

# SAFETY DATA SHEET

Date of last issue: 2022-12-01

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## Section 1—Identification

### Product identifier

Product name : LED UV Curable INK  
US11-WH220U / US11-WH500U

### Recommended use of the chemical and restrictions on use

Recommended use : Digital Printing

### Details of manufacturer or importer

Company : MUTOH AUSTRALIA PTY. LTD.  
Address : Unit 19/76 Reserve Road, Artarmon, NSW 2064, Australia  
Contact section : admin@mutoh-au.com or +61 2 9437 1366  
Telephone : +61 2 94371366

### Emergency telephone number

Emergency phone number (business hours): +61 2 9437 1366

## Section 2—Hazard(s) identification

### Classification of the hazardous chemical

Acute toxicity (Oral) : Category 4  
Skin corrosion/irritation : Category 2  
Serious eye damage/eye irritation : Category 2A  
Skin sensitisation : Category 1  
Reproductive toxicity : Category 2  
Specific target organ toxicity - single exposure : Category 3

### Label elements, including precautionary statements

Hazard pictograms :



Signal word : Warning

Hazard statement(s) : 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.  
H361 Suspected of damaging fertility or the unborn child.

Precautionary statement(s) : **Prevention:**  
P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.  
 P261 Avoid breathing mist or vapours.  
 P264 Wash skin thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P271 Use only outdoors or in a well-ventilated area.  
 P272 Contaminated work clothing should not be allowed out of the workplace.  
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.  
 P302 + P352 IF ON SKIN: Wash with plenty of water.  
 P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
 P337 + P313 If eye irritation persists: Get medical advice/ attention.  
 P362 + P364 Take off contaminated clothing and wash it before reuse.

**Storage:**

P405 Store locked up.

**Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

**Other hazards which do not result in classification**

None known.

**Section 3—Composition and information on ingredients**

Substance / Mixture : Mixture

**Components**

Chemical name	CAS-No.	Concentration (% w/w)
Tetrahydrofurfuryl acrylate	2399-48-6	30 -< 60
4-(1,1-Dimethylethyl)cyclohexyl acrylate	84100-23-2	10 -< 30
2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3	10 -< 30
(5-Ethyl-1,3-dioxan-5-yl)methyl acrylate	66492-51-1	< 10
Titanium dioxide	13463-67-7	< 10
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7	< 10
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	< 10

**Section 4—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.

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.
  
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause respiratory irritation. Suspected of damaging fertility or the unborn child.
  
- 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 (see section 8).
  
- Notes to physician : Treat symptomatically and supportively.

**Section 5—Firefighting measures**

- Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO2)  
Dry chemical
  
- Unsuitable extinguishing media : High volume water jet
  
- Specific hazards during firefighting : Vapours may form explosive mixtures with air. Exposure to combustion products may be a hazard to health.
  
- Hazardous combustion product : Carbon oxides  
Oxides of phosphorus  
Nitrogen oxides (NOx)  
Metal oxides
  
- 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.
  
- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

**Section 6—Accidental release measures**

- Personal precautions, protective equipment and emergency : Use personal protective equipment. Follow safe handling advice (see section 7) and personal

- procedures
- protective equipment recommendations (see section 8).
- Environmental precautions : Avoid release to the environment.  
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.
- Methods and materials for containment and 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.

**Section 7—Handling and storage**

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/ PERSONAL PROTECTION section.
- Local/Total ventilation : If sufficient ventilation is unavailable, use with local exhaust ventilation.
- Advice on safe handling : Do not get on skin or clothing.  
Avoid breathing mist or vapours.  
Do not swallow.  
Do not get in eyes.  
Wash skin thoroughly after handling.  
Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment.  
Keep container tightly closed.  
Already sensitised individuals should consult their physician regarding working with respiratory irritants or sensitisers.  
Do not eat, drink or smoke when using this product.  
Take care to prevent spills, waste and minimize release to the environment.
- Hygiene measures : If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.  
When using do not eat, drink or smoke.  
Contaminated work clothing should not be allowed out of the workplace.  
Wash contaminated clothing before re-use.
- Conditions for safe storage : 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.
- Materials to avoid : Do not store with the following product types:  
Strong oxidizing agents

