

SAFETY DATA SHEET

Date of last issue: 2020-01-16 Date of first issue: 2014-02-07

SECTION 1. IDENTIFICATION

Product name	:	LED UV Curable INK Black VJ-LUH1-BK220U / VJ-LUH1-BK800U		
Manufacturer or supplier's Company name of supplier				
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 accor Acute toxicity (Oral)	dar :	nce with 29 CFR 1910.1200 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

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 :	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.
Most important symptoms and : effects, both acute and delayed	Harmful if swallowed. 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 ME	١SU	IRES
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 method	s :	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 RELE	<u>مع</u> ا	EMEASURES

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.



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

Components	CAS-No.	Value type (Form of	Control parameters /	Basis
		exposure)	Permissible concentration	
Carbon black	1333-86-4	TWA	3.5 mg/m ³	NIOSH REL
		TWA	3.5 mg/m ³	OSHA Z-1
		TWA (Inhalable fraction)	3 mg/m ³	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
рН	:	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/cm ³
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 Inhalation Skin contact Ingestion Eye contact	s of	exposure
Acute toxicity Harmful if swallowed. <u>Product:</u> Acute oral toxicity	:	Acute toxicity estimate: 1,989 mg/kg
Components: 2-Propenoic acid, 2-[2-(ethe Acute oral toxicity	-	Method: Calculation method oxy)ethoxy]ethyl ester: 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 gly Acute oral toxicity		diacrylate esters: 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 E.D50 (Rat): > 2.000 mg/kg Acute oral toxicity Experiment: The substance or mixture has no acute dermal toxicity Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide: Acute oral toxicity Acute oral toxicity E.D50 (Rat): > 5.000 mg/kg Method: OECD Test Guideline 401 Acute oral toxicity E.D50 (Rat): > 2.000 mg/kg Method: OECD Test Guideline 401 Acute oral toxicity E.D50 (Rat): > 2.000 mg/kg Method: OECD Test Guideline 401 Acute oral toxicity E.D50 (Rat): > 2.000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity Acute oral toxicity E.D50 (Rat): > 2.000 mg/kg Method: OECD Test Guideline 401 Assessment: The substance or mixture has no acute oral toxicity Acute oral toxicity E.D50 (Rat): > 2.000 mg/kg Method: OECD Test Guideline 401 Assessment: The substance or mixture has no acute dermal toxicity Carbon black: Acute oral toxicity E.D50 (Rat): > 10,000 mg/kg Carbon black: Acute oral toxicity E.D50 (Rat): > 2.000 mg/kg Method: OECD Test Guideline 401 Acute oral toxicity E.D5		
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Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403	-	Method: OECD Test Guideline 401
	Acute inhalation toxicity	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 Remarks: Based on data from similar materials
2-Benzyl-2-dimethylamin	o-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. <u>Components:</u> 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. <u>Components:</u> 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



