



LUS-170 INK BLACK

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Issue date: 29-8-2017 Revision date: 3-12-2024 Supersedes version of: 4-7-2023 Version: 3.2

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

1.1. Product identifier

Product form : Mixture
Product name : LUS-170 INK BLACK
UFI : UPXM-AY8Y-Y109-8R3R
Product code : LUS17-K-BA
Product group : Trade product

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

Relevant identified uses

Main use category : Professional use

Title	Use descriptors
LUS-170 INK BLACK	SU0, PC18, PROC1

Full text of use descriptors: see section 16

1.3. Details of the supplier of the safety data sheet

Mimaki Europe B.V.
Stammerdijk 7E
1112 AA Diemen
Netherlands
T +31 20 4627640
reach@mimakieurope.com

1.4. Emergency telephone number

Emergency number : National Poisons Information Centre +31 (0)30 - 274 8888
(Only for the purpose of informing medical personnel in cases of accidental intoxications.
The emergency phone number is 24 hours/day available.)

Country/Area	Organisation/Company	Address	Emergency number	Comment
United Kingdom	Guy's & St Thomas' Poisons Unit Medical Toxicology Unit, Guy's & St Thomas' Hospital Trust	Avonley Road SE14 5ER	+44 20 7188 7188	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute toxicity (oral), Category 4 H302
Skin corrosion/irritation, Category 2 H315
Serious eye damage/eye irritation, Category 1 H318
Skin sensitisation, Category 1 H317
Reproductive toxicity, Category 1B H360Df
Specific target organ toxicity – Repeated exposure, Category 1 H372
Hazardous to the aquatic environment – Chronic Hazard, Category 2 H411

Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

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2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



Signal word (CLP)

Contains

Hazard statements (CLP)

Precautionary statements (CLP)

EUH-statements

Extra phrases

- : Danger
- : 2-phenoxyethyl acrylate; tetrahydrofurfuryl acrylate; 1-vinylhexahydro-2H-azepin-2-one; diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide ; phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide; exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate
- : H315 - Causes skin irritation.
- H317 - May cause an allergic skin reaction.
- H318 - Causes serious eye damage.
- H360Df - May damage the unborn child. Suspected of damaging fertility.
- H372 - Causes damage to organs (liver, respiratory tract) through prolonged or repeated exposure.
- H411 - Toxic to aquatic life with long lasting effects.
- : P201 - Obtain special instructions before use.
- P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
- 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 or doctor.
- P308+P313 - IF exposed or concerned: Get medical advice/attention.
- P391 - Collect spillage.
- : EUH071 - Corrosive to the respiratory tract.
- : Restricted to professional users.

2.3. Other hazards

Contains no PBT and/or vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

Component	
Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)
Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or substance(s) are not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

Component	
Substance(s) not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605	diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)

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SECTION 3: Composition/information on ingredients

3.2. Mixtures

Name	Product identifier	% w/w (% w/w)	Classification according to Regulation (EC) No. 1272/2008 [CLP]
2-phenoxyethyl acrylate	CAS-No.: 48145-04-6 EC-No.: 256-360-6 REACH-no: 01-2119980532-35	20 – 30	Skin Sens. 1A, H317 Repr. 2, H361d Aquatic Chronic 2, H411
tetrahydrofurfuryl acrylate	CAS-No.: 2399-48-6 EC-No.: 219-268-7 REACH-no: 01-2120738396-46	20 – 30	Acute Tox. 4 (Oral), H302 Skin Corr. 1C, H314 Eye Dam. 1, H318 Skin Sens. 1B, H317 Repr. 1B, H360Df STOT RE 2, H373 Aquatic Chronic 2, H411
1-vinylhexahydro-2H-azepin-2-one	CAS-No.: 2235-00-9 EC-No.: 218-787-6 REACH-no: 01-2119977109-27	10 – 20	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Eye Irrit. 2, H319 Skin Sens. 1B, H317 STOT RE 1, H372
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate	CAS-No.: 5888-33-5 EC-No.: 227-561-6 EC Index-No.: 607-756-00-6 REACH-no: 01-2119957862-25	10 – 20	Skin Sens. 1A, H317 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide substance listed on REACH Candidate List	CAS-No.: 75980-60-8 EC-No.: 278-355-8 EC Index-No.: 015-203-00-X REACH-no: 01-2119972295-29	5 – 10	Skin Sens. 1B, H317 Repr. 1B, H360Fd
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	CAS-No.: 162881-26-7 EC-No.: 423-340-5 EC Index-No.: 015-189-00-5 REACH-no: 01-2119944153-43	1 – 5	Skin Sens. 1, H317 Aquatic Chronic 4, H413

