


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

- **1.1 Product identifier**  
**PEROXAN PB-50 A**
- **Trade name:**
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**  
No further relevant information available.
- **Application of the substance / the mixture**  
Reaction initiator  
For industrial use
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
PERGAN GmbH  
Hilfsstoffe für industrielle Prozesse  
Schlavenhorst 71  
D-46395 Bocholt  
Tel: +49 2871 9902-0  
Fax: +49 2871 9902-50
- **Further information obtainable from:**  
Environment protection / Security of labour  
Competent person:  
\* Sales Manager Germany: Mr. Ansgar Pappenheim, e-mail: a.pappenheim@pergan.com  
\* Export Sales Manager: Mr. Dr. Thomas Philipps, e-mail: dr.philipps@pergan.com  
\* Environment protection / : Mr. Christoph Wilting, e-mail: c.wilting@pergan.com  
Security of labour
- **1.4 Emergency telephone number:**  
- Tel: +49 2871 9902-0

## SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**  

Org. Perox. C	H242	Heating may cause a fire.
Skin Irrit. 2	H315	Causes skin irritation.
Eye Irrit. 2	H319	Causes serious eye irritation.
Skin Sens. 1	H317	May cause an allergic skin reaction.
STOT SE 3	H335	May cause respiratory irritation.
Aquatic Acute 1	H400	Very toxic to aquatic life.
Aquatic Chronic 3	H412	Harmful to aquatic life with long lasting effects.
- **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**  



GHS02 GHS07 GHS09
- **Signal word**  
Danger
- **Hazard-determining components of labelling:**  
tert-butyl perbenzoate  
4-hydroxy-4-methylpentan-2-one  
2,4-Pentanedione, peroxide
- **Hazard statements**  
H242 Heating may cause a fire.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H317 May cause an allergic skin reaction.  
H335 May cause respiratory irritation.  
H400 Very toxic to aquatic life.  
H412 Harmful to aquatic life with long lasting effects.
- **Precautionary statements**  

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220	Keep away from dirt, rust, chemicals in particular concentrated acids, alkalis and accelerators (e. g. heavy metal compounds and amines).
P234	Keep only in original container.
P264	Wash thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P410	Protect from sunlight.
P411+P235	Store at temperatures not exceeding +30°C. Keep cool.
P420	Do not mix with peroxide-accelerators or reducing agents.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

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- **2.3 Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### SECTION 3: Composition/information on ingredients

#### · 3.2 Chemical characterisation: Mixtures

##### · Dangerous components:

CAS: 37187-22-7 EINECS: 253-384-9	2,4-Pentanedione, peroxide Org. Perox. D, H242; Eye Irrit. 2, H319; Skin Sens. 1, H317	25-30%
CAS: 614-45-9 EINECS: 210-382-2 Reg-No.:01-2119513317-46	tert-butyl perbenzoate Org. Perox. C, H242; Aquatic Acute 1, H400; Acute Tox. 4, H332; Skin Irrit. 2, H315; Skin Sens. 1, H317; Aquatic Chronic 3, H412	25-30%
CAS: 123-42-2 EINECS: 204-626-7 Index number: 603-016-00-1 Reg-No.:01-2119473975-21	4-hydroxy-4-methylpentan-2-one Flam. Liq. 3, H226; Eye Irrit. 2, H319; STOT SE 3, H335	20-25%
CAS: 123-54-6 EINECS: 204-634-0 Index number: 606-029-00-0 Reg-No.:01-2119458968-15	pentane-2,4-dione Flam. Liq. 3, H226; Acute Tox. 3, H311; Acute Tox. 3, H331; Acute Tox. 4, H302	5-10%

- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

### SECTION 4: First aid measures

#### · 4.1 Description of first aid measures

- **General information:** Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.



Take care of personal protection for the first aider.

- **After inhalation:** Supply fresh air and to be sure call for a doctor.  
In case of unconsciousness place patient stably in side position for transportation.  
Take affected persons into fresh air and keep quiet.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.  
Immediately remove contaminated clothing.
- **After eye contact:** Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.

