

SAFETY DATA SHEET

Date of last issue: -

Date of first issue: 2020-01-06

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Black

PJUVG5-BK1000U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

Address : 4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042

Telephone : 480-968-7772

Emergency telephone : 480-968-7772

During normal opening times

Recommended use of the chemical and restrictions on use

Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with 29 CFR 1910.1200

Acute toxicity (Oral) : Category 4

Skin irritation : Category 2

Serious eye damage : Category 1

Skin sensitization : Category 1

Reproductive toxicity : Category 1B

Specific target organ systemic:

toxicity - single exposure

Category 3

Specific target organ systemic:

toxicity - repeated exposure

Category 2

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.

H315 Causes skin irritation.

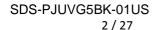
H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H335 May cause respiratory irritation.

H360 May damage fertility or the unborn child.

H373 May cause damage to organs through prolonged or

repeated exposure.

Precautionary Statements : Prevention:





P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe mist or vapors.

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 must 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 soap and 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 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

P333 + P313 If skin irritation or rash occurs: 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

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous ingredients

	040 11	0 ' ' '0' '
Chemical name	CAS-No.	Concentration (% w/w)
3,3,5-Trimethylcyclohexyl acrylate	86178-38-3	>= 45 - < 55
4-(1-Oxo-2-propenyl)-morpholine	5117-12-4	>= 20 - < 30
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7	>= 3 - =< 7
2-(2-Ethoxyethoxy)ethyl acrylate	7328-17-8	>= 3 - =< 7
Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate	5888-33-5	>= 1 - =< 5
Propoxylated neopentyl glycol diacrylate esters	84170-74-1	>= 1 - =< 5
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	75980-60-8	>= 1 - < 5
Hexamethylene diacrylate	13048-33-4	>= 1 - < 5
Carbon black	1333-86-4	>= 1 - < 5
2-benzyl-2-dimethylamino-4-morpholinobutyrophenone	119313-12-1	>= 1 - < 5
Oxybis(methyl-2,1-ethanediyl) diacrylate	57472-68-1	< 1

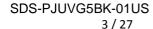
SECTION 4. FIRST AID MEASURES

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 immediately.

If swallowed, DO NOT induce vomiting. If swallowed

Get medical attention.

Rinse mouth thoroughly with water.

Never give anything by mouth to an unconscious person.

Most important symptoms and:

Harmful if swallowed. effects, both acute and delayed Causes skin irritation.

> May cause an allergic skin reaction. Causes serious eye damage. May cause respiratory irritation.

May damage fertility or the unborn child.

May cause damage to organs through prolonged or repeated

exposure.

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.

Notes to physician Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Water spray Suitable extinguishing media

Alcohol-resistant foam Carbon dioxide (CO2)

Dry chemical

Unsuitable extinguishing

media

None known.

Specific hazards during fire

fighting

Vapors may form explosive mixtures with air.

Exposure to combustion products may be a hazard to health.

Hazardous combustion

products

Carbon oxides

Nitrogen oxides (NOx) Oxides of phosphorus

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 fire-fighters

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 procedures Use personal protective equipment.

Follow safe handling advice and personal protective equipment

recommendations.

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.

Do not release the product to the aquatic environment above

defined regulatory levels

Methods and materials for containment and cleaning up

Soak up with inert absorbent material.

For large spills, provide diking or other appropriate containment to keep material from spreading. If diked 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 : Use with local exhaust ventilation.

Advice on safe handling : Do not get on skin or clothing.

Do not breathe vapors or spray mist.

Do not swallow. Do not get in eyes.

Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure

assessment.

Keep container tightly closed.

Take care to prevent spills, waste and minimize release to the

environment.

Conditions for safe storage : Keep in properly labeled containers.

Store locked up. Keep tightly closed.

Keep in a cool, well-ventilated place.

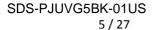
Store in accordance with the particular national regulations.

Materials to avoid : Do not store with the following product types:

Strong oxidizing agents Organic peroxides

Explosives Gases

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION





Ingredients with workplace control parameters

mg. cancerno man mormpiaco com or parametero				
Components	CAS-No.	Value type	Control parameters	Basis
		(Form of	/ Permissible	
		exposure)	concentration	
Carbon black	1333-86-4	TWA	3.5 mg/m ³	NIOSH REL
		TWA	3.5 mg/m ³	OSHA Z-1
		TWA (Inhalable	3 mg/m³	ACGIH
		fraction)		
Hexamethylene diacrylate	13048-33-4	TWA	1 mg/m ³	US WEEL

Engineering measures

: Minimize workplace exposure concentrations.

Use with local exhaust ventilation.

Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m3 - total dust, 5 mg/m3 - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m3 - respirable particles, 10 mg/m3 - inhalable particles.

Personal protective equipment

Respiratory protection

General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : Chemical-resistant gloves

Remarks : Choose gloves to protect hands against chemicals depending on

the concentration 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.

Eye protection : Wear the following personal protective equipment:

Chemical resistant goggles must be worn.

If splashes are likely to occur, wear:

Face-shield

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).

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.



SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : black

Odor : characteristic

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling:

range

> 100 °C

Flash point : > 93 °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

Vapor pressure : No data available

Relative vapor density : No data available

Density : No data available

Solubility(ies)

Water solubility : Immiscible in water

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No data available

Decomposition temperature : No data available

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.



7 / 27



Possibility of hazardous

reactions

: Vapors 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

Information on likely routes of exposure

Inhalation Skin contact Ingestion Eye contact

Acute toxicity

Harmful if swallowed.

Product:

Acute oral toxicity : Acute toxicity estimate: 1,700 mg/kg

Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg

Method: Calculation method

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

4-(1-Oxo-2-propenyl)-morpholine:

Acute oral toxicity : LD50 (Rat): 588 mg/kg

Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

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

2-(2-Ethoxyethoxy)ethyl acrylate:

Acute oral toxicity : LD50 (Rat): > 300 - < 2,000 mg/kg

Method: OECD Test Guideline 423

Remarks: Based on data from similar materials

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

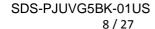
Exposure time: 4 h
Test atmosphere: dust/mist

Method: OECD Test Guideline 403

Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402





Assessment: The substance or mixture has no acute dermal

toxicity

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Acute oral toxicity : LD50 (Rat): 4,350 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 3,000 mg/kg

Propoxylated neopentyl glycol diacrylate esters:

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

Acute inhalation toxicity : LC50 (Rat): > 2 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

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

Hexamethylene diacrylate:

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

Acute inhalation toxicity : LC0 (Rat): 0.41 mg/l

Exposure time: 7 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): 3,650 mg/kg

Carbon black:

Acute oral toxicity : LD50 (Rat): > 10,000 mg/kg

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

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

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Acute oral toxicity : LD50 (Rat): 3,530 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Result: Skin irritation

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



4-(1-Oxo-2-propenyl)-morpholine:

Species: Rabbit Result: No skin irritation

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Result: Skin irritation

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

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

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

Species: Rabbit

Result: No skin irritation

Hexamethylene diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

Carbon black:

Species: Rabbit

Result: No skin irritation

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Result: Irritation to eyes, reversing within 21 days

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

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rabbit

Result: Irreversible effects on the eye Method: OECD Test Guideline 405

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

Species: Rabbit

Result: No eye irritation



Method: OECD Test Guideline 405

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit Result: No eye irritation

Method: OECD Test Guideline 405

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Result: Irritation to eyes, reversing within 21 days

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

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit Result: No eye irritation

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

Species: Rabbit Result: No eye irritation

Hexamethylene diacrylate:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

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

Carbon black:

Species: Rabbit Result: No eye irritation

Method: OECD Test Guideline 405

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit Result: No eye irritation

Method: OECD Test Guideline 405

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Result: Irreversible effects on the eye Method: OECD Test Guideline 405

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

4-(1-Oxo-2-propenyl)-morpholine:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig

Method: Directive 67/548/EEC, Annex V, B.6.

Result: positive

Assessment: Probability or evidence of skin sensitization in humans



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

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

2-(2-Ethoxyethoxy)ethyl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Remarks: Based on data from similar materials

Assessment: Probability or evidence of skin sensitization in humans

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Propoxylated neopentyl glycol diacrylate esters:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

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

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

Hexamethylene diacrylate:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Carbon black:

Test Type: Buehler Test

Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

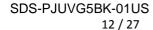
Result: negative

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Oxybis(methyl-2,1-ethanediyl) diacrylate:





Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Germ cell mutagenicity

Not classified based on available information.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Test Type: in vitro micronucleus test Method: OECD Test Guideline 487

Result: negative

4-(1-Oxo-2-propenyl)-morpholine:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 473

Result: positive

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 471

Result: negative

Germ cell mutagenicity -

Assessment

Weight of evidence does not support classification as a germ cell

mutagen.

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

2-(2-Ethoxyethoxy)ethyl acrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Remarks: Based on data from similar materials

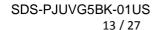
Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo

cytogenetic assay) Species: Mouse

Application Route: Ingestion Method: OECD Test Guideline 474

Result: negative

Remarks: Based on data from similar materials





Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 473

Result: negative

Propoxylated neopentyl glycol diacrylate esters:

Genotoxicity in vitro : 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: Ingestion Method: OECD Test Guideline 474

Result: negative

Remarks: Based on data from similar materials

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

Hexamethylene diacrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Result: negative

Test Type: Bacterial reverse mutation assay (AMES)

Method: OECD Test Guideline 471

Result: negative

Carbon black:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Test Type: In vitro sister chromatid exchange assay in

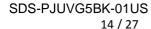
mammalian cells

Method: OECD Test Guideline 479

Result: negative

Test Type: in vitro micronucleus test Method: OECD Test Guideline 487

Result: negative





Genotoxicity in vivo : Test Type: Sex-linked recessive lethal test in Drosophila

melanogaster (in vivo)

Species: Drosophila melanogaster (vinegar fly)

Application Route: Ingestion
Method: OECD Test Guideline 477

Result: negative

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Genotoxicity in vitro : 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: Hamster

Application Route: Ingestion

Result: negative

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Genotoxicity in vitro : 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

Remarks: Based on data from similar materials

Carcinogenicity

Not classified based on available information.

Components: Carbon black: Species: Rat

Application Route: Inhalation Exposure time: 24 Months

Result: positive

Species: Rat

Application Route: Ingestion Exposure time: 2 Years

Result: negative

Carcinogenicity - Assessment: Weight of evidence does not support classification as a carcinogen

IARC Group 2B: Possibly carcinogenic to humans

Carbon black 1333-86-4

OSHANo component of this product present at levels greater than or

equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or

equal to 0.1% is identified as a known or anticipated carcinogen

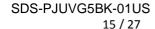
by NTP.

Reproductive toxicity

May damage fertility or the unborn child.

Components:

3,3,5-Trimethylcyclohexyl acrylate:





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

Effects on fetal development : 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

4-(1-Oxo-2-propenyl)-morpholine:

Effects on fertility : Remarks: May cause adverse reproductive effects.

Based on a Significant New Use Rule regulation

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

Effects on fetal development : Test Type: Fertility/early embryonic development

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

Result: negative

2-(2-Ethoxyethoxy)ethyl acrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

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

Effects on fetal development : Test Type: Combined repeated dose toxicity study with the

reproduction/developmental toxicity screening test

Species: Rat

Application Route: Ingestion
Method: OECD Test Guideline 422

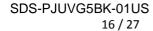
Result: negative

Propoxylated neopentyl glycol diacrylate esters:

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test

Species: Rat

Application Route: Ingestion
Method: OECD Test Guideline 421





Result: negative

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

Remarks: Based on data from similar materials

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.

Hexamethylene diacrylate:

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

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

Carbon black:

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

Result: negative

Test Type: Embryo-fetal development

Species: Mouse

Application Route: inhalation (dust/mist/fume)

Result: negative

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Effects on fertility : Test Type: One-generation reproduction toxicity study

Species: Rat

Application Route: Ingestion

Result: positive

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

Result: positive

Reproductive toxicity -

Assessment

Clear evidence of adverse effects on development, based on animal experiments., Some evidence of adverse effects on

sexual function and fertility, based on animal experiments.

Oxybis(methyl-2,1-ethanediyl) diacrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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

Remarks: Based on data from similar materials

STOT-single exposure

May cause respiratory irritation.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Assessment: May cause respiratory irritation.

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

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Assessment: May cause respiratory irritation.

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

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Components:

4-(1-Oxo-2-propenyl)-morpholine:

Routes of exposure: Oral

Assessment: May cause damage to organs through prolonged or repeated exposure. Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Repeated dose toxicity

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Species: Rat

NOAEL: 1,000 mg/kg Application Route: Ingestion Exposure time: 4 weeks

Method: OECD Test Guideline 422

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rat NOAEL: 50 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

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rat

NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

Remarks: Based on data from similar materials



Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Species: Rat NOAEL: 100 mg/kg

Application Route: Ingestion Exposure time: 2 Weeks

Method: OECD Test Guideline 422

Propoxylated neopentyl glycol diacrylate esters:

Species: Rat

NOAEL: 1,000 mg/kg Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

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

Species: Rat NOAEL: 100 mg/kg LOAEL: 300 mg/kg

Application Route: Ingestion Exposure time: 90 Days

Hexamethylene diacrylate:

Species: Rat

NOAEL: 250 mg/kg

Application Route: Ingestion
Method: OECD Test Guideline 422

Carbon black:

Species: Rat NOAEL: 1 mg/kg LOAEL: 7 mg/kg

Application Route: inhalation (dust/mist/fume)

Exposure time: 90 Days

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rat

NOAEL: >= 100 mg/kg Application Route: Ingestion Exposure time: 28 Days

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rat NOAEL: 250 mg/kg

Application Route: Ingestion Exposure time: 54 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

Aspiration toxicity

Not classified based on available information.

Further information

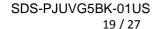
Components:

4-(1-Oxo-2-propenyl)-morpholine:

Remarks: May cause internal organ effects Based on a Significant New Use Rule regulation

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity Components:





3,3,5-Trimethylcyclohexyl acrylate:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 1.9 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 14.43 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae EC50 (Pseudokirchneriella subcapitata (green algae)): 0.59 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 0.43 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms NOEC: 1,000 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

4-(1-Oxo-2-propenyl)-morpholine:

Toxicity to fish LC50 (Oncorhynchus mykiss (rainbow trout)): > 220 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 120 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae ErC50 (Pseudokirchneriella subcapitata (green algae)): > 120

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): >= 120

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms IC50: > 100 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.

NOEC (Desmodesmus subspicatus (green algae)): 260 µg/l Toxicity to algae

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: No toxicity at the limit of solubility.