Dipl

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



TEST I VDE. LOCALIVITION N	: ode assay (LLNA)
Routes of exposure: Skin	
Species: Mouse	
Method: OECD Test Guid	deline 429
Result: positive	
Assessment: Probability of	or evidence of skin sensitization in humans
2-Benzyl-2-dimethylami Test Type: Maximization	n o-4-morpholinobutyrophenone: Test
Routes of exposure: Skin	contact
Species: Guinea pig	
Result: negative	
Germ cell mutagenicity	
Not classified based on a	vailable information.
Components:	
Genotoxicity in vitro	ethenyloxy)ethoxy]ethyl ester: : 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
	: Test Type: Bacterial reverse mutation assay (AMES)
	: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative
	Method: OECD Test Guideline 471 Result: negative : Test Type: Mammalian erythrocyte micronucleus test (in vivo
	Method: OECD Test Guideline 471 Result: negative : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
	 Method: OECD Test Guideline 471 Result: negative Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse
	 Method: OECD Test Guideline 471 Result: negative Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
	 Method: OECD Test Guideline 471 Result: negative Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Ingestion
	 Method: OECD Test Guideline 471 Result: negative Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Ingestion Method: OECD Test Guideline 474
Genotoxicity in vivo	 Method: OECD Test Guideline 471 Result: negative Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Ingestion Method: OECD Test Guideline 474 Result: negative
Genotoxicity in vivo	Method: OECD Test Guideline 471 Result: negative : 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 Ibenzoyl)phosphine oxide: : Test Type: Bacterial reverse mutation assay (AMES)
Genotoxicity in vivo	Method: OECD Test Guideline 471 Result: negative : 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 Ibenzoyl)phosphine oxide:
Genotoxicity in vivo	 Method: OECD Test Guideline 471 Result: negative 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 Ibenzoyl)phosphine oxide: Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Genotoxicity in vivo	Method: OECD Test Guideline 471 Result: negative : 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 Ibenzoyl)phosphine oxide: : Test Type: Bacterial reverse mutation assay (AMES)
Genotoxicity in vivo	 Method: OECD Test Guideline 471 Result: negative 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 Ibenzoyl)phosphine oxide: Test Type: Bacterial reverse mutation assay (AMES) Result: negative Test Type: Chromosome aberration test in vitro Result: negative
Genotoxicity in vivo	 Method: OECD Test Guideline 471 Result: negative 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 Ibenzoyl)phosphine oxide: 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
Genotoxicity in vivo	 Method: OECD Test Guideline 471 Result: negative 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 Ibenzoyl)phosphine oxide: Test Type: Bacterial reverse mutation assay (AMES) Result: negative Test Type: Chromosome aberration test in vitro Result: negative
Genotoxicity in vivo Diphenyl(2,4,6-trimethy Genotoxicity in vitro	 Method: OECD Test Guideline 471 Result: negative 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 Ibenzoyl)phosphine oxide: 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
Genotoxicity in vitro	 Method: OECD Test Guideline 471 Result: negative 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 Ibenzoyl)phosphine oxide: 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
Genotoxicity in vivo Diphenyl(2,4,6-trimethyl Genotoxicity in vitro Phenylbis (2,4,6-trimeth	 Method: OECD Test Guideline 471 Result: negative 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 Ibenzoyl)phosphine oxide: 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 Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative
Genotoxicity in vivo Diphenyl(2,4,6-trimethyl Genotoxicity in vitro Phenylbis (2,4,6-trimeth	 Method: OECD Test Guideline 471 Result: negative 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 Ibenzoyl)phosphine oxide: 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 Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative
Genotoxicity in vivo Diphenyl(2,4,6-trimethyl Genotoxicity in vitro Phenylbis (2,4,6-trimeth	 Method: OECD Test Guideline 471 Result: negative 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 Ibenzoyl)phosphine oxide: 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 Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative



Result: negative Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative Carbon black: Test Type: Bacterial reverse mutation assay (AMES) Genotoxicity in vitro Method: OECD Test Guideline 471 Result: negative Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative Test Type: In vitro sister chromatid exchange assay in mammalian cells Method: OECD Test Guideline 479 Result: negative Test Type: in vitro micronucleus test Method: OECD Test Guideline 487 **Result:** negative Test Type: Sex-linked recessive lethal test in Drosophila Genotoxicity in vivo : 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: : Test Type: Bacterial reverse mutation assay (AMES) Genotoxicity in vitro Method: OECD Test Guideline 471 Result: negative Genotoxicity in vivo 1 Test Type: Mammalian erythrocyte micronucleus test (in vivo



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 leve equal to 0.1% is on OSHA's list of regulated				
NTP	No ingredient of this product present at level equal to 0.1% is identified as a known or ant by NTP.				
Reproductive toxicity May damage fertility. May damage the unborn child. Components:					
2-Propenoic acid, 2-[2-(ethenyle Effects on fertility :	Test Type: Combined repeated dose toxicity reproduction/developmental toxicity screenir Species: Rat Application Route: Ingestion Method: OECD Test Guideline 422 Result: negative Remarks: May cause adverse reproductive of Based on a Significant New Use Rule regula	effects.			
Effects on fetal development :	Remarks: May cause developmental effects Based on a Significant New Use Rule regula				
Propoxylated neopentyl glycol Effects on fertility :	diacrylate esters: Test Type: Reproduction/Developmental tox Species: Rat Application Route: Ingestion Method: OECD Test Guideline 421 Result: negative	icity screening test			
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative Remarks: Based on data from similar materi	als			



