

SAFETY DATA SHEET

Date of last issue: 2020-01-16 Date of first issue: 2019-12-01

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Black

UH21-BK220U / UH21-BK800U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

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

Contact section : Customer Care
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 sensitization : Category 1

Reproductive toxicity : Category 1B

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.

H317 May cause an allergic skin reaction.

H360FD May damage fertility. May damage 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.

P270 Do not eat, drink or smoke when using this product.

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



attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/

attention.

P363 Wash contaminated clothing 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

Components

Components		
Chemical name	CAS-No.	Concentration
		(% w/w)
2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3	80 - 90
Propoxylated neopentyl glycol diacrylate esters	84170-74-1	< 7
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	< 7
Propylidynetrimethanol, propoxylated, esters with acrylic acid	53879-54-2	< 5
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7	< 5
Carbon black	1333-86-4	< 5
2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	< 1
Glycerol, propoxylated, esters with acrylic acid	52408-84-1	< 0.5
4,4'-Isopropylidenediphenol, oligomeric reaction products with	55818-57-0	< 0.5
1-chloro-2,3-epoxypropane, esters with acrylic acid		
2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone	119313-12-1	< 0.3

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.

In case of skin contact : In case of contact, immediately flush skin with soap and plenty of

water.

Remove contaminated clothing and shoes.

Get medical attention.
Wash clothing before reuse.

Thoroughly clean shoes before reuse.

In case of eye contact : Flush eyes with water as a precaution.

Get medical attention if irritation develops and persists.

If swallowed, DO NOT induce vomiting.

Get medical attention.

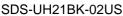
Rinse mouth thoroughly with water.

Never give anything by mouth to an unconscious person.

Most important symptoms and : Harmful if swallowed.

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

May damage fertility. May damage the unborn child.



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Protection of first-aiders : First Aid responders should pay attention to self-protection, and

use the recommended personal protective equipment when the

potential for exposure exists (see section 8).

Notes to physician : Treat symptomatically and supportively.

SECTION 5. 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

Exposure to combustion products may be a hazard to health.

Hazardous combustion

Products

Carbon oxides

Oxides of phosphorus Nitrogen oxides (NOx)

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.

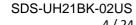
For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and 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





: See Engineering measures under EXPOSURE Technical measures

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.

Avoid contact with eves.

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.

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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of	Control parameters /	Basis
		exposure)	Permissible concentration	
Carbon black	1333-86-4	TWA	3.5 mg/m³	NIOSH REL
		TWA	3.5 mg/m³	OSHA Z-1
		TWA (Inhalable fraction)	3 mg/m³	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.



Eye protection : Wear the following personal protective equipment:

Safety glasses

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 : mild

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : -71 °C

Initial boiling point and boiling:

range

94 °C

Flash point : 119 °C

Method: Seta closed cup

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 : > 3

Density : 1.03 - 1.06 g/cm³

Solubility(ies)

Water solubility : 18 g/l

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No data available

Decomposition temperature : The substance or mixture is not classified self-reactive.



Viscosity

Viscosity, dynamic : 2 - 10 mPa.s

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

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: 1,989 mg/kg

Method: Calculation method

Components:

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

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

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

Exposure time: 4 h

Test atmosphere: dust/mist Method: OECD Test Guideline 403

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

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

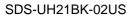
Propoxylated neopentyl glycol diacrylate esters:

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



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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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 423

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

Carbon black:

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Acute oral toxicity : LD50 (Rat): 1,984 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

Glycerol, propoxylated, esters with acrylic acid:

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 (Rabbit): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal

toxicity

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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 inhalation toxicity : LC50 (Rat): > 5 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

Remarks: Based on data from similar materials

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

Skin corrosion/irritation

Not classified based on available information.

Components:

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: May cause skin irritation.

Based on a Significant New Use Rule regulation

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

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

Species: Rabbit

Result: No skin irritation

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Method: OECD Test Guideline 439

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

Carbon black:

Species: Rabbit

Result: No skin irritation

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation





2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

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

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Result: No eye irritation

Method: OECD Test Guideline 437

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

Carbon black:

Species: Rabbit Result: No eye irritation

Method: OECD Test Guideline 405

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rabbit Result: No eye irritation

Method: OECD Test Guideline 405

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

Method: OECD Test Guideline 405

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.



Components:

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

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Test Type: Buehler Test

Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Remarks: Based on data from similar materials

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

Carbon black:

Test Type: Buehler Test

Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: negative

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Glycerol, propoxylated, esters with acrylic acid:

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



4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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

Germ cell mutagenicity

Not classified based on available information.

Components:

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

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

Method: OECD Test Guideline 476

Result: negative

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

cytogenetic assay) Species: Mouse

Application Route: Ingestion Method: OECD Test Guideline 474

Result: negative

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

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

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 mam-

malian 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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

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

Result: negative

Glycerol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: Chromosome aberration test in vitro

Result: negative

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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

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

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cytogenetic assay) Species: Hamster

Application Route: Ingestion

Result: negative

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

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. May damage the unborn child.

Components:

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

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

reproduction/developmental toxicity screening test

Species: Rat

Application Route: Ingestion
Method: OECD Test Guideline 422

Result: negative

Remarks: May cause adverse reproductive effects. Based on a Significant New Use Rule regulation

Effects on fetal development : Remarks: May cause developmental effects

Based on a Significant New Use Rule regulation

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

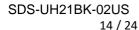
Application Route: Ingestion

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.

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

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

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., Clear evidence of adverse effects on sexual function and fertility, based on animal experiments.

Glycerol, propoxylated, esters with acrylic acid:

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

Species: Rat

Application Route: Ingestion

Result: negative

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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 Method: OECD Test Guideline 415

Result: negative

Effects on fetal development : Test Type: One-generation reproduction toxicity study

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 415

Result: positive

Reproductive toxicity - : Clear evidence of adverse effects on development, based on

Assessment animal experiments.

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

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

Species: Rat NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

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

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rat NOAEL: 75 mg/kg LOAEL: 220 mg/kg

Application Route: Ingestion Exposure time: 90 Days

Method: OECD Test Guideline 408



Glycerol, propoxylated, esters with acrylic acid:

Species: Rat NOAEL: 250 mg/kg LOAEL: 750 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rat

NOAEL: > 900 mg/kg Application Route: Ingestion Exposure time: 5 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

Aspiration toxicity

Not classified based on available information.

Further information

Components:

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

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

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

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

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

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

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: EC50 (Desmodesmus subspicatus (green algae)): 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.78 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to daphnia and other

aquatic invertebrates (Chronic

toxicity)

NOEC (Daphnia magna (Water flea)): 0.26 mg/l

Exposure time: 21 d

Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: 741 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

Propoxylated neopentyl glycol diacrylate esters:

17 / 24

MUTOH

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/aquatic plants: 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/aquatic plants: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 2.01

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 1.56 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

Exposure time: 3 h

Method: OECD Test Guideline 209

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1 - 10 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)): > 10 - 100 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): > 10 - 100

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

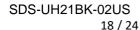
EC10 (Desmodesmus subspicatus (green algae)): > 1 - 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

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





Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): > 1.18 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: No toxicity at the limit of solubility.

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

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: No toxicity at the limit of solubility.

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

Carbon black:

: LL50 (Danio rerio (zebra fish)): > 1,000 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)): > 5,600 mg/l

Exposure time: 24 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: 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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Toxicity to fish LC50 (Zebrafish): 9 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 15.3 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): 1.6 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

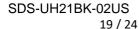
NOEC (Desmodesmus subspicatus (green algae)): 0.39 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms IC50: > 100 mg/l

Exposure time: 3 h





Glycerol, propoxylated, esters with acrylic acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 5.74 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 91.4 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): 12.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): 2.06 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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Toxicity to fish : LL50 (Cyprinus carpio (Carp)): > 100 mg/l

Exposure time: 96 h

Test substance: Water Accommodated Fraction

Method: ISO 7346/1

Remarks: Based on data from similar materials

Toxicity to daphnia and other :

aquatic invertebrates

LL50 (Daphnia magna (Water flea)): > 100 mg/l

Exposure time: 48 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: EL50 (Pseudokirchneriella subcapitata (green algae)): 105 mg/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

NOELR (Pseudokirchneriella subcapitata (green algae)): 1.2

mg/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

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

Exposure time: 3 h

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

EC50 (Daphnia magna (Water flea)): > 0.8 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

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

Exposure time: 72 h

Method: OECD Test Guideline 201

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Toxicity to microorganisms : EC50: > 100 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

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

Biodegradability : Result: Readily biodegradable.

