

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 - GB



OKS 589

Version	Revision Date:	Date of last issue: 09.07.2016	Print Date:
1.4	20.08.2018	Date of first issue: 30.03.2013	20.08.2018

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

1.1 Product identifier

Product name : OKS 589

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

Use of the Sub-
stance/Mixture : Lubricant

Recommended restrictions
on use : Restricted to professional users.

1.3 Details of the supplier of the safety data sheet

Company : OKS Spezialschmierstoffe GmbH
Ganghoferstr. 47
D-82216 Maisach-Gernlinden
Tel.: +49 8142 3051 500
Fax.: +49 8142 3051 599

E-mail address of person
responsible for the SDS : mcm@oks-germany.com
National contact :

1.4 Emergency telephone number

Emergency telephone
number : +49 8142 3051 517

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 2 H225: Highly flammable liquid and vapour.

Serious eye damage, Category 1 H318: Causes serious eye damage.

Specific target organ toxicity - single ex-
posure, Category 3, Central nervous
system H336: May cause drowsiness or dizziness.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)




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Hazard pictograms	:	  
Signal word	:	Danger
Hazard statements	:	H225 Highly flammable liquid and vapour. H318 Causes serious eye damage. H336 May cause drowsiness or dizziness.
Supplemental Hazard Statements	:	EUH066 Repeated exposure may cause skin dryness or cracking.
Precautionary statements	:	Prevention: P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 Keep container tightly closed. P280 Wear protective gloves/ eye protection/ face protection. Response: P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish. Storage: P403 + P235 Store in a well-ventilated place. Keep cool.

Hazardous components which must be listed on the label:

n-butyl acetate
butan-1-ol

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.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Chemical nature	:	Solvent mixture epoxy resin solid lubricant PTFE Molybdenum disulfide
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Hazardous components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration limits M-Factor Notes	Concentration (% w/w)
butanone	78-93-3 201-159-0 606-002-00-3 01-2119457290-43-XXXX	Flam. Liq.2; H225 Eye Irrit.2; H319 STOT SE3; H336		>= 20 - < 30
ethyl acetate	141-78-6 205-500-4 607-022-00-5 01-2119475103-46	Flam. Liq.2; H225 Eye Irrit.2; H319 STOT SE3; H336		>= 10 - < 20
butan-1-ol	71-36-3 200-751-6 603-004-00-6 01-2119484630-38-XXXX	Flam. Liq.3; H226 Acute Tox.4; H302 Skin Irrit.2; H315 Eye Dam.1; H318 STOT SE3; H336 STOT SE3; H335		>= 3 - < 10
aluminium dihydrogen triphosphate	13939-25-8 237-714-9 01-2119970565-28-XXXX	Eye Irrit.2; H319		>= 1 - < 10
2-butoxyethanol	111-76-2 203-905-0 603-014-00-0 01-2119475108-36-XXXX	Acute Tox.4; H302 Acute Tox.4; H332 Acute Tox.4; H312 Skin Irrit.2; H315 Eye Irrit.2; H319		>= 1 - < 10
Substances with a workplace exposure limit :				
n-butyl acetate	123-86-4 204-658-1 607-025-00-1 01-2119485493-29-	Flam. Liq.3; H226 STOT SE3; H336		>= 30 - < 50

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	XXXX			
molybdenum disulphide	1317-33-5 215-263-9			$\geq 1 - < 10$
Graphite	7782-42-5 231-955-3			$\geq 1 - < 10$

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- If inhaled : Call a physician or poison control centre immediately.
Remove person to fresh air. If signs/symptoms continue, get medical attention.
Keep patient warm and at rest.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
If breathing is irregular or stopped, administer artificial respiration.
- In case of skin contact : Take off all contaminated clothing immediately.
Get medical attention immediately if irritation develops and persists.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes.
Get medical attention immediately.
- If swallowed : Move the victim to fresh air.
If accidentally swallowed obtain immediate medical attention.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
Do NOT induce vomiting.
Rinse mouth with water.
Never give anything by mouth to an unconscious person.