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Seek medical attention if ill effect develops. Do not breathe gas, fumes, vapour or spray. Avoid contact with skin and eyes. Never give anything by mouth to an unconscious person. IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation	: In case of accident by inhalation : remove casualty to fresh air and keep at rest. Consult a doctor/medical service if you feel unwell.
First-aid measures after skin contact	: Seek medical attention if ill effect or irritation develops. Wash skin with mild soap and water. Wash contaminated clothing before reuse.
First-aid measures after eye contact	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
First-aid measures after ingestion	: If swallowed, seek medical advice immediately and show this container or label. Never give anything by mouth to an unconscious person. Rinse mouth. Do NOT induce vomiting.

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

Symptoms/effects	: May damage the unborn child. Suspected of damaging fertility. Causes damage to organs through prolonged or repeated exposure. liver. respiratory tract.
Symptoms/effects after inhalation	: May cause an allergic skin reaction.
Symptoms/effects after skin contact	: Causes skin irritation.
Symptoms/effects after eye contact	: Causes serious eye damage.
Symptoms/effects after ingestion	: Swallowing a small quantity of this material will result in serious health hazard.

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

Concerning personal protective equipment to use, see section 8. Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Carbon dioxide (CO ₂). Dry chemical. Alcohol resistant foam. Use extinguishing media appropriate for surrounding fire.
Unsuitable extinguishing media	: Heavy water stream.

5.2. Special hazards arising from the substance or mixture

Reactivity in case of fire	: Combustion produces toxic gases.
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5.3. Advice for firefighters

Firefighting instructions	: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.
Protection during firefighting	: Do not breathe vapours. Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	: May cause sensitization by inhalation and skin contact.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Avoid contact with skin and eyes. Keep public away from danger area.
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For non-emergency personnel

Emergency procedures	: Evacuate unnecessary personnel.
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For emergency responders

Protective equipment	: For further information refer to section 8: "Exposure controls/personal protection". Equip cleanup crew with proper protection.
Emergency procedures	: Ventilate area.

6.2. Environmental precautions

Do not allow material to contaminate ground water system. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up	: Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Store away from other materials. Place in a suitable container for disposal in accordance with the waste regulations (see Section 13).
Other information	: Clear contaminated areas thoroughly.

6.4. Reference to other sections

Concerning personal protective equipment to use, see section 8. See Section 12. Ecological information.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Provide good ventilation in process area to prevent formation of vapour. Local exhaust or breathing protection. Avoid inhalation of vapours. Use personal protective equipment as required. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
Hygiene measures	: Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions	: Keep out of the reach of children. Keep only in the original container in a cool well ventilated place. Keep container tightly closed.
Incompatible products	: Strong bases. Strong acids.
Incompatible materials	: Sources of ignition. Direct sunlight.
Storage area	: Avoid: Direct sunlight. Store away from heat.

