

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006, as amended by  
Commission Regulation (EU) 2020/878



## NOROX®CHM-50

Version	Revision Date:	SDS Number:	Date of last issue: 09.11.2023
4.0	06.03.2025	600000000077	Date of first issue: 21.06.2016

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

#### 1.1 Product identifier

Trade name : NOROX®CHM-50

Unique Formula Identifier (UFI) : XMY8-K0JD-R009-C3PJ

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

Use of the Sub-stance/Mixture : polymerisation initiators

#### 1.3 Details of the supplier of the safety data sheet

Company : United Initiators GmbH  
Dr.-Gustav-Adolph-Str. 3  
82049 Pullach

Telephone : +49 / 89 / 74422 – 0

E-mail address of person responsible for the SDS : contact@united-in.com

#### 1.4 Emergency telephone number

+44 1235 239670

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### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

##### Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 3	H226: Flammable liquid and vapour.
Organic peroxides, Type F	H242: Heating may cause a fire.
Acute toxicity, Category 4	H302: Harmful if swallowed.
Acute toxicity, Category 3	H331: Toxic if inhaled.
Skin corrosion, Sub-category 1B	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Carcinogenicity, Category 1B	H350: May cause cancer.

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Specific target organ toxicity - single exposure, Category 3, Respiratory system	H335: May cause respiratory irritation.
Specific target organ toxicity - repeated exposure, Category 2	H373: May cause damage to organs through prolonged or repeated exposure.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

### 2.2 Label elements

#### Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.  
H242 Heating may cause a fire.  
H302 Harmful if swallowed.  
H314 Causes severe skin burns and eye damage.  
H331 Toxic if inhaled.  
H335 May cause respiratory irritation.  
H350 May cause cancer.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
P201 Obtain special instructions before use.  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P234 Keep only in original packaging.  
P260 Do not breathe mist or vapours.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.  
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.  
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact

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lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

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

P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

P391 Collect spillage.

### Storage:

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

### Hazardous components which must be listed on the label:

Cumene hydroperoxide (CAS-No. 80-15-9)  
Cumene (CAS-No. 98-82-8)

### Additional Labelling

Restricted to professional users.

### 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

Chemical nature : Organic Peroxide  
Liquid

#### Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
methyl acetoacetate	105-45-3 203-299-8 607-137-00-0 01-2119451095-43	Eye Irrit. 2; H319	>= 50 - < 55

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Cumene hydroperoxide	80-15-9 201-254-7 617-002-00-8 01-2119475796-19	Flam. Liq. 3; H226 Org. Perox. E; H242 Acute Tox. 4; H302 Acute Tox. 3; H331 Acute Tox. 4; H312 Skin Corr. 1B; H314 Eye Dam. 1; H318 STOT RE 2; H373 Aquatic Chronic 2; H411  specific concentration limit Skin Corr. 1B; H314 >= 10 % Skin Irrit. 2; H315 3 - < 10 % Eye Dam. 1; H318 3 - < 10 % Eye Irrit. 2; H319 1 - < 3 % STOT SE 3; H335 < 10 %  Acute toxicity esti- mate  Acute oral toxicity: 382 mg/kg Acute dermal toxicity: 1,200 mg/kg	>= 40 - < 45
Cumene	98-82-8 202-704-5 601-024-00-X 01-2119473983-24	Flam. Liq. 3; H226 Carc. 1B; H350 STOT SE 3; H335 (Respiratory system) Asp. Tox. 1; H304 Aquatic Chronic 2; H411	>= 5 - < 7.5
Benzenemethanol, alpha,alpha-dimethyl-	617-94-7 210-539-5 01-2119965145-35	Acute Tox. 4; H302 Skin Irrit. 2; H315 Eye Irrit. 2; H319  Acute toxicity esti- mate  Acute oral toxicity: 500 mg/kg	>= 1 - < 5
acetophenone	98-86-2 202-708-7 606-042-00-1	Acute Tox. 4; H302 Eye Irrit. 2; H319	>= 1 - < 5

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	01-2119533169-37	Acute toxicity estimate	
		Acute oral toxicity: 500.0 mg/kg	

For explanation of abbreviations see section 16.