	14/24
	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-trimethylbenzo Effects on fetal development :	byl) phosphine oxide: 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 Effects on fertility :)-2-morpholinopropan-1-one: 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 Effects on fetal development :	with acrylic acid: Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative
4,4'-Isopropylidenediphenol, ol esters with acrylic acid: Effects on fertility :	igomeric reaction products with 1-chloro-2,3-epoxypropane, 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 - Assessment	:	Clear evidence of adverse effects on development, 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: 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

Exposure time: 72 h Method: OECD Test Guideline 201Toxicity 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 211Toxicity to microorganisms:EC50: 741 mg/l Exposure time: 3 h	Ecotoxicity <u>Components:</u> 2-Propenoic acid, 2-[2-(ethenylc Toxicity to fish :	bxy)ethoxy]ethyl ester: LC50 (Danio rerio (zebra fish)): 6.8 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
 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 		Exposure time: 48 h
Exposure time: 72 h Method: OECD Test Guideline 201Toxicity 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 211Toxicity to microorganisms:EC50: 741 mg/l Exposure time: 3 h	Toxicity to algae/aquatic plants :	Exposure time: 72 h
aquatic invertebrates (Chronic toxicity)Exposure time: 21 d Method: OECD Test Guideline 211Toxicity to microorganisms:EC50: 741 mg/l Exposure time: 3 h		•
Exposure time: 3 h	aquatic invertebrates (Chronic	Exposure time: 21 d
	Toxicity to microorganisms :	

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-trimethylbenzoy Toxicity to fish :	
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, propo Toxicity to fish :	kylated, esters with acrylic acid: 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



	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: Toxicity to fish :	LL50 (Danio rerio (zebra fish)): > 1,000 mg/l 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-methylthiopheny Toxicity to fish	l)-2-morpholinopropan-1-one: 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 Toxicity to fish :	with acrylic acid: 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
	igomeric 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
	LL50 (Daphnia magna (Water flea)): > 100 mg/l
aquatic invertebrates	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 :	
	Exposure time: 3 h Method: OECD Test Guideline 209
2-Benzyl-2-dimethylamino-4-mo	
Toxicity to fish :	LC50 (Danio rerio (zebra fish)): 0.46 mg/l Exposure time: 96 h

	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-(ethenyle Biodegradability :	oxy)ethoxy]ethyl ester: Result: Readily biodegradable. Biodegradation: 84.4 % Exposure time: 28 d
	Propoxylated neopentyl glycol Biodegradability :	diacrylate esters: Result: Not readily biodegradable. Biodegradation: 51 % Exposure time: 28 d Method: OECD Test Guideline 301D
	Diphenyl(2,4,6-trimethylbenzoy	I)nhosnhine oxide:
••	Biodegradability :	Result: Not readily biodegradable. Biodegradation: 0 - 10 % Exposure time: 28 d Method: OECD Test Guideline 301F
	Propylidynetrimethanol, propo Biodegradability :	xylated, esters with acrylic acid: 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-trimethylbenzo	avi) nhosnhine oxide:
	Biodegradability :	Result: Not readily biodegradable. Biodegradation: 1 % Exposure time: 28 d Method: OECD Test Guideline 301B
	2-Methyl-1-(4-methylthiophenyl Biodegradability :)-2-morpholinopropan-1-one: Result: Not readily biodegradable. Biodegradation: 1 % Exposure time: 28 d Method: OECD Test Guideline 301E
	Glycerol, propoxylated, esters Biodegradability :	with acrylic acid: Result: Readily biodegradable. Biodegradation: 72 - 85 % Exposure time: 28 d Method: OECD Test Guideline 301B
	4.4'-Isopronvlidenedinhenol	igomeric reaction products with 1-chloro-2,3-epoxypropane,
	esters with acrylic acid:	Result: Not readily biodegradable. Biodegradation: 42 % Exposure time: 28 d Method: OECD Test Guideline 301F
	2-Benzyl-2-dimethylamino-4-m Biodegradability :	