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4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Inhalation may provoke the following symptoms:
Unconsciousness
Dizziness
Drowsiness
Headache
Nausea
Tiredness
Skin contact may provoke the following symptoms:
Erythema

Risks : Central nervous system depression
Can be absorbed through skin.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Fire may cause evolution of:
Carbon oxides
Halogenated compounds
Metal oxides
Oxides of phosphorus
Sulphur oxides

Do not let product enter drains.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. In the case of respirable dust and/or fumes, use self-contained breathing apparatus. Exposure to decomposition products may be a hazard to health.

Further information : Standard procedure for chemical fires.

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Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Cool containers/tanks with water spray.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Evacuate personnel to safe areas.
Use personal protective equipment.
Ensure adequate ventilation.
Remove all sources of ignition.
Do not breathe vapours or spray mist.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions

Environmental precautions : Do not allow contact with soil, surface or ground water.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Non-sparking tools should be used.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Use only in an area containing explosion proof equipment.
Do not use in areas without adequate ventilation.
Do not breathe vapours or spray mist.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin and eyes.
For personal protection see section 8.
Keep away from fire, sparks and heated surfaces.
Smoking, eating and drinking should be prohibited in the application area.
Wash hands and face before breaks and immediately after handling the product.

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Ensure all equipment is electrically grounded before beginning transfer operations.
Do not get in eyes or mouth or on skin.
Do not get on skin or clothing.
Do not ingest.
Do not use sparking tools.
Do not enter areas where used or stored until adequately ventilated.
Do not repack.
Do not re-use empty containers.
These safety instructions also apply to empty packaging which may still contain product residues.
Keep container closed when not in use.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.

Hygiene measures : Wash face, hands and any exposed skin thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in original container. Keep container closed when not in use. Keep in a cool place away from oxidizing agents. Keep in a dry, cool and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in accordance with the particular national regulations. Keep in properly labelled containers.

7.3 Specific end use(s)

Specific use(s) : Consult the technical guidelines for the use of this substance/mixture.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
n-butyl acetate	123-86-4	TWA	150 ppm 724 mg/m ³	GB EH40 (2005-04-06)
		STEL	200 ppm 966 mg/m ³	GB EH40 (2005-04-06)
butanone	78-93-3	TWA	200 ppm 600 mg/m ³	2000/39/EC (2000-06-16)
Further information	Indicative			
		STEL	300 ppm 900 mg/m ³	2000/39/EC (2000-06-16)

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Further information	Indicative			
		TWA	200 ppm 600 mg/m ³	GB EH40 (2005-04-06)
Further information	Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		STEL	300 ppm 899 mg/m ³	GB EH40 (2005-04-06)
Further information	Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
ethyl acetate	141-78-6	TWA	200 ppm	GB EH40 (2005-04-06)
		STEL	400 ppm	GB EH40 (2005-04-06)
		STEL	400 ppm 1,468 mg/m ³	2017/164/EU (2017-02-01)
Further information	Indicative			
		TWA	200 ppm 734 mg/m ³	2017/164/EU (2017-02-01)
Further information	Indicative			
molybdenum disulphide	1317-33-5	TWA	10 mg/m ³ (Molybdenum)	GB EH40 (2005-04-06)
		STEL	20 mg/m ³ (Molybdenum)	GB EH40 (2005-04-06)
butan-1-ol	71-36-3	STEL	50 ppm 154 mg/m ³	GB EH40 (2005-04-06)
Further information	Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
2-butoxyethanol	111-76-2	TWA	20 ppm 98 mg/m ³	2000/39/EC (2000-06-16)
Further information	Identifies the possibility of significant uptake through the skin, Indicative			
		STEL	50 ppm 246 mg/m ³	2000/39/EC (2000-06-16)
Further information	Identifies the possibility of significant uptake through the skin, Indicative			
		TWA	25 ppm	GB EH40 (2005-04-06)
Further information	Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		STEL	50 ppm	GB EH40 (2005-04-06)
Further information	Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
Graphite	7782-42-5	TWA (inhalable dust)	10 mg/m ³	GB EH40 (2011-12-01)
Further information	For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m ⁻³ 8-hour TWA of inhalable dust or 4 mg.m ⁻³ 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed			