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

No further relevant information available.

#### · 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:** CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

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

Under certain fire conditions, traces of other toxic gases cannot be excluded.  
Hydrocarbons, carbondioxide and -monoxid.

#### · 5.3 Advice for firefighters

- **Protective equipment:** Mouth respiratory protective device.  
Do not inhale explosion gases or combustion gases.
- **Additional information** Cool endangered receptacles with water spray.  
Self-protection first!

### SECTION 6: Accidental release measures


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

Keep away from ignition sources.  
In case of further temperature should be cooled with waterspray from a safe distance.  
Wear breathing apparatus with filter A during decomposition of materials.  
Wear protective equipment. Keep unprotected persons away.




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- **6.2 Environmental precautions:** Inform respective authorities in case of seepage into water course or sewage system.  
 Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:** Dispose contaminated material as waste according to item 13.  
 Ensure adequate ventilation.  
 Large quantities should be diluted with suitable desensitization agent to a concentration below 10 % before disposal.  
 Soak up with absorbant material (e. g. Vermiculit) and dispose of in accordance with government regulations.
- **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 disposal information.  
 In case of large spillage the environmental authority should be informed.

### SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**  
 Keep away from heat and direct sunlight.  
 Ensure good ventilation/exhaustion at the workplace.  
 Open and handle receptacle with care.  
 Prevent formation of aerosols.  
 Wear suitable respiratory protective device when decanting larger quantities without extractor facilities.  
 Do not refill residue into storage receptacles.  
 Restrict the quantity stored at the work place.  
 Use only in well ventilated areas.  
 Before break and at the end of work hands should be thoroughly washed.  
 Only use tools made of suitable materials (e. g. polyethylene or stainless steel).  
 Keep away from dirt, rust, chemicals in particular concentrated acids, alkalis and accelerators (e. g. heavy-metal compounds and amines).  
 Oxidizing because of releasing oxygene.  
 While using do not eat, drink or smoke.  
 Do not generate flames or sparks.  
 Keep product and emptied container away from heat and sources of ignition.  
 Avoid shock and friction.  
 Take precautionary measures against static discharges.  
 Do not smoke.
- **Information about fire - and explosion protection:**  
 Protect from heat.  
 Protect against electrostatic charges.  
 Prevent impact and friction.  
 Use explosion-proof apparatus / fittings and spark-proof tools.  
 Fumes can combine with air to form an explosive mixture.  
 Wear shoes with conductive soles.  
 Formation of flammable or explosive gas/air-mixtures is possible.  
 Avoid open flames, sparks, direct sunlight and other sources of ignition.  
 Keep ignition sources away - Do not smoke.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:** Pay attention to the special requirements of your local authorities for storing dangerous goods.
- **Requirements to be met by storerooms and receptacles:**  
 Store only in the original receptacle.  
 Prevent any seepage into the ground.  
 Use only receptacles specifically permitted for this substance/product.
- **Information about storage in one common storage facility:**  
 Do not store or park organic peroxide together with heavy metal compounds and amines.  
 Store away from foodstuffs, drinks and feeding stuffs.
- **Further information about storage conditions:**  
 Keep container tightly sealed.  
 Protect from heat and direct sunlight.  
 Storage in a collecting room is required.  
 Protect from contamination.
- **Recommended storage temperature (To maintain quality):**  
 0 .... +30 °C

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

**SECTION 8: Exposure controls/personal protection**

· **Additional information about design of technical facilities:** No further data; see item 7.

· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

**123-42-2 4-hydroxy-4-methylpentan-2-one**

WEL (Great Britain)	Short-term value: 362 mg/m <sup>3</sup> , 75 ppm Long-term value: 241 mg/m <sup>3</sup> , 50 ppm
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· **DNELs**

**123-42-2 4-hydroxy-4-methylpentan-2-one**

Dermal	DNEL Longterm System	840 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	59.2 mg/m <sup>3</sup> (Worker)

**614-45-9 tert-butyl perbenzoate**

Dermal	DNEL Longterm System	6.25 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	4 mg/m <sup>3</sup> (Worker)

**123-54-6 pentane-2,4-dione**

Dermal	DNEL Longterm System	12 mg/kg bw/day (Worker)
Inhalative	DNEL Longterm System	84 mg/m <sup>3</sup> (Worker)

**7722-84-1 hydrogen peroxide solution**

Inhalative	DNEL Longterm Local	1.4 mg/m <sup>3</sup> (Worker)
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· **PNECs**

**123-42-2 4-hydroxy-4-methylpentan-2-one**

PNEC Marinewater sed	0.91 mg/kg sed dw
PNEC Freshwater	2 mg/l (AF 50)
PNEC Freshwater sed	9.06 mg/kg sed dw
PNEC Soil	0.63 mg/kg soil dw
PNEC STP	10 mg/l (AF 100)
PNEC Marinewater	0.2 mg/l (AF 500)

**614-45-9 tert-butyl perbenzoate**

PNEC Marinewater sed	0.024 mg/kg sed dw
PNEC Freshwater	0.0088 mg/l (AF 50)
PNEC Freshwater sed	0.24 mg/kg sed dw
PNEC Soil	0.043 mg/kg soil dw
PNEC STP	0.6 mg/l (AF 10)
PNEC Marinewater	0.00088 mg/l (AF 500)

**123-54-6 pentane-2,4-dione**

PNEC Marinewater sed	0.191 mg/kg sed dw
PNEC Freshwater	0.2 mg/l (AF 50)
PNEC Freshwater sed	1.909 mg/kg sed dw
PNEC STP	1.32 mg/l (AF 10)
PNEC Marinewater	0.02 mg/l (AF 500)

**7722-84-1 hydrogen peroxide solution**

PNEC Marinewater sed	0.047 mg/kg sed dw
PNEC Freshwater	0.013 mg/l (AF 50)
PNEC Freshwater sed	0.047 mg/kg sed dw
PNEC Soil	0.002 mg/kg soil dw
PNEC STP	mg/l (AF 100)
PNEC Marinewater	0.013 mg/l (AF 50)

· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**

· **Personal protective equipment:**




· **General protective and hygienic measures:**

The usual precautionary measures are to be adhered to when handling chemicals.  
Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing  
Wash hands before breaks and at the end of work.

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<ul style="list-style-type: none"> <li>· <b>Respiratory protection:</b></li> <li>· <b>Protection of hands:</b></li> <li>· <b>Material of gloves</b></li> <li>· <b>Penetration time of glove material</b></li> <li>· <b>Eye protection:</b></li> <li>· <b>Body protection:</b></li> </ul>	<p>Store protective clothing separately. Avoid close or long term contact with the skin. Avoid contact with the eyes and skin. Do not eat, drink, smoke or sniff while working. Use skin protection cream for skin protection. Be sure to clean skin thoroughly after work and before breaks. In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device. Use suitable respiratory device when it exceed exposure limit and when insufficiently ventilated.</p> <p> Filter A2</p> <p>Only use chemical-protective gloves with CE-labelling of category III. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation</p> <p>Protective gloves</p> <p>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. Butyl rubber, BR Fluorocarbon rubber (Viton) Nitrile rubber, NBR Neoprene</p> <p>The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.</p> <p> Tightly sealed goggles</p> <p> Protective work clothing</p>
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## SECTION 9: Physical and chemical properties

