/kg (mouse)
	LD50	5,610 mg/kg (rat) 5,610 mg/kg (rabbit)
	Intraperitoneal LD50	307 mg/kg (rat)
	Subcutaneous LD50	1,470 mg/kg (mouse)

79-92-5 (±)-Camphene

Oral	LD50	>5,000 mg/kg (rat)
Dermal	LD50	2,500 mg/kg (rab) Reizwirkung an der Haut: nicht reizend Spez.:Kaninchen Reizwirkung am Auge: reizend Spez.:Kaninchenauge
	Intraperitoneal LD	>500 mg/kg (mouse)

87-44-5 β-Caryophyllene

Oral	TDLO	5 ml/kg/4H (mouse)
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106-25-2 Nerol

Oral	LD50	4,500 mg/kg (rat)
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123-35-3 β-Myrcene

Oral	LD50	5,060 mg/kg (mouse)
	LD50	>11.39 g/kg (rat)
	Intraperitoneal TDLO	25 mg/kg (mouse)

- **Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** No irritating effect.
- **Sensitization:** Sensitization possible through skin contact.
- **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:

Toxic
Irritant

- **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**

123-35-3	β-Myrcene	2B
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- **NTP (National Toxicology Program)**

None of the ingredients is listed.

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· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Harmful to fish
- **Additional ecological information:**
- **General notes:**
 Water hazard class 2 (Self-assessment): hazardous for water
 Do not allow product to reach ground water, water course or sewage system.
 Danger to drinking water if even small quantities leak into the ground.
 Harmful to aquatic organisms
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**
 Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- | | |
|----------------------------------|----------|
| · UN-Number | |
| · DOT, IMDG, IATA | UN1230 |
| · UN proper shipping name | |
| · DOT, IATA | Methanol |
| · IMDG | METHANOL |

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· Transport hazard class(es)

· DOT



· Class

3 Flammable liquids

· Label

3, 6.1

· IMDG



· Class

3 Flammable liquids

· Label

3/6.1

· IATA



· Class

3 Flammable liquids

· Label

3 (6.1)

· Packing group

· DOT, IMDG, IATA

II

· Environmental hazards:

Not applicable.

· Special precautions for user

Warning: Flammable liquids

· Hazard identification number (Kemler code):

336

· EMS Number:

F-E,S-D

· Stowage Category

B

· Stowage Code

SW2 Clear of living quarters.

· 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: 1 L
On cargo aircraft only: 60 L

· IMDG

· Limited quantities (LQ)

1L

· Excepted quantities (EQ)

Code: E2

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 500 ml

· IATA

· Remarks:

When sold in quantities of less than or equal to 1 mL,
or 1 g, with an Excepted Quantity Code of
E1, E2, E4, or E5, this item meets the De Minimis
Quantities exemption, per IATA 2.6.10.

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Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

· **UN "Model Regulation":** UN 1230 METHANOL, 3 (6.1), II

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
No further relevant information available.

· **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

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

67-56-1 Methanol

· **TSCA (Toxic Substances Control Act):**

67-56-1	Methanol	ACTIVE
76-22-2	Camphor	ACTIVE
77-53-2	(+)-Cedrol	ACTIVE
78-70-6	(±)-Linalool	ACTIVE
79-92-5	(±)-Camphene	ACTIVE
87-44-5	β-Caryophyllene	ACTIVE
89-78-1	(±)-Menthol	ACTIVE
89-79-2	(-)-Isopulegol	ACTIVE
99-83-2	α-Phellandrene	ACTIVE
105-87-3	Geranyl acetate	ACTIVE
106-25-2	Nerol	ACTIVE
123-35-3	β-Myrcene	ACTIVE
124-76-5	Isoborneol	ACTIVE
470-82-6	Eucalyptol	ACTIVE
502-61-4	2,6,10 - Trimethyldodeca - 2,6,9,11 - tetraene	ACTIVE
1139-30-6	(-)-Caryophyllene oxide	ACTIVE
4630-07-3	(+)-Valencene	ACTIVE
4695-62-9	fenchone	ACTIVE
13877-91-3	β-Ocimene	ACTIVE

· **Hazardous Air Pollutants**

67-56-1 Methanol

· **Proposition 65**

· **Chemicals known to cause cancer:**

123-35-3 β-Myrcene

· **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.

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· **Chemicals known to cause developmental toxicity:**

67-56-1 Methanol

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value)**

76-22-2 Camphor

A4

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

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

16 Other information

All chemicals may pose unknown hazards and should be used with caution. This SDS applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. Cayman Chemical Company assumes no responsibility for incidental or consequential damages, including lost profits, arising from the use of these data. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Cayman Chemical Company assumes no responsibility for the completeness or accuracy of the information contained herein.

· **Department issuing SDS:** Environment protection department.

· **Contact:** -

· **Date of preparation / last revision** 05/04/2023

· **Abbreviations and acronyms:**

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)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

BEI: Biological Exposure Limit

Flammable Liquids 2: Flammable liquids – Category 2

Acute Toxicity - Oral 3: Acute toxicity – Category 3

Sensitization - Skin 1: Skin sensitisation – Category 1

Carcinogenicity 2: Carcinogenicity – Category 2

Toxic to Reproduction 2: Reproductive toxicity – Category 2

Specific Target Organ Toxicity - Single Exposure 1: Specific target organ toxicity (single exposure) – Category 1

Aquatic Acute 3: Hazardous to the aquatic environment - acute aquatic hazard – Category 3

Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3