**Section 8—Exposure controls and personal protection**

**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Titanium dioxide	13463-67-7	TWA	10 mg/m3	AU OEL
		TWA	10 mg/m3 (Titanium dioxide)	ACGIH

**Engineering measures** : Minimize workplace exposure concentrations.  
If sufficient ventilation is unavailable, use with local exhaust ventilation.

**Personal protective equipment**

Respiratory protection : If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

Filter type : Combined particulates and organic vapour type

Hand protection  
Material : Nitrile rubber

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

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

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).

**Section 9—Physical and chemical properties**

Appearance : liquid

Colour : white

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
Flammability (liquids)	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative density	:	No data available
Solubility(ies)		
Water solubility	:	insoluble
Solubility in other solvents	:	soluble Solvent: organic solvents
Partition coefficient: n-octanol/water	:	Not applicable
Auto-ignition temperature	:	No data available
Decomposition temperature	:	The substance or mixture is not classified self-reactive.
Viscosity		
Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle size	:	Not applicable

## Section 10—Stability and reactivity

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions:		Vapours may form explosive mixture with air. Can react with strong oxidizing agents.
Conditions to avoid	:	None known.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

## Section 11—Toxicological information

Exposure routes	:	Inhalation Skin contact Ingestion Eye contact
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**Acute toxicity**

Harmful if swallowed.

**Product:**

Acute oral toxicity : Acute toxicity estimate: 1,676 mg/kg  
Method: Calculation method

**Components:**

**Tetrahydrofurfuryl acrylate:**

Acute oral toxicity : LD50 (Rat): 928 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : Assessment: Corrosive to the respiratory tract.

**4-(1,1-Dimethylethyl)cyclohexyl acrylate:**

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

**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

**(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

**Titanium dioxide:**

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

Acute inhalation toxicity : LC50 (Rat): > 6.82 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation 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

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

**Titanium dioxide:**

Species: Rabbit

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

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

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

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

Species: Rabbit

Result: No eye irritation

Method: Directive 67/548/EEC, Annex V, B.5.



**Titanium dioxide:**

Species: Rabbit

Result: No eye irritation

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

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

**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:****Tetrahydrofurfuryl acrylate:**

Exposure routes: Skin contact

Species: Humans

Result: positive

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

**4-(1,1-Dimethylethyl)cyclohexyl 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 high 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

**(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

**Titanium dioxide:**

Test Type: Local lymph node assay (LLNA)

Exposure routes: Skin contact

Species: Mouse

Result: negative

**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 high skin sensitisation rate 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

**Chronic toxicity**

**Germ cell mutagenicity**

Not classified based on available information.

**Components:**

**Tetrahydrofurfuryl acrylate:**

Genotoxicity in vitro : Test Type: in vitro micronucleus test  
Method: OECD Test Guideline 487  
Result: negative

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

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

**(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

**Titanium dioxide:**

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

Genotoxicity in vivo : Test Type: In vivo micronucleus test  
Species: Mouse  
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.

**Components:**

**Titanium dioxide:**

Species: Rat  
Application Route: inhalation (dust/mist/fume)  
Exposure time: 2 Years  
Method: OECD Test Guideline 453  
Result: positive  
Remarks: The mechanism or mode of action may not be relevant in humans.

Carcinogenicity - Assessment: Limited evidence of carcinogenicity in inhalation studies with animals.

**Reproductive toxicity**

Suspected of damaging fertility or the unborn child.