	Bioaccumulative potential <u>Components:</u> 2-Propenoic acid, 2-[2-(eth Partition coefficient: n-octanol/water		
	Propoxylated neopentyl gl Partition coefficient: n-octanol/water	ycol :	diacrylate esters: log Pow: 2.41 - 3.87
	Diphenyl(2,4,6-trimethylbe Bioaccumulation	enzoy :	
	Partition coefficient: n-octanol/water	:	log Pow: 3.1 - 3.8
	Phenylbis (2,4,6-trimethylk Bioaccumulation	oenzo :	byl) phosphine oxide: Species: Fish Bioconcentration factor (BCF): < 5
	Partition coefficient: n-octanol/water	:	log Pow: 5.8
	2-Methyl-1-(4-methylthiopl Bioaccumulation	nenyl :)-2-morpholinopropan-1-one: Bioconcentration factor (BCF): 13
	Partition coefficient: n-octanol/water	:	log Pow: 3.09
	Glycerol, propoxylated, es Partition coefficient: n-octanol/water	iters :	with acrylic acid: log Pow: 2.52
	4,4'-Isopropylidenediphenesters with acrylic acid:	ol, ol	igomeric reaction products with 1-chloro-2,3-epoxypropane,
н	Partition coefficient: n-octanol/water	:	log Pow: 1.6 - 3.8
	2-Benzyl-2-dimethylamino Partition coefficient: n-octanol/water	-4-mo :	orpholinobutyrophenone: log Pow: 2.91
	Mobility in soil No data available		
	Other adverse effects No data available		
:	SECTION 13. DISPOSAL CONS	IDER	ATIONS
	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 establi	shed 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 abbreviat	ions	
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



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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: 2014-04-23

SECTION 1. IDENTIFICATION

	Product name	:	LED UV Curable INK Cleaner VJ-LUH1-CL220U		
	Manufacturer or supplier's d	leta	ails		
	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

1

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 :	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.
Most important symptoms and : effects, both acute and delayed	Causes skin irritation. 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



Unsuitable extinguishing : media	High volume water jet
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 jet. 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.



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 equipme Respiratory protection	ent :	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	
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
рН	:	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/cm ³ (20 °C)
Solubility(ies) Water solubility	:	completely miscible
Partition coefficient: n-octanol/water	:	Not applicable
Autoignition temperature	:	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 rout Inhalation Skin contact Ingestion Eye contact	tes of e	exposure
Acute toxicity		
Not classified based on ava	ailable i	nformation.
Product: Acute oral toxicity	:	Acute toxicity estimate: 3,616 mg/kg Method: Calculation method
Components:		
Diethylene Glycol Diethyl	I Ether:	:
Acute oral toxicity	:	LD50 (Rat): 4,970 mg/kg
bis(2-(2-methoxyethoxy)e	ethyl) e	ther:
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 Result: Skin irritation Remarks: Based on data fr		



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 availab	le information.			
IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.			
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.			
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.			
Reproductive toxicity May damage the unborn child. Components:	Suspected of damaging fertility.			
Diethylene Glycol Diethyl Eth Effects on fertility	er: : 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)ethy) 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.