7.3. Specific end use(s)

It is recommended to pass the information of this safety data sheet, eventually in an appropriated form, to the users.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DNEL and PNEC

2-phenoxyethyl acrylate (48145-04-6)

DNEL/DMEL (Workers)

Long-term - systemic effects, dermal	1,5 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	10 mg/m ³
Long-term - local effects, inhalation	77 mg/m ³

PNEC (Water)

PNEC aqua (freshwater)	2 µg/l
PNEC aqua (marine water)	0,2 µg/l
PNEC aqua (intermittent, freshwater)	0,0121 mg/l

PNEC (Sediment)

PNEC sediment (freshwater)	0,02 mg/kg dwt
PNEC sediment (marine water)	0,002 mg/kg dwt

PNEC (Soil)

PNEC soil	0,006 mg/kg dwt
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PNEC (STP)

PNEC sewage treatment plant	1,77 mg/l
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tetrahydrofurfuryl acrylate (2399-48-6)

DNEL/DMEL (Workers)

Long-term - systemic effects, dermal	4,9 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	1,73 mg/m ³

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tetrahydrofurfuryl acrylate (2399-48-6)	
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	180 µg/kg dw
Long-term - systemic effects, inhalation	300 µg/m³
Long-term - systemic effects, dermal	1,75 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	3,92 µg/L
PNEC aqua (marine water)	392 ng/l
PNEC aqua (intermittent, freshwater)	39,2 µg/L
PNEC (Sediment)	
PNEC sediment (freshwater)	20,6 µg/kg
PNEC sediment (marine water)	2,1 µg/kg
PNEC (Soil)	
PNEC soil	1,8 µg/kg
PNEC (STP)	
PNEC sewage treatment plant	2,637 mg/l
1-vinylhexahydro-2H-azepin-2-one (2235-00-9)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	0,7 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	4,9 mg/m³
Long-term - local effects, inhalation	0,17 mg/m³
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	0,4 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	1,04 mg/m³
Long-term - systemic effects, dermal	0,42 mg/kg bodyweight/day
Long-term - local effects, inhalation	0,04 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	0,1 mg/l
PNEC aqua (marine water)	0,01 mg/l
PNEC aqua (intermittent, freshwater)	1 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0,829 mg/kg dwt
PNEC sediment (marine water)	0,0829 mg/kg dwt
PNEC (Soil)	
PNEC soil	0,107 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	262 mg/l

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diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	0,233 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	0,822 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	83,3 µg/kg bodyweight/day
Long-term - systemic effects, inhalation	0,145 mg/m ³
Long-term - systemic effects, dermal	83,3 µg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	1,4 µg/l
PNEC aqua (marine water)	0,14 µg/l
PNEC aqua (intermittent, freshwater)	14 µg/l
PNEC aqua (intermittent, marine water)	1,4 µg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0,115 mg/kg dwt
PNEC sediment (marine water)	11,5 µg/kg dw
PNEC (Soil)	
PNEC soil	22,2 µg/kg dw
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide (162881-26-7)	
DNEL/DMEL (Workers)	
Acute - systemic effects, dermal	3,33 mg/kg bodyweight/day
Acute - systemic effects, inhalation	7,84 mg/m ³
Long-term - systemic effects, dermal	3,33 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	7,84 mg/m ³
DNEL/DMEL (General population)	
Acute - systemic effects, dermal	1,67 mg/kg bodyweight/day
Acute - systemic effects, inhalation	3,92 mg/m ³
Acute - systemic effects, oral	1,67 mg/kg bodyweight/day
Long-term - systemic effects, oral	1,67 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	3,92 mg/m ³
Long-term - systemic effects, dermal	1,67 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	0,8 µg/l
PNEC aqua (marine water)	0,8 µg/l
PNEC aqua (intermittent, freshwater)	0,8 µg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0,712 mg/kg dwt
PNEC sediment (marine water)	0,712 mg/kg dwt
PNEC (Soil)	
PNEC soil	20 mg/kg dwt

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phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide (162881-26-7)	
PNEC (STP)	
PNEC sewage treatment plant	1 mg/l
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate (5888-33-5)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	1,39 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	4,9 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	0,83 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	1,45 mg/m ³
Long-term - systemic effects, dermal	0,83 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	0,00092 mg/l
PNEC aqua (marine water)	0,000092 mg/l
PNEC aqua (intermittent, freshwater)	0,00704 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0,145 mg/kg dwt
PNEC sediment (marine water)	0,0145 mg/kg dwt
PNEC (Soil)	
PNEC soil	0,0285 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	2 mg/l

8.2. Exposure controls

Appropriate engineering controls

Appropriate engineering controls:

Ensure that there is a suitable ventilation system.