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

- General advice : Take off contaminated clothing and shoes immediately.  
Call a physician immediately.  
Never give anything by mouth to an unconscious person.  
If unconscious, place in recovery position and seek medical advice.  
Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.  
Symptoms of poisoning may appear several hours later.  
No artificial respiration, mouth-to-mouth or mouth to nose. Use suitable instruments/apparatus.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
- If inhaled : Administer oxygen if breathing is difficult or cyanosis is observed.  
Call a physician immediately.  
If breathed in, move person into fresh air.  
If not breathing, give artificial respiration.  
Contact a poison control center.  
Respiratory tract burning possible if aerosols are inhaled.  
Call a physician or poison control centre immediately.  
If unconscious, place in recovery position and seek medical advice.  
Keep respiratory tract clear.
- In case of skin contact : If symptoms persist, call a physician.  
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.  
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.  
Wash contaminated clothing before re-use.  
If on skin, rinse well with water.  
If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tis-

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sue damage and blindness.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Continue rinsing eyes during transport to hospital.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.

If swallowed : Call a physician immediately.  
Rinse mouth thoroughly with water.  
Keep respiratory tract clear.  
If symptoms persist, call a physician.

### 4.2 Most important symptoms and effects, both acute and delayed

Risks : Harmful if swallowed.  
Causes serious eye damage.  
Toxic if inhaled.  
May cause respiratory irritation.  
May cause cancer.  
May cause damage to organs through prolonged or repeated exposure.  
Causes severe burns.

### 4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically and supportively.

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media : Water spray jet  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

Unsuitable extinguishing media : High volume water jet

### 5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Risk of explosion if heated under confinement.  
Possible emission of gaseous decomposition products may lead to a dangerous pressure build-up.  
Avoid confinement.  
Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may auto-ignite.

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The product burns violently.  
Flash back possible over considerable distance.  
Do not allow run-off from fire fighting to enter drains or water courses.  
Vapours may form explosive mixtures with air.  
The product will float on water and can be reignited on surface water.  
Cool closed containers exposed to fire with water spray.

### 5.3 Advice for firefighters

- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.
- Specific extinguishing methods : Do not use a solid water stream as it may scatter and spread fire.  
Remove undamaged containers from fire area if it is safe to do so.  
Use water spray to cool unopened containers.
- Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
Use a water spray to cool fully closed containers.  
Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

- Personal precautions : Follow safe handling advice and personal protective equipment recommendations.  
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.  
Use personal protective equipment.  
Ensure adequate ventilation.  
Remove all sources of ignition.  
Evacuate personnel to safe areas.  
Never return spills in original containers for re-use.  
Treat recovered material as described in the section "Disposal considerations".

### 6.2 Environmental precautions

- Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.

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### 6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contact with incompatible substances can cause decomposition at or below SADT.  
Clear spills immediately.  
Suppress (knock down) gases/vapours/mists with a water spray jet.  
To clean the floor and all objects contaminated by this material, use plenty of water.  
Soak up with inert absorbent material.  
Isolate waste and do not reuse.  
Non-sparking tools should be used.  
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.

### 6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Advice on safe handling : Open drum carefully as content may be under pressure.  
Protect from contamination.  
Do not swallow.  
Do not breathe vapours/dust.  
Avoid exposure - obtain special instructions before use.  
Avoid contact with skin and eyes.  
Avoid formation of aerosol.  
Take precautionary measures against static discharges.  
Never return any product to the container from which it was originally removed.  
Provide sufficient air exchange and/or exhaust in work rooms.  
Avoid confinement.  
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
Smoking, eating and drinking should be prohibited in the application area.  
Wash thoroughly after handling.  
For personal protection see section 8.

Advice on protection against fire and explosion : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Keep away from heat and sources of ignition. Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition. Keep away from combustible material. Do



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not spray on a naked flame or any incandescent material.

Hygiene measures : Avoid contact with skin, eyes and clothing. Keep away from food and drink. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

### 7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in original container. Keep containers tightly closed in a cool, well-ventilated place. Store in cool place. Contamination may result in dangerous pressure increases - closed containers may rupture. Prevent unauthorized access. Observe label precautions. Store in accordance with the particular national regulations. Avoid impurities (e.g. rust, dust, ash), risk of decomposition. Electrical installations / working materials must comply with the technological safety standards. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Advice on common storage : Keep away from combustible materials. Keep away from strong acids, bases, heavy metal salts and other reducing substances.

