

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 31.08.2016

Version 1.0

GB:IE:MT / EN

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

1.1 Product identifier : INK-3001
Trade name : LED UV Curable INK

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

Use of the Sub- : Digital Printing
stance/Mixture

1.3 Details of the supplier of the safety data sheet

Company : MUTOH Belgium nv
Archimedesstraat 13, 8400 Oostende, Belgium

Telephone : +32 (0) 59 56 14 00

E-mail address : sds@mutoh.eu
Further information : sds@mutoh.co.jp
obtainable from

1.4 Emergency telephone number

+32 (0) 56 56 14 00 During normal opening times

SECTION 2: Hazards identification


2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Acute toxicity, Category 4	H302: Harmful if swallowed.
Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Specific target organ toxicity - single exposure, Category 3	H335: May cause respiratory irritation.
Chronic aquatic toxicity, Category 3	H412: Harmful to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

- Hazard pictograms : 
- Signal word : Warning
- Hazard statements : H302 Harmful if swallowed.
 H315 Causes skin irritation.
 H317 May cause an allergic skin reaction.
 H319 Causes serious eye irritation.
 H335 May cause respiratory irritation.
 H412 Harmful to aquatic life with long lasting effects.
- Precautionary statements : **Prevention:**
 P273 Avoid release to the environment.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
 P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

Hazardous components which must be listed on the label:

Tetrahydrofurfuryl acrylate

4-(1,1-dimethylethyl)cyclohexyl acrylate

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester

Additional Labelling

The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 60 %

2.3 Other hazards

None known.

SECTION 3: Composition/information on ingredients

3.1 Mixtures

Hazardous components

Chemical name	CAS-No. EC-No. Registration number	Classification	Concentration (% w/w)
Tetrahydrofurfuryl acrylate	2399-48-6 219-268-7	Acute Tox. 4; H302 Skin Irrit. 2; H315 Eye Irrit. 2; H319	40 - 50

4-(1,1-dimethylethyl)cyclohexyl acrylate	84100-23-2 282-104-8	Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335	15 - 25
(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate	66492-51-1 266-380-7	Skin Irrit. 2; H315 Skin Sens. 1B; H317 Aquatic Chronic 2; H411	5 - 15
2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3 451-690-9	Acute Tox. 4; H302 Skin Sens. 1; H317 Aquatic Chronic 3; H412	5 - 15
Phenylbis(2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7 423-340-5	Skin Sens. 1; H317 Aquatic Chronic 4; H413	1 - 10
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	75980-60-8 278-355-8	Skin Sens. 1B; H317 Repr. 2; H361 Aquatic Chronic 2; H411	< 3

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.
- Protection of first-aiders : First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.
- In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention.
- If swallowed : If swallowed, DO NOT induce vomiting.
Get medical attention.
Rinse mouth thoroughly with water.
Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

- Risks : Harmful if swallowed.
Causes skin irritation.
May cause an allergic skin reaction.

Causes serious eye irritation.
May cause respiratory irritation.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically and supportively.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical

Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Vapours may form explosive mixtures with air.
Exposure to combustion products may be a hazard to health.

Hazardous combustion products : Carbon oxides
Oxides of phosphorus
Sulphur oxides

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use water spray to cool unopened containers.
Remove undamaged containers from fire area if it is safe to do so.
Evacuate area.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Follow safe handling advice and personal protective equipment recommendations.

6.2 Environmental precautions

Environmental precautions : Discharge into the environment must be avoided.
Prevent further leakage or spillage if safe to do so.
Prevent spreading over a wide area (e.g. by containment or oil barriers).
Retain and dispose of contaminated wash water.
Local authorities should be advised if significant spillages cannot be contained.

6.3 Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up with inert absorbent material.
 For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent.
 Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
 Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

6.4 Reference to other sections

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Local/Total ventilation : Use with local exhaust ventilation.
- Advice on safe handling : Do not get on skin or clothing.
 Do not breathe vapours or spray mist.

 Do not swallow.
 Do not get in eyes.
 Handle in accordance with good industrial hygiene and safety practice.
 Keep container tightly closed.
 Take care to prevent spills, waste and minimize release to the environment.
- Hygiene measures : Ensure that eye flushing systems and safety showers are located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : Keep in properly labelled containers. Store locked up. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations.
- Advice on common storage : Do not store with the following product types:
 Strong oxidizing agents

7.3 Specific end use(s)

- Specific use(s) : No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.1.1 Great Britain

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Carbon black	1333-86-4	TWA	3.5 mg/m ³	GB EH40
		STEL	7 mg/m ³	GB EH40

8.1.2 Ireland

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Carbon black	1333-86-4	OELV - 8 hrs (TWA)	3.5 mg/m ³	IE OEL
		OELV - 15 min (STEL)	7 mg/m ³	IE OEL

8.1.3 Malta

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Engineering measures

Minimize workplace exposure concentrations.
Use with local exhaust ventilation.