Personal protection equipment

Personal protective equipment:

Safety glasses. Gloves. Protective clothing. Avoid all unnecessary exposure.

Personal protective equipment symbol(s):



Eye and face protection

Eye protection:

Chemical goggles or safety glasses (acc. EN 166)

Skin protection

Skin and body protection:

Wear suitable protective clothing. Standard. EN 13034

Hand protection:

Wear suitable gloves resistant to chemical penetration. Breakthrough time (EN 374-3:2003): > 480 min (www.echa.europa.eu). Nitrile rubber gloves (0,4 mm). Chloroprene rubber (0,5mm). Polyvinylchloride (PVC). Wear protective gloves.

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Respiratory protection

Respiratory protection:

Provide adequate ventilation. In case of inadequate ventilation wear respiratory protection. Extra personal protection: A/P2 filter respirator for organic vapour and harmful dust. Standard. EN 14387

Environmental exposure controls

Environmental exposure controls:

Do not discharge into drains or the environment.

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Black.
Odour	: characteristic.
Odour threshold	: Not available
Melting point	: Not available
Freezing point	: Not available
Boiling point	: Not available
Flammability	: Non flammable.
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Flash point	: 95 °C
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: Not available
Viscosity, kinematic	: Not available
Viscosity, dynamic	: 7 – 12 mPa·s @ 25°C
Solubility	: Water: insoluble in water
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: Not available
Vapour pressure at 50°C	: Not available
Density	: Not available
Relative density	: 1 – 1,1
Relative vapour density at 20°C	: Not available
Particle characteristics	: Not applicable

9.2. Other information

Other safety characteristics

VOC content : < 30 %

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Heat. Sparks. Open flame. Direct sunlight. Extremely high or low temperatures.

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10.5. Incompatible materials

Strong oxidizers. Powdered metals.

10.6. Hazardous decomposition products

No hazardous decomposition products known.

SECTION 11: Toxicological information

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

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

2-phenoxyethyl acrylate (48145-04-6)

LD50 oral rat	5000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LD50 dermal rat	2000 mg/kg

tetrahydrofurfuryl acrylate (2399-48-6)

LD50 oral rat	928 mg/kg bodyweight
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1-vinylhexahydro-2H-azepin-2-one (2235-00-9)

LD50 oral rat	1114 mg/kg
LD50 dermal rat	1700 mg/kg
LC50 Inhalation - Rat	1,6 mg/l (8h)

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)

LD50 oral rat	> 5000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity)
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity), Guideline: EU Method B.3 (Acute Toxicity (Dermal)), Guideline: EPA OPPTS 870.1200 (Acute Dermal Toxicity), Guideline: other:

phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide (162881-26-7)

LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: EU Method B.1 (Acute Toxicity (Oral))
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: other:92/69/EEC

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate (5888-33-5)

LD50 oral rat	5750 mg/kg
LD50 dermal rabbit	> 3000 mg/kg bodyweight Animal: rabbit, Animal sex: male, Guideline: other:pre-guideline

Skin corrosion/irritation : Causes skin irritation.
Additional information : On basis of test data
not corrosive
GLP OECD TG431

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)

pH	4 – 7
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Serious eye damage/irritation : Causes serious eye damage.

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)

pH	4 – 7
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Respiratory or skin sensitisation : May cause an allergic skin reaction.
Germ cell mutagenicity : Not classified

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Additional information	: Based on available data, the classification criteria are not met
Carcinogenicity	: Not classified
Additional information	: Based on available data, the classification criteria are not met
Reproductive toxicity	: May damage the unborn child. Suspected of damaging fertility.