Biodegradation: 84.4 % Exposure time: 28 d

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 65 % Exposure time: 28 d

Method: OECD Test Guideline 301B

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 1 % Exposure time: 28 d

Method: OECD Test Guideline 301E

Glycerol, propoxylated, esters with acrylic acid:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 72 - 85 % Exposure time: 28 d

Method: OECD Test Guideline 301B

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 42 % 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



Bioaccumulative potential

Components:

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

Partition coefficient: : log Pow: 1.7

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

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

Bioaccumulation Species: Fish

Bioconcentration factor (BCF): < 5

Partition coefficient: : log Pow: 5.8

n-octanol/water

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one: Bioaccumulation : Bioconcentration factor (BCF): 13

Partition coefficient: : log Pow: 3.09

n-octanol/water

Glycerol, propoxylated, esters with acrylic acid: Partition coefficient: : log Pow: 2.52

n-octanol/water

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Partition coefficient: : log Pow: 1.6 - 3.8

n-octanol/water

2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Partition coefficient: : log Pow: 2.91

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

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)

Respiratory or skin sensitization

Reproductive toxicity

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

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8
Propoxylated neopentyl glycol diacrylate esters	84170-74-1
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7
Carbon black	1333-86-4
Propylidynetrimethanol, propoxylated, esters with acrylic acid	53879-54-2

California Prop. 65

WARNING: This product can expose you to chemicals including Carbon black and Benzophenone, which are known to the State of California to cause cancer, and Toluene, which is known to the State of California to cause birth defects or other reproductive harm. 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

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester 86273-46-3

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 § 721.10064



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

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

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 Cooperation 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

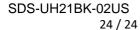
Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency,

http://echa.europa.eu/

Revision Date : 2020-01-16

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: 2019-12-01

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Cleaner

UH21-CL220U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

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

Contact section : Customer Care
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

Flammable liquids : Category 4

Skin irritation : Category 2

Reproductive toxicity : Category 1B

GHS label elements

Hazard pictograms



Signal Word : Danger

Hazard Statements : H227 Combustible liquid.

H315 Causes skin irritation.

H360Df May damage the unborn child. Suspected of damaging

fertility.

Precautionary Statements : Prevention:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read

and understood.

P210 Keep away from heat/sparks/open flames/hot surfaces. No

smoking.

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/ protective clothing/ eye protection/

face protection.

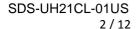
Response:

P302 + P352 IF ON SKIN: Wash with plenty of soap and water. P308 + P313 IF exposed or concerned: Get medical advice/

attention.

P332 + P313 If skin irritation occurs: Get medical advice/

attention.





P362 + P364 Take off contaminated clothing and wash it before

reuse.
Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste

disposal plant.

Other hazards

Vapors may form explosive mixture with air.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Diethylene Glycol Diethyl Ether	112-36-7	30 - 60
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	30 - 60

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 : Flush eyes with water as a precaution.

Get medical attention if irritation develops and persists.

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 damage the unborn child. Suspected of damaging fertility.

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.

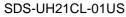
Notes to physician : Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray

Alcohol-resistant foam Carbon dioxide (CO2)

Dry chemical



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Unsuitable extinguishing

media

: High volume water iet

Specific hazards during fire

fighting

Do not use a solid water stream as it may scatter and spread

fire.

Flash back possible over considerable distance. 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 emergency procedures Remove all sources of ignition.

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

Non-sparking tools should be used.

Soak up with inert absorbent material.

Suppress (knock down) gases/vapors/mists with a water spray

iet.

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

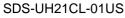
Technical measures : See Engineering measures under EXPOSURE

CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation : Use with local exhaust ventilation.

Use only in an area equipped with explosion proof exhaust

ventilation.



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

Do not breathe vapors or spray mist.

Do not swallow.

Avoid contact with eyes.

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

assessment.

Keep container tightly closed.

Keep away from heat and sources of ignition.

Take precautionary measures against static discharges.

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.

Keep away from heat and sources of ignition.

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

Contains no substances with occupational exposure limit values.

Engineering measures : Minimize workplace exposure concentrations.

Use only in an area equipped with explosion proof exhaust

ventilation.

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

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

Material : Flame retardant gloves

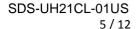
Remarks : Choose gloves to protect hands against chemicals depending on

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:

Safety goggles

Skin and body protection : Select appropriate protective clothing based on chemical

resistance data and an assessment of the local exposure

potential.

Wear the following personal protective equipment: Flame retardant antistatic protective clothing.

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 : mild

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling:

range

> 120 °C (1,013 hPa)

Flash point : 62.78 °C

Method: Seta closed cup

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 : > 3

(Air = 1.0)

Density : 0.94 - 0.99 g/cm³ (20 °C)

Solubility(ies)

Water solubility : completely miscible

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No o

No data available



Decomposition temperature : No data available

Viscosity

Viscosity, dynamic : 2 mPa.s

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

: Combustible liquid.

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

Conditions to avoid : Heat, flames and sparks.

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: 3,616 mg/kg

Method: Calculation method

Components:

Diethylene Glycol Diethyl Ether:

Acute oral toxicity : LD50 (Rat): 4,970 mg/kg

bis(2-(2-methoxyethoxy)ethyl) ether:

Acute oral toxicity : LD50 (Rat): 3,850 mg/kg

Acute dermal toxicity : LD50 (Rat): > 6,900 mg/kg

Remarks: Based on data from similar materials

Skin corrosion/irritation

Causes skin irritation.

Components:

Diethylene Glycol Diethyl Ether:

Result: Skin irritation

Remarks: Based on data from similar materials



bis(2-(2-methoxyethoxy)ethyl) ether:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

Diethylene Glycol Diethyl Ether:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

bis(2-(2-methoxyethoxy)ethyl) ether:

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Respiratory or skin sensitization

Skin sensitization

Not classified based on available information.

Respiratory sensitization

Not classified based on available information.

Components:

Diethylene Glycol Diethyl Ether:

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

bis(2-(2-methoxyethoxy)ethyl) ether:

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

Germ cell mutagenicity

Not classified based on available information.

Components:

Diethylene Glycol Diethyl Ether:

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

Result: negative

Remarks: Based on data from similar materials

Test Type: In vitro mammalian cell gene mutation test

Result: negative

Remarks: Based on data from similar materials

Test Type: Chromosome aberration test in vitro

Result: negative

Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow

cytogenetic test, chromosomal analysis)

Species: Mouse

Application Route: Ingestion

Result: negative

Remarks: Based on data from similar materials



bis(2-(2-methoxyethoxy)ethyl) ether:

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

Result: negative

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow

cytogenetic test, chromosomal analysis)

Species: Rat

Application Route: Inhalation (vapor)

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 the unborn child. Suspected of damaging fertility.

Components:

Diethylene Glycol Diethyl Ether:

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

Species: Rat

Application Route: Ingestion

Result: negative

Remarks: Based on data from similar materials

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

Species: Rabbit

Application Route: Ingestion

Result: negative

bis(2-(2-methoxyethoxy)ethyl) ether:

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

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 421

Result: positive

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

Species: Rabbit

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.

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure



Not classified based on available information.

Repeated dose toxicity

Components:

Diethylene Glycol Diethyl Ether:

Species: Rat NOAEL: 2.49 mg/l

Application Route: inhalation (dust/mist/fume)

Exposure time: 4 w

Method: OECD Test Guideline 412

bis(2-(2-methoxyethoxy)ethyl) ether:

Species: Rat NOAEL: 250 mg/kg

Application Route: Ingestion

Exposure time: 28 d

Method: OECD Test Guideline 407

Remarks: Based on data from similar materials

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Diethylene Glycol Diethyl Ether:

Toxicity to fish : LC50: > 10,000 mg/l

Exposure time: 96 h

Toxicity to daphnia and other : LC50: 6,600 mg/l

aquatic invertebrates

Exposure time: 96 h

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

toxicity)

EC10 (Ceriodaphnia dubia (water flea)): 7.38 mg/l

Exposure time: 7 d

Remarks: Based on data from similar materials

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

Exposure time: 3 h

Method: OECD Test Guideline 209

bis(2-(2-methoxyethoxy)ethyl) ether:

Toxicity to fish LC50 (Danio rerio (zebra fish)): > 5,000 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)): 7,467 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae EC50 (Pseudokirchneriella subcapitata (green algae)): 2,814

ma/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 625 mg/l

Exposure time: 72 h

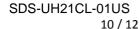
Method: OECD Test Guideline 201

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

NOEC (Daphnia magna (Water flea)): 320 mg/l

Exposure time: 21 d





toxicity) Method: OECD Test Guideline 211

Toxicity to microorganisms : EC10: >= 5,000 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

Remarks: Based on data from similar materials

Persistence and degradability

Components:

Diethylene Glycol Diethyl Ether:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 0 % Exposure time: 28 d

Method: OECD Test Guideline 301F

bis(2-(2-methoxyethoxy)ethyl) ether:

Biodegradability : Result: Inherently biodegradable.