NOEC (Daphnia magna (Water flea)): 8.1 μg/l

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

Exposure time: 21 d



toxicity) 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

2-(2-Ethoxyethoxy)ethyl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 6.8 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: Based on data from similar materials

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 55 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

EC10 (Desmodesmus subspicatus (green algae)): 3.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

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

Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50: 741 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 0.704 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): 1.98

mg/l

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.405

mg/l

Method: OECD Test Guideline 201

M-Factor (Acute aquatic

toxicity)

: 1

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

toxicity)

NOEC (Daphnia): 0.092 mg/l

Exposure time: 21 d

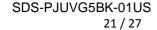
Method: OECD Test Guideline 211

M-Factor (Chronic aquatic

toxicity)

1

Propoxylated neopentyl glycol diacrylate esters:





: LC50 (Danio rerio (zebra fish)): 2.7 mg/l Toxicity to fish

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 37 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae EC50 (Pseudokirchneriella subcapitata (green algae)): 11 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 1 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms NOEC: 2 mg/l

Exposure time: 28 d

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

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1 - 10 mg/l

Exposure time: 96 h

aquatic invertebrates

Toxicity to daphnia and other : 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

EC50: > 1,000 mg/lToxicity to microorganisms

Exposure time: 3 h

Method: OECD Test Guideline 209

Hexamethylene diacrylate:

Toxicity to fish LC50 (Leuciscus idus (Golden orfe)): 4.6 - 10 mg/l

Exposure time: 96 h

aquatic invertebrates

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 2.6 mg/l

Exposure time: 48 h

Toxicity to algae ErC50 (Desmodesmus subspicatus (green algae)): 1.5 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 0.59 mg/l

Exposure time: 72 h

Toxicity to microorganisms EC50: 270 mg/l

Exposure time: 30 min

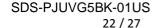
Method: OECD Test Guideline 209

Carbon black:

LL50 (Danio rerio (zebra fish)): > 1,000 mg/l Toxicity to fish

Exposure time: 96 h

Method: OECD Test Guideline 203





aquatic invertebrates

Toxicity to daphnia and other : EL50 (Daphnia magna (Water flea)); > 5,600 mg/l

Exposure time: 24 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 202

Toxicity to algae EL10 (Desmodesmus subspicatus (green algae)): > 10,000 mg/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

EL50 (Desmodesmus subspicatus (green algae)): > 10.000 mg/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

LC50 (Danio rerio (zebra fish)): 0.46 mg/l Toxicity to fish

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EL50 (Daphnia magna (Water flea)): > 0.8 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 2 mg/l Toxicity to algae

Exposure time: 72 h

Method: OECD Test Guideline 201

M-Factor (Acute aquatic

toxicity)

: 1

Toxicity to microorganisms : EC50: > 100 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

M-Factor (Chronic aquatic

toxicity)

: 1

Oxybis(methyl-2,1-ethanediyl) diacrylate:

LC50 (Leuciscus idus (Golden orfe)): 2.2 - 4.64 mg/l Toxicity to fish

> Exposure time: 96 h Method: DIN 38412

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 22.3 mg/l

Exposure time: 48 h

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 16.7 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 2.2 mg/l

Exposure time: 72 h

EC50: > 1,000 mg/lToxicity to microorganisms

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Result: Not readily biodegradable. Biodegradability

> Biodegradation: 16.8 % Exposure time: 28 d





Method: OECD Test Guideline 301F

4-(1-Oxo-2-propenyl)-morpholine:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 35 % Exposure time: 28 d

Method: OECD Test Guideline 301D

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

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 1 % Exposure time: 28 d

Method: OECD Test Guideline 301B

2-(2-Ethoxyethoxy)ethyl acrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 84.4 % Exposure time: 28 d

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 51 % Exposure time: 28 d

Method: OECD Test Guideline 301F

Propoxylated neopentyl glycol diacrylate esters:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 51 % Exposure time: 28 d

Method: OECD Test Guideline 301D

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

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 0 - 10 % Exposure time: 28 d

Method: OECD Test Guideline 301F

Hexamethylene diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 60 - 70 % Exposure time: 28 d

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 3 % Exposure time: 28 d

Method: OECD Test Guideline 301B

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 90 - 100 %

Exposure time: 28 d

Method: OECD Test Guideline 301A

Bioaccumulative potential

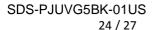
Components:

3,3,5-Trimethylcyclohexyl acrylate:

Partition coefficient: : log Pow: 4.6

n-octanol/water

4-(1-Oxo-2-propenyl)-morpholine:





Partition coefficient: : log Pow: -0.46

n-octanol/water

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

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 5

Partition coefficient: : log Pow: 5.8

n-octanol/water

2-(2-Ethoxyethoxy)ethyl acrylate:

Partition coefficient: : log Pow: 0.67

n-octanol/water Remarks: Calculation

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Bioaccumulation : Species: Zebrafish

Bioconcentration factor (BCF): 37 Method: OECD Test Guideline 305

Remarks: Based on data from similar materials

Partition coefficient: : log Pow: 4.52

n-octanol/water

Propoxylated neopentyl glycol diacrylate esters:

Partition coefficient: : log Pow: 2.41 - 3.87

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

Hexamethylene diacrylate:

Partition coefficient: log Pow: 2.81

n-octanol/water

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Partition coefficient: : log Pow: 2.91

n-octanol/water

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Partition coefficient: : log Pow: 0.01 - 0.39

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.

Do not release the product to the aquatic environment above

defined regulatory levels

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

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9
Packing group : III
Labels : 9

IATA-DGR

UN/ID No. : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9 Packing group : III

Labels : Miscellaneous

Packing instruction (cargo : 964

aircraft)

Packing instruction (passenger:

aircraft)

Environmentally hazardous : yes

IMDG-Code

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

964

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9
Packing group : III
Labels : 9
EmS Code : F-A, S-F
Marine pollutant : yes

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

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9
Packing group : III
Labels : CLASS 9
ERG Code : 171

Marine pollutant : yes(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Remarks : Above applies only to containers over 119 gallons or 450 liters.,

Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.



EPCRA - Emergency Planning and Community Right-to-Know CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Acute toxicity (any route of exposure)

Skin corrosion or irritation

Serious eye damage or eye irritation Respiratory or skin sensitization

Reproductive toxicity

Specific target organ toxicity (single or repeated exposure)

SARA 313 : The following components are subject to reporting levels

established by SARA Title III, Section 313:

2-(2-Ethoxyethoxy)ethyl 7328-17-8 >= 3 - =< 7 %

acrylate

US State Regulations

Pennsylvania Right To Know

3,3,5-Trimethylcyclohexyl acrylate	86178-38-3
4-(1-Oxo-2-propenyl)-morpholine	5117-12-4
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7
2-(2-Ethoxyethoxy)ethyl acrylate	7328-17-8
Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate	5888-33-5
Propoxylated neopentyl glycol diacrylate esters	84170-74-1
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	75980-60-8
Hexamethylene diacrylate	13048-33-4
Carbon black	1333-86-4
2-benzyl-2-dimethylamino-4-morpholinobutyrophenone	119313-12-1
Oxybis(methyl-2,1-ethanediyl) diacrylate	57472-68-1

California Prop. 65

WARNING: This product can expose you to chemicals including Carbon black, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances

Carbon black 1333-86-4

California Permissible Exposure Limits for Chemical Contaminants

Carbon black 1333-86-4

Additional regulatory information

4-(1-Oxo-2-propenyl)-morpholine 5117-12-4

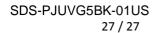
The United States Environmental Protection Agency (USEPA) has established a Significant New Use Rule (SNUR) for one of the components in this product. See 40 CFR § 721.5185

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits





OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits

for Air Contaminants

US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)

ACGIH / TWA : 8-hour, time-weighted average

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour

workday during a 40-hour workweek

OSHA Z-1 / TWA : 8-hour time weighted average

US WEEL / TWA : 8-hr TWA

AICS - Australian Inventory of Chemical Substances: ASTM - American Society for the Testing of Materials: bw - Body weight: CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN -Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL -Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS -Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified: NFPA - National Fire Protection Association: NO(A)EC - No Observed (Adverse) Effect Concentration: NO(A)EL - No Observed (Adverse) Effect Level: NOELR - No Observable Effect Loading Rate: 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ -Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

Sources of key data used to compile the Material Safety

Data Sheet

Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency,

http://echa.europa.eu/

Revision Date : 2020-01-06

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

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.



SAFETY DATA SHEET

Date of last issue: 2020-02-12 Date of first issue: 2020-01-06

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Cleaner

PJUVG5-CL1000U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

Address : 4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042

Telephone : 480-968-7772

Emergency telephone : 480-968-7772

During normal opening times

Recommended use of the chemical and restrictions on use

Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with 29 CFR 1910.1200

Eye irritation : Category 2A

GHS label elements

Hazard pictograms :



Signal Word : Warning

Hazard Statements : H319 Causes serious eye irritation.

Precautionary Statements : **Prevention:**

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/ protective clothing/ eye protection/

face protection.

Response:

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy

to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/

attention.

Other hazards

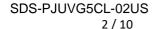
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Cyclohexanone	108-94-1	< 3





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 if symptoms occur.

In case of skin contact : Wash with water and soap as a precaution.

Get medical attention if symptoms occur.

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 if symptoms occur. Rinse mouth thoroughly with water.

 $Most\ important\ symptoms\ and\ :$

effects, both acute and delayed

Causes serious eye irritation.

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.

Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray

Alcohol-resistant foam Carbon dioxide (CO2)

Dry chemical

Unsuitable extinguishing

media

None known.

Specific hazards during fire

fighting

Vapors may form explosive mixtures with air.

Exposure to combustion products may be a hazard to health.

Hazardous combustion

products

Carbon 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 fire-fighters

In the event of fire, wear self-contained breathing apparatus.

Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and

Use personal protective equipment.

Follow safe handling advice and personal protective equipment



emergency procedures recommendations.

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.

Do not release the product to the aquatic environment above

defined regulatory levels

Methods and materials for containment and cleaning up

Soak up with inert absorbent material.

For large spills, provide diking or other appropriate containment to keep material from spreading. If diked 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 : Use with local exhaust ventilation.

Advice on safe handling : Do not get on skin or clothing.

Avoid inhalation of vapor or mist.

Do not swallow. Do not get in eyes.

Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure

assessment.

Keep container tightly closed.

Take care to prevent spills, waste and minimize release to the

environment.

Conditions for safe storage : Keep in properly labeled 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:

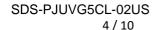
Strong oxidizing agents Organic peroxides

Explosives Gases

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

mgradiana min nampida aanin ar paramatara				
Components	CAS-No.	Value type	Control parameters	Basis
		(Form of	/ Permissible	
		exposure)	concentration	
Cyclohexanone	108-94-1	TWA	25 ppm	OSHA Z-1





	TWA	25 ppm	NIOSH REL
	TWA	20 ppm	ACGIH
	STEL	50 ppm	ACGIH

Engineering measures Minimize workplace exposure concentrations.

Use with local exhaust ventilation.

Personal protective equipment

Respiratory protection General and local exhaust ventilation is recommended to

> maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying

respirators may not provide adequate protection.

Hand protection

Material Chemical-resistant gloves

Remarks Choose gloves to protect hands against chemicals depending on

> the concentration 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.

Wear the following personal protective equipment: Eve protection

Safety goggles

Select appropriate protective clothing based on chemical Skin and body protection

resistance data and an assessment of the local exposure

potential.

Skin contact must be avoided by using impervious protective

clothing (gloves, aprons, boots, etc).

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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance liquid

Color clear

Odor characteristic

Odor Threshold No data available

pН No data available

Melting point/freezing point No data available

Initial boiling point and boiling : > 100 °C

range



Flash point : > 93 °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

Vapor pressure : No data available

Relative vapor density : No data available

Density : No data available

Solubility(ies)

Water solubility : Miscible with water

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No data available

Decomposition temperature : No data available

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

Vapors 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

Information on likely routes of exposure

Inhalation Skin contact



Ingestion Eye contact

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg

Method: Calculation method

Components:

Cyclohexanone:

Acute oral toxicity : LD50 (Rat): 1,620 mg/kg

Acute inhalation toxicity : LD50 (Rat): > 6.2 mg/l

Exposure time: 4 h
Test atmosphere: vapor

Acute dermal toxicity : Acute toxicity estimate: 1,620 mg/kg

Method: Expert judgment

Skin corrosion/irritation

Not classified based on available information.

Components: Cyclohexanone: Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components: Cyclohexanone: Species: Rabbit

Result: Irreversible effects on the eye

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Components: Cyclohexanone:

Test Type: Buehler Test

Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Germ cell mutagenicity

Not classified based on available information.

Components: Cyclohexanone:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

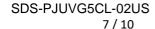
Result: negative

Carcinogenicity

Not classified based on available information.

Components:

Cyclohexanone:





Species: Rat

Application Route: Ingestion Exposure time: 104 weeks

Result: positive

Carcinogenicity - Assessment: Weight of evidence does not support classification as a carcinogen

IARC Group 3: Not classifiable as to human carcinogenicity

Cyclohexanone 108-94-1

OSHANo component of this product present at levels greater than or

egual to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or

equal to 0.1% is identified as a known or anticipated carcinogen

by NTP.

Reproductive toxicity

Not classified based on available information.

Components: Cyclohexanone:

Effects on fertility : Test Type: Two-generation reproduction toxicity study

Species: Rat

Application Route: inhalation (dust/mist/fume)

Result: negative

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rabbit

Application Route: Ingestion Method: OECD Test Guideline 414

Result: positive

Reproductive toxicity - : Weight of evidence does not support classification as a

Assessment reproductive toxicity.

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

Cyclohexanone:

Species: Rat NOAEL: 143 mg/kg

Application Route: Ingestion Exposure time: 90 Days

Method: OECD Test Guideline 408

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity Components:

Cyclohexanone:

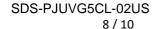
Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 536 - 732 mg/l

Exposure time: 48 h

Toxicity to daphnia and other : EC50: 100 mg/l

aquatic invertebrates

Exposure time: 48 h





Remarks: Based on data from similar materials

Toxicity to algae : EC50: 100 mg/l

Exposure time: 96 h

Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50 : > 1,000 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 203

Persistence and degradability

Components: Cyclohexanone:

Biodegradability : Result: Readily biodegradable.

Biodegradation: > 90 % Exposure time: 28 d

Method: OECD Test Guideline 301F

Bioaccumulative potential

Components: Cyclohexanone:

Partition coefficient: : log Pow: 0.86

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.

Domestic regulation

49 CFR

Not regulated as dangerous goods

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know



CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Cyclohexanone	108-94-1	5000	166666

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Serious eye damage or eye irritation

SARA 313 : This material does not contain any chemical components with

known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Pennsylvania Right To Know

Cyclohexanone 108-94-1

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits

OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits

for Air Contaminants

US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)

ACGIH / TWA : 8-hour, time-weighted average ACGIH / STEL : Short-term exposure limit

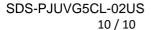
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour

workday during a 40-hour workweek

OSHA Z-1 / TWA : 8-hour time weighted average

US WEEL / TWA : 8-hr TWA

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials: bw - Body weight: CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN -Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL -Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS -Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse)





Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

Sources of key data used to compile the Material Safety

Data Sheet

Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency,

http://echa.europa.eu/

Revision Date : 2020-02-12

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

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.



SAFETY DATA SHEET

Date of last issue: -

Date of first issue: 2020-01-06

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Cyan

PJUVG5-CY1000U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

Address : 4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042

Telephone : 480-968-7772

Emergency telephone : 480-968-7772

During normal opening times

Recommended use of the chemical and restrictions on use

Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with 29 CFR 1910.1200

Acute toxicity (Oral) : Category 4

Skin irritation : Category 2

Serious eye damage : Category 1

Skin sensitization : Category 1

Reproductive toxicity : Category 1B

Specific target organ systemic:

toxicity - single exposure

Category 3

Specific target organ systemic:

toxicity - repeated exposure

Category 2

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.

H315 Causes skin irritation.

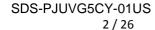
H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H335 May cause respiratory irritation.

H360 May damage fertility or the unborn child.

H373 May cause damage to organs through prolonged or

repeated exposure.

Precautionary Statements : **Prevention:**





P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe mist or vapors.

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 must 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 soap and 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 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P333 + P313 If skin irritation or rash occurs: 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

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
3,3,5-Trimethylcyclohexyl acrylate	86178-38-3	>= 30 - =< 40
4-(1-Oxo-2-propenyl)-morpholine	5117-12-4	>= 20 - < 30
2-(2-Ethoxyethoxy)ethyl acrylate	7328-17-8	>= 5 - < 10
Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate	5888-33-5	>= 3 - =< 7
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7	>= 3 - =< 7
Propoxylated neopentyl glycol diacrylate esters	84170-74-1	>= 1 - =< 5
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	75980-60-8	>= 1 - < 5
Hexamethylene diacrylate	13048-33-4	>= 1 - < 5
2-benzyl-2-dimethylamino-4-morpholinobutyrophenone	119313-12-1	>= 1 - < 5
Oxybis(methyl-2,1-ethanediyl) diacrylate	57472-68-1	< 1

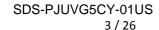
SECTION 4. FIRST AID MEASURES

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.