Recommended storage temperature : < 30 °C

Further information on storage stability : Stable under recommended storage conditions.

### 7.3 Specific end use(s)

Specific use(s) : For further information, refer to the product technical data sheet.

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Cumene	98-82-8	TWA	20 ppm 100 mg/m <sup>3</sup>	2000/39/EC
	Further information: Identifies the possibility of significant uptake through the skin, Indicative			
		STEL	50 ppm 250 mg/m <sup>3</sup>	2000/39/EC
	Further information: Identifies the possibility of significant uptake through the skin, Indicative			

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		TWA	10 ppm 50 mg/m <sup>3</sup>	2019/1831/E U
	Further information: A skin notation assigned to the occupational exposure limit value indicates the possibility of significant uptake through the skin., Indicative			
		STEL	50 ppm 250 mg/m <sup>3</sup>	2019/1831/E U
	Further information: A skin notation assigned to the occupational exposure limit value indicates the possibility of significant uptake through the skin., Indicative			
		OELV - 8 hrs (TWA)	10 ppm 50 mg/m <sup>3</sup>	IE OEL
	Further information: Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body			
		OELV - 15 min (STEL)	50 ppm 250 mg/m <sup>3</sup>	IE OEL
	Further information: Substances which have the capacity to penetrate intact skin when they come in contact with it, and be absorbed into the body			
acetophenone	98-86-2	OELV - 8 hrs (TWA)	10 ppm 49 mg/m <sup>3</sup>	IE OEL

### Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006

Substance name	End Use	Exposure routes	Potential health effects	Value
methyl acetoacetate	Workers	Inhalation	Long-term exposure	29.17 mg/m <sup>3</sup>
	Workers	Skin contact	Long-term exposure	8.33 mg/kg
Cumene hydroperoxide	Workers	Inhalation	Long-term systemic effects	6 mg/m <sup>3</sup>
	Workers	Inhalation	Acute local effects	250 mg/m <sup>3</sup>
Cumene	Workers	Skin contact	Long-term systemic effects	15.4 mg/kg bw/day
	Workers	Inhalation	Long-term systemic effects	22 mg/m <sup>3</sup>
acetophenone	Workers	Inhalation	Acute local effects	
	Remarks: No hazard identified			
	Workers	Skin contact	Long-term systemic effects	6.3 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	5.4 mg/m <sup>3</sup>
	Consumers	Skin contact	Long-term systemic effects	3.1 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	3.1 mg/kg bw/day
	Consumers	Ingestion	Acute systemic effects	6.25 mg/kg bw/day

### Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006

Substance name	Environmental Compartment	Value
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methyl acetoacetate	Fresh water	0.1 mg/l
	Fresh water sediment	0.08 mg/kg
	Marine water	0.01 mg/l
		0.008 mg/kg
	Sewage treatment plant	50 mg/l
Cumene hydroperoxide	Soil	0.018 mg/kg
	Fresh water	0.0031 mg/l
	Marine water	0.00031 mg/l
	Sewage treatment plant	0.39 mg/l
	Fresh water sediment	0.023 mg/kg dry weight (d.w.)
Cumene	Marine sediment	0.002 mg/kg dry weight (d.w.)
	Soil	0.0029 mg/kg dry weight (d.w.)
	Fresh water	0.035 mg/l
Cumene	Intermittent use/release	0.012 mg/l
	Marine water	0.004 mg/l
	Fresh water sediment	3.22 mg/kg
	Marine sediment	0.322 mg/kg
	Sewage treatment plant	200 mg/l
	Soil	0.624 mg/kg

### 8.2 Exposure controls

#### Engineering measures

Minimize workplace exposure concentrations.

#### Personal protective equipment

Eye/face protection : Ensure that eyewash stations and safety showers are close to the workstation location.  
Please follow all applicable local/national requirements when selecting protective measures for a specific workplace.  
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.  
Tightly fitting safety goggles  
Please wear suitable protective goggles. Also wear face protection if there is a splash hazard.

Equipment should conform to EN 166

#### Hand protection

Material : Nitrile rubber  
Break through time : < 10 min  
Glove thickness : 0.40 mm

Material : butyl-rubber  
Break through time : 480 min  
Glove thickness : 0.70 mm

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- Directive : Equipment should conform to EN 374
- Remarks : The data about break through time/strength of material are standard values! The exact break through time/strength of material has to be obtained from the producer of the protective glove. Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.
- Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.  
Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces.  
Wear as appropriate:  
Flame retardant antistatic protective clothing.
- Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.  
  