<b>· 9.1 Information on basic physical and chemical properties</b>	
<b>· General Information</b>	
<b>· Appearance:</b>	
· <b>Form:</b>	Fluid
· <b>Colour:</b>	colourless - yellowish
· <b>Odour:</b>	Characteristic
· <b>Odour threshold:</b>	Not determined.
· <b>pH-value:</b>	Not determined.
<b>· Change in condition</b>	
· <b>Melting point/freezing point:</b>	Not applicable.
· <b>Initial boiling point and boiling range:</b>	Not applicable.
· <b>Flash point:</b>	> SADT
· <b>Flammability (solid, gas):</b>	Not applicable.
· <b>Decomposition temperature:</b>	> +60 °C (SADT)
· <b>Auto-ignition temperature:</b>	Product is not selfigniting.
· <b>Explosive properties:</b>	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
<b>· Explosion limits:</b>	
· <b>Lower:</b>	Not determined.
· <b>Upper:</b>	Not determined.
· <b>Vapour pressure:</b>	Not determined.
· <b>Density at 20 °C:</b>	1.05 g/cm <sup>3</sup>
· <b>Relative density</b>	Not determined.
· <b>Vapour density</b>	Not determined.
· <b>Evaporation rate</b>	Not determined.
<b>· Solubility in / Miscibility with</b>	
· <b>water:</b>	Undetermined.
<b>· Partition coefficient: n-octanol/water:</b> not determined	

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· Viscosity:	
· Dynamic at 20 °C:	15 mPas
· Kinematic:	Not determined.
· 9.2 Other information	No further relevant information available.
· Active oxygen	4.7 - 5.0 %

### SECTION 10: Stability and reactivity

· 10.1 Reactivity	No further relevant information available.
· 10.2 Chemical stability	
· Thermal decomposition / conditions to be avoided:	SADT (Self Accelerating Decomposition Temperature) is the lowest temperature at which self accelerating decomposition may occur with substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by decomposition at and above the temperature. Contact with incompatible substances can cause decomposition at or below the SADT. No decomposition if used and stored according to specifications. To avoid thermal decomposition do not overheat.
· 10.3 Possibility of hazardous reactions	Self-accelerating decomposition at SADT.
· 10.4 Conditions to avoid	No further relevant information available.
· 10.5 Incompatible materials:	Rapid decomposition by dirt, rust, chemicals in particular concentrated acids, alkalis and accelerators (e. g. heavy-metal compounds and amines).
· 10.6 Hazardous decomposition products:	Hydrocarbons, carbon dioxide and -monoxide. No hazardous decomposition products if used and stored according to specifications.
· Additional information:	Emergency procedures will vary depending on conditions. The customer should have an emergency response plan in place.

### SECTION 11: Toxicological information

· 11.1 Information on toxicological effects	
· Acute toxicity	Based on available data, the classification criteria are not met.

· LD/LC50 values relevant for classification:		
<b>123-42-2 4-hydroxy-4-methylpentan-2-one</b>		
Oral	LD50	2,520 mg/kg (rattus)
Dermal	LD50	13,630 mg/kg (cuniculosus)
<b>614-45-9 tert-butyl perbenzoate</b>		
Oral	LD50	4,838 mg/kg (rattus)
Dermal	LD50	3,817 mg/kg (rattus)
Inhalative	LC100 4h	4.9 mg/l (rattus)
	LC0 / 4h	1.01 mg/l (rattus)
<b>37187-22-7 2,4-Pentanedione, peroxide</b>		
Oral	LD50	>2,000 mg/kg (rattus)
Dermal	LD0	>2,000 mg/kg (rattus)
<b>123-54-6 pentane-2,4-dione</b>		
Oral	LD50	575 mg/kg (rattus)
Dermal	LD50	790 mg/kg (rattus)
Inhalative	LC50 / 4h	5.1 mg/l (rattus)

· Primary irritant effect:	
· Skin corrosion/irritation	Causes skin irritation.
· Serious eye damage/irritation	Causes serious eye irritation.
· Respiratory or skin sensitisation	May cause an allergic skin reaction.
· CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)	
· Germ cell mutagenicity	Based on available data, the classification criteria are not met.
· Carcinogenicity	Based on available data, the classification criteria are not met.
· Reproductive toxicity	Based on available data, the classification criteria are not met.
· STOT-single exposure	May cause respiratory irritation.
· STOT-repeated exposure	Based on available data, the classification criteria are not met.
· Aspiration hazard	Based on available data, the classification criteria are not met.