MUTOH

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 immediately.

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 damage. May cause respiratory irritation.

May damage fertility or the unborn child.

May cause damage to organs through prolonged or repeated

exposure.

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.

Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray

Alcohol-resistant foam Carbon dioxide (CO2)

Dry chemical

Unsuitable extinguishing

media

None known.

Specific hazards during fire

fighting

Vapors may form explosive mixtures with air.

Exposure to combustion products may be a hazard to health.

Hazardous combustion

products

Carbon oxides

Nitrogen oxides (NOx) Oxides of phosphorus

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 fire-fighters

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 procedures Use personal protective equipment.

Follow safe handling advice and personal protective equipment

recommendations.

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.

Do not release the product to the aquatic environment above

defined regulatory levels

Methods and materials for containment and cleaning up

Soak up with inert absorbent material.

For large spills, provide diking or other appropriate containment to keep material from spreading. If diked 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 : Use with local exhaust ventilation.

Advice on safe handling : Do not get on skin or clothing.

Do not breathe vapors or spray mist.

Do not swallow. Do not get in eyes.

Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure

assessment.

Keep container tightly closed.

Take care to prevent spills, waste and minimize release to the

environment.

Conditions for safe storage : Keep in properly labeled 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
Organic peroxides

Explosives Gases

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters



SDS-PJUVG5CY-01US 5 / 26

Components	CAS-No.	Value type (Form of	Control parameters / Permissible	Basis
		exposure)	concentration	
Hexamethylene diacrylate	13048-33-4	TWA	1 mg/m³	US WEEL

Engineering measures

Minimize workplace exposure concentrations.

Use with local exhaust ventilation.

Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m3 - total dust, 5 mg/m3 - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m3 - respirable particles, 10 mg/m3 - inhalable

particles.

Personal protective equipment

Respiratory protection

General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material Chemical-resistant gloves

Remarks Choose gloves to protect hands against chemicals depending on

the concentration 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.

Eye protection Wear the following personal protective equipment:

Chemical resistant goggles must be worn.

If splashes are likely to occur, wear:

Face-shield

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).

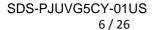
Hygiene measures Ensure that eye flushing systems and safety showers are

> located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance liquid

Color cyan





Odor : characteristic

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling:

range

> 100 °C

Flash point : > 93 °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

Vapor pressure : No data available

Relative vapor density : No data available

Density : No data available

Solubility(ies)

Water solubility : Immiscible in water

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No data available

Decomposition temperature : No data available

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.

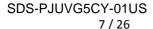
Chemical stability : Stable under normal conditions.

Possibility of hazardous

reactions

Vapors may form explosive mixture with air. Can react with strong oxidizing agents.

Conditions to avoid : None known.



MUTOH

Incompatible materials : Oxidizing agents

Hazardous decomposition

products

No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation Skin contact Ingestion Eye contact

Acute toxicity

Harmful if swallowed.

Product:

Acute oral toxicity : Acute toxicity estimate: 1,609 mg/kg

Method: Calculation method

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

Method: Calculation method

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

4-(1-Oxo-2-propenyl)-morpholine:

Acute oral toxicity : LD50 (Rat): 588 mg/kg

Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

2-(2-Ethoxyethoxy)ethyl acrylate:

Acute oral toxicity : LD50 (Rat): > 300 - < 2,000 mg/kg

Method: OECD Test Guideline 423

Remarks: Based on data from similar materials

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

Exposure time: 4 h
Test atmosphere: dust/mist

Method: OECD Test Guideline 403

Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Acute oral toxicity : LD50 (Rat): 4,350 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 3,000 mg/kg

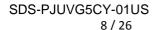
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

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

Propoxylated neopentyl glycol diacrylate esters:

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

Acute inhalation toxicity : LC50 (Rat): > 2 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

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

Hexamethylene diacrylate:

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

Acute inhalation toxicity : LC0 (Rat): 0.41 mg/l

Exposure time: 7 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): 3,650 mg/kg

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

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

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Acute oral toxicity : LD50 (Rat): 3,530 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Result: Skin irritation

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

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rabbit

Result: No skin irritation

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Method: OECD Test Guideline 404



Result: No skin irritation

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Result: Skin irritation

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

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

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

Species: Rabbit

Result: No skin irritation

Hexamethylene diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Result: Irritation to eyes, reversing within 21 days

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

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rabbit

Result: Irreversible effects on the eye Method: OECD Test Guideline 405

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Result: Irritation to eyes, reversing within 21 days

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

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

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405



Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit Result: No eye irritation

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

Species: Rabbit Result: No eye irritation

Hexamethylene diacrylate:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

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

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Result: Irreversible effects on the eye Method: OECD Test Guideline 405

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

4-(1-Oxo-2-propenyl)-morpholine:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig

Method: Directive 67/548/EEC, Annex V, B.6.

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

2-(2-Ethoxyethoxy)ethyl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Remarks: Based on data from similar materials

Assessment: Probability or evidence of skin sensitization in humans

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans



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

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Propoxylated neopentyl glycol diacrylate esters:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

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

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

Hexamethylene diacrylate:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: positive

Assessment: Probability or evidence of skin sensitization in humans

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Germ cell mutagenicity

Not classified based on available information.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

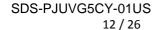
Method: OECD Test Guideline 476

Result: negative

Test Type: in vitro micronucleus test Method: OECD Test Guideline 487

Result: negative

4-(1-Oxo-2-propenyl)-morpholine:





Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 473

Result: positive

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 471

Result: negative

Germ cell mutagenicity -

Assessment

Weight of evidence does not support classification as a germ cell

mutagen.

2-(2-Ethoxyethoxy)ethyl acrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Remarks: Based on data from similar materials

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

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 473

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

Propoxylated neopentyl glycol diacrylate esters:

Genotoxicity in vitro : 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: Ingestion Method: OECD Test Guideline 474

Result: negative



Remarks: Based on data from similar materials

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

Hexamethylene diacrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Result: negative

Test Type: Bacterial reverse mutation assay (AMES)

Method: OECD Test Guideline 471

Result: negative

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Genotoxicity in vitro : 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: Hamster

Application Route: Ingestion

Result: negative

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Genotoxicity in vitro : 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

Remarks: Based on data from similar materials

Carcinogenicity

Not classified based on available information.

IARC No ingredient of this product present at levels greater than or

equal to 0.1% is identified as probable, possible or confirmed

human carcinogen by IARC.

OSHA No component of this product present at levels greater than or

equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or

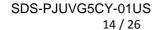
equal to 0.1% is identified as a known or anticipated carcinogen

by NTP.

Reproductive toxicity

May damage fertility or the unborn child.

Components:





3,3,5-Trimethylcyclohexyl acrylate:

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

Effects on fetal development : 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

4-(1-Oxo-2-propenyl)-morpholine:

Effects on fertility : Remarks: May cause adverse reproductive effects.

Based on a Significant New Use Rule regulation

2-(2-Ethoxyethoxy)ethyl acrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

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

Effects on fetal development : 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 fetal development : Test Type: Fertility/early embryonic development

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

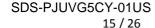
Result: negative

Propoxylated neopentyl glycol diacrylate esters:

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test

Species: Rat

Application Route: Ingestion





Method: OECD Test Guideline 421

Result: negative

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

Remarks: Based on data from similar materials

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.

Hexamethylene diacrylate:

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

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Effects on fertility : Test Type: One-generation reproduction toxicity study

Species: Rat

Application Route: Ingestion

Result: positive

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

Result: positive

Reproductive toxicity -

Assessment

Clear evidence of adverse effects on development, based on animal experiments., Some evidence of adverse effects on

sexual function and fertility, based on animal experiments.

Oxybis(methyl-2,1-ethanediyl) diacrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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



Remarks: Based on data from similar materials

STOT-single exposure

May cause respiratory irritation.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Assessment: May cause respiratory irritation.

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

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Assessment: May cause respiratory irritation.

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

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Components:

4-(1-Oxo-2-propenyl)-morpholine:

Routes of exposure: Oral

Assessment: May cause damage to organs through prolonged or repeated exposure. Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Repeated dose toxicity

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Species: Rat

NOAEL: 1,000 mg/kg Application Route: Ingestion Exposure time: 4 weeks

Method: OECD Test Guideline 422

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rat NOAEL: 50 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rat NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Species: Rat NOAEL: 100 mg/kg

Application Route: Ingestion Exposure time: 2 Weeks

Method: OECD Test Guideline 422

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

Propoxylated neopentyl glycol diacrylate esters:

Species: Rat

NOAEL: 1,000 mg/kg



Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

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

Species: Rat

NOAEL: 100 mg/kg LOAEL: 300 mg/kg

Application Route: Ingestion Exposure time: 90 Days

Hexamethylene diacrylate:

Species: Rat NOAEL: 250 mg/kg

Application Route: Ingestion Method: OECD Test Guideline 422

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rat

NOAEL: >= 100 mg/kg Application Route: Ingestion Exposure time: 28 Days

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rat

NOAEL: 250 mg/kg

Application Route: Ingestion Exposure time: 54 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

Aspiration toxicity

Not classified based on available information.

Further information

Components:

4-(1-Oxo-2-propenyl)-morpholine:

Remarks: May cause internal organ effects Based on a Significant New Use Rule regulation

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 1.9 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 14.43 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 0.59 mg/l

Exposure time: 72 h

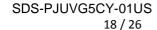
Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 0.43 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC: 1,000 mg/l





Exposure time: 3 h

Method: OECD Test Guideline 209

4-(1-Oxo-2-propenyl)-morpholine:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 220 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 120 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 120

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): >= 120

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : IC50: > 100 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

2-(2-Ethoxyethoxy)ethyl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 6.8 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: Based on data from similar materials

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 55 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

EC10 (Desmodesmus subspicatus (green algae)): 3.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

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

Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50: 741 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 0.704 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203



SDS-PJUVG5CY-01US 19 / 26

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): 1.98

mg/l

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.405

mg/l

Method: OECD Test Guideline 201

M-Factor (Acute aquatic

toxicity)

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

toxicity)

NOEC (Daphnia): 0.092 mg/l

Exposure time: 21 d

Method: OECD Test Guideline 211

M-Factor (Chronic aquatic

toxicity)

: 1

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 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

Propoxylated neopentyl glycol diacrylate esters:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 2.7 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 37 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 11 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

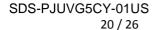
NOEC (Pseudokirchneriella subcapitata (green algae)): 1 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC: 2 mg/l

Exposure time: 28 d





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

Hexamethylene diacrylate:

Toxicity to fish LC50 (Leuciscus idus (Golden orfe)): 4.6 - 10 mg/l

Exposure time: 96 h

aquatic invertebrates

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 2.6 mg/l

Exposure time: 48 h

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 1.5 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 0.59 mg/l

Exposure time: 72 h

EC50: 270 mg/l Toxicity to microorganisms

Exposure time: 30 min

Method: OECD Test Guideline 209

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 0.46 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EL50 (Daphnia magna (Water flea)): > 0.8 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

Toxicity to algae ErC50 (Pseudokirchneriella subcapitata (green algae)): > 2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

M-Factor (Acute aquatic

toxicity)

: 1

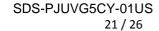
Toxicity to microorganisms EC50: > 100 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

M-Factor (Chronic aquatic

toxicity)





Oxybis(methyl-2,1-ethanediyl) diacrylate:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 2.2 - 4.64 mg/l

Exposure time: 96 h Method: DIN 38412

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 22.3 mg/l

Exposure time: 48 h

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 16.7 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 2.2 mg/l

Exposure time: 72 h

Toxicity to microorganisms : EC50: > 1,000 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 16.8 % Exposure time: 28 d

Method: OECD Test Guideline 301F

4-(1-Oxo-2-propenyl)-morpholine:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 35 % Exposure time: 28 d

Method: OECD Test Guideline 301D

2-(2-Ethoxyethoxy)ethyl acrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 84.4 % Exposure time: 28 d

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 51 % Exposure time: 28 d

Method: OECD Test Guideline 301F

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

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 1 % Exposure time: 28 d

Method: OECD Test Guideline 301B

Propoxylated neopentyl glycol diacrylate esters:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 51 % Exposure time: 28 d

Method: OECD Test Guideline 301D

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

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 0 - 10 % Exposure time: 28 d

Method: OECD Test Guideline 301F



Hexamethylene diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 60 - 70 % Exposure time: 28 d

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 3 % Exposure time: 28 d

Method: OECD Test Guideline 301B

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 90 - 100 %

Exposure time: 28 d

Method: OECD Test Guideline 301A

Bioaccumulative potential

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Partition coefficient: : log Pow: 4.6

n-octanol/water

4-(1-Oxo-2-propenyl)-morpholine:

Partition coefficient: : log Pow: -0.46

n-octanol/water

2-(2-Ethoxyethoxy)ethyl acrylate:

Partition coefficient: : log Pow: 0.67

n-octanol/water Remarks: Calculation

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Bioaccumulation : Species: Zebrafish

Bioconcentration factor (BCF): 37 Method: OECD Test Guideline 305

Remarks: Based on data from similar materials

Partition coefficient: : log Pow: 4.52

n-octanol/water

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

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 5

Partition coefficient: : log Pow: 5.8

n-octanol/water

Propoxylated neopentyl glycol diacrylate esters:Partition coefficient: log Pow: 2.41 - 3.87

n-octanol/water

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

Bioaccumulation : Species: Cyprinus carpio (Carp)

Bioconcentration factor (BCF): 18 - 72

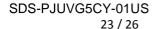
Partition coefficient: : log Pow: 3.1 - 3.8

n-octanol/water

Hexamethylene diacrylate:

Partition coefficient: : log Pow: 2.81

n-octanol/water





2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Partition coefficient: : log Pow: 2.91

n-octanol/water

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Partition coefficient: : log Pow: 0.01 - 0.39

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.

Do not release the product to the aquatic environment above

defined regulatory levels

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

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9
Packing group : III
Labels : 9

IATA-DGR

UN/ID No. : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9 Packing group : III

Labels : Miscellaneous

Packing instruction (cargo :

aircraft)

Packing instruction (passenger: 964

aircraft)

Environmentally hazardous : yes

IMDG-Code

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

964

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9
Packing group : III
Labels : 9

EmS Code : F-A. S-F



Marine pollutant : yes

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

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9 Packing group : III

Labels : CLASS 9 ERG Code : 171

Marine pollutant : yes(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Remarks : Above applies only to containers over 119 gallons or 450 liters.,

Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Acute toxicity (any route of exposure)

Skin corrosion or irritation

Serious eye damage or eye irritation Respiratory or skin sensitization

Reproductive toxicity

Specific target organ toxicity (single or repeated exposure)

SARA 313 : The following components are subject to reporting levels

established by SARA Title III, Section 313:

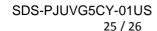
2-(2-Ethoxyethoxy)ethyl 7328-17-8 >= 5 - < 10 %

acrylate

US State Regulations

Pennsylvania Right To Know

yivama rugin io iulow	
3,3,5-Trimethylcyclohexyl acrylate	86178-38-3
4-(1-Oxo-2-propenyl)-morpholine	5117-12-4
2-(2-Ethoxyethoxy)ethyl acrylate	7328-17-8
Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate	5888-33-5
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7
Propoxylated neopentyl glycol diacrylate esters	84170-74-1
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	75980-60-8
Hexamethylene diacrylate	13048-33-4
2-benzyl-2-dimethylamino-4-morpholinobutyrophenone	119313-12-1
Oxybis(methyl-2,1-ethanediyl) diacrylate	57472-68-1





This product does not contain any chemicals known to the State of California to cause cancer, birth. or any other reproductive defects.