Biodegradation: > 70 % Exposure time: 28 d

Method: OECD Test Guideline 302B

Remarks: Based on data from similar materials

Bioaccumulative potential

Components:

Diethylene Glycol Diethyl Ether:

Partition coefficient: : log Pow: 0.39

n-octanol/water

bis(2-(2-methoxyethoxy)ethyl) ether:

Partition coefficient: : log Pow: -0.84

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.

Do not burn, or use a cutting torch on, the empty drum. 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.



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 : Fire Hazard

Acute Health Hazard Chronic Health Hazard

SARA 313 : The following components are subject to reporting levels

established by SARA Title III, Section 313:

Diethylene Glycol Diethyl Ether 112-36-7 60%

US State Regulations

Pennsylvania Right To Know

Diethylene Glycol Diethyl Ether 112-36-7 bis(2-(2-methoxyethoxy)ethyl) ether 143-24-8

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.

Additional regulatory information

Diethylene Glycol Diethyl Ether

112-36-7

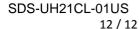
The United States Environmental Protection Agency (USEPA) has established a Significant New Use Rule (SNUR) for one of the components in this product. See 40 CFR § 721.10229

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

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 : 2019-12-01

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: 2020-01-16 Date of first issue: 2019-12-01

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Cyan

UH21-CY220U / UH21-CY800U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

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

Contact section : Customer Care
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 sensitization : Category 1

Reproductive toxicity : Category 1B

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.

H317 May cause an allergic skin reaction.

H360FD May damage fertility. May damage 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.

P270 Do not eat, drink or smoke when using this product.

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



attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/

attention.

P363 Wash contaminated clothing 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

Components

CAS-No.	Concentration
	(% w/w)
86273-46-3	80 - 90
84170-74-1	< 7
75980-60-8	< 7
53879-54-2	< 5
162881-26-7	< 5
71868-10-5	< 1
52408-84-1	< 0.5
55818-57-0	< 0.5
119313-12-1	< 0.3
	86273-46-3 84170-74-1 75980-60-8 53879-54-2 162881-26-7 71868-10-5 52408-84-1 55818-57-0

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 soap and plenty of

water.

Remove contaminated clothing and shoes.

Get medical attention. Wash clothing before reuse.

Thoroughly clean shoes before reuse.

In case of eye contact : Flush eyes with water as a precaution.

Get medical attention if irritation develops and persists.

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 swallowed.

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

May damage fertility. May damage the unborn child.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and



use the recommended personal protective equipment when the

potential for exposure exists (see section 8).

Notes to physician : Treat symptomatically and supportively.

SECTION 5. 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

Exposure to combustion products may be a hazard to health.

Hazardous combustion

Products

Carbon oxides

Oxides of phosphorus Nitrogen oxides (NOx)

Metal oxides

Specific extinguishing methods: Use extinguishing measures that are appropriate to local

circumstances and the surrounding environment. Use water spray to cool unopened containers.

Remove undamaged containers from fire area if it is safe to do

SO.

Evacuate area.

Special protective equipment :

for 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.

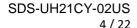
For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and 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.

Avoid contact with eves.

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.

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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

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

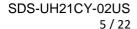
chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of

workday.

Eye protection : Wear the following personal protective equipment:

Safety glasses

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 : mild

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : -71 °C

Initial boiling point and boiling:

range

94 °C

Flash point : 119 °C

Method: Seta closed cup

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 : > 3

Density : 1.03 - 1.06 g/cm³

Solubility(ies)

Water solubility : 18 g/l

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No data available

Decomposition temperature : The substance or mixture is not classified self-reactive.

Viscosity

Viscosity, dynamic : 2 - 10 mPa.s

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

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: 1,989 mg/kg

Method: Calculation method

Components:

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

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

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

Exposure time: 4 h

Test atmosphere: dust/mist

Method: OECD Test Guideline 403

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

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

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

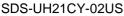
Test atmosphere: dust/mist

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

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity



7/22



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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 423

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Acute oral toxicity : LD50 (Rat): 1,984 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

Glycerol, propoxylated, esters with acrylic acid:

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 (Rabbit): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal

toxicity

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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 inhalation toxicity : LC50 (Rat): > 5 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

Remarks: Based on data from similar materials

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

Skin corrosion/irritation

Not classified based on available information.

Components:

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: May cause skin irritation.

Based on a Significant New Use Rule regulation

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

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

Species: Rabbit

Result: No skin irritation

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Method: OECD Test Guideline 439

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

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

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Result: No eye irritation

Method: OECD Test Guideline 437

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rabbit Result: No eye irritation

Method: OECD Test Guideline 405

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

Method: OECD Test Guideline 405

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

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

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Test Type: Buehler Test

Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Remarks: Based on data from similar materials

Assessment: Probability or evidence of low to moderate skin sensitization rate 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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Glycerol, propoxylated, esters with acrylic acid:

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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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

Germ cell mutagenicity

Not classified based on available information.

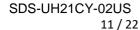
Components:

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

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

Method: OECD Test Guideline 476

Result: negative



MUTOH

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

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

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

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

Result: negative

Glycerol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: Chromosome aberration test in vitro

Result: negative

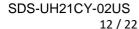
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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

Method: OECD Test Guideline 471

Result: negative



MUTOH

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

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

Carcinogenicity

Not classified based on available information.

IARC Not classifiable.

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. May damage the unborn child.

Components:

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

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

reproduction/developmental toxicity screening test

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 422

Result: negative

Remarks: May cause adverse reproductive effects. Based on a Significant New Use Rule regulation

Effects on fetal development : Remarks: May cause developmental effects

Based on a Significant New Use Rule regulation

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

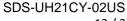
Result: negative

Remarks: Based on data from similar materials

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

Effects on fertility : Test Type: Fertility

Species: Rat



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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.

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

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

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 414

Result: negative

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

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

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., Clear evidence of adverse effects on sexual function and fertility, based on animal experiments.

Glycerol, propoxylated, esters with acrylic acid:

Effects on fetal development Test Type: Embryo-fetal development

Species: Rat

Application Route: Ingestion

Result: negative

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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 Method: OECD Test Guideline 415

Result: negative

Effects on fetal development Test Type: One-generation reproduction toxicity study

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 415



Result: positive

Reproductive toxicity -

Clear evidence of adverse effects on development, based on

Assessment

animal experiments.

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

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

Species: Rat

NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

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

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rat NOAEL: 75 mg/kg LOAEL: 220 mg/kg

Application Route: Ingestion Exposure time: 90 Days

Method: OECD Test Guideline 408

Glycerol, propoxylated, esters with acrylic acid:

Species: Rat NOAEL: 250 mg/kg LOAEL: 750 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rat

NOAEL: > 900 mg/kg



Application Route: Ingestion Exposure time: 5 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

Aspiration toxicity

Not classified based on available information.

Further information

Components:

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

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

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

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

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

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

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: EC50 (Desmodesmus subspicatus (green algae)): 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.78 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Daphnia magna (Water flea)): 0.26 mg/l

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

toxicity)

Exposure time: 21 d

Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: 741 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

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/aquatic plants: 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

MUTOH

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/aquatic plants: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 2.01

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 1.56 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

Exposure time: 3 h

Method: OECD Test Guideline 209

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1 - 10 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)): > 10 - 100 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): > 10 - 100

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): > 1 - 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

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

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): > 1.18 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: No toxicity at the limit of solubility.

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

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: No toxicity at the limit of solubility.



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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Toxicity to fish : LC50 (Zebrafish): 9 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 15.3 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): 1.6 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.39 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : IC50: > 100 mg/l

Exposure time: 3 h

Glycerol, propoxylated, esters with acrylic acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 5.74 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 91.4 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): 12.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): 2.06 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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Toxicity to fish : LL50 (Cyprinus carpio (Carp)): > 100 mg/l

Exposure time: 96 h

Test substance: Water Accommodated Fraction

Method: ISO 7346/1

Remarks: Based on data from similar materials

Toxicity to daphnia and other :

aquatic invertebrates

LL50 (Daphnia magna (Water flea)): > 100 mg/l

Exposure time: 48 h

Test substance: Water Accommodated Fraction



Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: EL50 (Pseudokirchneriella subcapitata (green algae)): 105 mg/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

NOELR (Pseudokirchneriella subcapitata (green algae)): 1.2

ma/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

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

Exposure time: 3 h

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

EC50 (Daphnia magna (Water flea)): > 0.8 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

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

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50: > 100 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

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

Biodegradability : Result: Readily biodegradable.