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	<p>above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3., Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used</p>				
	<table border="1"> <tr> <td></td> <td>TWA (Respirable dust)</td> <td>4 mg/m³</td> <td>GB EH40 (2011-12-01)</td> </tr> </table>		TWA (Respirable dust)	4 mg/m ³	GB EH40 (2011-12-01)
	TWA (Respirable dust)	4 mg/m ³	GB EH40 (2011-12-01)		
Further information	<p>For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 4 mg.m-3 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3., Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used</p>				

Biological occupational exposure limits

Substance name	CAS-No.	Control parameters	Sampling time	Basis
butanone	78-93-3	butan-2-one: 70 micromol per litre (Urine)	After shift	GB EH40 BAT
2-butoxyethanol	111-76-2	butoxyacetic acid: 240 Millimoles per mole Creatinine (Urine)	After shift	GB EH40 BAT

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

Substance name	End Use	Exposure routes	Potential health effects	Value
n-butyl acetate	Workers	Inhalation	Long-term systemic	300 mg/m ³

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			effects	
	Workers	Inhalation	Acute systemic effects	600 mg/m ³
	Workers	Dermal	Long-term local effects	11 mg/cm ²
butanone	Workers	Inhalation	Long-term systemic effects	600 mg/m ³
	Workers	Skin contact	Long-term systemic effects	1161 mg/kg
ethyl acetate	Consumers	Ingestion	Long-term systemic effects	4.5 mg/kg
Remarks:	Exposure time: 24 h			
	Consumers	Skin contact	Long-term systemic effects	37 mg/kg
Remarks:	Exposure time: 24 h			
	Workers	Skin contact	Long-term systemic effects	63 mg/kg
Remarks:	Exposure time: 8 h			
	Workers	Inhalation	Acute systemic effects	1468 mg/m ³
	Consumers	Inhalation	Acute systemic effects	734 mg/m ³
	Workers	Inhalation	Acute local effects	1468 mg/m ³
	Consumers	Inhalation	Acute local effects	734 mg/m ³
	Workers	Inhalation	Long-term local effects	734 mg/m ³
	Workers	Inhalation	Long-term systemic effects	734 mg/m ³
	Consumers	Inhalation	Long-term systemic effects	367 mg/m ³
	Consumers	Inhalation	Long-term local effects	367 mg/m ³
butan-1-ol	Workers	Inhalation	Long-term local effects	310 mg/m ³
	Consumers	Inhalation	Long-term systemic effects	55.357 mg/m ³
	Consumers	Inhalation	Long-term local effects	155 mg/m ³
	Consumers	Skin contact	Long-term systemic effects	3.125 mg/kg bw/day
	Consumers	Ingestion	Long-term systemic effects	1.562 mg/kg bw/day
2-butoxyethanol	Workers	Inhalation	Long-term systemic effects	98 mg/m ³
	Workers	Inhalation	Acute systemic effects	1091 mg/m ³
	Workers	Skin contact	Long-term systemic effects	125 mg/kg bw/day
	Workers	Skin contact	Acute systemic effects	89 mg/kg bw/day
	Workers	Inhalation	Acute local effects	246 mg/m ³