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 <u>Components:</u> Diethylene Glycol Diethyl Ether:					
Toxicity to fish	LC50: > 10,000 mg/l Exposure time: 96 h				
Toxicity to daphnia and other : aquatic invertebrates	LC50: 6,600 mg/l 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 mg/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				



Method: OECD Test Guideline 211
EC10: >= 5,000 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Remarks: Based on data from similar materials
r: Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F
ether: Result: Inherently biodegradable
Result: Inherently biodegradable. Biodegradation: > 70 %
Exposure time: 28 d Method: OECD Test Guideline 302B
Remarks: Based on data from similar materials
r:
log Pow: 0.39
ether: log Pow: -0.84
RATIONS
Dispose of in accordance with local regulations.
Empty containers should be taken to an approved waste handling site for recycling or disposal.

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 : 2020-01-16

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SAFETY DATA SHEET

Date of last issue: 2020-01-16 Date of first issue: 2014-02-07

SECTION 1. IDENTIFICATION

Product name	:	LED UV Curable INK Cyan VJ-LUH1-CY220U / VJ-LUH1-CY800U		
Manufacturer or supplier's Company name of supplier				
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 1910.1200Acute 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/ 		



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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	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 :	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.
Most important symptoms and : effects, both acute and delayed	Harmful if swallowed. 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.



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).
Ensure that eye flushing systems and safety showers are

 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
рН	:	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. <u>Product:</u> Acute oral toxicity	:	Acute toxicity estimate: 1,989 mg/kg Method: Calculation method		
<u>Components:</u> 2-Propenoic acid, 2-[2-(ethe	-			
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 gly Acute oral toxicity	col :	diacrylate esters: 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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2-Benzyl-2-dimethylamino-4-morpholinobutyrophenone: Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg	-	Method: OECD Test Guideline 402
Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg		Remarks: Based on data from similar materials
Method: OFCD Test Guideline 101	2-Benzyl-2-dimethylaming	
	Acute oral loxicity	: 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. <u>Components:</u> 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

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



Diphenvl(2.4.6-trimethvlbenzovl)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

Not classified based on available information. **Components:**

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

:

Genotoxicity in vitro

Germ cell mutagenicity

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 Genotoxicity in vitro :	diacrylate esters: 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-trimethylbenzoy Genotoxicity in vitro :	I)phosphine oxide: 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-trimethylbenzo Genotoxicity in vitro :	byl) phosphine oxide: 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, ol esters with acrylic acid:	igomeric reaction products with 1-chloro-2,3-epoxypropane,			
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- Genotoxicity in vitro	 morpholinobutyrophenone: 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 availab	le information.
IARC	Not classifiable.
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	
Reproductive toxicity	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.
	equal to 0.1% is identified as a known or anticipated carcinogen by NTP. age the unborn child.
Reproductive toxicity May damage fertility. May dam <u>Components:</u> 2-Propenoic acid, 2-[2-(ethen	 equal to 0.1% is identified as a known or anticipated carcinogen by NTP. age the unborn child. yloxy)ethoxy]ethyl ester: 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.
Reproductive toxicity May damage fertility. May dam <u>Components:</u> 2-Propenoic acid, 2-[2-(ethen Effects on fertility	 equal to 0.1% is identified as a known or anticipated carcinogen by NTP. age the unborn child. yloxy)ethoxy]ethyl ester: 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 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-trimethylben Effects on fetal development				
2-Methyl-1-(4-methylthiopher 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, ester Effects on fetal development				
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid:				
-	 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- Effects on fertility	 morpholinobutyrophenone: 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 -Assessment : Clear evidence of adverse effects on development, 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: 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