Biodegradation: 84.4 % Exposure time: 28 d

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 65 % Exposure time: 28 d

Method: OECD Test Guideline 301B

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 1 % Exposure time: 28 d

Method: OECD Test Guideline 301E

Glycerol, propoxylated, esters with acrylic acid:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 72 - 85 % Exposure time: 28 d

Method: OECD Test Guideline 301B

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 42 % 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

Bioaccumulative potential

Components:

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

Partition coefficient: : log Pow: 1.7

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

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

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 5

Partition coefficient: : log Pow: 5.8

n-octanol/water

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Bioaccumulation : Bioconcentration factor (BCF): 13

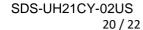
Partition coefficient: : log Pow: 3.09

n-octanol/water

Glycerol, propoxylated, esters with acrylic acid:

Partition coefficient: : log Pow: 2.52

n-octanol/water





4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Partition coefficient: log Pow: 1.6 - 3.8

n-octanol/water

2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Partition coefficient: : log Pow: 2.91

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

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)

Respiratory or skin sensitization

Reproductive toxicity

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

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8
Propoxylated neopentyl glycol diacrylate esters	84170-74-1
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7
Propylidynetrimethanol, propoxylated, esters with acrylic acid	53879-54-2

California Prop. 65

WARNING: This product can expose you to chemicals including Benzophenone, which is known to the State of California to cause cancer, and Toluene, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Additional regulatory information

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester 86273-46-3
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 § 721.10064

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

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 Cooperation 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



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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 : 2020-01-16

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: 2020-01-16 Date of first issue: 2019-12-01

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Magenta

UH21-MA220U / UH21-MA800U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

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

Contact section : Customer Care
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 sensitization : Category 1

Reproductive toxicity : Category 1B

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.

H317 May cause an allergic skin reaction.

H360FD May damage fertility. May damage 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.

P270 Do not eat, drink or smoke when using this product.

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



attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/

attention.

P363 Wash contaminated clothing 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

Components

CAS-No.	Concentration
	(% w/w)
86273-46-3	80 - 90
84170-74-1	< 7
75980-60-8	< 7
53879-54-2	< 5
162881-26-7	< 5
71868-10-5	< 1
52408-84-1	< 0.5
55818-57-0	< 0.5
119313-12-1	< 0.3
	86273-46-3 84170-74-1 75980-60-8 53879-54-2 162881-26-7 71868-10-5 52408-84-1 55818-57-0

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 soap and plenty of

water.

Remove contaminated clothing and shoes.

Get medical attention. Wash clothing before reuse.

Thoroughly clean shoes before reuse.

In case of eye contact : Flush eyes with water as a precaution.

Get medical attention if irritation develops and persists.

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 swallowed.

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

May damage fertility. May damage the unborn child.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and



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use the recommended personal protective equipment when the

potential for exposure exists (see section 8).

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

Exposure to combustion products may be a hazard to health.

Hazardous combustion

Products

Carbon oxides

Oxides of phosphorus Nitrogen oxides (NOx)

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.

Avoid contact with 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.

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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

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

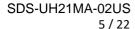
workday.

Eye protection : Wear the following personal protective equipment:

Safety glasses

Skin and body protection : Select appropriate protective clothing based on chemical

resistance data and an assessment of the local exposure



MUTOH

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 : mild

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : -71 °C

Initial boiling point and boiling:

range

94 °C

Flash point : 119 °C

Method: Seta closed cup

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 : > 3

Density : 1.03 - 1.06 g/cm³

Solubility(ies)

Water solubility : 18 g/l

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No data available

Decomposition temperature : The substance or mixture is not classified self-reactive.

Viscosity

Viscosity, dynamic : 2 - 10 mPa.s

Viscosity, kinematic : No data available



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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

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.

Acute inhalation toxicity

Product:

Acute oral toxicity : Acute toxicity estimate: 1,989 mg/kg

Method: Calculation method

Components:

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:Acute oral toxicity : LD50 (Rat): 1,790 mg/kg

Acute draitoxicity . LD30 (Nat). 1,730 mg/kg

LC50 (Rat): > 5.04 mg/l Exposure time: 4 h

Test atmosphere: dust/mist

Method: OECD Test Guideline 403

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

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

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



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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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 423

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Acute oral toxicity : LD50 (Rat): 1,984 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

Glycerol, propoxylated, esters with acrylic acid:

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 (Rabbit): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal

toxicity

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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 inhalation toxicity : LC50 (Rat): > 5 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

Remarks: Based on data from similar materials

 $\hbox{\bf 2-Benzyl-2-} dimethy lamino-4-morpholino butyrophenone:$

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

Method: OECD Test Guideline 401



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

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

Skin corrosion/irritation

Not classified based on available information.

Components:

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: May cause skin irritation.

Based on a Significant New Use Rule regulation

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

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

Species: Rabbit

Result: No skin irritation

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Method: OECD Test Guideline 439

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

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

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Result: No eye irritation

Method: OECD Test Guideline 437

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rabbit Result: No eve irritation

Method: OECD Test Guideline 405

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

Method: OECD Test Guideline 405

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

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

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Test Type: Buehler Test

Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Remarks: Based on data from similar materials

Assessment: Probability or evidence of low to moderate skin sensitization rate 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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Glycerol, propoxylated, esters with acrylic acid:

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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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

Germ cell mutagenicity

Not classified based on available information.

Components:

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

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

Method: OECD Test Guideline 476

Result: negative

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



cytogenetic assay) Species: Mouse

Application Route: Ingestion Method: OECD Test Guideline 474

Result: negative

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

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

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

Result: negative

Glycerol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: Chromosome aberration test in vitro

Result: negative

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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

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

Carcinogenicity

Not classified based on available information.

IARC Not classifiable.

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. May damage the unborn child.

Components:

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

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

reproduction/developmental toxicity screening test

Species: Rat

Application Route: Ingestion
Method: OECD Test Guideline 422

Result: negative

Remarks: May cause adverse reproductive effects. Based on a Significant New Use Rule regulation

Effects on fetal development : Remarks: May cause developmental effects

Based on a Significant New Use Rule regulation

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

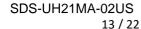
Remarks: Based on data from similar materials

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.

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

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., Clear evidence of adverse effects on

sexual function and fertility, based on animal experiments.

Glycerol, propoxylated, esters with acrylic acid:

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

Species: Rat

Application Route: Ingestion

Result: negative

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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
Method: OECD Test Guideline 415

Result: negative

Effects on fetal development : Test Type: One-generation reproduction toxicity study

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 415

Result: positive



Reproductive toxicity -

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

Assessment

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

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

Species: Rat NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

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

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rat NOAEL: 75 mg/kg LOAEL: 220 mg/kg

Application Route: Ingestion Exposure time: 90 Days

Method: OECD Test Guideline 408

Glycerol, propoxylated, esters with acrylic acid:

Species: Rat

NOAEL: 250 mg/kg LOAEL: 750 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rat

NOAEL: > 900 mg/kg Application Route: Ingestion



Exposure time: 5 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

Aspiration toxicity

Not classified based on available information.

Further information

Components:

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

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

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

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

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

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

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: EC50 (Desmodesmus subspicatus (green algae)): 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.78 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

toxicity)

NOEC (Daphnia magna (Water flea)): 0.26 mg/l

Exposure time: 21 d

Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: 741 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

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/aquatic plants: 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

MUTOH

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/aquatic plants: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 2.01

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 1.56 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

Exposure time: 3 h

Method: OECD Test Guideline 209

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1 - 10 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)): > 10 - 100 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): > 10 - 100

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): > 1 - 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

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

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): > 1.18 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

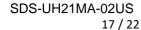
Remarks: No toxicity at the limit of solubility.

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

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: No toxicity at the limit of solubility.