Additional regulatory information

4-(1-Oxo-2-propenyl)-morpholine

5117-12-4

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 § 721.5185

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

ACGIH USA. ACGIH Threshold Limit Values (TLV) NIOSH REL USA. NIOSH Recommended Exposure Limits

OSHA Z-1 USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits

for Air Contaminants

: USA. Workplace Environmental Exposure Levels (WEEL) **US WEEL**

8-hour, time-weighted average ACGIH / TWA

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour

workday during a 40-hour workweek

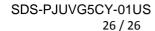
: 8-hour time weighted average OSHA Z-1 / TWA

US WEEL / TWA : 8-hr TWA

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials: bw - Body weight: CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN -Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL -Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS -Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified: NFPA - National Fire Protection Association: NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ -Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

compile the Material Safety

Sources of key data used to : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency,





Data Sheet http://echa.europa.eu/

Revision Date : 2020-01-06

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

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.



SAFETY DATA SHEET

Date of last issue: -

Date of first issue: 2020-01-06

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Magenta

PJUVG5-MA1000U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

Address : 4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042

Telephone : 480-968-7772

Emergency telephone : 480-968-7772

During normal opening times

Recommended use of the chemical and restrictions on use

Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with 29 CFR 1910.1200

Acute toxicity (Oral) : Category 4

Skin irritation : Category 2

Serious eye damage : Category 1

Skin sensitization : Category 1

Reproductive toxicity : Category 1B

Specific target organ systemic:

toxicity - single exposure

Category 3

Specific target organ systemic: Cat

toxicity - repeated exposure

Category 2

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.

H315 Causes skin irritation.

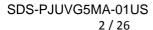
H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H335 May cause respiratory irritation.

H360 May damage fertility or the unborn child.

H373 May cause damage to organs through prolonged or

repeated exposure.

Precautionary Statements : Prevention:





P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe mist or vapors.

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 must 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 soap and 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 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P333 + P313 If skin irritation or rash occurs: 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

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
3,3,5-Trimethylcyclohexyl acrylate	86178-38-3	>= 30 - =< 40
4-(1-Oxo-2-propenyl)-morpholine	5117-12-4	>= 15 - < 25
2-(2-Ethoxyethoxy)ethyl acrylate	7328-17-8	>= 5 - < 10
Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate	5888-33-5	>= 3 - =< 7
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7	>= 3 - =< 7
Propoxylated neopentyl glycol diacrylate esters	84170-74-1	>= 1 - =< 5
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	75980-60-8	>= 1 - < 5
Hexamethylene diacrylate	13048-33-4	>= 1 - < 5
2-benzyl-2-dimethylamino-4-morpholinobutyrophenone	119313-12-1	>= 1 - < 5
Oxybis(methyl-2,1-ethanediyl) diacrylate	57472-68-1	< 1

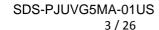
SECTION 4. FIRST AID MEASURES

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 immediately.

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 damage. May cause respiratory irritation.

May damage fertility or the unborn child.

May cause damage to organs through prolonged or repeated

exposure.

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.

Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray

Alcohol-resistant foam Carbon dioxide (CO2)

Dry chemical

Unsuitable extinguishing

media

None known.

Specific hazards during fire

fighting

Vapors may form explosive mixtures with air.

Exposure to combustion products may be a hazard to health.

Hazardous combustion

products

Carbon oxides

Nitrogen oxides (NOx)

Oxides of phosphorus

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 fire-fighters

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 procedures Use personal protective equipment.

Follow safe handling advice and personal protective equipment

recommendations.

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.

Do not release the product to the aquatic environment above

defined regulatory levels

Methods and materials for containment and cleaning up

Soak up with inert absorbent material.

For large spills, provide diking or other appropriate containment to keep material from spreading. If diked 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 : Use with local exhaust ventilation.

Advice on safe handling : Do not get on skin or clothing.

Do not breathe vapors or spray mist.

Do not swallow. Do not get in eyes.

Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure

assessment.

Keep container tightly closed.

Take care to prevent spills, waste and minimize release to the

environment.

Conditions for safe storage : Keep in properly labeled 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
Organic peroxides

Explosives Gases

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters



SDS-PJUVG5MA-01US 5 / 26

Components	CAS-No.	Value type (Form of	Control parameters / Permissible	Basis
		exposure)	concentration	
Hexamethylene diacrylate	13048-33-4	TWA	1 mg/m³	US WEEL

Engineering measures

Minimize workplace exposure concentrations.

Use with local exhaust ventilation.

Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m3 - total dust, 5 mg/m3 - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m3 - respirable particles, 10 mg/m3 - inhalable

particles.

Personal protective equipment

Respiratory protection

General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material Chemical-resistant gloves

Remarks Choose gloves to protect hands against chemicals depending on

the concentration 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.

Eye protection Wear the following personal protective equipment:

Chemical resistant goggles must be worn.

If splashes are likely to occur, wear:

Face-shield

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).

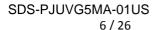
Hygiene measures Ensure that eye flushing systems and safety showers are

> located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance liquid

Color magenta





Odor : characteristic

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling:

range

> 100 °C

Flash point : > 93 °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

Vapor pressure : No data available

Relative vapor density : No data available

Density : No data available

Solubility(ies)

Water solubility : Immiscible in water

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No data available

Decomposition temperature : No data available

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

Vapors may form explosive mixture with air. Can react with strong oxidizing agents.

Conditions to avoid : None known.



7 / 26



Incompatible materials : Oxidizing agents

Hazardous decomposition

products

No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation Skin contact Ingestion Eye contact

Acute toxicity

Harmful if swallowed.

Product:

Acute oral toxicity : Acute toxicity estimate: 1,609 mg/kg

Method: Calculation method

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

Method: Calculation method

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

4-(1-Oxo-2-propenyl)-morpholine:

Acute oral toxicity : LD50 (Rat): 588 mg/kg

Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

2-(2-Ethoxyethoxy)ethyl acrylate:

Acute oral toxicity : LD50 (Rat): > 300 - < 2,000 mg/kg

Method: OECD Test Guideline 423

Remarks: Based on data from similar materials

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

Exposure time: 4 h
Test atmosphere: dust/mist

Method: OECD Test Guideline 403

Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Acute oral toxicity : LD50 (Rat): 4,350 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 3,000 mg/kg

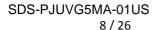
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

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

Propoxylated neopentyl glycol diacrylate esters:

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

Acute inhalation toxicity : LC50 (Rat): > 2 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

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

Hexamethylene diacrylate:

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

Acute inhalation toxicity : LC0 (Rat): 0.41 mg/l

Exposure time: 7 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): 3,650 mg/kg

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

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

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Acute oral toxicity : LD50 (Rat): 3,530 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Result: Skin irritation

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

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rabbit

Result: No skin irritation

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Method: OECD Test Guideline 404



Result: No skin irritation

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Result: Skin irritation

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

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

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

Species: Rabbit Result: No skin irritation

Hexamethylene diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Result: Irritation to eyes, reversing within 21 days

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

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rabbit

Result: Irreversible effects on the eye Method: OECD Test Guideline 405

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Result: Irritation to eyes, reversing within 21 days

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

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

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405



Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit Result: No eye irritation

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

Species: Rabbit Result: No eye irritation

Hexamethylene diacrylate:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

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

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Result: Irreversible effects on the eye Method: OECD Test Guideline 405

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

4-(1-Oxo-2-propenyl)-morpholine:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig

Method: Directive 67/548/EEC, Annex V, B.6.

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

2-(2-Ethoxyethoxy)ethyl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Remarks: Based on data from similar materials

Assessment: Probability or evidence of skin sensitization in humans

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans



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

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Propoxylated neopentyl glycol diacrylate esters:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

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

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

Hexamethylene diacrylate:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: positive

Assessment: Probability or evidence of skin sensitization in humans

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Germ cell mutagenicity

Not classified based on available information.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

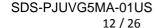
Method: OECD Test Guideline 476

Result: negative

Test Type: in vitro micronucleus test Method: OECD Test Guideline 487

Result: negative

4-(1-Oxo-2-propenyl)-morpholine:





Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 473

Result: positive

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 471

Result: negative

Germ cell mutagenicity -

Assessment

Weight of evidence does not support classification as a germ cell

mutagen.

2-(2-Ethoxyethoxy)ethyl acrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Remarks: Based on data from similar materials

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

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 473

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

Propoxylated neopentyl glycol diacrylate esters:

Genotoxicity in vitro : 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: Ingestion
Method: OECD Test Guideline 474

Result: negative



Remarks: Based on data from similar materials

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

Hexamethylene diacrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Result: negative

Test Type: Bacterial reverse mutation assay (AMES)

Method: OECD Test Guideline 471

Result: negative

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Genotoxicity in vitro : 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: Hamster

Application Route: Ingestion

Result: negative

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Genotoxicity in vitro : 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

Remarks: Based on data from similar materials

Carcinogenicity

Not classified based on available information.

IARC No ingredient of this product present at levels greater than or

equal to 0.1% is identified as probable, possible or confirmed

human carcinogen by IARC.

OSHANo component of this product present at levels greater than or

equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or

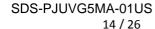
equal to 0.1% is identified as a known or anticipated carcinogen

by NTP.

Reproductive toxicity

May damage fertility or the unborn child.

Components:





3,3,5-Trimethylcyclohexyl acrylate:

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

Effects on fetal development : 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

4-(1-Oxo-2-propenyl)-morpholine:

Effects on fertility : Remarks: May cause adverse reproductive effects.

Based on a Significant New Use Rule regulation

2-(2-Ethoxyethoxy)ethyl acrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

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

Effects on fetal development : 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 fetal development : Test Type: Fertility/early embryonic development

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

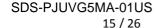
Result: negative

Propoxylated neopentyl glycol diacrylate esters:

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test

Species: Rat

Application Route: Ingestion





Method: OECD Test Guideline 421

Result: negative

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

Remarks: Based on data from similar materials

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.

Hexamethylene diacrylate:

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

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Effects on fertility : Test Type: One-generation reproduction toxicity study

Species: Rat

Application Route: Ingestion

Result: positive

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

Result: positive

Reproductive toxicity -

Assessment

Clear evidence of adverse effects on development, based on animal experiments., Some evidence of adverse effects on

sexual function and fertility, based on animal experiments.

Oxybis(methyl-2,1-ethanediyl) diacrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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



Remarks: Based on data from similar materials

STOT-single exposure

May cause respiratory irritation.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Assessment: May cause respiratory irritation.

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

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Assessment: May cause respiratory irritation.

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

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Components:

4-(1-Oxo-2-propenyl)-morpholine:

Routes of exposure: Oral

Assessment: May cause damage to organs through prolonged or repeated exposure. Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Repeated dose toxicity

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Species: Rat

NOAEL: 1,000 mg/kg Application Route: Ingestion Exposure time: 4 weeks

Method: OECD Test Guideline 422

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rat NOAEL: 50 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rat NOAEL: 160 mg/kg

NOAEL: 160 mg/kg
Application Route: Ingestion

Exposure time: 28 Days

Method: OECD Test Guideline 407

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Species: Rat NOAEL: 100 mg/kg

Application Route: Ingestion Exposure time: 2 Weeks

Method: OECD Test Guideline 422

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

Propoxylated neopentyl glycol diacrylate esters:

Species: Rat

NOAEL: 1,000 mg/kg



Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

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

Species: Rat

NOAEL: 100 mg/kg LOAEL: 300 mg/kg

Application Route: Ingestion Exposure time: 90 Days

Hexamethylene diacrylate:

Species: Rat NOAEL: 250 mg/kg

Application Route: Ingestion Method: OECD Test Guideline 422

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rat

NOAEL: >= 100 mg/kg Application Route: Ingestion Exposure time: 28 Days

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rat

NOAEL: 250 mg/kg

Application Route: Ingestion Exposure time: 54 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

Aspiration toxicity

Not classified based on available information.

Further information

Components:

4-(1-Oxo-2-propenyl)-morpholine:

Remarks: May cause internal organ effects Based on a Significant New Use Rule regulation

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 1.9 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 14.43 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 0.59 mg/l

Exposure time: 72 h

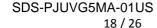
Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 0.43 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC: 1,000 mg/l





Exposure time: 3 h

Method: OECD Test Guideline 209

4-(1-Oxo-2-propenyl)-morpholine:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 220 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 120 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 120

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): >= 120

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : IC50: > 100 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

2-(2-Ethoxyethoxy)ethyl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 6.8 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: Based on data from similar materials

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 55 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

EC10 (Desmodesmus subspicatus (green algae)): 3.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

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

Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50: 741 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 0.704 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203



SDS-PJUVG5MA-01US 19 / 26

ErC50 (Pseudokirchneriella subcapitata (green algae)): 1.98 Toxicity to algae

mg/l

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.405

Method: OECD Test Guideline 201

M-Factor (Acute aquatic

toxicity)

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

toxicity)

NOEC (Daphnia): 0.092 mg/l

Exposure time: 21 d

Method: OECD Test Guideline 211

M-Factor (Chronic aquatic

toxicity)

1

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

LC50 (Danio rerio (zebra fish)): > 90 µg/l Toxicity to fish

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 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

Propoxylated neopentyl glycol diacrylate esters:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 2.7 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 37 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae EC50 (Pseudokirchneriella subcapitata (green algae)): 11 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

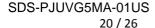
NOEC (Pseudokirchneriella subcapitata (green algae)): 1 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms NOEC: 2 mg/l

Exposure time: 28 d





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

Hexamethylene diacrylate:

Toxicity to fish LC50 (Leuciscus idus (Golden orfe)): 4.6 - 10 mg/l

Exposure time: 96 h

aquatic invertebrates

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 2.6 mg/l

Exposure time: 48 h

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 1.5 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 0.59 mg/l

Exposure time: 72 h

EC50: 270 mg/l Toxicity to microorganisms

Exposure time: 30 min

Method: OECD Test Guideline 209

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 0.46 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EL50 (Daphnia magna (Water flea)): > 0.8 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

Toxicity to algae ErC50 (Pseudokirchneriella subcapitata (green algae)): > 2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

M-Factor (Acute aquatic

toxicity)

: 1

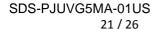
Toxicity to microorganisms EC50: > 100 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

M-Factor (Chronic aquatic

toxicity)





Oxybis(methyl-2,1-ethanediyl) diacrylate:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 2.2 - 4.64 mg/l

Exposure time: 96 h Method: DIN 38412

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 22.3 mg/l

Exposure time: 48 h

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 16.7 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 2.2 mg/l

Exposure time: 72 h

Toxicity to microorganisms : EC50: > 1,000 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 16.8 % Exposure time: 28 d

Method: OECD Test Guideline 301F

4-(1-Oxo-2-propenyl)-morpholine:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 35 % Exposure time: 28 d

Method: OECD Test Guideline 301D

2-(2-Ethoxyethoxy)ethyl acrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 84.4 % Exposure time: 28 d

Remarks: Based on data from similar materials

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 51 % Exposure time: 28 d

Method: OECD Test Guideline 301F

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

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 1 % Exposure time: 28 d

Method: OECD Test Guideline 301B

Propoxylated neopentyl glycol diacrylate esters:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 51 % Exposure time: 28 d

Method: OECD Test Guideline 301D

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

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 0 - 10 % Exposure time: 28 d

Method: OECD Test Guideline 301F



Hexamethylene diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 60 - 70 % Exposure time: 28 d

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 3 % Exposure time: 28 d

Method: OECD Test Guideline 301B

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 90 - 100 %

Exposure time: 28 d

Method: OECD Test Guideline 301A

Bioaccumulative potential

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Partition coefficient: : log Pow: 4.6

n-octanol/water

4-(1-Oxo-2-propenyl)-morpholine:

Partition coefficient: : log Pow: -0.46

n-octanol/water

2-(2-Ethoxyethoxy)ethyl acrylate:

Partition coefficient: : log Pow: 0.67

n-octanol/water Remarks: Calculation

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Bioaccumulation : Species: Zebrafish

Bioconcentration factor (BCF): 37 Method: OECD Test Guideline 305

Remarks: Based on data from similar materials

Partition coefficient: : log Pow: 4.52

n-octanol/water

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

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 5

Partition coefficient: : log Pow: 5.8

n-octanol/water

Propoxylated neopentyl glycol diacrylate esters:Partition coefficient: log Pow: 2.41 - 3.87

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

Hexamethylene diacrylate:

Partition coefficient: : log Pow: 2.81

n-octanol/water



23 / 26



2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Partition coefficient: : log Pow: 2.91

n-octanol/water

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Partition coefficient: : log Pow: 0.01 - 0.39

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.