**Components:**

**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

**(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

**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.

**Components:**

**Tetrahydrofurfuryl acrylate:**

Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

**Repeated dose toxicity**

**Components:**

**Tetrahydrofurfuryl acrylate:**

Species: Rat  
NOAEL: 35 mg/kg  
LOAEL: 84 mg/kg  
Application Route: Ingestion  
Exposure time: 90 Days

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

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

**(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

**Titanium dioxide:**

Species: Rat

NOAEL: 24,000 mg/kg  
Application Route: Ingestion  
Exposure time: 28 Days

Species: Rat  
NOAEL: 10 mg/m<sup>3</sup>  
Application Route: inhalation (dust/mist/fume)  
Exposure time: 2 yr

**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**

**Ecotoxicity**

**Components:**

**Tetrahydrofurfuryl acrylate:**

- Toxicity to fish : LC50 (Danio rerio (zebra fish)): 7.32 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 37.7 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 3.92 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- : EC10 (Pseudokirchneriella subcapitata (green algae)): 2.48 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to microorganisms : EC50: 263.7 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

**4-(1,1-Dimethylethyl)cyclohexyl acrylate:**

- Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1.27 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.03 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 0.539 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 0.414 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC10: 490 mg/l  
Exposure time: 3 h

**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/aquatic plants : 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 daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.26 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: 741 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

**(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/aquatic plants : 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

**Titanium dioxide:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l  
Exposure time: 96 h

Method: OECD Test Guideline 203

- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 48 h
- Toxicity to algae/aquatic plants : EC50 (Skeletonema costatum (marine diatom)): > 10,000 mg/l  
Exposure time: 72 h
- Toxicity to microorganisms : EC50: > 1,000 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

**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/aquatic plants : 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
- ErC50 (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 daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): >= 8.1 µg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211  
Remarks: No toxicity at the limit of solubility
- Toxicity to microorganisms : EC50: > 100 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

**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/aquatic plants : 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

**Persistence and degradability**

**Components:**

**Tetrahydrofurfuryl acrylate:**

Biodegradability : Result: Not readily biodegradable.  
Biodegradation: 77.7 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

**4-(1,1-Dimethylethyl)cyclohexyl acrylate:**

Biodegradability : Result: Not readily biodegradable.  
Biodegradation: 4 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301C

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

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

**(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

**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

**Bioaccumulative potential**

**Components:**

**Tetrahydrofurfuryl acrylate:**

Partition coefficient: : log Pow: 0.81  
n-octanol/water

**4-(1,1-Dimethylethyl)cyclohexyl acrylate:**

Partition coefficient: : log Pow: 5.5 - 5.6  
n-octanol/water Method: OECD Test Guideline 117

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

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

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

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

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

Partition coefficient: : log Pow: 5.8



n-octanol/water

**Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide:**

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

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

**Mobility in soil**

No data available

**Other adverse effects**

No data available

### Section 13—Disposal considerations

**Disposal methods**

Waste from residues : Dispose of in accordance with local regulations.

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

**International Regulations**

**UNRTDG**

Not regulated as dangerous goods

**IATA-DGR**

Not regulated as dangerous goods

**IMDG-Code**

Not regulated as dangerous goods

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**National Regulations**

**ADG**

Not regulated as dangerous goods

### Section 15—Regulatory information

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

Standard for the Uniform : Schedule 6  
Scheduling of Medicines and  
Poisons

Prohibition/Licensing : There is no applicable prohibition, authorisation and restricted use  
Requirements requirements, including for carcinogens referred to in Schedule 10  
of the model WHS Act and Regulations.

### Section 16—Any other relevant information

**Further information**

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

**Date of preparation or review**

Revision Date : 2022-12-01

**Key abbreviations or acronyms used**

ACGIH : USA. ACGIH Threshold Limit Values (TLV)  
AU OEL : Australia. Workplace Exposure Standards for Airborne Contaminants.  
ACGIH / TWA : 8-hour, time-weighted average  
AU OEL / TWA : Exposure standard - time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); 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; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; 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; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.