Respirator with combination filter for vapour/particulate (EN 141)
- Filter type : ABEK-filter
- Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

- Physical state : liquid
- Colour : light yellow
- Odour : aromatic
- Odour Threshold : not determined

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Melting point/ range	:	not determined
Boiling point/boiling range	:	Not applicable Decomposition
Flammability	:	Not applicable
Upper explosion limit / Upper flammability limit	:	14.5 %(V) (for a component of this mixture)
Lower explosion limit / Lower flammability limit	:	1.4 %(V) (for a component of this mixture)
Flash point	:	60 °C Method: closed cup
Auto-ignition temperature	:	not determined
Self-Accelerating decomposition temperature (SADT)	:	60 °C SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.
pH	:	Not applicable not determined substance/mixture is non-soluble (in water)
Viscosity		
Viscosity, dynamic	:	not determined
Viscosity, kinematic	:	not determined
Solubility(ies)		
Water solubility	:	slightly soluble
Partition coefficient: n-octanol/water	:	No data available
Vapour pressure	:	not determined
Relative density	:	not determined

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Density : ca. 1.0 g/cm<sup>3</sup>

Relative vapour density : No data available

### 9.2 Other information

Oxidizing properties : The substance or mixture is not classified as oxidizing.  
Organic peroxide

Flammability (liquids) : Flammable liquid and vapour., Organic peroxide

Self-ignition : The substance or mixture is not classified as pyrophoric.

Self-heating substances : The substance or mixture is not classified as self heating.

Substances and mixtures,  
which in contact with water,  
emit flammable gases : The substance or mixture does not emit flammable gases in  
contact with water.

Desensitised explosives : Not applicable

Evaporation rate : No data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Stable under recommended storage conditions.  
Heating may cause a fire or explosion.

### 10.2 Chemical stability

Stable under recommended storage conditions.  
No decomposition if stored normally.

### 10.3 Possibility of hazardous reactions

Hazardous reactions : Vapours may form explosive mixture with air.

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### 10.4 Conditions to avoid

Conditions to avoid : Protect from contamination.  
Contact with incompatible substances can cause decomposition at or below SADT.  
Heat, flames and sparks.  
Avoid confinement.

### 10.5 Incompatible materials

Materials to avoid : Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents

### 10.6 Hazardous decomposition products

Irritant, caustic, flammable, noxious/toxic gases and vapours can develop in the case of fire and decomposition

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## SECTION 11: Toxicological information

### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Acute toxicity

Harmful if swallowed.  
Toxic if inhaled.

#### Product:

Acute oral toxicity : Acute toxicity estimate: 882.38 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 7.32 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour  
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 2,000 mg/kg  
Method: Calculation method

#### Components:

##### **methyl acetoacetate:**

Acute oral toxicity : LD50 (Rat, male): 2,580 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rabbit): > 49 mg/l  
Exposure time: 4 h  
Test atmosphere: vapour  
Assessment: The substance or mixture has no acute inhalation toxicity  
Remarks: Information given is based on data obtained from

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similar substances.  
No mortality observed at this dose.

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: The substance or mixture has no acute dermal toxicity  
Remarks: No mortality observed at this dose.

### **Cumene hydroperoxide:**

Acute oral toxicity : LD50 Oral (Rat): 382 mg/kg

Acute inhalation toxicity : LC50: 1.370 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The component/mixture is toxic after short term inhalation.

Acute dermal toxicity : LD50 (Rat): 1,200 - 1,520 mg/kg  
Assessment: The component/mixture is moderately toxic after single contact with skin.

Acute toxicity estimate: 1,200 mg/kg  
Method: Calculation method

### **Cumene:**

Acute oral toxicity : LD50 (Rat): 2,260 mg/kg  
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rabbit): > 3,160 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity  
Remarks: No mortality observed at this dose.