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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

LC50 (Zebrafish): 9 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)): 15.3 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): 1.6 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.39 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms IC50: > 100 mg/l

Exposure time: 3 h

Glycerol, propoxylated, esters with acrylic acid:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 5.74 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 91.4 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): 12.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): 2.06 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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid: Toxicity to fish

LL50 (Cyprinus carpio (Carp)): > 100 mg/l

Exposure time: 96 h

Test substance: Water Accommodated Fraction

Method: ISO 7346/1

Remarks: Based on data from similar materials

Toxicity to daphnia and other :

aquatic invertebrates

LL50 (Daphnia magna (Water flea)): > 100 mg/l

Exposure time: 48 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 202

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Toxicity to algae/aquatic plants: EL50 (Pseudokirchneriella subcapitata (green algae)): 105 mg/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

NOELR (Pseudokirchneriella subcapitata (green algae)): 1.2

mq/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

EC50: > 1,000 mg/lToxicity to microorganisms

Exposure time: 3 h

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

aquatic invertebrates

Toxicity to daphnia and other : EC50 (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/aquatic plants:

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms EC50: > 100 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

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

Result: Readily biodegradable. Biodegradability

Biodegradation: 84.4 % Exposure time: 28 d

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Biodegradability Result: Readily biodegradable.

> Biodegradation: 65 % Exposure time: 28 d

Method: OECD Test Guideline 301B

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 1 % Exposure time: 28 d

Method: OECD Test Guideline 301E

Glycerol, propoxylated, esters with acrylic acid:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 72 - 85 % Exposure time: 28 d

Method: OECD Test Guideline 301B

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 42 % 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

Bioaccumulative potential

Components:

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

Partition coefficient: : log Pow: 1.7

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

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

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 5

Partition coefficient: : log Pow: 5.8

n-octanol/water

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Bioaccumulation : Bioconcentration factor (BCF): 13

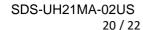
Partition coefficient: : log Pow: 3.09

n-octanol/water

Glycerol, propoxylated, esters with acrylic acid:

Partition coefficient: : log Pow: 2.52

n-octanol/water





4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Partition coefficient: log Pow: 1.6 - 3.8

n-octanol/water

2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Partition coefficient: : log Pow: 2.91

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

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)

Respiratory or skin sensitization

Reproductive toxicity

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

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8
Propoxylated neopentyl glycol diacrylate esters	84170-74-1
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7
Propylidynetrimethanol, propoxylated, esters with acrylic acid	53879-54-2

California Prop. 65

WARNING: This product can expose you to chemicals including Benzophenone, which is known to the State of California to cause cancer, and Toluene, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Additional regulatory information

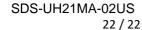
2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester 86273-46-3
The United States Environmental Protection Agency (USEPA) has established a Significant New Use Rule (SNUR) for one of the components in this product.
See 40 CFR § 721.10064

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

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 Cooperation 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

Data Sheet

eChem Portal search results and European Chemicals Agency,

http://echa.europa.eu/

Revision Date : 2020-01-16

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: 2020-01-16 Date of first issue: 2019-12-01

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Varnish

UH21-VA220U / UH21-VA800U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

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

Contact section : Customer Care
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 sensitization : Category 1

Reproductive toxicity : Category 1B

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.

H317 May cause an allergic skin reaction.

H360FD May damage fertility. May damage 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.

P270 Do not eat, drink or smoke when using this product.

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



attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/

attention.

P363 Wash contaminated clothing 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

Components

Chamical name	CACNIC	Consontration
Chemical name	CAS-No.	Concentration
		(% w/w)
2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3	80 - 90
Propoxylated neopentyl glycol diacrylate esters	84170-74-1	< 7
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	< 7
Propylidynetrimethanol, propoxylated, esters with acrylic acid	53879-54-2	< 5
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7	< 5
2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	< 1
Glycerol, propoxylated, esters with acrylic acid	52408-84-1	< 0.5
4,4'-Isopropylidenediphenol, oligomeric reaction products with	55818-57-0	< 0.5
1-chloro-2,3-epoxypropane, esters with acrylic acid		
2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone	119313-12-1	< 0.3

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.

In case of skin contact : In case of contact, immediately flush skin with soap and plenty of

water.

Remove contaminated clothing and shoes.

Get medical attention. Wash clothing before reuse.

Thoroughly clean shoes before reuse.

In case of eye contact : Flush eyes with water as a precaution.

Get medical attention if irritation develops and persists.

If swallowed, DO NOT induce vomiting.

Get medical attention.

Rinse mouth thoroughly with water.

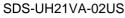
Never give anything by mouth to an unconscious person.

Most important symptoms and : Harmful if swallowed.

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

May damage fertility. May damage the unborn child.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and



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use the recommended personal protective equipment when the

potential for exposure exists (see section 8).

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

Exposure to combustion products may be a hazard to health.

Hazardous combustion

Products

Carbon oxides

Oxides of phosphorus Nitrogen oxides (NOx)

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

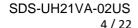
regulations are applicable.

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.

Avoid contact with 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.

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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

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

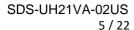
workday.

Eye protection : Wear the following personal protective equipment:

Safety glasses

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 : mild

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : -71 °C

Initial boiling point and boiling:

range

94 °C

Flash point : 119 °C

Method: Seta closed cup

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 : > 3

Density : 1.03 - 1.06 g/cm³

Solubility(ies)

Water solubility : 18 g/l

Partition coefficient:

n-octanol/water

Not applicable

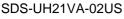
Autoignition temperature : No data available

Decomposition temperature : The substance or mixture is not classified self-reactive.

Viscosity

Viscosity, dynamic : 2 - 10 mPa.s

Viscosity, kinematic : No data available



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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

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: 1,989 mg/kg

Method: Calculation method

Components:

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:Acute oral toxicity : LD50 (Rat): 1,790 mg/kg

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

Exposure time: 4 h

Test atmosphere: dust/mist

Method: OECD Test Guideline 403

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

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

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



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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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 423

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Acute oral toxicity : LD50 (Rat): 1,984 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

Glycerol, propoxylated, esters with acrylic acid:

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 (Rabbit): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal

toxicity

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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 inhalation toxicity : LC50 (Rat): > 5 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

Remarks: Based on data from similar materials

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

Skin corrosion/irritation

Not classified based on available information.

Components:

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: May cause skin irritation.

Based on a Significant New Use Rule regulation

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

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

Species: Rabbit

Result: No skin irritation

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Method: OECD Test Guideline 439

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

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

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Result: No eye irritation

Method: OECD Test Guideline 437

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rabbit Result: No eve irritation

Method: OECD Test Guideline 405

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

Method: OECD Test Guideline 405

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

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

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Test Type: Buehler Test

Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Remarks: Based on data from similar materials

Assessment: Probability or evidence of low to moderate skin sensitization rate 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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Glycerol, propoxylated, esters with acrylic acid:

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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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

Germ cell mutagenicity

Not classified based on available information.

Components:

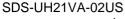
2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:

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

Method: OECD Test Guideline 476

Result: negative

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



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MUTOH

cytogenetic assay) Species: Mouse

Application Route: Ingestion Method: OECD Test Guideline 474

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

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

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

Result: negative

Glycerol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: Chromosome aberration test in vitro

Result: negative

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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

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

Carcinogenicity

Not classified based on available information.

IARC Not classifiable.

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. May damage the unborn child.

Components:

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

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

reproduction/developmental toxicity screening test

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 422

Result: negative

Remarks: May cause adverse reproductive effects. Based on a Significant New Use Rule regulation

Effects on fetal development : Remarks: May cause developmental effects

Based on a Significant New Use Rule regulation

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

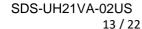
Remarks: Based on data from similar materials

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

Effects on fertility : Test Type: Fertility

Species: Rat

Application Route: Ingestion



Idion

Result: positive

Reproductive toxicity -

Assessment

Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

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., Clear evidence of adverse effects on

sexual function and fertility, based on animal experiments.

Glycerol, propoxylated, esters with acrylic acid:

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

Species: Rat

Application Route: Ingestion

Result: negative

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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
Method: OECD Test Guideline 415

Result: negative

Effects on fetal development : Test Type: One-generation reproduction toxicity study

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 415

Result: positive



Reproductive toxicity -

: Clear evidence of adverse effects on development, based on

Assessment animal experiments.

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

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

Species: Rat NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

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

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rat NOAEL: 75 mg/kg LOAEL: 220 mg/kg

Application Route: Ingestion Exposure time: 90 Days

Method: OECD Test Guideline 408

Glycerol, propoxylated, esters with acrylic acid:

Species: Rat

NOAEL: 250 mg/kg LOAEL: 750 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rat

NOAEL: > 900 mg/kg Application Route: Ingestion



Exposure time: 5 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

Aspiration toxicity

Not classified based on available information.