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

Substance name	Environmental Compartment	Value
n-butyl acetate	Fresh water	0.18 mg/l
	Marine water	0.018 mg/l
	Microbiological Activity in Sewage Treatment Systems	35.6 mg/l
	Fresh water sediment	0.981 mg/kg
butanone	Marine sediment	0.0981 mg/kg
	Soil	0.09 mg/kg
	Fresh water	55.8 mg/l
	Marine water	55.8 mg/l
ethyl acetate	Intermittent use/release	55.8 mg/l
	Sewage treatment plant	709 mg/l
	Fresh water sediment	284.7 mg/kg
	Marine sediment	284.7 mg/kg
	Soil	22.5 mg/kg
	Water	0.26 mg/l
	Soil	0.22 mg/kg
butan-1-ol	Fresh water sediment	0.34 mg/kg
	Fresh water	0.082 mg/l
2-butoxyethanol	Marine water	0.008 mg/l
	Intermittent use/release	2.25 mg/l
	Microbiological Activity in Sewage Treatment Systems	2476 mg/l
	Fresh water sediment	0.324 mg/kg dry weight (d.w.)
	Marine sediment	0.032 mg/kg dry weight (d.w.)
	Soil	0.017 mg/kg dry weight (d.w.)
2-butoxyethanol	Fresh water	8.8 mg/l
	Marine water	0.88 mg/l
	Sewage treatment plant	463 mg/l
	Fresh water sediment	34.6 mg/kg
	Marine sediment	3.46 mg/kg
	Soil	2.33 mg/kg
	Oral	0.02 mg/kg

8.2 Exposure controls

Engineering measures

Use only in an area equipped with explosion proof exhaust ventilation.
Handle only in a place equipped with local exhaust (or other appropriate exhaust).

Personal protective equipment

Eye protection : Safety glasses with side-shields conforming to EN166

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- Hand protection
- Material : butyl-rubber
 - Protective index : Class 1
- Remarks : Wear protective gloves. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. The break through time depends amongst other things on the material, the thickness and the type of glove and therefore has to be measured for each case.
- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.
- Filter type : Filter type A-P
- Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- Appearance : liquid
- Colour : black
- Odour : characteristic
- Odour Threshold : No data available

- pH : No data available
- Melting point/range : No data available
- Boiling point/boiling range : 76 °C
- Flash point : 0.5 °C(1,013 hPa)
Method: Abel-Pensky, closed cup
- Evaporation rate : No data available
- Flammability (solid, gas) : Not applicable

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Upper explosion limit : No data available

Lower explosion limit : No data available

Vapour pressure : < 1,100 hPa (20 °C)

Relative vapour density : No data available

Density : 1.00 g/cm³
(20 °C)

Bulk density : No data available

Solubility(ies)

 Water solubility : immiscible

 Solubility in other solvents : No data available

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

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Viscosity

 Viscosity, dynamic : No data available

 Viscosity, kinematic : No data available

Explosive properties : Not explosive

Oxidizing properties : No data available

9.2 Other information

Sublimation point : No data available

Self-ignition : No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No hazards to be specially mentioned.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

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Hazardous reactions : No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.
Strong sunlight for prolonged periods.

10.5 Incompatible materials

Materials to avoid : Oxidizing agents

10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product:

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

Remarks: Effects due to ingestion may include:

Symptoms: Central nervous system depression

Acute inhalation toxicity : Acute toxicity estimate: > 20 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Remarks: Respiration of solvent vapour may cause dizziness.

Symptoms: Inhalation may provoke the following symptoms:,
Dizziness, Drowsiness, Vomiting, Fatigue, Vertigo, Central
nervous system depression

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

Remarks: Prolonged or repeated skin contact with liquid may
cause defatting resulting in drying, redness and possible blis-
tering.