<u>Components:</u> 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

 loxy)ethoxy]ethyl ester: LC50 (Danio rerio (zebra fish)): 6.8 mg/l Exposure time: 96 h Method: OECD Test Guideline 203 EC50 (Daphnia magna (Water flea)): 55 mg/l Exposure time: 48 h Method: OECD Test Guideline 202 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
Exposure time: 48 h Method: OECD Test Guideline 202 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
Exposure time: 72 h Method: OECD Test Guideline 201 NOEC (Desmodesmus subspicatus (green algae)): 0.78 mg/l Exposure time: 72 h
Exposure time: 72 h
NOEC (Daphnia magna (Water flea)): 0.26 mg/l Exposure time: 21 d Method: OECD Test Guideline 211
EC50: 741 mg/l Exposure time: 3 h Method: OECD Test Guideline 209
I diacrylate esters:
LC50 (Danio rerio (zebra fish)): 2.7 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
EC50 (Daphnia magna (Water flea)): 37 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
EC50 (Pseudokirchneriella subcapitata (green algae)): 11 mg/l 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-trimethylbenzoy Toxicity to fish :	I)phosphine oxide: 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, propox Toxicity to fish :	cylated, esters with acrylic acid: 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-trimethylbenzo Toxicity to fish :	byl) phosphine oxide: 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 Toxicity to fish :)-2-morpholinopropan-1-one: 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 Toxicity to fish :	with acrylic acid: 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
	igomeric 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-m Toxicity to fish :	orpholinobutyrophenone: 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-(ethenyle Biodegradability :	oxy)ethoxy]ethyl ester: Result: Readily biodegradable. Biodegradation: 84.4 % Exposure time: 28 d
Propoxylated neopentyl glycol Biodegradability :	diacrylate esters: Result: Not readily biodegradable. Biodegradation: 51 % Exposure time: 28 d Method: OECD Test Guideline 301D
Diphenyl(2,4,6-trimethylbenzoy Biodegradability :	
Propylidynetrimethanol, propo Biodegradability :	xylated, esters with acrylic acid: 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-trimethylbenzo Biodegradability :	byl) phosphine oxide: Result: Not readily biodegradable.



Biodegradation: 1 % Exposure time: 28 d Method: OECD Test Guideline 301B

2-Methyl-1-(4-methylthiophe	enyl)-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:

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.

· 9· •· • • • • • • • • • •	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: n-octanol/water	:	log Pow: 3.1 - 3.8
F	Phenylbis (2,4,6-trimethylbe	nzc	yl) 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: n-octanol/water	:	log Pow: 3.09

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





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: 2014-02-07

SECTION 1. IDENTIFICATION

Product name	:	LED UV Curable INK Magenta VJ-LUH1-MA220U / VJ-LUH1-MA800U		
Manufacturer or supplier's Company name of supplier				
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 accor Acute toxicity (Oral)	dar :	nce with 29 CFR 1910.1200 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/



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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	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 :	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.
Most important symptoms and : effects, both acute and delayed	Harmful if swallowed. 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)
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
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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 equipmen Respiratory protection :	nt :	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	:	magenta
Odor	:	mild
Odor Threshold	:	No data available
рН	:	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/cm ³
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 rou Inhalation Skin contact Ingestion Eye contact	tes of	exposure
Acute toxicity Harmful if swallowed. <u>Product:</u> Acute oral toxicity		Acute toxicity estimate: 1,989 mg/kg
-		Method: Calculation method
<u>Components:</u> 2-Propenoic acid, 2-[2-(et	honyl	oxy)athoxyJathyl astor
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



Diphenyl(2,4,6-trimethylb 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
Propylidynetrimethanol, j Acute oral toxicity	 bropoxylated, esters with acrylic acid: LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 423 Remarks: Based on data from similar materials
Phenylbis (2.4.6-trimethy	lbenzoyl) phosphine oxide:
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-methylthiop Acute oral toxicity	ohenyl)-2-morpholinopropan-1-one: : 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, e	sters 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 toxic
Acute dermal toxicity	: LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal
	toxicity
4,4'-lsopropylidenedipher esters with acrylic acid:	nol, oligomeric reaction products with 1-chloro-2,3-epoxypropan
Acute oral toxicity	: LD50 (Rat): > 2,000 mg/kg
	Method: OECD Test Guideline 401 Assessment: The substance or mixture has no acute oral toxi
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-dimethylamin	o-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. <u>Components:</u> 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. <u>Components:</u> 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