2-phenoxyethyl acrylate (48145-04-6)

NOAEL (animal/female, F0/P)	300 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
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STOT-single exposure	: Not classified
Additional information	: Based on available data, the classification criteria are not met

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)

LOAEL (oral, rat)	250 – 300 mg/kg bodyweight
NOAEL (oral, rat)	50 – 100 mg/kg bodyweight/day

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate (5888-33-5)

NOAEL (oral, rat)	84 – 111 mg/kg bodyweight/day
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STOT-repeated exposure	: Causes damage to organs (liver, respiratory tract) through prolonged or repeated exposure.
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2-phenoxyethyl acrylate (48145-04-6)

NOAEL (oral, rat, 90 days)	300 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
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tetrahydrofurfuryl acrylate (2399-48-6)

NOAEL (oral, rat, 90 days)	35 mg/kg bodyweight/day
STOT-repeated exposure	May cause damage to organs through prolonged or repeated exposure.

1-vinylhexahydro-2H-azepin-2-one (2235-00-9)

LOAEC (inhalation, rat, vapour, 90 days)	0,181 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study), Guideline: EU Method B.29 (Sub-Chronic Inhalation Toxicity:90-Day Study)
NOAEL (subacute, oral, animal/male, 28 days)	50 mg/kg bodyweight NOAEL (oral, rat)
NOAEL (subacute, oral, animal/female, 28 days)	50 mg/kg bodyweight NOAEL (oral, rat)
STOT-repeated exposure	Causes damage to organs (liver, respiratory tract) through prolonged or repeated exposure.

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)

NOAEL (subacute, oral, animal/male, 28 days)	50 mg/kg bodyweight NOAEL (oral, rat)
NOAEL (subacute, oral, animal/female, 28 days)	50 mg/kg bodyweight NOAEL (oral, rat)

phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide (162881-26-7)

NOAEL (oral, rat, 90 days)	> 1000 mg/kg bodyweight Animal: rat, Guideline: other:92/69/eec
NOAEL (dermal, rat/rabbit, 90 days)	1000 mg/kg bodyweight/day

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate (5888-33-5)

NOAEL (oral, rat, 90 days)	100 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 422 (Combined Repeated Dose Toxicity Study with the Reproduction / Developmental Toxicity Screening Test)
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Aspiration hazard	: Not classified
Additional information	: Based on available data, the classification criteria are not met

2-phenoxyethyl acrylate (48145-04-6)

Viscosity, kinematic	≈ 10,136 mm²/s
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1-vinylhexahydro-2H-azepin-2-one (2235-00-9)

Viscosity, kinematic	3,5 – 6,16 mm²/s
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11.2. Information on other hazards

Other information

Potential adverse human health effects and symptoms : Harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - water : Harmful to aquatic life with long lasting effects.
Hazardous to the aquatic environment, short-term (acute) : Not classified
Hazardous to the aquatic environment, long-term (chronic) : Toxic to aquatic life with long lasting effects.

2-phenoxyethyl acrylate (48145-04-6)

LC50 - Fish [1]	10 mg/l Test organisms (species): Leuciscus idus
LC50 - Fish [2]	10 mg/l (72 h)
EC50 - Crustacea [1]	1,21 mg/l Test organisms (species): Daphnia magna
EC50 - Crustacea [2]	3,85 mg/l (24 h)
EC50 - Other aquatic organisms [1]	24h
EC50 72h - Algae [1]	4,4 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 72h - Algae [2]	1,7 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 96h - Algae [1]	4,1 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 96h - Algae [2]	1,33 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)

tetrahydrofurfuryl acrylate (2399-48-6)

LC50 - Fish [1]	7,32 mg/l
EC50 - Crustacea [1]	37,7 mg/l
EC50 72h - Algae [1]	3,92 mg/l
EC50 72h - Algae [2]	2,71 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)

1-vinylhexahydro-2H-azepin-2-one (2235-00-9)

LC50 - Fish [1]	307 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 - Crustacea [1]	> 100 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 100 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
NOEC (chronic)	5,75 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic fish	3,2 mg/l Test organisms (species): other:
NOEC chronic algae	25 mg/l (72h)