### **Benzenemethanol, alpha,alpha-dimethyl-:**

Acute oral toxicity : Acute toxicity estimate: 500 mg/kg  
Assessment: The component/mixture is moderately toxic after single ingestion.  
Remarks: Expert judgement

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : LD50: Method: Expert judgement  
Assessment: The substance or mixture has no acute dermal toxicity  
Remarks: Based on available data, the classification criteria are not met.



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### acetophenone:

Acute oral toxicity : Acute toxicity estimate: 500.0 mg/kg  
Method: Expert judgement  
Assessment: The component/mixture is moderately toxic after single ingestion.  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Acute dermal toxicity : LD50 (Rat): 3,300 mg/kg  
Method: OECD Test Guideline 402

### Skin corrosion/irritation

Causes severe burns.

### Product:

Remarks : Extremely corrosive and destructive to tissue.

### Components:

#### methyl acetoacetate:

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation

#### Cumene hydroperoxide:

Species : Rabbit  
Result : Causes burns.

Remarks : Extremely corrosive and destructive to tissue.

#### Cumene:

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation

#### Benzenemethanol, alpha,alpha-dimethyl-:

Species : Rabbit  
Result : Severe skin irritation

### acetophenone:

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : No skin irritation

Remarks : May cause skin irritation in susceptible persons.

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### Serious eye damage/eye irritation

Causes serious eye damage.

#### Product:

Remarks : May cause irreversible eye damage.

#### Components:

##### **methyl acetoacetate:**

Species : Rabbit  
Exposure time : 24 h  
Method : OECD Test Guideline 405  
Result : Irreversible effects on the eye  
GLP : yes

##### **Cumene hydroperoxide:**

Species : Rabbit  
Result : Corrosive

Remarks : May cause irreversible eye damage.

##### **Cumene:**

Species : Rabbit  
Method : OECD Test Guideline 405  
Result : No eye irritation

##### **Benzenemethanol, alpha,alpha-dimethyl-:**

Result : Irritating to eyes.

##### **acetophenone:**

Species : Rabbit  
Method : No information available.  
Result : Eye irritation  
Remarks : Based on harmonised classification in EU regulation  
1272/2008, Annex VI

Remarks : May cause irreversible eye damage.

### Respiratory or skin sensitisation

#### **Skin sensitisation**

Not classified due to lack of data.

#### **Respiratory sensitisation**

Not classified due to lack of data.

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### Components:

#### **methyl acetoacetate:**

Exposure routes : Skin contact  
Species : Mouse  
Method : OECD Test Guideline 429  
Result : Does not cause skin sensitisation.

#### **Cumene hydroperoxide:**

Result : Does not cause skin sensitisation.

#### **Cumene:**

Exposure routes : Skin contact  
Species : Guinea pig  
Method : OECD Test Guideline 406  
Result : Does not cause skin sensitisation.

#### **acetophenone:**

Test Type : Draize Test  
Exposure routes : Skin contact  
Species : Guinea pig  
Result : Does not cause skin sensitisation.

### **Germ cell mutagenicity**

Not classified due to lack of data.

### Components:

#### **methyl acetoacetate:**

Genotoxicity in vitro : Method: OECD Test Guideline 476  
Result: negative  
  
Method: OECD Test Guideline 471  
Result: negative  
  
Method: OECD Test Guideline 473  
Result: negative

#### **Cumene hydroperoxide:**

Genotoxicity in vitro : Test Type: in vitro assay  
Test system: Salmonella typhimurium  
Result: positive  
  
Genotoxicity in vivo : Test Type: Micronucleus test  
Species: Mouse  
Application Route: Skin contact  
Result: negative

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### Cumene:

Genotoxicity in vitro : Method: OECD Test Guideline 473  
Result: negative

Method: OECD Test Guideline 471  
Result: negative

Method: OECD Test Guideline 476  
Result: negative

Method: OECD Test Guideline 482  
Result: negative

Test Type: Ames test  
Result: positive

Genotoxicity in vivo : Species: Rat  
Application Route: Intraperitoneal  
Exposure time: 72 h  
Method: OECD Test Guideline 474  
Result: Equivocal

Species: Mouse  
Application Route: inhalation (gas)  
Exposure time: 14 w  
Method: OECD Test Guideline 474  
Result: negative

### acetophenone:

Genotoxicity in vitro : Method: OECD Test Guideline 473  
Result: negative

Method: OECD Test Guideline 476  
Result: negative

Method: OECD Test Guideline 471  
Result: negative

Genotoxicity in vivo : Species: Mouse  
Application Route: Intraperitoneal  
Method: OECD Test Guideline 474  
Result: negative

### Carcinogenicity

May cause cancer.