: Test Type: Mammalian erythrocyte micronucleus test (in vivo



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

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

Diphenvl(2.4.6-trimethy	ylbenzoyl)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-methylthiopheny)-2-morpholinopropan-1-one:
	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Glycerol, propoxylated, esters	with acrylic acid:
	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- Genotoxicity in vitro	 morpholinobutyrophenone: 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 availab	le information.
IARC	Not classifiable.
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.
2-Propenoic acid, 2-[2-(ethen) Effects on fertility	 yloxy)ethoxy]ethyl ester: 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 glyce Effects on fertility	 bl diacrylate esters: 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-trimethylbenzo	
Effects on fertility	: Test Type: Fertility

rtility : 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-trimethylbe Effects on fetal development	coyl) phosphine oxide: Test Type: Fertility/early embryonic development Species: Rat Application Route: Ingestion Method: OECD Test Guideline 414 Result: negative
2-Methyl-1-(4-methylthiophe Effects on fertility	 /I)-2-morpholinopropan-1-one: 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, este Effects on fetal development	
	ligomeric 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 Effects on fertility	norpholinobutyrophenone: 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 -Assessment : Clear evidence of adverse effects on development, 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:

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-(ethenylo Toxicity to fish :	bxy)ethoxy]ethyl ester: 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 Toxicity to fish :	diacrylate esters: 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 Toxicity to fish :	l)phosphine oxide: 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, propox Toxicity to fish :	cylated, esters with acrylic acid: 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-trimethylbenzo Toxicity to fish :	yl) phosphine oxide: 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-methylthiopheny Toxicity to fish :	I)-2-morpholinopropan-1-one: 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/lExposure time: 96 hMethod: 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, of esters with acrylic acid:	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,				
	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
	ender Parel et mender en en
2-Benzyl-2-dimethylamino-4-m Toxicity to fish :	orpholinobutyrophenone: 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 <u>Components:</u> 2-Propenoic acid, 2-[2-(ethenyl Biodegradability	oxy)ethoxy]ethyl ester: Result: Readily biodegradable. Biodegradation: 84.4 % Exposure time: 28 d
Propoxylated neopentyl glycol Biodegradability :	diacrylate esters: Result: Not readily biodegradable. Biodegradation: 51 % Exposure time: 28 d Method: OECD Test Guideline 301D
Diphenyl(2,4,6-trimethylbenzoy Biodegradability :	/I)phosphine oxide: Result: Not readily biodegradable. Biodegradation: 0 - 10 % Exposure time: 28 d Method: OECD Test Guideline 301F
Propylidynetrimethanol, propo Biodegradability :	xylated, esters with acrylic acid: 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-trimethylbenzo Biodegradability :	oyl) phosphine oxide: Result: Not readily biodegradable. Biodegradation: 1 %