Symptoms: Skin disorders

Components:

butanone:

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Acute oral toxicity : LD50 (Rat): 2,193 mg/kg
Method: OECD Test Guideline 423
GLP: yes

Acute inhalation toxicity : LC50 (Rat): 34 mg/l
Exposure time: 4 h
Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg
Method: OECD Test Guideline 402

ethyl acetate:

Acute oral toxicity : LD50 (Rat): 5,600 mg/kg

Acute inhalation toxicity : LC50 (Rat): 58 mg/l
Exposure time: 8 h
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

Acute dermal toxicity : LD50 (Rabbit): 18,000 mg/kg

butan-1-ol:

Acute oral toxicity : LD50 (Rat): 2,292 mg/kg
Method: OECD Test Guideline 401
Assessment: The component/mixture is moderately toxic after single ingestion.

Acute inhalation toxicity : LC50 (Rat): > 17.76 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): 3,430 mg/kg
Method: OECD Test Guideline 402

aluminium dihydrogen triphosphate:

Acute oral toxicity : LD50 Oral (Rat): > 2,500 mg/kg
Method: OECD Test Guideline 420
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 3.46 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity

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2-butoxyethanol:

Acute oral toxicity : LD50 (Rat): 1,746 mg/kg

Acute inhalation toxicity : Assessment: The component/mixture is moderately toxic after short term inhalation.

Acute dermal toxicity : Assessment: The component/mixture is moderately toxic after single contact with skin.

n-butyl acetate:

Acute oral toxicity : LD50 (Rat): 10,768 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 21 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403
GLP: yes
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 17,600 mg/kg

molybdenum disulphide:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute dermal toxicity : LD50 (Rat): > 16,000 mg/kg

Skin corrosion/irritation

Product:

Remarks: This information is not available.

Components:

butanone:

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

Result: Repeated exposure may cause skin dryness or cracking.

ethyl acetate:

Species: Rabbit
Result: No skin irritation

butan-1-ol:

Species: Rabbit

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Assessment: Irritating to skin.
Result: Irritating to skin.
GLP: no

aluminium dihydrogen triphosphate:

Assessment: No skin irritation
Result: No skin irritation

2-butoxyethanol:

Species: Rabbit
Assessment: Irritating to skin.
Result: Irritating to skin.

n-butyl acetate:

Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: Repeated exposure may cause skin dryness or cracking.

molybdenum disulphide:

Assessment: No skin irritation
Result: No skin irritation

Serious eye damage/eye irritation

Product:

Remarks: Risk of serious damage to eyes.

Components:

butanone:

Species: Rabbit
Assessment: Irritating to eyes.
Method: OECD Test Guideline 405
Result: Irritating to eyes.

ethyl acetate:

Species: Rabbit
Result: Mild eye irritation

butan-1-ol:

Species: Rabbit
Assessment: Risk of serious damage to eyes.
Method: OECD Test Guideline 405
Result: Risk of serious damage to eyes.
GLP: yes

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aluminium dihydrogen triphosphate:

Assessment: Irritating to eyes.
Result: Irritating to eyes.

2-butoxyethanol:

Species: Rabbit
Assessment: Irritating to eyes.
Result: Irritating to eyes.

n-butyl acetate:

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

molybdenum disulphide:

Assessment: No eye irritation
Result: No eye irritation

Respiratory or skin sensitisation

Product:

Remarks: This information is not available.

Components:

butanone:

Test Type: Maximisation Test
Species: Guinea pig
Assessment: Does not cause skin sensitisation.
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.
GLP: yes

ethyl acetate:

Species: Guinea pig
Method: OECD Test Guideline 406
Result: Did not cause sensitisation on laboratory animals.

butan-1-ol:

Species: Mouse
Assessment: Did not cause sensitisation on laboratory animals.
Method: OECD Test Guideline 429
Result: Did not cause sensitisation on laboratory animals.

aluminium dihydrogen triphosphate:

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Assessment: Did not cause sensitisation on laboratory animals.
Result: Did not cause sensitisation on laboratory animals.