Do not release the product to the aquatic environment above

defined regulatory levels

Empty containers should be taken to an approved waste Contaminated packaging

handling site for recycling or disposal.

If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number UN 3082

Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class 9 Ш Packing group Labels 9

IATA-DGR

UN 3082 UN/ID No.

Environmentally hazardous substance, liquid, n.o.s. Proper shipping name

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class 9 Ш Packing group

Miscellaneous Labels

Packing instruction (cargo

aircraft)

Packing instruction (passenger: 964

aircraft)

Environmentally hazardous yes

IMDG-Code

UN number UN 3082

Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

964

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class Packing group Ш Labels 9 F-A. S-F **EmS Code**



Marine pollutant : ves

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

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9 Packing group : III

Labels : CLASS 9 ERG Code : 171

Marine pollutant : yes(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Remarks : Above applies only to containers over 119 gallons or 450 liters.,

Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Acute toxicity (any route of exposure)

Skin corrosion or irritation

Serious eye damage or eye irritation Respiratory or skin sensitization

Reproductive toxicity

Specific target organ toxicity (single or repeated exposure)

SARA 313 : The following components are subject to reporting levels

established by SARA Title III, Section 313:

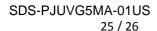
2-(2-Ethoxyethoxy)ethyl 7328-17-8 >= 5 - < 10 %

acrylate

US State Regulations

Pennsylvania Right To Know

yivaina ragin ro raion	
3,3,5-Trimethylcyclohexyl acrylate	86178-38-3
4-(1-Oxo-2-propenyl)-morpholine	5117-12-4
2-(2-Ethoxyethoxy)ethyl acrylate	7328-17-8
Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate	5888-33-5
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7
Propoxylated neopentyl glycol diacrylate esters	84170-74-1
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	75980-60-8
Hexamethylene diacrylate	13048-33-4
2-benzyl-2-dimethylamino-4-morpholinobutyrophenone	119313-12-1
Oxybis(methyl-2,1-ethanediyl) diacrylate	57472-68-1





This product does not contain any chemicals known to the State of California to cause cancer, birth. or any other reproductive defects.

Additional regulatory information

4-(1-Oxo-2-propenyl)-morpholine

5117-12-4

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 § 721.5185

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

ACGIH USA. ACGIH Threshold Limit Values (TLV) NIOSH REL USA. NIOSH Recommended Exposure Limits

OSHA Z-1 USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits

for Air Contaminants

: USA. Workplace Environmental Exposure Levels (WEEL) **US WEEL**

8-hour, time-weighted average ACGIH / TWA

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour

workday during a 40-hour workweek

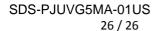
: 8-hour time weighted average OSHA Z-1 / TWA

US WEEL / TWA : 8-hr TWA

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials: bw - Body weight: CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN -Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL -Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS -Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified: NFPA - National Fire Protection Association: NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ -Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

compile the Material Safety

Sources of key data used to : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency,





Data Sheet http://echa.europa.eu/

Revision Date : 2020-01-06

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

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.



SAFETY DATA SHEET

Date of last issue: -

Date of first issue: 2020-01-06

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Varnish

PJUVG5-VA1000U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

Address : 4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042

Telephone : 480-968-7772

Emergency telephone : 480-968-7772

During normal opening times

Recommended use of the chemical and restrictions on use

Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with 29 CFR 1910.1200

Skin irritation : Category 2

Serious eye damage : Category 1

Skin sensitization : Category 1

Reproductive toxicity : Category 1B

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H315 Causes skin irritation.

H317 May cause an allergic skin reaction. H318 Causes serious eye damage.

H360 May damage fertility or the unborn child.

Precautionary Statements : **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 vapors.
P264 Wash skin thoroughly after handling.

P272 Contaminated work clothing must not be allowed out of the

workplace.

P280 Wear protective gloves/ protective clothing/ eye protection/

face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water. P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with



SDS-PJUVG5VA-01US 2 / 19

water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON

CENTER/doctor.

P308 + P313 IF exposed or concerned: Get medical advice/

attention.

P333 + P313 If skin irritation or rash occurs: 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

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Oxybis(methyl-2,1-ethanediyl) diacrylate	57472-68-1	>= 50 - < 60
2-(2-Ethoxyethoxy)ethyl acrylate	7328-17-8	>= 7 - =< 13
Poly(oxy-1,2-ethanediyl), .alphahydroomega[(1-	28961-43-5	>= 5 - =< 10
oxo-2-propen-1-yl)oxy]-, ether with 2-ethyl-2-		
(hydroxymethyl)-1,3-propanediol		
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7	>= 3 - =< 7
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	75980-60-8	>= 1 - < 5
Propoxylated neopentyl glycol diacrylate esters	84170-74-1	< 1
Hexamethylene diacrylate	13048-33-4	< 1

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.

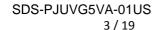
Get medical attention immediately.

If swallowed, DO NOT induce vomiting.

Get medical attention.

Rinse mouth thoroughly with water.

Most important symptoms and : Causes skin irritation.





effects, both acute and delayed May cause an allergic skin reaction.

Causes serious eve damage.

May damage 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.

Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray

Alcohol-resistant foam Carbon dioxide (CO2)

Dry chemical

Unsuitable extinguishing

media

None known.

Specific hazards during fire

fighting

Vapors may form explosive mixtures with air.

Exposure to combustion products may be a hazard to health.

Hazardous combustion

products

Carbon oxides

Oxides of phosphorus

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 fire-fighters

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 procedures Use personal protective equipment.

Follow safe handling advice and personal protective equipment

recommendations.

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.

Methods and materials for containment and cleaning up

Soak up with inert absorbent material.

For large spills, provide diking or other appropriate containment to keep material from spreading. If diked 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 : Use with local exhaust ventilation.

Advice on safe handling : Do not get on skin or clothing.

Do not breathe vapors or spray mist.

Do not swallow. Do not get in eyes.

Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure

assessment.

Keep container tightly closed.

Take care to prevent spills, waste and minimize release to the

environment.

Conditions for safe storage : Keep in properly labeled 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
Organic peroxides

Explosives Gases

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type	Control parameters	Basis
		(Form of	/ Permissible	
		exposure)	concentration	
Hexamethylene diacrylat	e 13048-33-4	TWA	1 mg/m³	US WEEL

Engineering measures : Minimize workplace exposure concentrations.

Use with local exhaust ventilation.

Personal protective equipment

Respiratory protection : General and local exhaust ventilation is recommended to

maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA

approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : Chemical-resistant gloves

Remarks : Choose gloves to protect hands against chemicals depending on

the concentration specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special



SDS-PJUVG5VA-01US 5 / 19

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.

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).

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.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : clear

Odor : characteristic

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling:

range

> 100 °C

Flash point : > 93 °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

Vapor pressure : No data available

Relative vapor density : No data available

Density : No data available

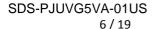
Solubility(ies)

Water solubility : Immiscible in water

Partition coefficient:

n-octanol/water

Not applicable





Autoignition temperature : No data available

Decomposition temperature : No data available

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

: Vapors 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

Information on likely routes of exposure

Inhalation Skin contact Ingestion Eye contact

Acute toxicity

Not classified based on available information.

Product:

Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg

Method: Calculation method

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

Method: Calculation method

Components:

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Acute oral toxicity : LD50 (Rat): 3,530 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

2-(2-Ethoxyethoxy)ethyl acrylate:

Acute oral toxicity : LD50 (Rat): > 300 - < 2,000 mg/kg

Method: OECD Test Guideline 423

Remarks: Based on data from similar materials

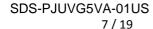
Acute inhalation toxicity : LC50 (Rat): > 5.04 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Method: OECD Test Guideline 403

Remarks: Based on data from similar materials





Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

Remarks: Based on data from similar materials

Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-[(1-oxo-2-propen-1-yl)oxy]-, ether with 2-

ethyl-2-(hydroxymethyl)-1,3-propanediol:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rabbit): 13,200 mg/kg

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

Propoxylated neopentyl glycol diacrylate esters:

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

Acute inhalation toxicity : LC50 (Rat): > 2 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

Hexamethylene diacrylate:

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

Acute inhalation toxicity : LC0 (Rat): 0.41 mg/l

Exposure time: 7 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): 3,650 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation



2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: Based on data from similar materials

Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-[(1-oxo-2-propen-1-yl)oxy]-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol:

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

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

Hexamethylene diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Result: Irreversible effects on the eye Method: OECD Test Guideline 405

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Remarks: Based on data from similar materials

Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-[(1-oxo-2-propen-1-yl)oxy]-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

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

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No eye irritation



Hexamethylene diacrylate:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

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

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

2-(2-Ethoxyethoxy)ethyl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Remarks: Based on data from similar materials

Assessment: Probability or evidence of skin sensitization in humans

Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-[(1-oxo-2-propen-1-yl)oxy]-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol:

Test Type: Buehler Test

Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

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

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

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

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

Propoxylated neopentyl glycol diacrylate esters:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

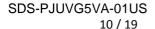
Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

Hexamethylene diacrylate:





Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Germ cell mutagenicity

Not classified based on available information.

Components:

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Genotoxicity in vitro : 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

Remarks: Based on data from similar materials

2-(2-Ethoxyethoxy)ethyl acrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Remarks: Based on data from similar materials

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

Remarks: Based on data from similar materials

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

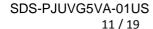
Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Propoxylated neopentyl glycol diacrylate esters:

Genotoxicity in vitro : 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: Ingestion Method: OECD Test Guideline 474

Result: negative

Remarks: Based on data from similar materials

Hexamethylene diacrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Result: negative

Test Type: Bacterial reverse mutation assay (AMES)

Method: OECD Test Guideline 471

Result: negative

Carcinogenicity

Not classified based on available information.

IARC No ingredient of this product present at levels greater than or

equal to 0.1% is identified as probable, possible or confirmed

human carcinogen by IARC.

OSHANo component of this product present at levels greater than or

egual to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or

equal to 0.1% is identified as a known or anticipated carcinogen

by NTP.

Reproductive toxicity

May damage fertility or the unborn child.

Components:

Oxybis(methyl-2,1-ethanediyl) diacrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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

Remarks: Based on data from similar materials

2-(2-Ethoxyethoxy)ethyl acrylate:

Effects on fertility : Test Type: Combined repeated dose toxicity study with the

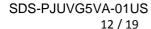
reproduction/developmental toxicity screening test

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 422

Result: negative

Remarks: Based on data from similar materials





Effects on fetal development : 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

Remarks: Based on data from similar materials

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

Effects on fetal 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 - : Some evidence of adverse effects on sexual function and

Assessment fertility, and/or on development, based on animal experiments.

Propoxylated neopentyl glycol diacrylate esters:

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 421

Result: negative

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

Remarks: Based on data from similar materials

Hexamethylene diacrylate:

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

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

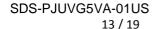
Repeated dose toxicity

Components:

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rat NOAEL: 250 mg/kg

Application Route: Ingestion





Exposure time: 54 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rat NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

Remarks: Based on data from similar materials

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

Propoxylated neopentyl glycol diacrylate esters:

Species: Rat

NOAEL: 1,000 mg/kg Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

Hexamethylene diacrylate:

Species: Rat NOAEL: 250 mg/kg

Application Route: Ingestion Method: OECD Test Guideline 422

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity Components:

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Toxicity to fish LC50 (Leuciscus idus (Golden orfe)): 2.2 - 4.64 mg/l

Exposure time: 96 h Method: DIN 38412

aquatic invertebrates

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 22.3 mg/l

Exposure time: 48 h

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 16.7 mg/l

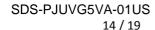
Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 2.2 mg/l

Exposure time: 72 h

EC50: > 1,000 mg/lToxicity to microorganisms

Exposure time: 30 min





Method: OECD Test Guideline 209

2-(2-Ethoxyethoxy)ethyl acrylate:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 6.8 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: Based on data from similar materials

Toxicity to daphnia and other

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 55 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

ErC50 (Desmodesmus subspicatus (green algae)): 10 mg/l Toxicity to algae

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

EC10 (Desmodesmus subspicatus (green algae)): 3.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

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

Remarks: Based on data from similar materials

EC50: 741 mg/l Toxicity to microorganisms

Exposure time: 3 h

Method: OECD Test Guideline 209

Remarks: Based on data from similar materials

Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-[(1-oxo-2-propen-1-yl)oxy]-, ether with 2ethyl-2-(hydroxymethyl)-1,3-propanediol:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 1.95 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 70.7 mg/l Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae EC50 (Desmodesmus subspicatus (green algae)): 2.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms EC50 : > 1,000 mg/l

Exposure time: 180 min

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.



SDS-PJUVG5VA-01US 15 / 19

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 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 : 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

Propoxylated neopentyl glycol diacrylate esters:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 2.7 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 37 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 11 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 1 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC: 2 mg/l

Exposure time: 28 d

Hexamethylene diacrylate:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 4.6 - 10 mg/l

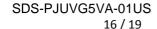
Exposure time: 96 h

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 2.6 mg/l

Exposure time: 48 h





Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 1.5 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 0.59 mg/l

Exposure time: 72 h

Toxicity to microorganisms : EC50: 270 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 90 - 100 %

Exposure time: 28 d

Method: OECD Test Guideline 301A

2-(2-Ethoxyethoxy)ethyl acrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 84.4 % Exposure time: 28 d

Remarks: Based on data from similar materials

Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-[(1-oxo-2-propen-1-yl)oxy]-, ether with 2-

ethyl-2-(hydroxymethyl)-1,3-propanediol:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 60 % 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

Propoxylated neopentyl glycol diacrylate esters:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 51 % Exposure time: 28 d

Method: OECD Test Guideline 301D

Hexamethylene diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 60 - 70 % Exposure time: 28 d

Bioaccumulative potential

Components:

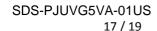
Oxybis(methyl-2,1-ethanediyl) diacrylate:

Partition coefficient: : log Pow: 0.01 - 0.39

n-octanol/water

2-(2-Ethoxyethoxy)ethyl acrylate:

Partition coefficient: : log Pow: 0.67





n-octanol/water Remarks: Calculation

Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-[(1-oxo-2-propen-1-yl)oxy]-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol:

Partition coefficient: : log Pow: 2.89

n-octanol/water

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

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 5

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

Propoxylated neopentyl glycol diacrylate esters:Partition coefficient: log Pow: 2.41 - 3.87

n-octanol/water

Hexamethylene diacrylate:

Partition coefficient: : log Pow: 2.81

n-octanol/water

Mobility in soilNo 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.