Further information

Components:

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

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

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

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

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

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

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: EC50 (Desmodesmus subspicatus (green algae)): 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.78 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to daphnia and other :

aquatic invertebrates (Chronic

toxicity)

NOEC (Daphnia magna (Water flea)): 0.26 mg/l

Exposure time: 21 d

Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: 741 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

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/aquatic plants: 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/aquatic plants: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 2.01

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 1.56 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

Exposure time: 3 h

Method: OECD Test Guideline 209

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1 - 10 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)): > 10 - 100 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): > 10 - 100

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): > 1 - 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

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

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): > 1.18 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

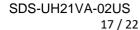
Remarks: No toxicity at the limit of solubility.

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

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: No toxicity at the limit of solubility.





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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

LC50 (Zebrafish): 9 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)): 15.3 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): 1.6 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.39 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms IC50: > 100 mg/l

Exposure time: 3 h

Glycerol, propoxylated, esters with acrylic acid:

Toxicity to fish LC50 (Danio rerio (zebra fish)): 5.74 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 91.4 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): 12.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): 2.06 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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Toxicity to fish LL50 (Cyprinus carpio (Carp)): > 100 mg/l

Exposure time: 96 h

Test substance: Water Accommodated Fraction

Method: ISO 7346/1

Remarks: Based on data from similar materials

Toxicity to daphnia and other :

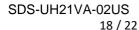
aquatic invertebrates

LL50 (Daphnia magna (Water flea)): > 100 mg/l

Exposure time: 48 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 202





Toxicity to algae/aquatic plants: EL50 (Pseudokirchneriella subcapitata (green algae)): 105 mg/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

NOELR (Pseudokirchneriella subcapitata (green algae)): 1.2

mq/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

EC50: > 1,000 mg/lToxicity to microorganisms

Exposure time: 3 h

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

aquatic invertebrates

Toxicity to daphnia and other : EC50 (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/aquatic plants:

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms EC50: > 100 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

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

Result: Readily biodegradable. Biodegradability

Biodegradation: 84.4 % Exposure time: 28 d

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Biodegradability : Result: Readily biodegradable.

> Biodegradation: 65 % Exposure time: 28 d

Method: OECD Test Guideline 301B

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 1 % Exposure time: 28 d

Method: OECD Test Guideline 301E

Glycerol, propoxylated, esters with acrylic acid:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 72 - 85 % Exposure time: 28 d

Method: OECD Test Guideline 301B

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 42 % 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

Bioaccumulative potential

Components:

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

Partition coefficient: : log Pow: 1.7

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

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

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 5

Partition coefficient: : log Pow: 5.8

n-octanol/water

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Bioaccumulation : Bioconcentration factor (BCF): 13

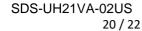
Partition coefficient: : log Pow: 3.09

n-octanol/water

Glycerol, propoxylated, esters with acrylic acid:

Partition coefficient: : log Pow: 2.52

n-octanol/water





4.4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2.3-epoxypropane. esters with acrylic acid:

: log Pow: 1.6 - 3.8 Partition coefficient:

n-octanol/water

2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone:

: log Pow: 2.91 Partition coefficient:

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

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)

Respiratory or skin sensitization

Reproductive toxicity

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

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8
Propoxylated neopentyl glycol diacrylate esters	84170-74-1
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7
Propylidynetrimethanol, propoxylated, esters with acrylic acid	53879-54-2

California Prop. 65

WARNING: This product can expose you to chemicals including Benzophenone, which is known to the State of California to cause cancer, and Toluene, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Additional regulatory information

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester 86273-46-3
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 § 721.10064

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

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 Cooperation 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



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compile the Material Safety

Data Sheet

eChem Portal search results and European Chemicals Agency,

http://echa.europa.eu/

Revision Date : 2020-01-16

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: 2020-01-16 Date of first issue: 2019-12-01

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK White

UH21-WH220U / UH21-WH500U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

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

Contact section : Customer Care
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 sensitization : Category 1

Reproductive toxicity : Category 2

GHS label elements

Hazard pictograms



Signal Word : Warning

Hazard Statements : H302 Harmful if swallowed.

H317 May cause an allergic skin reaction.

H361 Suspected of damaging 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.

P270 Do not eat, drink or smoke when using this product.

P272 Contaminated work clothing must not be allowed out of the

workplace.

P280 Wear protective gloves/ protective clothing/ eye protection/

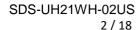
face protection.

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





attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/

attention.

P363 Wash contaminated clothing 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

Components

Chemical name	CAS-No.	Concentration (% w/w)
2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3	70 - 80
Titanium dioxide	13463-67-7	10 -< 20
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	75980-60-8	1 - 5
Propoxylated neopentyl glycol diacrylate esters	84170-74-1	1 - 5
Glycerol, propoxylated, esters with acrylic acid	52408-84-1	< 0.5
4,4'-Isopropylidenediphenol, oligomeric reaction products	55818-57-0	< 0.5
with 1-chloro-2,3-epoxypropane, esters with acrylic acid		

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 soap and plenty of

water.

Remove contaminated clothing and shoes.

Get medical attention. Wash clothing before reuse.

Thoroughly clean shoes before reuse.

In case of eye contact : Flush eyes with water as a precaution.

Get medical attention if irritation develops and persists.

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 swallowed.

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

Suspected of damaging fertility or the unborn child.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and

use the recommended personal protective equipment when the

potential for exposure exists.

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

Exposure to combustion products may be a hazard to health.

Hazardous combustion

Products

Carbon oxides Metal 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

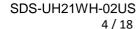
certain local or national requirements.

SECTION 7. HANDLING AND STORAGE

Technical measures : See Engineering measures under EXPOSURE

CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation : Use with local exhaust ventilation.





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

Do not breathe vapors or spray mist.

Do not swallow.

Avoid contact with eves.

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.

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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

mg. cancerno man morripiaco com or parametero				
Components	CAS-No.	Value type (Form	Control parameters /	Basis
		of exposure)	Permissible concentration	
Titanium dioxide	13463-67-7	TWA (total dust)	15 mg/m³	OSHA Z-1
		TWA	10 mg/m³ (Titanium dioxide)	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

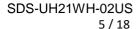
workday.

Wear the following personal protective equipment: Eye protection

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 : white

Odor : mild

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : -71 °C

Initial boiling point and boiling:

range

94 °C

(1,013.000 hPa)

Flash point : 119 °C

Method: Seta closed cup

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 : > 3

Density : 1.09 - 1.12 g/cm³ (20 °C)

Solubility(ies)

Water solubility : 18 g/l

Partition coefficient:

n-octanol/water

Not applicable

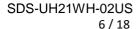
Autoignition temperature : No data available

Decomposition temperature : No data available

Viscosity

Viscosity, dynamic : 2 - 10 mPa.s

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

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: 1,989 mg/kg

Method: Calculation method

Components:

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

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

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

Exposure time: 4 h

Test atmosphere: dust/mist

Method: OECD Test Guideline 403

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

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

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

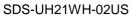
Assessment: The substance or mixture has no acute inhalation

toxicity

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

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

Method: OECD Test Guideline 401



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MUTOH

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

Glycerol, propoxylated, esters with acrylic acid:

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 (Rabbit): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal

toxicity

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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 inhalation toxicity : LC50 (Rat): > 5 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

Remarks: Based on data from similar materials

Skin corrosion/irritation

Not classified based on available information.

Components:

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: May cause skin irritation.

Based on a Significant New Use Rule regulation

Titanium dioxide:

Species: Rabbit

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

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

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

Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Titanium dioxide:

Species: Rabbit Result: No eye irritation

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

Species: Rabbit Result: No eye irritation

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit Result: No eye irritation

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

Method: OECD Test Guideline 405

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rabbit Result: No eye irritation

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:

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

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

Titanium dioxide:

Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact





Species: Mouse Result: negative

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

Glycerol, propoxylated, esters with acrylic acid:

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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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:

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

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

Method: OECD Test Guideline 476

Result: negative

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

cytogenetic assay) Species: Mouse

Application Route: Ingestion Method: OECD Test Guideline 474

Result: negative

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

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

Glycerol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: Chromosome aberration test in vitro

Result: negative

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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

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.

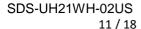
IARC Group 2B: Possibly carcinogenic to humans

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

Suspected of damaging fertility or the unborn child.