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diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)	
LC50 - Fish [1]	1,4 mg/l Test organisms (species): Cyprinus carpio
LC50 - Fish [2]	6,53 mg/l (48h)
EC50 - Crustacea [1]	3,53 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	> 2,01 mg/l Test organisms (species): Raphidocelis subcapitata (previous names: Pseudokirchneriella subcapitata, Selenastrum capricornutum)
EC50 96h - Algae [1]	3,829 mg/l Source: Ecological Structure Activity Relationships
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide (162881-26-7)	
LC50 - Fish [1]	> 0,09 mg/l Test organisms (species): other:Zebra Fish Brachydanio rerio
EC50 - Crustacea [1]	> 1,175 mg/l Test organisms (species): other aquatic crustacea:Daphnia Magna
EC50 - Crustacea [2]	> 1175 mg/l Test organisms (species): Daphnia magna
EC50 - Other aquatic organisms [1]	> 1,175 mg/l Test organisms (species): other aquatic crustacea:
EC50 72h - Algae [1]	> 0,26 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
NOEC chronic crustacea	8,1 µg/L (21 d)
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate (5888-33-5)	
LC50 - Fish [1]	0,704 mg/l Test organisms (species): Danio rerio (previous name: Brachydanio rerio)
EC50 72h - Algae [1]	1,98 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 72h - Algae [2]	0,596 mg/l Test organisms (species): Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
LOEC (chronic)	0,277 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC (acute)	0,153 – 0,405
NOEC (chronic)	0,092 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic crustacea	0,092 mg/l
12.2. Persistence and degradability	
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Persistence and degradability	May cause long-term adverse effects in the environment.
2-phenoxyethyl acrylate (48145-04-6)	
Persistence and degradability	Rapidly degradable
tetrahydrofurfuryl acrylate (2399-48-6)	
Persistence and degradability	Rapidly degradable
1-vinylhexahydro-2H-azepin-2-one (2235-00-9)	
Persistence and degradability	Rapidly degradable
diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)	
Persistence and degradability	Rapidly degradable
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide (162881-26-7)	
Persistence and degradability	Rapidly degradable

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ADDITIVES

Persistence and degradability	Rapidly degradable
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acrylate monomer

Persistence and degradability	Rapidly degradable
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exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate (5888-33-5)

Persistence and degradability	Rapidly degradable
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Photoinitiator

Persistence and degradability	Rapidly degradable
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12.3. Bioaccumulative potential

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Bioaccumulative potential	Not established.
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2-phenoxyethyl acrylate (48145-04-6)

Partition coefficient n-octanol/water (Log Pow)	2,58 @ 25°C
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tetrahydrofurfuryl acrylate (2399-48-6)

Partition coefficient n-octanol/water (Log Pow)	0,81 @ 21.7 °C
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1-vinylhexahydro-2H-azepin-2-one (2235-00-9)

Partition coefficient n-octanol/water (Log Pow)	1,2 – 1,242 @ 23 - 25 °C and pH 7.2
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diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)

Partition coefficient n-octanol/water (Log Pow)	3,1 – 3,87 @ 23 °C and pH 6.4
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phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide (162881-26-7)

Partition coefficient n-octanol/water (Log Pow)	4,65 – 5,8 @ 20 - 22 °C and pH 7 - 8.3
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exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate (5888-33-5)

Partition coefficient n-octanol/water (Log Pow)	4,52 @ 20°C
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12.4. Mobility in soil

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)

Mobility in soil	784,8 Source: Quantitative Structure Activity Relation
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12.5. Results of PBT and vPvB assessment

Component

Substance(s) not meeting the PBT criteria of REACH regulation, in accordance with Annex XIII	diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)
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Substance(s) not meeting the vPvB criteria of REACH regulation, in accordance with Annex XIII	diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (75980-60-8)
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12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

Additional information : Avoid release to the environment.