Domestic regulation

49 CFR

Not regulated as dangerous goods



SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Skin corrosion or irritation

Serious eye damage or eye irritation Respiratory or skin sensitization

Reproductive toxicity

SARA 313 : The following components are subject to reporting levels

established by SARA Title III, Section 313:

2-(2-Ethoxyethoxy)ethyl 7328-17-8 >= 7 - =< 13 %

acrvlate

US State Regulations

Pennsylvania Right To Know

Oxybis(methyl-2,1-ethanediyl) diacrylate 57472-68-1 2-(2-Ethoxyethoxy)ethyl acrylate 7328-17-8
Poly(oxy-1,2-ethanediyl), .alpha.-hydro-.omega.-[(1-oxo-2-propen-1-yl)oxy]-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol 28961-43-5
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide 162881-26-7
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide 75980-60-8
Propoxylated neopentyl glycol diacrylate esters 84170-74-1
Hexamethylene diacrylate 13048-33-4

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits

OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits

for Air Contaminants

US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)

ACGIH / TWA : 8-hour, time-weighted average

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour

workday during a 40-hour workweek

OSHA Z-1 / TWA : 8-hour time weighted average

US WEEL / TWA : 8-hr TWA

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS -



Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ -Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

Sources of key data used to compile the Material Safety

Data Sheet

Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency,

http://echa.europa.eu/

Revision Date : 2020-01-06

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

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.



SAFETY DATA SHEET

Date of last issue: -

Date of first issue: 2020-01-06

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK White

PJUVG5-WH1000U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

Address : 4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042

Telephone : 480-968-7772

Emergency telephone : 480-968-7772

During normal opening times

Recommended use of the chemical and restrictions on use

Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with 29 CFR 1910.1200

Acute toxicity (Oral) : Category 4

Acute toxicity (Dermal) : Category 4

Skin irritation : Category 2

Serious eye damage : Category 1

Skin sensitization : Category 1

Specific target organ systemic:

toxicity - single exposure

Category 3

GHS label elements

Hazard pictograms



Signal Word : Danger

Hazard Statements : H302 + H312 Harmful if swallowed or in contact with skin.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H335 May cause respiratory irritation.

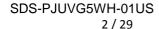
Precautionary Statements : **Prevention:**

P261 Avoid breathing mist or vapors. 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 must 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 + P312 IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER/doctor if you feel unwell.

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 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

P333 + P313 If skin irritation or rash occurs: 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

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Titanium dioxide	13463-67-7	>= 20 - < 30
N,N-Dimethylacrylamide	2680-03-7	>= 15 - < 25
Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate	5888-33-5	>= 7 - =< 13
3,3,5-Trimethylcyclohexyl acrylate	86178-38-3	>= 3-=< 7
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7	>= 3-=< 7
Nonane-1,9-diyl diacrylate	107481-28-7	>= 3-=< 7
2-(2-Ethoxyethoxy)ethyl acrylate	7328-17-8	>= 3-=< 7
2-Propenoic acid, 1,1'-(1,6-hexanediyl) ester, polymer	67906-98-3	>= 1 - < 5
with 2-aminoethanol		
Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate	84434-11-7	>= 1 - < 5
1-Propanone, 1,1'-(oxydi-4,1-phenylene)bis[2-hydroxy-	71868-15-0	>= 1 - < 5
2-methyl-		
Propoxylated neopentyl glycol diacrylate esters	84170-74-1	< 1
Oxybis(methyl-2,1-ethanediyl) diacrylate	57472-68-1	< 1
2-Phenoxyethyl acrylate	48145-04-6	< 1
Trimethylolpropane triacrylate	15625-89-5	< 1
Hexamethylene diacrylate	13048-33-4	< 1

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.



SDS-PJUVG5WH-01US 3 / 29

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 immediately.

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 : Harmful if

effects, both acute and delayed

Harmful if swallowed or in contact with skin.

Causes skin irritation.

May cause an allergic skin reaction.

Causes serious eye damage.
May cause respiratory irritation.

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.

Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray

Alcohol-resistant foam Carbon dioxide (CO2)

Dry chemical

Unsuitable extinguishing

media

None known.

Specific hazards during fire

fighting

Vapors may form explosive mixtures with air.

Exposure to combustion products may be a hazard to health.

Hazardous combustion

products

Carbon oxides

Nitrogen oxides (NOx) Oxides of phosphorus

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 fire-fighters

In the event of fire, wear self-contained breathing apparatus.

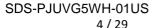
Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and

Use personal protective equipment.

Follow safe handling advice and personal protective equipment





emergency procedures recommendations.

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.

Do not release the product to the aquatic environment above

defined regulatory levels

Methods and materials for containment and cleaning up

Soak up with inert absorbent material.

For large spills, provide diking or other appropriate containment to keep material from spreading. If diked 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 : Use with local exhaust ventilation.

Advice on safe handling : Do not get on skin or clothing.

Do not breathe vapors or spray mist.

Do not swallow. Do not get in eyes.

Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure

assessment.

Keep container tightly closed.

Take care to prevent spills, waste and minimize release to the

environment.

Conditions for safe storage : Keep in properly labeled 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 Organic peroxides

Explosives Gases

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

mgradiana min nampida aanin ar paramatara				
Components	CAS-No.	Value type	Control parameters	Basis
		(Form of	/ Permissible	
		exposure)	concentration	
Titanium dioxide	13463-67-7	TWA (total dust)	15 mg/m³	OSHA Z-1



SDS-PJUVG5WH-01US 5 / 29

		TWA	10 mg/m³ (Titanium dioxide)	ACGIH
Hexamethylene diacrylate	13048-33-4	TWA	1 mg/m³	US WEEL

Engineering measures

Minimize workplace exposure concentrations.

Use with local exhaust ventilation.

Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m3 - total dust, 5 mg/m3 - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m3 - respirable particles, 10 mg/m3 - inhalable particles.

Personal protective equipment

Respiratory protection

General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection

Material : Chemical-resistant gloves

Remarks : Choose gloves to protect hands against chemicals depending on

the concentration 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.

Eye protection : Wear the following personal protective equipment:

Chemical resistant goggles must be worn. If splashes are likely to occur, wear:

Face-shield

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).

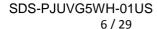
Hygiene measures : Ensure that eye flushing systems and safety showers are

located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : white





Odor : characteristic

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling:

range

> 100 °C

Flash point : > 93 °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

Vapor pressure : No data available

Relative vapor density : No data available

Density : No data available

Solubility(ies)

Water solubility : Immiscible in water

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No data available

Decomposition temperature : No data available

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

: Vapors 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

Information on likely routes of exposure

Inhalation Skin contact Ingestion Eye contact

Acute toxicity

Harmful if swallowed or in contact with skin.

Product:

Acute oral toxicity : Acute toxicity estimate: 806 mg/kg

Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: 1,523 mg/kg

Method: Calculation method

Components:

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

N,N-Dimethylacrylamide:

Acute oral toxicity : LD50 (Rat): 215 - 464 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 3.16 mg/l

Acute dermal toxicity : LD50 (Rat): 500 - 2,000 mg/kg

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Acute oral toxicity : LD50 (Rat): 4,350 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 3,000 mg/kg

3,3,5-Trimethylcyclohexyl acrylate:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

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

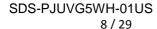
Assessment: The substance or mixture has no acute dermal

toxicity

Nonane-1,9-diyl diacrylate:

Acute oral toxicity : LD50: > 2,500 mg/kg

Acute inhalation toxicity : LC50: > 5.05 mg/l





2-(2-Ethoxyethoxy)ethyl acrylate:

Acute oral toxicity : LD50 (Rat): > 300 - < 2,000 mg/kg

Method: OECD Test Guideline 423

Remarks: Based on data from similar materials

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

Exposure time: 4 h

Test atmosphere: dust/mist

Method: OECD Test Guideline 403

Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

Remarks: Based on data from similar materials

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate:

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

1-Propanone, 1,1'-(oxydi-4,1-phenylene)bis[2-hydroxy-2-methyl-:

Acute oral toxicity : LD50: > 2,000 mg/kg

Remarks: Based on data from similar materials

Propoxylated neopentyl glycol diacrylate esters:

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

Acute inhalation toxicity : LC50 (Rat): > 2 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Acute oral toxicity : LD50 (Rat): 3,530 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

2-Phenoxyethyl acrylate:

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

Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Trimethylolpropane triacrylate:

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

Acute inhalation toxicity : LC50 (Rat): > 0.55 mg/l

Exposure time: 6 h
Test atmosphere: vapour

Assessment: The substance or mixture has no acute inhalation

toxicity

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal



toxicity

Hexamethylene diacrylate:

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

Acute inhalation toxicity : LC0 (Rat): 0.41 mg/l

Exposure time: 7 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): 3,650 mg/kg

Skin corrosion/irritation Causes skin irritation.

Components: Titanium dioxide: Species: Rabbit

Result: No skin irritation

N,N-Dimethylacrylamide:

Species: Rabbit

Result: No skin irritation

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Result: Skin irritation

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

3,3,5-Trimethylcyclohexyl acrylate:

Result: Skin irritation

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

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: Based on data from similar materials

2-Propenoic acid, 1,1'-(1,6-hexanediyl) ester, polymer with 2-aminoethanol:

Result: Skin irritation

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate:

Species: Rabbit

Result: No skin irritation

1-Propanone, 1,1'-(oxydi-4,1-phenylene)bis[2-hydroxy-2-methyl-:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: Based on data from similar materials

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation



2-Phenoxyethyl acrylate:

Species: Rabbit

Result: Skin slightly irritation

Trimethylolpropane triacrylate:

Species: Rabbit Result: Skin irritation

Hexamethylene diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

Titanium dioxide:

Species: Rabbit Result: No eye irritation

N,N-Dimethylacrylamide:

Species: Rabbit

Result: Irreversible effects on the eye Method: OECD Test Guideline 437

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Result: Irritation to eyes, reversing within 21 days

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

3,3,5-Trimethylcyclohexyl acrylate:

Result: Irritation to eyes, reversing within 21 days

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

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

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Remarks: Based on data from similar materials

2-Propenoic acid, 1,1'-(1,6-hexanediyl) ester, polymer with 2-aminoethanol:

Result: Irritation to eyes, reversing within 21 days

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate:

Species: Rabbit

Result: No eye irritation

1-Propanone, 1,1'-(oxydi-4,1-phenylene)bis[2-hydroxy-2-methyl-:

Result: No eye irritation

Method: OECD Test Guideline 492

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No eye irritation

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit



Result: Irreversible effects on the eye Method: OECD Test Guideline 405

2-Phenoxyethyl acrylate:

Species: Rabbit

Result: Slightly irritation to eyes, reversing within 48 hours

Trimethylolpropane triacrylate:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

Hexamethylene diacrylate:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

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

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

Titanium dioxide:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse Result: negative

N,N-Dimethylacrylamide:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

3,3,5-Trimethylcyclohexyl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

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

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Nonane-1,9-diyl diacrylate:

Result: Skin Sesitization

2-(2-Ethoxyethoxy)ethyl acrylate:



Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Remarks: Based on data from similar materials

Assessment: Probability or evidence of skin sensitization in humans

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

1-Propanone, 1,1'-(oxydi-4,1-phenylene)bis[2-hydroxy-2-methyl-:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: negative

Remarks: Based on data from similar materials

Propoxylated neopentyl glycol diacrylate esters:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

2-Phenoxyethyl acrylate:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Trimethylolpropane triacrylate:

Test Type: Maximisation Test Exposure routes: Skin contact

Species: Guinea pig Result: positive

Assessment: Probability or evidence of skin sensitisation in humans

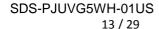
Hexamethylene diacrylate:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Germ cell mutagenicity





Not classified based on available information.

Components:
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

N,N-Dimethylacrylamide:

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

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

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

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 473

Result: negative

3,3,5-Trimethylcyclohexyl acrylate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Test Type: in vitro micronucleus test Method: OECD Test Guideline 487

Result: negative

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

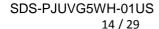
Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)

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

2-(2-Ethoxyethoxy)ethyl acrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Remarks: Based on data from similar materials

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

Remarks: Based on data from similar materials

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Test Type: in vitro micronucleus test Method: OECD Test Guideline 487

Result: negative

Propoxylated neopentyl glycol diacrylate esters:

Genotoxicity in vitro : 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: Ingestion Method: OECD Test Guideline 474

Result: negative

Remarks: Based on data from similar materials

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Genotoxicity in vitro : 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

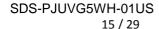
Result: negative

Remarks: Based on data from similar materials

2-Phenoxyethyl acrylate:

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

Method: OECD Test Guideline 471





Result: negative

Trimethylolpropane triacrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Remarks: Based on data from similar materials

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

Hexamethylene diacrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Result: negative

Test Type: Bacterial reverse mutation assay (AMES)

Method: OECD Test Guideline 471

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.

Trimethylolpropane triacrylate:

Species: Rat

Application Route: Skin contact Exposure time: 104 - 105 weeks

Result: negative

IARC Group 2B: Possibly carcinogenic to humans

Titanium dioxide 13463-67-7

OSHANo component of this product present at levels greater than or

equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or

equal to 0.1% is identified as a known or anticipated carcinogen

by NTP.

Reproductive toxicity

Not classified based on available information.

Components:

N,N-Dimethylacrylamide:

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test

Species: Rat

Application Route: Ingestion
Method: OECD Test Guideline 421

Result: negative



Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

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

Effects on fetal development : 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

3,3,5-Trimethylcyclohexyl acrylate:

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

Effects on fetal development : 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 fetal development : Test Type: Fertility/early embryonic development

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

Result: negative

2-(2-Ethoxyethoxy)ethyl acrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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

Remarks: Based on data from similar materials

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate:

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion
Method: OECD Test Guideline 414

Result: negative

Propoxylated neopentyl glycol diacrylate esters:



SDS-PJUVG5WH-01US 17 / 29

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 421

Result: negative

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

Remarks: Based on data from similar materials

Oxybis(methyl-2,1-ethanediyl) diacrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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

Remarks: Based on data from similar materials

2-Phenoxyethyl acrylate:

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

Effects on fetal development : 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: positive

Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

Result: positive

Reproductive toxicity -

Some evidence of adverse effects on development, based on

Assessment

animal experiments.

Trimethylolpropane triacrylate:

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test

Species: Rat

Application Route: Ingestion

Result: negative

Remarks: Based on data from similar materials

Effects on foetal development : Test Type: Embryo-foetal development

Species: Rat



Application Route: Ingestion

Result: negative

Hexamethylene diacrylate:

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

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

STOT-single exposure

May cause respiratory irritation.

Components:

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Assessment: May cause respiratory irritation.