2-butoxyethanol:

Test Type: Maximisation Test
Species: Guinea pig
Assessment: Did not cause sensitisation on laboratory animals.
Result: Did not cause sensitisation on laboratory animals.

n-butyl acetate:

Test Type: Maximisation Test
Exposure routes: Dermal
Species: Guinea pig
Assessment: Does not cause skin sensitisation.
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.

molybdenum disulphide:

Assessment: Does not cause skin sensitisation.
Result: Does not cause skin sensitisation.

Germ cell mutagenicity

Product:

Genotoxicity in vitro : Remarks: No data available

Genotoxicity in vivo : Remarks: No data available

Components:

butanone:

Germ cell mutagenicity- Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

2-butoxyethanol:

Germ cell mutagenicity- Assessment : In vitro tests did not show mutagenic effects

n-butyl acetate:

Genotoxicity in vitro : Test Type: Ames test
Species: Salmonella typhimurium
Method: OECD Test Guideline 471
Result: negative

: Test Type: Chromosome aberration test in vitro
Species: Chinese hamster cells

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Method: OECD Test Guideline 473
Result: negative

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

Germ cell mutagenicity- Assessment : Tests on bacterial or mammalian cell cultures did not show mutagenic effects., Animal testing did not show any mutagenic effects.

molybdenum disulphide:

Germ cell mutagenicity- Assessment : Animal testing did not show any mutagenic effects.

Carcinogenicity

Product:

Remarks: No data available

Components:

butanone:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

2-butoxyethanol:

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

n-butyl acetate:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

molybdenum disulphide:

Carcinogenicity - Assessment : No evidence of carcinogenicity in animal studies.

Reproductive toxicity

Product:

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

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Components:

butanone:

Reproductive toxicity - Assessment : No toxicity to reproduction
No effects on or via lactation

aluminium dihydrogen triphosphate:

Reproductive toxicity - Assessment : No toxicity to reproduction

2-butoxyethanol:

Reproductive toxicity - Assessment : No toxicity to reproduction
Animal testing did not show any effects on foetal development.

n-butyl acetate:

Effects on fertility : Test Type: Two-generation study
Species: Rat
Application Route: inhalation (vapour)
General Toxicity - Parent: NOAEC: 750 mg/l
General Toxicity F1: NOAEC: 750 mg/l
General Toxicity F2: NOAEC: 750 mg/l
Method: OECD Test Guideline 416
Result: Embryotoxic effects and adverse effects on the offspring were detected.

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.
No toxicity to reproduction

STOT - single exposure

Components:

butanone:

Exposure routes: Inhalation
Target Organs: Respiratory system
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects., May cause drowsiness or dizziness.

ethyl acetate:

Exposure routes: Inhalation
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

butan-1-ol:

Exposure routes: Inhalation
Target Organs: Respiratory system
Assessment: The substance or mixture is classified as specific target organ toxicant, single ex-

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posure, category 3 with respiratory tract irritation.

Exposure routes: Inhalation

Target Organs: Central nervous system

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

aluminium dihydrogen triphosphate:

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

2-butoxyethanol:

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

n-butyl acetate:

Exposure routes: Inhalation

Target Organs: Central nervous system

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

molybdenum disulphide:

Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT - repeated exposure

Components:

butanone:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

butan-1-ol:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

aluminium dihydrogen triphosphate:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

2-butoxyethanol:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

n-butyl acetate:

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Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

molybdenum disulphide:

Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Product:

Remarks: This information is not available.

Components:

n-butyl acetate:

Species: Rat
NOAEL: 125 mg/kg
Application Route: Oral

Aspiration toxicity

Product:

This information is not available.

Components:

butanone:

No aspiration toxicity classification

butan-1-ol:

No aspiration toxicity classification

aluminium dihydrogen triphosphate:

No aspiration toxicity classification

2-butoxyethanol:

No aspiration toxicity classification

n-butyl acetate:

No aspiration toxicity classification

Further information

Product:

Remarks: Information given is based on data on the components and the toxicology of similar products.