Components:

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

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

reproduction/developmental toxicity screening test

Species: Rat

Application Route: Ingestion Method: OECD Test Guideline 422

Result: negative

Remarks: May cause adverse reproductive effects. Based on a Significant New Use Rule regulation

Effects on fetal development : Remarks: May cause developmental effects

Based on a Significant New Use Rule regulation

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

Glycerol, propoxylated, esters with acrylic acid:

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

Species: Rat

Application Route: Ingestion

Result: negative

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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



STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

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

Species: Rat NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

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

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

Glycerol, propoxylated, esters with acrylic acid:

Species: Rat NOAEL: 250 mg/kg LOAEL: 750 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rat

NOAEL: > 900 mg/kg Application Route: Ingestion Exposure time: 5 Weeks

Method: OECD Test Guideline 422

Aspiration toxicity

Not classified based on available information.

Further information





Components:

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

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

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

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

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

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

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.78 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to daphnia and other :

aquatic invertebrates (Chronic toxicity)

Exposure time: 21 d
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: 741 mg/l Exposure time: 3 h

Method: OECD Test Guideline 209

Titanium dioxide:

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

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): > 100 mg/l

NOEC (Daphnia magna (Water flea)): 0.26 mg/l

Exposure time: 48 h

Toxicity to algae : EC50 (Skeletonema costatum (marine diatom)): > 10,000 mg/l

Exposure time: 72 h

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

Exposure time: 3h

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

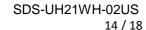
Method: OECD Test Guideline 202

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:

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

Exposure time: 96 h

Method: OECD Test Guideline 203

aquatic invertebrates

Toxicity to daphnia and other : 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

: NOEC: 2 mg/l Toxicity to microorganisms

Exposure time: 28 d

Glycerol, propoxylated, esters with acrylic acid:

: LC50 (Danio rerio (zebra fish)): 5.74 mg/l Toxicity to fish

Exposure time: 96 h

Method: OECD Test Guideline 203

aquatic invertebrates

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 91.4 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae ErC50 (Desmodesmus subspicatus (green algae)): 12.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): 2.06 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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Toxicity to fish LL50 (Cyprinus carpio (Carp)): > 100 mg/l

Exposure time: 96 h

Test substance: Water Accommodated Fraction

Method: ISO 7346/1

Remarks: Based on data from similar materials

Toxicity to daphnia and other :

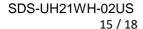
aquatic invertebrates

LL50 (Daphnia magna (Water flea)): > 100 mg/l

Exposure time: 48 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 202





Toxicity to algae : EL50 (Pseudokirchneriella subcapitata (green algae)): 105 mg/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

NOELR (Pseudokirchneriella subcapitata (green algae)): 1.2

mg/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

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

Exposure time: 3 h

Method: OECD Test Guideline 209

Persistence and degradability

Components:

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

Biodegradability : Result: Readily biodegradable.

Biodegradation: 84.4 % Exposure time: 28 d

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

Glycerol, propoxylated, esters with acrylic acid:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 72 - 85 % Exposure time: 28 d

Method: OECD Test Guideline 301B

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 42 % Exposure time: 28 d

Method: OECD Test Guideline 301F

Bioaccumulative potential

Components:

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

Partition coefficient: : log Pow: 1.7

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

Glycerol, propoxylated, esters with acrylic acid:

Partition coefficient: : log Pow: 2.52

n-octanol/water

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Partition coefficient: : log Pow: 1.6 - 3.8

n-octanol/water

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

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

Contaminated packaging : Empty containers should be taken to an approved waste

handling site for recycling or disposal.

If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

Not regulated as dangerous goods

IATA-DGR

Not regulated as dangerous goods

IMDG-Code

Not regulated as dangerous goods

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

Not applicable for product as supplied.

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 : Acute toxicity (any route of exposure)

Respiratory or skin sensitization

Reproductive toxicity

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

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester 86273-46-3
Titanium dioxide 13463-67-7
Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide 75980-60-8

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, and Toluene, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California Permissible Exposure Limits for Chemical Contaminants

Titanium dioxide 13463-67-7

Additional regulatory information

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester 86273-46-3
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 § 721.10064

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

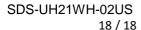
ACGIH / TWA : 8-hour, time-weighted average

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

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



Internal technical data, data from raw material SDSs, OECD

eChem Portal search results and European Chemicals Agency,



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

http://echa.europa.eu/

Revision Date

2020-01-16

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: 2020-01-16 Date of first issue: 2019-12-01

SECTION 1. IDENTIFICATION

Product name : LED UV Curable INK Yellow

UH21-YE220U / UH21-YE800U

Manufacturer or supplier's details

Company name of supplier : MUTOH America Inc

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

Contact section : Customer Care
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 sensitization : Category 1

Reproductive toxicity : Category 1B

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H302 Harmful if swallowed.

H317 May cause an allergic skin reaction.

H360FD May damage fertility. May damage 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.

P270 Do not eat, drink or smoke when using this product.

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

2 / 22



attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/

attention.

P363 Wash contaminated clothing 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

Components

Components		
Chemical name	CAS-No.	Concentration
		(% w/w)
2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3	80 - 90
Propoxylated neopentyl glycol diacrylate esters	84170-74-1	< 7
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	< 7
Propylidynetrimethanol, propoxylated, esters with acrylic acid	53879-54-2	< 5
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7	< 5
2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one	71868-10-5	< 1
Glycerol, propoxylated, esters with acrylic acid	52408-84-1	< 0.5
4,4'-Isopropylidenediphenol, oligomeric reaction products with	55818-57-0	< 0.5
1-chloro-2,3-epoxypropane, esters with acrylic acid		
2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone	119313-12-1	< 0.3

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.

In case of skin contact : In case of contact, immediately flush skin with soap and plenty of

water.

Remove contaminated clothing and shoes.

Get medical attention.
Wash clothing before reuse.

Thoroughly clean shoes before reuse.

In case of eye contact : Flush eyes with water as a precaution.

Get medical attention if irritation develops and persists.

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 swallowed.

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

May damage fertility. May damage the unborn child.

Protection of first-aiders : First Aid responders should pay attention to self-protection, and



use the recommended personal protective equipment when the

potential for exposure exists (see section 8).

Notes to physician : Treat symptomatically and supportively.

SECTION 5. 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

Exposure to combustion products may be a hazard to health.

Hazardous combustion

Products

Carbon oxides

Oxides of phosphorus Nitrogen oxides (NOx)

Metal oxides

Specific extinguishing methods: Use extinguishing measures that are appropriate to local

circumstances and the surrounding environment. Use water spray to cool unopened containers.

Remove undamaged containers from fire area if it is safe to do

SO.

Evacuate area.

Special protective equipment :

for 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.

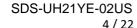
For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and 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



MUTOH

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.

Avoid contact with eves.

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.

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

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

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

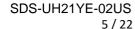
chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of

workday.

Eye protection : Wear the following personal protective equipment:

Safety glasses

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 : mild

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : -71 °C

Initial boiling point and boiling:

range

94 °C

Flash point : 119 °C

Method: Seta closed cup

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 : > 3

Density : 1.03 - 1.06 g/cm³

Solubility(ies)

Water solubility : 18 g/l

Partition coefficient:

n-octanol/water

Not applicable

Autoignition temperature : No data available

Decomposition temperature : The substance or mixture is not classified self-reactive.

Viscosity

Viscosity, dynamic : 2 - 10 mPa.s

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

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: 1,989 mg/kg

Method: Calculation method

Components:

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:Acute oral toxicity : LD50 (Rat): 1,790 mg/kg

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

Exposure time: 4 h

Test atmosphere: dust/mist

Method: OECD Test Guideline 403

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

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity

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

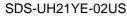
Test atmosphere: dust/mist

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

Method: OECD Test Guideline 402

Assessment: The substance or mixture has no acute dermal

toxicity



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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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 423

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Acute oral toxicity : LD50 (Rat): 1,984 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

Glycerol, propoxylated, esters with acrylic acid:

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 (Rabbit): > 2,000 mg/kg

Assessment: The substance or mixture has no acute dermal

toxicity

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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 inhalation toxicity : LC50 (Rat): > 5 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

Remarks: Based on data from similar materials

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

Skin corrosion/irritation

Not classified based on available information.

Components:

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

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Remarks: May cause skin irritation.

Based on a Significant New Use Rule regulation

Propoxylated neopentyl glycol diacrylate esters:

Species: Rabbit

Result: No skin irritation

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

Species: Rabbit

Result: No skin irritation

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Method: OECD Test Guideline 439

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Species: Rabbit

Method: OECD Test Guideline 404

Result: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

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

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Result: No eye irritation

Method: OECD Test Guideline 437

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rabbit Result: No eye irritation

Method: OECD Test Guideline 405

Glycerol, propoxylated, esters with acrylic acid:

Species: Rabbit

Result: Irritation to eyes, reversing within 21 days

Method: OECD Test Guideline 405

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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

Respiratory or skin sensitization

Skin sensitization

May cause an allergic skin reaction.