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional waste regulation	: Disposal must be done according to official regulations.
Product/Packaging disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations.
Ecological waste information	: Avoid release to the environment.
European List of Waste (LoW, EC 2000/532)	: 08 03 12* - waste ink containing dangerous substances
HP Code	: HP5 - "Specific Target Organ Toxicity (STOT)/Aspiration Toxicity:" waste which can cause specific target organ toxicity either from a single or repeated exposure, or which cause acute toxic effects following aspiration. HP6 - "Acute Toxicity:" waste which can cause acute toxic effects following oral or dermal administration, or inhalation exposure. HP8 - "Corrosive:" waste which on application can cause skin corrosion. HP13 - "Sensitising:" waste which contains one or more substances known to cause sensitising effects to the skin or the respiratory organs. HP14 - "Ecotoxic:" waste which presents or may present immediate or delayed risks for one or more sectors of the environment

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 3082	UN 3082	UN 3082	UN 3082	UN 3082
14.2. UN proper shipping name				
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	Environmentally hazardous substance, liquid, n.o.s.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Transport document description				
UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate ; 2-phenoxyethyl acrylate), 9, III, (-)	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate ; 2-phenoxyethyl acrylate), 9, III, MARINE POLLUTANT	UN 3082 Environmentally hazardous substance, liquid, n.o.s. (exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate ; 2-phenoxyethyl acrylate), 9, III	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate ; 2-phenoxyethyl acrylate), 9, III	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate ; 2-phenoxyethyl acrylate), 9, III
14.3. Transport hazard class(es)				
9	9	9	9	9
14.4. Packing group				
III	III	III	III	III

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ADR	IMDG	IATA	ADN	RID
14.5. Environmental hazards				
Dangerous for the environment: Yes	Dangerous for the environment: Yes Marine pollutant: Yes EmS-No. (Fire): F-A EmS-No. (Spillage): S-F	Dangerous for the environment: Yes	Dangerous for the environment: Yes	Dangerous for the environment: Yes
No supplementary information available				

14.6. Special precautions for user

Overland transport

Classification code (ADR)	: M6
Special provisions (ADR)	: 274, 335, 375, 601
Limited quantities (ADR)	: 5I
Excepted quantities (ADR)	: E1
Packing instructions (ADR)	: P001, IBC03, LP01, R001
Special packing provisions (ADR)	: PP1
Mixed packing provisions (ADR)	: MP19
Portable tank and bulk container instructions (ADR)	: T4
Portable tank and bulk container special provisions (ADR)	: TP1, TP29
Tank code (ADR)	: LGBV
Vehicle for tank carriage	: AT
Transport category (ADR)	: 3
Special provisions for carriage - Packages (ADR)	: V12
Special provisions for carriage - Loading, unloading and handling (ADR)	: CV13
Hazard identification number (Kemler No.)	: 90
Orange plates	: 
Tunnel restriction code (ADR)	: -
EAC code	: •3Z

Transport by sea

Special provisions (IMDG)	: 274, 335, 969
Limited quantities (IMDG)	: 5 L
Excepted quantities (IMDG)	: E1
Packing instructions (IMDG)	: LP01, P001
Special packing provisions (IMDG)	: PP1
IBC packing instructions (IMDG)	: IBC03
Tank instructions (IMDG)	: T4
Tank special provisions (IMDG)	: TP2, TP29
Stowage category (IMDG)	: A

Air transport

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y964
PCA limited quantity max net quantity (IATA)	: 30kgG
PCA packing instructions (IATA)	: 964
PCA max net quantity (IATA)	: 450L
CAO packing instructions (IATA)	: 964
CAO max net quantity (IATA)	: 450L
Special provisions (IATA)	: A97, A158, A197
ERG code (IATA)	: 9L

Inland waterway transport

Classification code (ADN)	: M6
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Special provisions (ADN)	: 274, 335, 375, 601
Limited quantities (ADN)	: 5 L
Excepted quantities (ADN)	: E1
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP
Number of blue cones/lights (ADN)	: 0