Personal protective equipment

Eye protection : Wear the following personal protective equipment:
Safety goggles

Hand protection
Material : Chemical-resistant gloves

Remarks : Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

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 : Combined particulates and organic vapour type (A-P)

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	liquid
Colour	:	black
Odour	:	No data available
Odour Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	95 °C
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative density	:	No data available
Solubility(ies)		
Water solubility	:	immiscible
Solubility in other solvents	:	completely miscible Solvent: organic solvents
Partition coefficient: n-octanol/water	:	Not applicable
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Not classified as a reactivity hazard.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Vapours may form explosive mixture with air.
Can react with strong oxidizing agents.

10.4 Conditions to avoid

Conditions to avoid : None known.

10.5 Incompatible materials

Materials to avoid : Oxidizing agents

10.6 Hazardous decomposition products

No hazardous decomposition products are known.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Information on likely routes of exposure : Inhalation
Skin contact
Ingestion
Eye contact

Acute toxicity

Harmful if swallowed.

Product:

Acute oral toxicity : Acute toxicity estimate: 924.23 mg/kg
Method: Calculation method

Components:

Tetrahydrofurfuryl acrylate:

Acute oral toxicity : LD50 (Rat): 551 mg/kg

4-(1,1-dimethylethyl)cyclohexyl acrylate:

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

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 423

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

Acute oral toxicity : LD50 (Rat): 1,790 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 5.04 mg/l

Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Causes skin irritation.

Components:

Tetrahydrofurfuryl acrylate:

Species: Rabbit
Result: Skin irritation

4-(1,1-dimethylethyl)cyclohexyl acrylate:

Species: Rabbit
Result: Skin irritation

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate:

Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

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

Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

Species: Rabbit

Method: OECD Test Guideline 404
Result: No skin irritation

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide:

Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

Tetrahydrofurfuryl acrylate:

Species: Rabbit
Result: Irritation to eyes, reversing within 21 days

4-(1,1-dimethylethyl)cyclohexyl acrylate:

Species: Rabbit
Result: Irritation to eyes, reversing within 21 days

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate:

Species: Rabbit
Method: Directive 67/548/EEC, Annex V, B.5.
Result: No eye irritation

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

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

Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

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

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide:

Species: Rabbit
Result: No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified based on available information.

Components:

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate:

Test Type: Local lymph node assay (LLNA)
Exposure routes: Skin contact
Species: Mouse
Method: OECD Test Guideline 429
Result: positive

Assessment: Probability or evidence of low to moderate skin sensitisation rate in humans

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

Test Type: Local lymph node assay (LLNA)
 Exposure routes: Skin contact
 Species: Mouse
 Method: OECD Test Guideline 429
 Result: positive

Assessment: Probability or evidence of skin sensitisation in humans

Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

Test Type: Maximisation Test
 Exposure routes: Skin contact
 Species: Guinea pig
 Method: OECD Test Guideline 406
 Result: positive

Assessment: Probability or evidence of skin sensitisation in humans

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide:

Test Type: Local lymph node assay (LLNA)
 Exposure routes: Skin contact
 Species: Mouse
 Method: OECD Test Guideline 429
 Result: positive

Assessment: Probability or evidence of low to moderate skin sensitisation rate in humans

Germ cell mutagenicity

Not classified based on available information.

Components:

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
 Method: OECD Test Guideline 476
 Result: negative

: Test Type: Bacterial reverse mutation assay (AMES)
 Method: OECD Test Guideline 471
 Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
 Species: Mouse
 Application Route: Intraperitoneal injection
 Method: OECD Test Guideline 474 Result: negative

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
 Method: OECD Test Guideline 476
 Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo)

cytogenetic assay)
Species: Mouse
Application Route: Ingestion
Method: OECD Test Guideline 474
Result: negative

Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative

: Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: negative

: Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

: Test Type: Chromosome aberration test in vitro
Result: negative

: Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

Components:

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate:

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: negative

Effects on foetal development : Test Type: Embryo-foetal development
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test

Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: negative

Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

Effects on foetal development : Test Type: Fertility/early embryonic development
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 414
Result: negative

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide:

Effects on fertility : Test Type: Fertility
Species: Rat
Application Route: Ingestion
Result: positive

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

STOT - single exposure

May cause respiratory irritation.

Components:

4-(1,1-dimethylethyl)cyclohexyl acrylate:

Assessment: May cause respiratory irritation.

Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

STOT - repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate:

Species: Rat
NOAEL: >= 250 mg/kg
Application Route: Ingestion
Exposure time: 31 Days
Method: OECD Test Guideline 422

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

Species: Rat
NOAEL: 160 mg/kg
Application Route: Ingestion
Exposure time: 28 Days
Method: OECD Test Guideline 407

Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

Species: Rat
NOAEL: 1,000 mg/kg
Application Route: Ingestion
Exposure time: 90 Days

Method: OECD Test Guideline 408

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide:

Species: Rat
 NOAEL: 100 mg/kg
 LOAEL: 300 mg/kg
 Application Route: Ingestion
 Exposure time: 90 Days

Aspiration toxicity

Not classified based on available information.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Further information

The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 60 %

Components:

Tetrahydrofurfuryl acrylate:

Ecotoxicology Assessment

Acute aquatic toxicity : Toxic effects cannot be excluded

Chronic aquatic toxicity : Toxic effects cannot be excluded

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 4 mg/l
 Exposure time: 96 h
 Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 20 mg/l
 Exposure time: 48 h
 Method: OECD Test Guideline 202

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 34 mg/l
 Exposure time: 72 h
 Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 9 mg/l
 Exposure time: 72 h
 Method: OECD Test Guideline 201

Toxicity to microorganisms : EC10 : 300 mg/l
 Exposure time: 3 h
 Method: OECD Test Guideline 209

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 6.8 mg/l
 Exposure time: 96 h
 Method: OECD Test Guideline 203

- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 55 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
- Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 10 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
- NOEC (Desmodesmus subspicatus (green algae)): 0.78 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
- Toxicity to microorganisms : EC50 : 741 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.26 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

- Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 90 µg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: No toxicity at the limit of solubility
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1.18 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: No toxicity at the limit of solubility
- Toxicity to algae : NOEC (Desmodesmus subspicatus (green algae)): 260 µg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: No toxicity at the limit of solubility
- Toxicity to microorganisms : EC50 : > 100 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 8.1 µg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211
Remarks: No toxicity at the limit of solubility

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide:

- Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1 - 10 mg/l
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 3.53 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
- Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 2.01 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 1.56 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 : > 1,000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

12.2 Persistence and degradability

Components:

4-(1,1-dimethylethyl)cyclohexyl acrylate:

Biodegradability : Result: rapidly degradable

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 28 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 84.4 %
Exposure time: 28 d

Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 1 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 0 - 10 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

12.3 Bioaccumulative potential

Components:

4-(1,1-dimethylethyl)cyclohexyl acrylate:

Partition coefficient: n-octanol/water : log Pow: 5.5 - 5.6

(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate:

Partition coefficient: n-octanol/water : log Pow: 1.9

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

Partition coefficient: n-octanol/water : log Pow: 1.7

Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

Partition coefficient: n-octanol/water : log Pow: 5.8

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 18 - 72

Partition coefficient: n-octanol/water : log Pow: 3.1 - 3.8

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Not relevant

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

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

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
If not otherwise specified: Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

Not regulated as dangerous goods

14.2 UN proper shipping name

Not regulated as dangerous goods

14.3 Transport hazard class(es)

Not regulated as dangerous goods

14.4 Packing group

Not regulated as dangerous goods

14.5 Environmental hazards

Not regulated as dangerous goods

14.6 Special precautions for user

Not applicable

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) : 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

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

: Not applicable

Additional regulatory information

2,4-Diethyl-9H-thioxanthen-9-one 82799-44-8

The United States Environmental Protection Agency (USEPA) has established a Significant New Use Rule (SNUR) for one of the components in this product.

See 40 CFR § 721.9664

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Full text of H-Statements

H302 : Harmful if swallowed.
 H315 : Causes skin irritation.
 H317 : May cause an allergic skin reaction.
 H319 : Causes serious eye irritation.
 H335 : May cause respiratory irritation.
 H411 : Toxic to aquatic life with long lasting effects.
 H412 : Harmful to aquatic life with long lasting effects.
 H413 : May cause long lasting harmful effects to aquatic life.

Full text of other abbreviations

Acute Tox. : Acute toxicity
 Aquatic Chronic : Chronic aquatic toxicity
 Eye Irrit. : Eye irritation
 Repr. : Reproductive toxicity
 Skin Irrit. : Skin irritation
 Skin Sens. : Skin sensitisation
 STOT SE : Specific target organ toxicity - single exposure

GB EH40 : UK. EH40 WEL - Workplace Exposure Limits
 GB EH40 / TWA : Long-term exposure limit (8-hour TWA reference period)
 GB EH40 / STEL : Short-term exposure limit (15-minute reference period)

IE OEL : Ireland. List of Chemical Agents and Occupational Exposure Limit Values - Schedule 1
 IE OEL / OELV - 8 hrs (TWA) : Occupational exposure limit value (8-hour reference period)

IE OEL / OELV - 15 min : Occupational exposure limit value (15-minute reference period)
(STEL) (STEL)

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 - In-

ternational Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; 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

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

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

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