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Components:

aluminium dihydrogen triphosphate:

Remarks: Ingestion causes irritation of upper respiratory system and gastrointestinal disturbance.

molybdenum disulphide:

Remarks: Information given is based on data on the components and the toxicology of similar products.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish : Remarks: Harmful to aquatic organisms.

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to microorganisms : Remarks: No data available

Components:

butanone:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2,993 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 308 mg/l
Exposure time: 48 h
Test Type: static test

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 1,972 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes

Toxicity to microorganisms : EC50 (Pseudomonas putida): 1,150 mg/l
Exposure time: 16 h
Test Type: static test

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Method: DIN 38 412 Part 8

GLP:

ethyl acetate:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 230 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 717 mg/l
Exposure time: 48 h
Method: DIN 38412

Toxicity to microorganisms : EC10 (Pseudomonas putida): 2,900 mg/l
Exposure time: 16 h

butan-1-ol:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 1,376 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1,328 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 225 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC10 (Pseudomonas putida): 2,476 mg/l
Exposure time: 17 h
Test Type: static test
Method: DIN 38 412 Part 8

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 4.1 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: Reproduction Test
Method: OECD Test Guideline 211

2-butoxyethanol:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 1,474 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1,550 mg/l
Exposure time: 48 h
Test Type: Immobilization

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- Method: OECD Test Guideline 202
- Toxicity to algae : EC50 (*Pseudokirchneriella subcapitata* (green algae)): 1,840 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
- Toxicity to fish (Chronic toxicity) : NOEC: > 100 mg/l
Exposure time: 21 d
Species: *Danio rerio* (zebra fish)
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 100 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
Test Type: Reproduction Test
Method: OECD Test Guideline 211
- n-butyl acetate:**
- Toxicity to fish : LC50 (*Pimephales promelas* (fathead minnow)): 18 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia* (water flea)): 44 mg/l
Exposure time: 48 h
Test Type: static test
- Toxicity to algae : EC50 (*Desmodesmus subspicatus* (green algae)): 397 mg/l
Exposure time: 72 h
Test Type: static test
- Toxicity to microorganisms : EC50 (*Tetrahymena pyriformis*): 356 mg/l
Exposure time: 40 h
Test Type: Growth inhibition
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 23 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
Test Type: Reproduction Test
GLP: yes

molybdenum disulphide:

- Toxicity to fish : LC50 (*Pimephales promelas* (fathead minnow)): > 100 mg/l
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): > 100 mg/l
Exposure time: 48 h
- Toxicity to algae : EC50 (*Pseudokirchneriella subcapitata* (green algae)): > 100 mg/l
Exposure time: 72 h

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12.2 Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Physico-chemical removability : Remarks: No data available

Components:

butanone:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Result: rapidly biodegradable
Biodegradation: 98 %
Exposure time: 28 d
Method: OECD Test Guideline 301D
GLP: yes

ethyl acetate:

Biodegradability : Biodegradation: 100 %
Exposure time: 28 d
Method: OECD Test Guideline 301D
Remarks: According to the results of tests of biodegradability this product is considered as being readily biodegradable.

butan-1-ol:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Result: rapidly biodegradable
Biodegradation: > 92 %
Exposure time: 28 d

2-butoxyethanol:

Biodegradability : Test Type: aerobic
Result: rapidly biodegradable
Biodegradation: 90 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

n-butyl acetate:

Biodegradability : Test Type: Primary biodegradation
Result: rapidly biodegradable
Biodegradation: 83 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

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12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).
This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

Components:

butanone:

Bioaccumulation : Remarks: Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

Partition coefficient: n-octanol/water : log Pow: 0.3 (40 °C)
Method: OECD Test Guideline 117
GLP: yes

butan-1-ol:

Partition coefficient: n-octanol/water : log Pow: 1 (25 °C)
pH: 7
Method: OECD Test Guideline 117
GLP: yes