### Components:

#### methyl acetoacetate:

Remarks : This information is not available.

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### Cumene hydroperoxide:

Remarks : This information is not available.

### Cumene:

Species : Rat, male and female  
Application Route : inhalation (vapour)  
Result : carcinogenic effects

Species : Mouse, male and female  
Application Route : inhalation (vapour)  
Result : carcinogenic effects

Carcinogenicity - Assessment : Sufficient evidence of carcinogenicity in animal experiments

### Reproductive toxicity

Not classified due to lack of data.

### Components:

#### **methyl acetoacetate:**

Effects on fertility : Species: Rat  
Application Route: Ingestion  
General Toxicity - Parent: NOAEL: > 1,000  
Method: OECD Test Guideline 422  
Result: negative

#### **Cumene hydroperoxide:**

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

#### **Cumene:**

Effects on foetal development : Species: Rabbit  
Application Route: inhalation (vapour)  
General Toxicity Maternal: LOAEL: 500  
Developmental Toxicity: NOAEL: 2,300  
Method: OECD Test Guideline 414

#### **acetophenone:**

Effects on fertility : Species: Rat  
Application Route: Ingestion  
General Toxicity - Parent: NOAEL: 225 mg/kg body weight  
General Toxicity F1: NOAEL: 225 mg/kg body weight  
Method: OECD Test Guideline 422

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Result: negative

Species: Rat  
Application Route: Ingestion  
General Toxicity - Parent: LOAEL: 750 mg/kg body weight  
General Toxicity F1: LOAEL: 750 mg/kg body weight  
Method: OECD Test Guideline 422

Effects on foetal development : Species: Mouse  
Application Route: Ingestion  
General Toxicity Maternal: NOAEL: 125 mg/kg body weight  
Embryo-foetal toxicity: NOAEL: 125 mg/kg body weight  
Method: OECD Test Guideline 414

### STOT - single exposure

May cause respiratory irritation.

#### Components:

##### **Cumene:**

Assessment : May cause respiratory irritation.

### STOT - repeated exposure

May cause damage to organs through prolonged or repeated exposure.

#### Components:

##### **Cumene hydroperoxide:**

Assessment : May cause damage to organs through prolonged or repeated exposure.

### Repeated dose toxicity

#### Components:

##### **methyl acetoacetate:**

Species : Rat  
NOAEL : 1,000 mg/kg  
Application Route : Ingestion  
Exposure time : 28 d  
Method : OECD Test Guideline 407

##### **Cumene hydroperoxide:**

Species : Rat  
NOAEC : 31 mg/m<sup>3</sup>  
Application Route : inhalation (gas)  
Exposure time : 90 d

##### **Cumene:**

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Species : Rat  
NOAEL : 154 mg/kg  
Application Route : Oral  
Method : OECD Test Guideline 413

### **acetophenone:**

Species : Rat  
NOAEL : 225 mg/kg  
LOAEL : 750 mg/kg  
Application Route : Ingestion  
Method : OECD Test Guideline 422

### **Aspiration toxicity**

Not classified due to lack of data.

### **Components:**

#### **Cumene:**

May be fatal if swallowed and enters airways.

## 11.2 Information on other hazards

### **Endocrine disrupting properties**

#### **Product:**

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### **Further information**

#### **Product:**

Remarks : Solvents may degrease the skin.

### **Components:**

#### **acetophenone:**

Remarks : No data available

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### SECTION 12: Ecological information

#### 12.1 Toxicity

##### Components:

##### **methyl acetoacetate:**

- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): > 111.4 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : NOEC (Desmodesmus subspicatus (green algae)): 100 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

##### **Cumene hydroperoxide:**

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 3.9 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 18.8 mg/l  
Exposure time: 48 h  
Test Type: Immobilization  
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 3.1 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- NOEC (Desmodesmus subspicatus (green algae)): 1 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to microorganisms : NOEC (Pseudomonas putida): 50 mg/l  
End point: Growth rate  
Exposure time: 16 h

##### **Cumene:**

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 4.8 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 2.14 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202