Respiratory sensitization

Not classified based on available information.

Components:

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

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Test Type: Buehler Test

Routes of exposure: Skin contact

Species: Guinea pig

Method: OECD Test Guideline 406

Result: positive

Remarks: Based on data from similar materials

Assessment: Probability or evidence of low to moderate skin sensitization rate 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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Test Type: Maximization Test Routes of exposure: Skin contact

Species: Guinea pig Result: negative

Glycerol, propoxylated, esters with acrylic acid:

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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

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

Germ cell mutagenicity

Not classified based on available information.

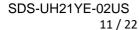
Components:

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

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

Method: OECD Test Guideline 476

Result: negative



MUTOH

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

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

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

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

Result: negative

Glycerol, propoxylated, esters with acrylic acid:

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

Method: OECD Test Guideline 471

Result: negative

Test Type: Chromosome aberration test in vitro

Result: negative

4,4'-lsopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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

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

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

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. May damage the unborn child.

Components:

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

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

reproduction/developmental toxicity screening test

Species: Rat

Application Route: Ingestion
Method: OECD Test Guideline 422

Result: negative

Remarks: May cause adverse reproductive effects. Based on a Significant New Use Rule regulation

Effects on fetal development : Remarks: May cause developmental effects

Based on a Significant New Use Rule regulation

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

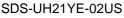
Application Route: Ingestion

Result: negative

Remarks: Based on data from similar materials

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

Effects on fertility : Test Type: Fertility



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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.

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

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., Clear evidence of adverse effects on sexual function and fertility, based on animal experiments.

Glycerol, propoxylated, esters with acrylic acid:

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

Species: Rat

Application Route: Ingestion

Result: negative

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

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
Method: OECD Test Guideline 415

Result: negative

Effects on fetal development : Test Type: One-generation reproduction toxicity study

Species: Rat

Application Route: Ingestion



Method: OECD Test Guideline 415

Result: positive

Reproductive toxicity -

Clear evidence of adverse effects on development, based on

Assessment animal experiments.

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Repeated dose toxicity

Components:

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

Species: Rat NOAEL: 160 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 407

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

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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Species: Rat NOAEL: 75 mg/kg LOAEL: 220 mg/kg

Application Route: Ingestion Exposure time: 90 Days

Method: OECD Test Guideline 408

Glycerol, propoxylated, esters with acrylic acid:

Species: Rat NOAEL: 250 mg/kg LOAEL: 750 mg/kg

Application Route: Ingestion Exposure time: 28 Days

Method: OECD Test Guideline 422

Remarks: Based on data from similar materials

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Species: Rat







NOAEL: > 900 ma/ka Application Route: Ingestion Exposure time: 5 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

Aspiration toxicity

Not classified based on available information.

Further information

Components:

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

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

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

LC50 (Danio rerio (zebra fish)): 6.8 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)): 55 mg/l

NOEC (Daphnia magna (Water flea)): 0.26 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: EC50 (Desmodesmus subspicatus (green algae)): 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.78 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to daphnia and other : aquatic invertebrates (Chronic

toxicity)

Exposure time: 21 d

Method: OECD Test Guideline 211

Toxicity to microorganisms EC50: 741 mg/l

Exposure time: 3 h

Method: OECD Test Guideline 209

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

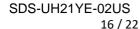
Exposure time: 48 h

Method: OECD Test Guideline 202

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

Exposure time: 72 h

Method: OECD Test Guideline 201



MUTOH

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/aquatic plants: ErC50 (Pseudokirchneriella subcapitata (green algae)): > 2.01

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 1.56 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

Exposure time: 3 h

Method: OECD Test Guideline 209

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1 - 10 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)): > 10 - 100 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Based on data from similar materials

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): > 10 - 100

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): > 1 - 10 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

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

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

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): > 1.18 mg/l

Exposure time: 48 h

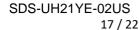
Method: OECD Test Guideline 202

Remarks: No toxicity at the limit of solubility.

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

Exposure time: 72 h

Method: OECD Test Guideline 201



MUTOH

Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other : aquatic invertebrates (Chronic

NOEC (Daphnia magna (Water flea)): 8.1 μg/l 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-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Toxicity to fish : LC50 (Zebrafish): 9 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 15.3 mg/l

Exposure time: 24 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (

ErC50 (Desmodesmus subspicatus (green algae)): 1.6 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

NOEC (Desmodesmus subspicatus (green algae)): 0.39 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms : IC50: > 100 mg/l

Exposure time: 3 h

Glycerol, propoxylated, esters with acrylic acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 5.74 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Toxicity to daphnia and other :

aquatic invertebrates

EC50 (Daphnia magna (Water flea)): 91.4 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: ErC50 (Desmodesmus subspicatus (green algae)): 12.2 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

EC10 (Desmodesmus subspicatus (green algae)): 2.06 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

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Toxicity to fish : LL50 (Cyprinus carpio (Carp)): > 100 mg/l

Exposure time: 96 h

Test substance: Water Accommodated Fraction

Method: ISO 7346/1

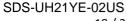
Remarks: Based on data from similar materials

Toxicity to daphnia and other :

aquatic invertebrates

LL50 (Daphnia magna (Water flea)): > 100 mg/l

Exposure time: 48 h



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MLITOH

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants: EL50 (Pseudokirchneriella subcapitata (green algae)): 105 mg/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

NOELR (Pseudokirchneriella subcapitata (green algae)): 1.2

ma/l

Exposure time: 72 h

Test substance: Water Accommodated Fraction

Method: OECD Test Guideline 201

EC50: > 1,000 mg/lToxicity to microorganisms

Exposure time: 3 h

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

aquatic invertebrates

Toxicity to daphnia and other : EC50 (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/aguatic plants:

Exposure time: 72 h

Method: OECD Test Guideline 201

Toxicity to microorganisms EC50: > 100 mg/l

Exposure time: 30 min

Method: OECD Test Guideline 209

Persistence and degradability

Components:

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

Result: Readily biodegradable. Biodegradability

Biodegradation: 84.4 % Exposure time: 28 d

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

Propylidynetrimethanol, propoxylated, esters with acrylic acid:

Biodegradability : Result: Readily biodegradable.

> Biodegradation: 65 % Exposure time: 28 d

Method: OECD Test Guideline 301B

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

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 1 % Exposure time: 28 d

Method: OECD Test Guideline 301E

Glycerol, propoxylated, esters with acrylic acid:

Biodegradability : Result: Readily biodegradable.

Biodegradation: 72 - 85 % Exposure time: 28 d

Method: OECD Test Guideline 301B

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,

esters with acrylic acid:

Biodegradability : Result: Not readily biodegradable.

Biodegradation: 42 % 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

Bioaccumulative potential

Components:

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

Partition coefficient: : log Pow: 1.7

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

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

Bioaccumulation : Species: Fish

Bioconcentration factor (BCF): < 5

Partition coefficient: : log Pow: 5.8

n-octanol/water

2-Methyl-1-(4-methylthiophenyl)-2-morpholinopropan-1-one:

Bioaccumulation : Bioconcentration factor (BCF): 13

Partition coefficient: : log Pow: 3.09

n-octanol/water

Glycerol, propoxylated, esters with acrylic acid:

Partition coefficient: : log Pow: 2.52



n-octanol/water

4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:

Partition coefficient: : log Pow: 1.6 - 3.8

n-octanol/water

2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone:

Partition coefficient: : log Pow: 2.91

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

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)

Respiratory or skin sensitization

Reproductive toxicity

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

2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester	86273-46-3
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8
Propoxylated neopentyl glycol diacrylate esters	84170-74-1
Phenylbis (2,4,6-trimethylbenzoyl) phosphine oxide	162881-26-7
Propylidynetrimethanol, propoxylated, esters with acrylic acid	53879-54-2

California Prop. 65

WARNING: This product can expose you to chemicals including Nickel compounds and Benzophenone, which are known to the State of California to cause cancer, and Toluene, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Additional regulatory information

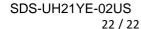
2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester 86273-46-3
The United States Environmental Protection Agency (USEPA) has established a Significant New Use Rule (SNUR) for one of the components in this product.
See 40 CFR § 721.10064

SECTION 16. OTHER INFORMATION

Further information

Full text of other abbreviations

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 Cooperation 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 : 2020-01-16

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.