2-butoxyethanol:

Bioaccumulation : Bioconcentration factor (BCF): 2.5

Partition coefficient: n-octanol/water : log Pow: 0.81 (25 °C)
Method: OECD Test Guideline 107

n-butyl acetate:

Partition coefficient: n-octanol/water : log Pow: 2.3 (25 °C)
pH: 7
Method: OECD Test Guideline 117
GLP: yes

12.4 Mobility in soil

Product:

Mobility : Remarks: No data available

Distribution among environmental compartments : Remarks: 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

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very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

Components:

butanone:

Assessment : Non-classified PBT substance. Non-classified vPvB substance.

butan-1-ol:

Assessment : Non-classified PBT substance. Non-classified vPvB substance.

n-butyl acetate:

Assessment : Non-classified PBT substance. Non-classified vPvB substance.

12.6 Other adverse effects

Product:

Additional ecological information : No information on ecology is available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : The product should not be allowed to enter drains, water courses or the soil.
Do not dispose of with domestic refuse.
Dispose of as hazardous waste in compliance with local and national regulations.

Waste codes should be assigned by the user based on the application for which the product was used.

Contaminated packaging : Packaging that is not properly emptied must be disposed of as the unused product.
Dispose of waste product or used containers according to local regulations.

The following Waste Codes are only suggestions:

SECTION 14: Transport information

14.1 UN number

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ADR : UN 1263
IMDG : UN 1263
IATA : UN 1263

14.2 UN proper shipping name

ADR : PAINT
IMDG : PAINT
IATA : Paint

14.3 Transport hazard class(es)

ADR : 3
IMDG : 3
IATA : 3

14.4 Packing group

ADR
Packing group : II
Classification Code : F1
Hazard Identification Number : 33
Labels : 3
Tunnel restriction code : (D/E)

IMDG
Packing group : II
Labels : 3
EmS Code : F-E, S-E

IATA (Cargo)
Packing instruction (cargo aircraft) : 364
Packing instruction (LQ) : Y341
Packing group : II
Labels : Flammable Liquids

IATA (Passenger)
Packing instruction (passenger aircraft) : 353
Packing instruction (LQ) : Y341
Packing group : II
Labels : Flammable Liquids

14.5 Environmental hazards

ADR
Environmentally hazardous : no

IMDG
Marine pollutant : no

IATA (Passenger)
Environmentally hazardous : no

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IATA (Cargo)

Environmentally hazardous : no

14.6 Special precautions for user

No special precautions required.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Remarks : Not applicable for product as supplied.

SECTION 15: Regulatory information

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

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59) : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

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

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable

Regulation (EC) No 850/2004 on persistent organic pollutants : Not applicable

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : See Annex XVII to Regulation (EC) no 1907/2006 for Conditions of restriction

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

P5c	FLAMMABLE LIQUIDS	Quantity 1 5,000 t	Quantity 2 50,000 t
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P5c

Volatile organic compounds : Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
Volatile organic compounds (VOC) content: 69.92 %
Volatile CMR compounds: 0.01 %
Remarks: VOC content excluding water

Other regulations:

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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.

15.2 Chemical safety assessment

This information is not available.

SECTION 16: Other information

Full text of H-Statements

H225	: Highly flammable liquid and vapour.
H226	: Flammable liquid and vapour.
H302	: Harmful if swallowed.
H312	: Harmful in contact with skin.
H315	: Causes skin irritation.
H318	: Causes serious eye damage.
H319	: Causes serious eye irritation.
H332	: Harmful if inhaled.
H335	: May cause respiratory irritation.
H336	: May cause drowsiness or dizziness.

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; 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 Organisa-

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tion 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; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Classification of the mixture:

Flam. Liq. 2	H225
Eye Dam. 1	H318
STOT SE 3	H336

Classification procedure:

Based on product data or assessment
Calculation method
Calculation method

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