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Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 2.01 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 : > 2,000 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.35 mg/l  
Exposure time: 21 d  
Species: Daphnia magna (Water flea)  
Method: OECD Test Guideline 211

### Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

### Benzenemethanol, alpha,alpha-dimethyl-:

#### Ecotoxicology Assessment

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

### acetophenone:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 162 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 528 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 86.4 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 24.8 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

## 12.2 Persistence and degradability

### Components:

#### **methyl acetoacetate:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301F

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### **Cumene hydroperoxide:**

Biodegradability : Result: Not readily biodegradable.  
Method: OECD Test Guideline 301B

### **Cumene:**

Biodegradability : Result: Readily biodegradable.

### **Benzenemethanol, alpha,alpha-dimethyl-:**

Biodegradability : Remarks: No data available

### **acetophenone:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301C

## 12.3 Bioaccumulative potential

### Components:

#### **methyl acetoacetate:**

Partition coefficient: n-  
octanol/water : log Pow: -0.4 (20 °C)

#### **Cumene hydroperoxide:**

Partition coefficient: n-  
octanol/water : log Pow: 1.6

#### **Cumene:**

Bioaccumulation : Bioconcentration factor (BCF): 94.69  
Remarks: Calculation

Partition coefficient: n-  
octanol/water : log Pow: 3.55 (23 °C)

#### **Benzenemethanol, alpha,alpha-dimethyl-:**

Partition coefficient: n-  
octanol/water : Remarks: No data available

#### **acetophenone:**

Bioaccumulation : Bioconcentration factor (BCF): 0.48

Partition coefficient: n-  
octanol/water : log Pow: 1.63

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### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

**Product:**

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

### 12.6 Endocrine disrupting properties

**Product:**

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 12.7 Other adverse effects

**Product:**

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Toxic to aquatic life with long lasting effects.

---

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Product : Dispose of wastes in an approved waste disposal facility.  
The product should not be allowed to enter drains, water courses or the soil.  
Do not contaminate ponds, waterways or ditches with chemical or used container.

According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.  
Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

Contaminated packaging : Dispose of in accordance with local regulations.  
Clean container with water.  
Dispose of contents/ container to an approved waste disposal plant.  
Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

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Do not burn, or use a cutting torch on, the empty drum.

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### SECTION 14: Transport information

#### 14.1 UN number or ID number

ADR	:	UN 3109
RID	:	UN 3109
IMDG	:	UN 3109
IATA	:	UN 3109

#### 14.2 UN proper shipping name

ADR	:	ORGANIC PEROXIDE TYPE F, LIQUID (CUMYL HYDROPEROXIDE)
RID	:	ORGANIC PEROXIDE TYPE F, LIQUID (CUMYL HYDROPEROXIDE)
IMDG	:	ORGANIC PEROXIDE TYPE F, LIQUID (CUMYL HYDROPEROXIDE)
IATA	:	Organic peroxide type F, liquid (Cumyl hydroperoxide)

#### 14.3 Transport hazard class(es)

	Class	Subsidiary risks
ADR	: 5.2	
RID	: 5.2	
IMDG	: 5.2	
IATA	: 5.2	HEAT

#### 14.4 Packing group

ADR	
Packing group	: Not assigned by regulation
Classification Code	: P1
Hazard Identification Number	: 539
Labels	: 5.2
Tunnel restriction code	: (D)

RID	
Packing group	: Not assigned by regulation
Classification Code	: P1
Hazard Identification Number	: 539
Labels	: 5.2

IMDG	
Packing group	: Not assigned by regulation
Labels	: 5.2

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EmS Code : F-J, S-R

### IATA (Cargo)

Packing instruction (cargo aircraft) : 570  
Packing group : Not assigned by regulation  
Labels : Organic Peroxides, Keep Away From Heat

### IATA (Passenger)

Packing instruction (passenger aircraft) : 570  
Packing group : Not assigned by regulation  
Labels : Organic Peroxides, Keep Away From Heat

## 14.5 Environmental hazards

### ADR

Environmentally hazardous : yes

### RID

Environmentally hazardous : yes

### IMDG

Marine pollutant : yes

## 14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

## 14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

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## SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Conditions of restriction for the following entries should be considered:  
Number on list 3

Number on list 28: Cumene

Number on list 75: If you intend to use this product as tattoo ink, please

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contact your vendor.