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

3,3,5-Trimethylcyclohexyl 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: Titanium dioxide:

Species: Rat

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

Species: Rat NOAEL: 10 mg/m³

Application Route: inhalation (dust/mist/fume)

Exposure time: 2 y

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Species: Rat NOAEL: 100 mg/kg

Application Route: Ingestion Exposure time: 2 Weeks

Method: OECD Test Guideline 422

3,3,5-Trimethylcyclohexyl acrylate:

Species: Rat

NOAEL: 1,000 mg/kg Application Route: Ingestion Exposure time: 4 weeks

Method: OECD Test Guideline 422

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

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rat NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

Remarks: Based on data from similar materials

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate:

Species: Rat NOAEL: 100 mg/kg

Application Route: Ingestion Exposure time: 90 Days

Propoxylated neopentyl glycol diacrylate esters:

Species: Rat

NOAEL: 1,000 mg/kg Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rat

NOAEL: 250 mg/kg

Application Route: Ingestion Exposure time: 54 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

2-Phenoxyethyl acrylate:

Species: Rat

NOAEL: 350 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Trimethylolpropane triacrylate:

Species: Rat

NOAEL: >= 500 mg/kg Application Route: Ingestion Exposure time: 35 - 56 Days Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

Hexamethylene diacrylate:

Species: Rat NOAEL: 250 mg/kg

Application Route: Ingestion

Method: OECD Test Guideline 422

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

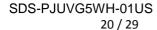
Components:

Titanium dioxide:

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

Exposure time: 96 h

Method: OECD Test Guideline 203





aquatic invertebrates

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): > 100 mg/l

Exposure time: 48 h

Toxicity to algae EC50 (Skeletonema costatum (marine diatom)): > 10,000 mg/l

Exposure time: 72 h

EC50: > 1,000 mg/lToxicity to microorganisms

Exposure time: 3h

Method: OECD Test Guideline 209

N,N-Dimethylacrylamide:

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

Method: OECD Test Guideline 202

Toxicity to algae EC50 (Pseudokirchneriella subcapitata (green algae)): > 400

mq/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 0.704 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to algae ErC50 (Pseudokirchneriella subcapitata (green algae)): 1.98

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.405

ma/l

Method: OECD Test Guideline 201

M-Factor (Acute aquatic

toxicity)

1

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

toxicity)

NOEC (Daphnia): 0.092 mg/l

Exposure time: 21 d

Method: OECD Test Guideline 211

M-Factor (Chronic aquatic

toxicity)

: 1

3,3,5-Trimethylcyclohexyl acrylate:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 1.9 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 14.43 mg/l

Exposure time: 48 h

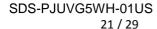
Method: OECD Test Guideline 202

EC50 (Pseudokirchneriella subcapitata (green algae)): 0.59 mg/l Toxicity to algae

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 0.43 mg/l





Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC: 1,000 mg/l Toxicity to microorganisms

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 ug/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 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

Nonane-1,9-diyl diacrylate:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.67 mg/l

Exposure time: 96 h

Toxicity to daphnia and other :

aquatic invertebrates

EC50: 0.64 mg/l

Exposure time: 48 h

Toxicity to algae EC50 (Desmodesmus subspicatus (green algae)): 0.19 mg/l

Exposure time: 72 h

NOEC (Desmodesmus subspicatus (green algae)): 0.032 mg/l

Exposure time: 72 h

2-(2-Ethoxyethoxy)ethyl acrylate:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 6.8 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: Based on data from similar materials

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 55 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

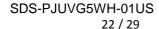
ErC50 (Desmodesmus subspicatus (green algae)): 10 mg/l Toxicity to algae

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

EC10 (Desmodesmus subspicatus (green algae)): 3.2 mg/l





Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

NOEC (Daphnia magna (Water flea)): 0.26 mg/l

Toxicity to daphnia and other : aquatic invertebrates (Chronic

Exposure time: 21 d

toxicity)

Method: OECD Test Guideline 211

Remarks: Based on data from similar materials

Toxicity to microorganisms :

EC50: 741 mg/l Exposure time: 3 h

Method: OECD Test Guideline 209

Remarks: Based on data from similar materials

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 1.89 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 2.26 mg/l

Exposure time: 48 h

aquatic invertebrates

Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 1.01 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

1-Propanone, 1,1'-(oxydi-4,1-phenylene)bis[2-hydroxy-2-methyl-:

Toxicity to daphnia and other : EC50: 4.25 mg/l

aquatic invertebrates

Exposure time: 48 h

Remarks: Based on data from similar materials

Toxicity to algae : EC50: 1.32 mg/l

Exposure time: 96 h

Remarks: Based on data from similar materials

Propoxylated neopentyl glycol diacrylate esters:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 2.7 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 37 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 11 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 1 mg/l

Exposure time: 72 h

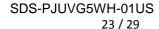
Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC: 2 mg/l

Exposure time: 28 d

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 2.2 - 4.64 mg/l





Exposure time: 96 h Method: DIN 38412

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 22.3 mg/l

Exposure time: 48 h

ErC50 (Desmodesmus subspicatus (green algae)): 16.7 mg/l Toxicity to algae

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 2.2 mg/l

Exposure time: 72 h

EC50: > 1,000 mg/lToxicity to microorganisms

Exposure time: 30 min

Method: OECD Test Guideline 209

2-Phenoxyethyl acrylate:

Toxicity to fish LC50 (Leuciscus idus (Golden orfe)): 10 mg/l

> Exposure time: 96 h Method: DIN 38412

aquatic invertebrates

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 1.21 mg/l

Exposure time: 48 h

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 4.44 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 0.71 mg/l

Exposure time: 72 h

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

toxicity)

NOEC (Daphnia magna (Water flea)): 0.1 mg/l

Exposure time: 21 d

Method: OECD Test Guideline 211

Remarks: Based on data from similar materials

Toxicity to microorganisms EC50: 177 mg/l

Exposure time: 180 min

Trimethylolpropane triacrylate:

Toxicity to fish LC50 (Leuciscus idus (Golden orfe)): 1.47 mg/l

Exposure time: 96 h

Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 19.9 mg/l

Exposure time: 48 h

Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae EC50 (Desmodesmus subspicatus (green algae)): 4.86 mg/l

Exposure time: 96 h

Method: Directive 67/548/EEC, Annex V, C.3.

EC50: 625 mg/l Toxicity to microorganisms

> Exposure time: 30 min Method: ISO 8192

Hexamethylene diacrylate:

Toxicity to fish LC50 (Leuciscus idus (Golden orfe)): 4.6 - 10 mg/l

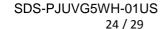
Exposure time: 96 h

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 2.6 mg/l

Exposure time: 48 h





Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 1.5 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 0.59 mg/l

Exposure time: 72 h

Toxicity to microorganisms : EC50: 270 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

N,N-Dimethylacrylamide:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 0 % Exposure time: 28 d

Method: OECD Test Guideline 301C

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 51 % Exposure time: 28 d

Method: OECD Test Guideline 301F

3,3,5-Trimethylcyclohexyl acrylate:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 16.8 % Exposure time: 28 d

Method: OECD Test Guideline 301F

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

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 1 % Exposure time: 28 d

Method: OECD Test Guideline 301B

Nonane-1,9-diyl diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 83 % Exposure time: 28 d

2-(2-Ethoxyethoxy)ethyl acrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 84.4 % Exposure time: 28 d

Remarks: Based on data from similar materials

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 0 - 10 % Exposure time: 28 d

Method: OECD Test Guideline 301F

1-Propanone, 1,1'-(oxydi-4,1-phenylene)bis[2-hydroxy-2-methyl-:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 0 % Exposure time: 28 d

Method: OECD Test Guideline 301F

Propoxylated neopentyl glycol diacrylate esters:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 51 %



Exposure time: 28 d

Method: OECD Test Guideline 301D

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 90 - 100 %

Exposure time: 28 d

Method: OECD Test Guideline 301A

2-Phenoxyethyl acrylate:

Biodegradability : Result: Inherently biodegradable.

Biodegradation: 22.3 % Exposure time: 28 d

Method: OECD Test Guideline 301D

Remarks: Based on data from similar materials

Trimethylolpropane triacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 82 - 90 % Exposure time: 28 d

Method: OECD Test Guideline 301

Hexamethylene diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 60 - 70 % Exposure time: 28 d

Bioaccumulative potential

Components:

N,N-Dimethylacrylamide:

Partition coefficient: : log Pow: -0.3

n-octanol/water

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Bioaccumulation : Species: Zebrafish

Bioconcentration factor (BCF): 37 Method: OECD Test Guideline 305

Remarks: Based on data from similar materials

Partition coefficient: : log Pow: 4.52

n-octanol/water

3,3,5-Trimethylcyclohexyl acrylate:

Partition coefficient: : log Pow: 4.6

n-octanol/water

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

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 5

Partition coefficient: : log Pow: 5.8

n-octanol/water

Nonane-1,9-diyl diacrylate:

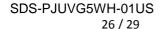
Partition coefficient: : log Pow: 4.64

n-octanol/water

2-(2-Ethoxyethoxy)ethyl acrylate:

Partition coefficient: : log Pow: 0.67 n-octanol/water : Remarks: Calculation

Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate:





Partition coefficient: : log Pow: 2.91

n-octanol/water

1-Propanone, 1,1'-(oxydi-4,1-phenylene)bis[2-hydroxy-2-methyl-:

Partition coefficient: : log Pow: 2.63

n-octanol/water

Propoxylated neopentyl glycol diacrylate esters:Partition coefficient: log Pow: 2.41 - 3.87

n-octanol/water

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Partition coefficient: : log Pow: 0.01 - 0.39

n-octanol/water

2-Phenoxyethyl acrylate:

Partition coefficient: : log Pow: 2.58

n-octanol/water

Trimethylolpropane triacrylate:

Partition coefficient: : log Pow: 0.67

n-octanol/water

Hexamethylene diacrylate:

Partition coefficient: : log Pow: 2.81

n-octanol/water

Mobility in soilNo data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

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

Do not release the product to the aquatic environment above

defined regulatory levels

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

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9
Packing group : III
Labels : 9

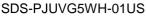
IATA-DGR

UN/ID No. : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)



27 / 29



Class 9 Ш Packing group

Labels Miscellaneous

Packing instruction (cargo

aircraft)

Packing instruction (passenger: 964

aircraft)

Environmentally hazardous ves

IMDG-Code

UN 3082 **UN** number

Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

964

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class Ш Packing group Labels 9 **EmS Code** F-A, S-F Marine pollutant ves

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

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number UN 3082

Proper shipping name Environmentally hazardous substance, liquid, n.o.s.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2,2,1]hept-2-vl acrylate)

Class 9 Packing group Ш CLASS 9 Labels **ERG Code** 171

Marine pollutant ves(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Remarks Above applies only to containers over 119 gallons or 450 liters...

Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards Acute toxicity (any route of exposure)

Skin corrosion or irritation

Serious eve damage or eve irritation Respiratory or skin sensitization

SARA 313 The following components are subject to reporting levels

established by SARA Title III, Section 313:

2-(2-Ethoxyethoxy)ethyl 7328-17-8 >= 3 - =< 7 %



acrylate

US State Regulations

Pennsylvania Right To Know

Titanium dioxide	13463-67-7
N,N-Dimethylacrylamide	2680-03-7
Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate	5888-33-5
3,3,5-Trimethylcyclohexyl acrylate	86178-38-3
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7
Nonane-1,9-diyl diacrylate	107481-28-7
2-(2-Ethoxyethoxy)ethyl acrylate	7328-17-8
2-Propenoic acid, 1,1'-(1,6-hexanediyl) ester, polymer with 2-aminoetl	nanol 67906-98-3
Ethyl phenyl(2,4,6-trimethylbenzoyl)phosphinate	84434-11-7
1-Propanone, 1,1'-(oxydi-4,1-phenylene)bis[2-hydroxy-2-methyl-	71868-15-0
Propoxylated neopentyl glycol diacrylate esters	84170-74-1
Oxybis(methyl-2,1-ethanediyl) diacrylate	57472-68-1
2-Phenoxyethyl acrylate	48145-04-6
Trimethylolpropane triacrylate	15625-89-5
Hexamethylene diacrylate	13048-33-4

California Prop. 65

WARNING: This product can expose you to chemicals including Titanium dioxide, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

California Permissible Exposure Limits for Chemical Contaminants

Titanium dioxide 13463-67-7

Additional regulatory information

Nonane-1,9-diyl diacrylate 107481-28-7

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 § 721.10338

1-Propanone, 1,1'-(oxydi-4,1-phenylene)bis[2-hydroxy-2-methyl-71868-10-5 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 § 721.10575

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits

OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits

for Air Contaminants

US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)

ACGIH / TWA : 8-hour, time-weighted average

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour

workday during a 40-hour workweek

OSHA Z-1 / TWA : 8-hour time weighted average

US WEEL / TWA : 8-hr TWA

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ -Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

Sources of key data used to compile the Material Safety

Data Sheet

Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency,

http://echa.europa.eu/

Revision Date : 2020-01-06

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

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.



SAFETY DATA SHEET

Date of last issue: -

Date of first issue: 2020-01-06

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Yellow

PJUVG5-YE1000U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

Address : 4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042

Telephone : 480-968-7772

Emergency telephone : 480-968-7772

During normal opening times

Recommended use of the chemical and restrictions on use

Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with 29 CFR 1910.1200

Acute toxicity (Oral) : Category 4

Skin irritation : Category 2

Serious eye damage : Category 1

Skin sensitization : Category 1

Reproductive toxicity : Category 1B

Specific target organ systemic:

toxicity - single exposure

Category 3

Specific target organ systemic:

toxicity - repeated exposure

Category 2

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.

H315 Causes skin irritation.

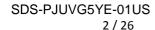
H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H335 May cause respiratory irritation.

H360 May damage fertility or the unborn child.

H373 May cause damage to organs through prolonged or

repeated exposure.

Precautionary Statements : **Prevention:**





P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe mist or vapors.

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 must 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 soap and 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 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

P308 + P313 IF exposed or concerned: Get medical advice/attention.

P333 + P313 If skin irritation or rash occurs: 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

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
3,3,5-Trimethylcyclohexyl acrylate	86178-38-3	>= 45 - < 55
4-(1-Oxo-2-propenyl)-morpholine	5117-12-4	>= 20 - < 30
2-(2-Ethoxyethoxy)ethyl acrylate	7328-17-8	>= 3 - =< 7
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7	>= 3 - =< 7
Propoxylated neopentyl glycol diacrylate esters	84170-74-1	>= 1 - =< 5
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	75980-60-8	>= 1 - < 5
Hexamethylene diacrylate	13048-33-4	>= 1 - < 5
Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate	5888-33-5	>= 1 - < 5
2-benzyl-2-dimethylamino-4-morpholinobutyrophenone	119313-12-1	>= 1 - < 5
Oxybis(methyl-2,1-ethanediyl) diacrylate	57472-68-1	< 1

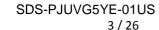
SECTION 4. FIRST AID MEASURES

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 immediately.

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 damage. May cause respiratory irritation.

May damage fertility or the unborn child.

May cause damage to organs through prolonged or repeated

exposure.

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.

Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray

Alcohol-resistant foam Carbon dioxide (CO2)

Dry chemical

Unsuitable extinguishing

media

None known.

Specific hazards during fire

fighting

Vapors may form explosive mixtures with air.

Exposure to combustion products may be a hazard to health.

Hazardous combustion

products

Carbon oxides

Nitrogen oxides (NOx) Oxides of phosphorus

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 fire-fighters

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 procedures Use personal protective equipment.

Follow safe handling advice and personal protective equipment

recommendations.

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.

Do not release the product to the aquatic environment above

defined regulatory levels

Methods and materials for containment and cleaning up

Soak up with inert absorbent material.

For large spills, provide diking or other appropriate containment to keep material from spreading. If diked 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 : Use with local exhaust ventilation.

Advice on safe handling : Do not get on skin or clothing.

Do not breathe vapors or spray mist.

Do not swallow. Do not get in eyes.

Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure

assessment.

Keep container tightly closed.

Take care to prevent spills, waste and minimize release to the

environment.

Conditions for safe storage : Keep in properly labeled 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 Organic peroxides

Explosives Gases

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters



SDS-PJUVG5YE-01US 5 / 26

Components	CAS-No.	Value type (Form of	Control parameters / Permissible	Basis
		exposure)	concentration	
Hexamethylene diacrylate	13048-33-4	TWA	1 mg/m³	US WEEL

Engineering measures

Minimize workplace exposure concentrations.

Use with local exhaust ventilation.

Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m3 - total dust, 5 mg/m3 - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m3 - respirable particles, 10 mg/m3 - inhalable

particles.

Personal protective equipment

Respiratory protection

General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection Material

Chemical-resistant gloves

Remarks

Choose gloves to protect hands against chemicals depending on the concentration 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.

Eye protection Wear the following personal protective equipment:

Chemical resistant goggles must be worn. If splashes are likely to occur, wear:

Face-shield

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).