Rail transport

Classification code (RID)	: M6
Special provisions (RID)	: 274, 335, 375, 601
Limited quantities (RID)	: 5L
Excepted quantities (RID)	: E1
Packing instructions (RID)	: P001, IBC03, LP01, R001
Special packing provisions (RID)	: PP1
Mixed packing provisions (RID)	: MP19
Portable tank and bulk container instructions (RID)	: T4
Portable tank and bulk container special provisions (RID)	: TP1, TP29
Tank codes for RID tanks (RID)	: LGBV
Transport category (RID)	: 3
Special provisions for carriage – Packages (RID)	: W12
Special provisions for carriage - Loading, unloading and handling (RID)	: CW13, CW31
Colis express (express parcels) (RID)	: CE8
Hazard identification number (RID)	: 90

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

EU-Regulations

REACH Annex XVII (Restriction List)

EU restriction list (REACH Annex XVII)		
Reference code	Applicable on	Entry title or description
3(b)	LUS-170 INK BLACK ; 2-phenoxyethyl acrylate ; tetrahydrofurfuryl acrylate ; 1-vinylhexahydro-2H-azepin-2-one ; exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10
3(c)	LUS-170 INK BLACK ; 2-phenoxyethyl acrylate ; tetrahydrofurfuryl acrylate ; exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate; isobornyl acrylate	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1

REACH Annex XIV (Authorisation List)

Contains no substance(s) listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains substance(s) listed on the REACH Candidate List in concentrations $\geq 0.1\%$ or SCL: diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide (EC 278-355-8, CAS 75980-60-8)

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PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (1005/2009)

Contains no substance(s) listed on the Ozone Depletion list (Regulation EU 1005/2009 on substances that deplete the ozone layer)

Dual-Use Regulation (428/2009)

Contains no substance subject to the COUNCIL REGULATION (EC) No 428/2009 of 5 May 2009 setting up a Community regime for the control of exports, transfer, brokering and transit of dual-use items.

VOC Directive (2004/42)

VOC content : < 30 %

Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

For the following substances of this mixture a chemical safety assessment has been carried out:

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

SECTION 16: Other information

Indication of changes		
Section	Changed item	Comments
	Revision date	Modified
	Supersedes	Modified
15		Added

Abbreviations and acronyms:	
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
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level

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Abbreviations and acronyms:

NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
STP	Sewage treatment plant
TLM	Median Tolerance Limit
SDS	Safety Data Sheet
vPvB	Very Persistent and Very Bioaccumulative

Data sources	: REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.
Other information	: DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness.

Full text of H- and EUH-statements:

Acute Tox. 4 (Dermal)	Acute toxicity (dermal), Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment – Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment – Chronic Hazard, Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Aquatic Chronic 4	Hazardous to the aquatic environment – Chronic Hazard, Category 4
EUH071	Corrosive to the respiratory tract.
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H360Df	May damage the unborn child. Suspected of damaging fertility.
H360Fd	May damage fertility. Suspected of damaging the unborn child.
H361d	Suspected of damaging the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.

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Full text of H- and EUH-statements:

H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H413	May cause long lasting harmful effects to aquatic life.
Repr. 1B	Reproductive toxicity, Category 1B
Repr. 2	Reproductive toxicity, Category 2
Skin Corr. 1C	Skin corrosion/irritation, Category 1, Sub-Category 1C
Skin Sens. 1	Skin sensitisation, Category 1
Skin Sens. 1A	Skin sensitisation, category 1A
Skin Sens. 1B	Skin sensitisation, category 1B
STOT RE 1	Specific target organ toxicity – Repeated exposure, Category 1
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2

Full text of use descriptors

PC18	Ink and Toners
PROC1	Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
SU0	Other

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Acute Tox. 4 (Oral)	H302	Calculation method
Skin Irrit. 2	H315	Expert judgement
Eye Dam. 1	H318	Calculation method
Skin Sens. 1	H317	Calculation method
Repr. 1B	H360Df	Expert judgement
STOT RE 1	H372	Calculation method
Aquatic Chronic 2	H411	Calculation method

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.