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59) : Not applicable

Regulation (EC) on substances that deplete the ozone layer : Not applicable

Regulation (EU) 2019/1021 on persistent organic pollutants (recast) : Not applicable

Regulation (EU) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals : Not applicable

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. H2 ACUTE TOXIC

P6b SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES

E2 ENVIRONMENTAL HAZARDS

### Other regulations:

Gefahrgruppe nach TRGS 741: Ib (German regulatory requirements)

Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

### The components of this product are reported in the following inventories:

TCSI (TW) : On the inventory, or in compliance with the inventory

TSCA (US) : All substances listed as active on the TSCA inventory

AIIC (AU) : On the inventory, or in compliance with the inventory

DSL (CA) : All components of this product are on the Canadian DSL

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ENCS (JP)	:	On the inventory, or in compliance with the inventory
ISHL (JP)	:	On the inventory, or in compliance with the inventory
KECI (KR)	:	On the inventory, or in compliance with the inventory
PICCS (PH)	:	On the inventory, or in compliance with the inventory
IECSC (CN)	:	On the inventory, or in compliance with the inventory

### 15.2 Chemical safety assessment

This information is not available.

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## SECTION 16: Other information

### Full text of H-Statements

H226	:	Flammable liquid and vapour.
H242	:	Heating may cause a fire.
H302	:	Harmful if swallowed.
H304	:	May be fatal if swallowed and enters airways.
H312	:	Harmful in contact with skin.
H314	:	Causes severe skin burns and eye damage.
H315	:	Causes skin irritation.
H318	:	Causes serious eye damage.
H319	:	Causes serious eye irritation.
H331	:	Toxic if inhaled.
H335	:	May cause respiratory irritation.
H350	:	May cause cancer.
H373	:	May cause damage to organs through prolonged or repeated exposure.
H411	:	Toxic to aquatic life with long lasting effects.

### Full text of other abbreviations

Acute Tox.	:	Acute toxicity
Aquatic Chronic	:	Long-term (chronic) aquatic hazard
Asp. Tox.	:	Aspiration hazard
Carc.	:	Carcinogenicity
Eye Dam.	:	Serious eye damage
Eye Irrit.	:	Eye irritation
Flam. Liq.	:	Flammable liquids
Org. Perox.	:	Organic peroxides
Skin Corr.	:	Skin corrosion
Skin Irrit.	:	Skin irritation
STOT RE	:	Specific target organ toxicity - repeated exposure
STOT SE	:	Specific target organ toxicity - single exposure
2000/39/EC	:	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
2019/1831/EU	:	Europe. Commission Directive 2019/1831/EU establishing a fifth list of indicative occupational exposure limit values

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IE OEL : Ireland. List of Chemical Agents and Carcinogens with Occupational Exposure Limit Values - Code of Practice, Schedule 1 and 2

2000/39/EC / TWA : Limit Value - eight hours  
2000/39/EC / STEL : Short term exposure limit  
2019/1831/EU / TWA : Limit Value - eight hours  
2019/1831/EU / STEL : Short term exposure limit  
IE OEL / OELV - 8 hrs (TWA) : Occupational exposure limit value (8-hour reference period)  
IE OEL / OELV - 15 min (STEL) : Occupational exposure limit value (15-minute reference period)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

### Further information

Other information : This safety datasheet only contains information relating to safety and does not replace any product information or product specification.  
These safety instructions also apply to empty packaging which may still contain product residues.  
The hazards on the label also apply to residues in the con-



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006, as amended by  
Commission Regulation (EU) 2020/878



## NOROX® CHM-50

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4.0	06.03.2025	600000000077	Date of first issue: 21.06.2016

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tainer.

Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

### Classification of the mixture:

Flam. Liq. 3	H226
Org. Perox. F	H242
Acute Tox. 4	H302
Acute Tox. 3	H331
Skin Corr. 1B	H314
Eye Dam. 1	H318
Carc. 1B	H350
STOT SE 3	H335
STOT RE 2	H373
Aquatic Chronic 2	H411

### Classification procedure:

Based on product data or assessment
Based on product data or assessment
Calculation method
Calculation method
Calculation method
Calculation method
Calculation method
Calculation method
Calculation method
Calculation method

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

IE / EN