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**SECTION 12: Ecological information**· **12.1 Toxicity**· **Aquatic toxicity:****123-54-6 pentane-2,4-dione**

LC50 / 96h 72 mg/l (oncorhynchus mykiss)

EC50 / 48h 75 mg/l (daphnia magna)

· **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:**

Very toxic for fish

· **Additional ecological information:**· **General notes:**

Water hazard class 2 (German Regulation) (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.  
Also poisonous for fish and plankton in water bodies.  
Very toxic for aquatic organisms

· **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**

After diluting with a suitable desensitisation agent to 10 %, the solution must be supplied to a special treatment (e. g. thermal utilization) under observance of all official regulations.

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· **Waste disposal key:**

Please contact your hazardous waste disposers to assign the right EWC-(European waste catalog)-number.

· **Uncleaned packaging:**· **Recommendation:**

This material and its container must be disposed of as hazardous waste.

**SECTION 14: Transport information**· **14.1 UN-Number**· **ADR, IMDG, IATA**

UN3103

· **14.2 UN proper shipping name**· **ADR**

3103 ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE, ACETYL ACETONE PEROXIDE), ENVIRONMENTALLY HAZARDOUS

· **IMDG**

ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE, ACETYL ACETONE PEROXIDE), MARINE POLLUTANT

· **IATA**

ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE, ACETYL ACETONE PEROXIDE)

· **14.3 Transport hazard class(es)**· **ADR**· **Class**

5.2 (P1) Organic peroxides.

· **Label**

5.2

· **IMDG**· **Class**


5.2 Organic peroxides.

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· Label	5.2
· IATA	
	
· Class	5.2 Organic peroxides.
· Label	5.2
· 14.4 Packing group · ADR, IMDG, IATA	Void
· 14.5 Environmental hazards:	Product contains environmentally hazardous substances: tert-BUTYL PEROXYBENZOATE
· Marine pollutant:	Yes Symbol (fish and tree)
· Special marking (ADR):	Symbol (fish and tree)
· 14.6 Special precautions for user · Danger code (Kemler):	Warning: Organic peroxides. -
· 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
· Transport/Additional information:	
· ADR	
· Limited quantities (LQ)	25 ml
· Transport category	2
· Tunnel restriction code	D
· RID / GGVSEB:	like ADR

### SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
  - REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3
  - National regulations:
  - Other regulations, limitations and prohibitive regulations
    - Please note: Take care of the respective local regulations.
- 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

### SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Relevant phrases
  - H226 Flammable liquid and vapour.
  - H242 Heating may cause a fire.
  - H302 Harmful if swallowed.
  - H311 Toxic in contact with skin.
  - H315 Causes skin irritation.
  - H317 May cause an allergic skin reaction.
  - H319 Causes serious eye irritation.
  - H331 Toxic if inhaled.
  - H332 Harmful if inhaled.
  - H335 May cause respiratory irritation.
  - H400 Very toxic to aquatic life.
  - H412 Harmful to aquatic life with long lasting effects.
- Department issuing SDS: Environment protection / Security of labour
- Contact:
  - Tel: +49 2871 9902-0
  - E-mail: mail@pergan.com
- 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)
  - ICAO: International Civil Aviation Organisation
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - ELINCS: European List of Notified Chemical Substances

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CAS: Chemical Abstracts Service (division of the American Chemical Society)  
DNEL: Derived No-Effect Level (REACH)  
PNEC: Predicted No-Effect Concentration (REACH)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
PBT: Persistent, Bioaccumulative and Toxic  
vPvB: very Persistent and very Bioaccumulative  
Flam. Liq. 3: Flammable liquids – Category 3  
Org. Perox. C: Organic peroxides – Type C/D  
Org. Perox. D: Organic peroxides – Type C/D  
Acute Tox. 3: Acute toxicity – Category 3  
Acute Tox. 4: Acute toxicity – Category 4  
Skin Irrit. 2: Skin corrosion/irritation – Category 2  
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2  
Skin Sens. 1: Skin sensitisation – Category 1  
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3  
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1  
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

\* Data compared to the  
previous version altered.