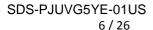
Hygiene measures Ensure that eye flushing systems and safety showers are

> located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance liquid

Color yellow





Odor : characteristic

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling:

range

> 100 °C

Flash point : > 93 °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

Vapor pressure : No data available

Relative vapor density : No data available

Density : No data available

Solubility(ies)

Water solubility : Immiscible in water

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No data available

Decomposition temperature : No data available

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

Vapors 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

Information on likely routes of exposure

Inhalation Skin contact Ingestion Eye contact

Acute toxicity

Harmful if swallowed.

Product:

Acute oral toxicity : Acute toxicity estimate: 1,700 mg/kg

Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg

Method: Calculation method

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

4-(1-Oxo-2-propenyl)-morpholine:

Acute oral toxicity : LD50 (Rat): 588 mg/kg

Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

2-(2-Ethoxyethoxy)ethyl acrylate:

Acute oral toxicity : LD50 (Rat): > 300 - < 2,000 mg/kg

Method: OECD Test Guideline 423

Remarks: Based on data from similar materials

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

Exposure time: 4 h
Test atmosphere: dust/mist

Method: OECD Test Guideline 403

Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

Remarks: Based on data from similar materials

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

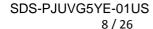
Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

Propoxylated neopentyl glycol diacrylate esters:





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

Acute inhalation toxicity : LC50 (Rat): > 2 mg/l

Exposure time: 4 h

Test atmosphere: dust/mist

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

Hexamethylene diacrylate:

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

Acute inhalation toxicity : LC0 (Rat): 0.41 mg/l

Exposure time: 7 h
Test atmosphere: vapor

Acute dermal toxicity : LD50 (Rabbit): 3,650 mg/kg

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Acute oral toxicity : LD50 (Rat): 4,350 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 3,000 mg/kg

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

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

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Acute oral toxicity : LD50 (Rat): 3,530 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Result: Skin irritation

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

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rabbit

Result: No skin irritation

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Method: OECD Test Guideline 404



Result: No skin irritation

Remarks: Based on data from similar materials

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

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

Species: Rabbit

Result: No skin irritation

Hexamethylene diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Result: Skin irritation

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

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Skin irritation

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Result: Irritation to eyes, reversing within 21 days

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

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rabbit

Result: Irreversible effects on the eye Method: OECD Test Guideline 405

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Remarks: Based on data from similar materials

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

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No eye irritation



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

Species: Rabbit Result: No eye irritation

Hexamethylene diacrylate:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

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

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Result: Irritation to eyes, reversing within 21 days

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

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rabbit

Result: Irreversible effects on the eye Method: OECD Test Guideline 405

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

4-(1-Oxo-2-propenyl)-morpholine:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig

Method: Directive 67/548/EEC, Annex V, B.6.

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

2-(2-Ethoxyethoxy)ethyl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Remarks: Based on data from similar materials

Assessment: Probability or evidence of skin sensitization in humans

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

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Assessment: Probability or evidence of skin sensitization in humans



Propoxylated neopentyl glycol diacrylate esters:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

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

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

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

Hexamethylene diacrylate:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact

Species: Mouse

Method: OECD Test Guideline 429

Result: positive

Assessment: Probability or evidence of skin sensitization in humans

Germ cell mutagenicity

Not classified based on available information.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

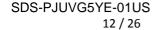
Method: OECD Test Guideline 476

Result: negative

Test Type: in vitro micronucleus test Method: OECD Test Guideline 487

Result: negative

4-(1-Oxo-2-propenyl)-morpholine:





Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 473

Result: positive

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 471

Result: negative

Germ cell mutagenicity -

Assessment

Weight of evidence does not support classification as a germ cell

mutagen.

2-(2-Ethoxyethoxy)ethyl acrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Remarks: Based on data from similar materials

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

Remarks: Based on data from similar materials

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

Propoxylated neopentyl glycol diacrylate esters:

Genotoxicity in vitro : 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: Ingestion Method: OECD Test Guideline 474

Result: negative

Remarks: Based on data from similar materials

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



Hexamethylene diacrylate:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test

Result: negative

Test Type: Bacterial reverse mutation assay (AMES)

Method: OECD Test Guideline 471

Result: negative

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Method: OECD Test Guideline 476

Result: negative

Test Type: Chromosome aberration test in vitro

Method: OECD Test Guideline 473

Result: negative

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Genotoxicity in vitro : 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: Hamster

Application Route: Ingestion

Result: negative

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Genotoxicity in vitro : 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

Remarks: Based on data from similar materials

Carcinogenicity

Not classified based on available information.

IARC Group 1: Carcinogenic to humans

Nickel compounds

OSHANo component of this product present at levels greater than or

equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or

equal to 0.1% is identified as a known or anticipated carcinogen

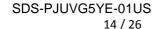
by NTP.

Reproductive toxicity

May damage fertility or the unborn child.

Components:

3,3,5-Trimethylcyclohexyl acrylate:





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

Effects on fetal development : 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

4-(1-Oxo-2-propenyl)-morpholine:

Effects on fertility : Remarks: May cause adverse reproductive effects.

Based on a Significant New Use Rule regulation

2-(2-Ethoxyethoxy)ethyl acrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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

Remarks: Based on data from similar materials

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

Effects on fetal development : Test Type: Fertility/early embryonic development

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

Result: negative

Propoxylated neopentyl glycol diacrylate esters:

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 421

Result: negative

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

Remarks: Based on data from similar materials

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

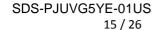
Effects on fertility : Test Type: Fertility

Species: Rat

Application Route: Ingestion

Result: positive

Reproductive toxicity - : Some evidence of adverse effects on sexual function and





Assessment fertility, and/or on development, based on animal experiments.

Hexamethylene diacrylate:

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

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

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

Effects on fetal development : 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

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Effects on fertility : Test Type: One-generation reproduction toxicity study

Species: Rat

Application Route: Ingestion

Result: positive

Effects on fetal development : Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion
Method: OECD Test Guideline 414

Result: positive

Reproductive toxicity -

Assessment

Clear evidence of adverse effects on development, based on animal experiments., Some evidence of adverse effects on

sexual function and fertility, based on animal experiments.

Oxybis(methyl-2,1-ethanediyl) diacrylate:

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

Remarks: Based on data from similar materials

Effects on fetal development : 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

Remarks: Based on data from similar materials



STOT-single exposure

May cause respiratory irritation.

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Assessment: May cause respiratory irritation.

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

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Assessment: May cause respiratory irritation.

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

STOT-repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Components:

4-(1-Oxo-2-propenyl)-morpholine:

Routes of exposure: Oral

Assessment: May cause damage to organs through prolonged or repeated exposure. Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Repeated dose toxicity

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Species: Rat

NOAEL: 1,000 mg/kg Application Route: Ingestion Exposure time: 4 weeks

Method: OECD Test Guideline 422

4-(1-Oxo-2-propenyl)-morpholine:

Species: Rat NOAEL: 50 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

2-(2-Ethoxyethoxy)ethyl acrylate:

Species: Rat NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

Remarks: Based on data from similar materials

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

Propoxylated neopentyl glycol diacrylate esters:

Species: Rat

NOAEL: 1,000 mg/kg Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

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

Species: Rat NOAEL: 100 mg/kg LOAEL: 300 mg/kg



Application Route: Ingestion Exposure time: 90 Days

Hexamethylene diacrylate:

Species: Rat NOAEL: 250 mg/kg

Application Route: Ingestion

Method: OECD Test Guideline 422

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Species: Rat NOAEL: 100 mg/kg

Application Route: Ingestion Exposure time: 2 Weeks

Method: OECD Test Guideline 422

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rat

NOAEL: >= 100 mg/kg **Application Route: Ingestion** Exposure time: 28 Days

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Species: Rat

NOAEL: 250 mg/kg

Application Route: Ingestion Exposure time: 54 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

Aspiration toxicity

Not classified based on available information.

Further information

Components:

4-(1-Oxo-2-propenyl)-morpholine:

Remarks: May cause internal organ effects Based on a Significant New Use Rule regulation

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 1.9 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

aquatic invertebrates

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 14.43 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae EC50 (Pseudokirchneriella subcapitata (green algae)): 0.59 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

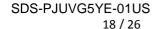
EC10 (Pseudokirchneriella subcapitata (green algae)): 0.43 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC: 1,000 mg/l Toxicity to microorganisms

Exposure time: 3 h





Method: OECD Test Guideline 209

4-(1-Oxo-2-propenyl)-morpholine:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 220 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 120 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 120

mq/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): >= 120

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : IC50: > 100 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

2-(2-Ethoxyethoxy)ethyl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 6.8 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: Based on data from similar materials

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 55 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

EC10 (Desmodesmus subspicatus (green algae)): 3.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Based on data from similar materials

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

Remarks: Based on data from similar materials

Toxicity to microorganisms : EC50: 741 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

Remarks: Based on data from similar materials

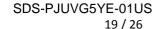
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide:

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.





aquatic invertebrates

Toxicity to daphnia and other : 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.

NOEC (Desmodesmus subspicatus (green algae)): 260 µg/l Toxicity to algae

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

Propoxylated neopentyl glycol diacrylate esters:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 2.7 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 37 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

EC50 (Pseudokirchneriella subcapitata (green algae)): 11 mg/l Toxicity to algae

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 1 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC: 2 mg/l Toxicity to microorganisms

Exposure time: 28 d

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

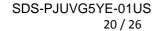
EC50: > 1,000 mg/lToxicity to microorganisms

Exposure time: 3 h

Method: OECD Test Guideline 209

Hexamethylene diacrylate:

Toxicity to fish LC50 (Leuciscus idus (Golden orfe)): 4.6 - 10 mg/l





Exposure time: 96 h

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 2.6 mg/l

Exposure time: 48 h

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 1.5 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 0.59 mg/l

Exposure time: 72 h

Toxicity to microorganisms : EC50: 270 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 0.704 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): 1.98

mg/l

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.405

mg/l

Method: OECD Test Guideline 201

M-Factor (Acute aquatic

toxicity)

1

Toxicity to daphnia and other : aquatic invertebrates (Chronic

toxicity)

NOEC (Daphnia): 0.092 mg/l

Exposure time: 21 d

Method: OECD Test Guideline 211

M-Factor (Chronic aquatic

toxicity)

: 1

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 0.46 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EL50 (Daphnia magna (Water flea)): > 0.8 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

M-Factor (Acute aquatic

toxicity)

: 1

Toxicity to microorganisms : EC50: > 100 mg/l

Exposure time: 30 min

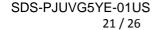
Method: OECD Test Guideline 209

M-Factor (Chronic aquatic

toxicity)

1

Oxybis(methyl-2,1-ethanediyl) diacrylate:





Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 2.2 - 4.64 mg/l

Exposure time: 96 h Method: DIN 38412

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 22.3 mg/l

Exposure time: 48 h

Toxicity to algae : ErC50 (Desmodesmus subspicatus (green algae)): 16.7 mg/l

Exposure time: 72 h

EC10 (Desmodesmus subspicatus (green algae)): 2.2 mg/l

Exposure time: 72 h

Toxicity to microorganisms : EC50: > 1,000 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 16.8 % Exposure time: 28 d

Method: OECD Test Guideline 301F

4-(1-Oxo-2-propenyl)-morpholine:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 35 % Exposure time: 28 d

Method: OECD Test Guideline 301D

2-(2-Ethoxyethoxy)ethyl acrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 84.4 % Exposure time: 28 d

Remarks: Based on data from similar materials

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

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 1 % Exposure time: 28 d

Method: OECD Test Guideline 301B

Propoxylated neopentyl glycol diacrylate esters:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 51 % Exposure time: 28 d

Method: OECD Test Guideline 301D

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

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 0 - 10 % Exposure time: 28 d

Method: OECD Test Guideline 301F

Hexamethylene diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 60 - 70 % Exposure time: 28 d

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:

Biodegradability : Result: Not readily biodegradable.



Biodegradation: 51 % Exposure time: 28 d

Method: OECD Test Guideline 301F

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 3 % Exposure time: 28 d

Method: OECD Test Guideline 301B

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 90 - 100 %

Exposure time: 28 d

Method: OECD Test Guideline 301A

Bioaccumulative potential

Components:

3,3,5-Trimethylcyclohexyl acrylate:

Partition coefficient: : log Pow: 4.6

n-octanol/water

4-(1-Oxo-2-propenyl)-morpholine:

Partition coefficient: : log Pow: -0.46

n-octanol/water

2-(2-Ethoxyethoxy)ethyl acrylate:

Partition coefficient: : log Pow: 0.67

n-octanol/water Remarks: Calculation

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

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 5

Partition coefficient: : log Pow: 5.8

n-octanol/water

Propoxylated neopentyl glycol diacrylate esters:Partition coefficient: log Pow: 2.41 - 3.87

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

Hexamethylene diacrylate:

Partition coefficient: : log Pow: 2.81

n-octanol/water

Exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate:Bioaccumulation : Species: Zebrafish

ioaccumulation : Species: Zebrafish
Bioconcentration factor (BCF): 37

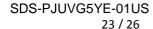
Method: OECD Test Guideline 305

Remarks: Based on data from similar materials

Partition coefficient: : log Pow: 4.52

n-octanol/water

2-benzyl-2-dimethylamino-4-morpholinobutyrophenone:





Partition coefficient: : log Pow: 2.91

n-octanol/water

Oxybis(methyl-2,1-ethanediyl) diacrylate:

Partition coefficient: : log Pow: 0.01 - 0.39

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.

Do not release the product to the aquatic environment above

defined regulatory levels

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

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9
Packing group : III
Labels : 9

IATA-DGR

UN/ID No. : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9 Packing group : III

Labels : Miscellaneous

Packing instruction (cargo

aircraft)

964

Packing instruction (passenger: 964

aircraft)

Environmentally hazardous : yes

IMDG-Code

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9
Packing group : III
Labels : 9

EmS Code : F-A, S-F Marine pollutant : yes



Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number : UN 3082

Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.

(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Class : 9 Packing group : III

Labels : CLASS 9 ERG Code : 171

Marine pollutant : yes(3,3,5-Trimethylcyclohexyl acrylate, Exo-1,7,7-

trimethylbicyclo[2.2.1]hept-2-yl acrylate)

Remarks : Above applies only to containers over 119 gallons or 450 liters.,

Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Acute toxicity (any route of exposure)

Skin corrosion or irritation

Serious eye damage or eye irritation Respiratory or skin sensitization

Reproductive toxicity

Specific target organ toxicity (single or repeated exposure)

SARA 313 : The following components are subject to reporting levels

established by SARA Title III, Section 313:

2-(2-Ethoxyethoxy)ethyl 7328-17-8 >= 3 - =< 7 %

acrylate

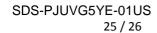
US State Regulations

Pennsylvania Right To Know

86178-38-3
5117-12-4
7328-17-8
162881-26-7
84170-74-1
75980-60-8
13048-33-4
5888-33-5
119313-12-1
57472-68-1

California Prop. 65

WARNING: This product can expose you to chemicals including Nickel compounds, which is known





to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Additional regulatory information

4-(1-Oxo-2-propenyl)-morpholine

5117-12-4

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 § 721.5185

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits

OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits

for Air Contaminants

US WEEL : USA. Workplace Environmental Exposure Levels (WEEL)

ACGIH / TWA : 8-hour, time-weighted average

NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour

workday during a 40-hour workweek

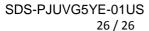
OSHA Z-1 / TWA : 8-hour time weighted average

US WEEL / TWA : 8-hr TWA

AICS - Australian Inventory of Chemical Substances: ASTM - American Society for the Testing of Materials: bw - Body weight: CERCLA - Comprehensive Environmental Response. Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN -Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL -Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS -Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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: RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ -Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance 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

Sources of key data used to compile the Material Safety Data Sheet

: Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, http://echa.europa.eu/





Revision Date : 2020-01-06

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

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.