Exposure time: 28 d Method: OECD Test Guideline 301B

	: Result: Not readily biodegradable. Biodegradation: 1 %
	Exposure time: 28 d
	Method: OECD Test Guideline 301E
Glycerol, propoxylated,	
Biodegradability	: Result: Readily biodegradable.
	Biodegradation: 72 - 85 % Exposure time: 28 d
	Method: OECD Test Guideline 301B
	enol, oligomeric reaction products with 1-chloro-2,3-epoxyprop
esters with acrylic acid: Biodegradability	: Result: Not readily biodegradable.
Diodogradability	Biodegradation: 42 %
	Exposure time: 28 d
	Method: OECD Test Guideline 301F
	no-4-morpholinobutyrophenone:
Biodegradability	: Result: Not readily biodegradable.
	Biodegradation: 3 %
	Exposure time: 28 d Method: OECD Test Guideline 301B
Bioaccumulative potent	ial
	ethenyloxy)ethoxy]ethyl ester:
	: log Pow: 1.7
n-octanol/water	
Propoxylated neopentyl	glycol diacrylate esters:
Partition coefficient:	
	: log Pow: 2.41 - 3.87
n-octanol/water	: log Pow: 2.41 - 3.87
n-octanol/water Diphenyl(2,4,6-trimethyl	benzoyl)phosphine oxide:
n-octanol/water	benzoyl)phosphine oxide: : Species: Cyprinus carpio (Carp)
n-octanol/water Diphenyl(2,4,6-trimethyl	benzoyl)phosphine oxide:
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient:	benzoyl)phosphine oxide: : Species: Cyprinus carpio (Carp)
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation	benzoyl)phosphine oxide: : Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient: n-octanol/water Phenylbis (2,4,6-trimeth)	 benzoyl)phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72 log Pow: 3.1 - 3.8 ylbenzoyl) phosphine oxide:
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient: n-octanol/water	 benzoyl)phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72 log Pow: 3.1 - 3.8 ylbenzoyl) phosphine oxide: Species: Fish
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient: n-octanol/water Phenylbis (2,4,6-trimeth)	 benzoyl)phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72 log Pow: 3.1 - 3.8 ylbenzoyl) phosphine oxide:
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient: n-octanol/water Phenylbis (2,4,6-trimeth)	 benzoyl)phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72 log Pow: 3.1 - 3.8 ylbenzoyl) phosphine oxide: Species: Fish
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient: n-octanol/water Phenylbis (2,4,6-trimeth) Bioaccumulation	 benzoyl)phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72 i log Pow: 3.1 - 3.8 ylbenzoyl) phosphine oxide: Species: Fish Bioconcentration factor (BCF): < 5
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient: n-octanol/water Phenylbis (2,4,6-trimeth) Bioaccumulation Partition coefficient: n-octanol/water	 benzoyl)phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72 i log Pow: 3.1 - 3.8 ylbenzoyl) phosphine oxide: Species: Fish Bioconcentration factor (BCF): < 5
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient: n-octanol/water Phenylbis (2,4,6-trimeth) Bioaccumulation Partition coefficient: n-octanol/water	 benzoyl)phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72 i log Pow: 3.1 - 3.8 ylbenzoyl) phosphine oxide: Species: Fish Bioconcentration factor (BCF): < 5 i log Pow: 5.8
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient: n-octanol/water Phenylbis (2,4,6-trimeth) Bioaccumulation Partition coefficient: n-octanol/water 2-Methyl-1-(4-methylthic)	 benzoyl)phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72 i log Pow: 3.1 - 3.8 ylbenzoyl) phosphine oxide: Species: Fish Bioconcentration factor (BCF): < 5 i log Pow: 5.8 ophenyl)-2-morpholinopropan-1-one:
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient: n-octanol/water Phenylbis (2,4,6-trimeth) Bioaccumulation Partition coefficient: n-octanol/water 2-Methyl-1-(4-methylthic) Bioaccumulation	 benzoyl)phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72 ilog Pow: 3.1 - 3.8 ylbenzoyl) phosphine oxide: Species: Fish Bioconcentration factor (BCF): < 5 ilog Pow: 5.8 ophenyl)-2-morpholinopropan-1-one: Bioconcentration factor (BCF): 13
n-octanol/water Diphenyl(2,4,6-trimethyl Bioaccumulation Partition coefficient: n-octanol/water Phenylbis (2,4,6-trimeth) Bioaccumulation Partition coefficient: n-octanol/water 2-Methyl-1-(4-methylthic) Bioaccumulation Partition coefficient:	 benzoyl)phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72 i log Pow: 3.1 - 3.8 ylbenzoyl) phosphine oxide: Species: Fish Bioconcentration factor (BCF): < 5 i log Pow: 5.8 phenyl)-2-morpholinopropan-1-one: Bioconcentration factor (BCF): 13 log Pow: 3.09



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

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 SafetyeChem Portal sData Sheethttp://echa.euro	earch results and European Chemicals Agency, ppa.eu/
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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: 2014-02-07

SECTION 1. IDENTIFICATION

Product name	:	LED UV Curable INK Varnish VJ-LUH1-VA220U / VJ-LUH1-VA800U
Manufacturer or supplier's Company name of supplier		
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 c	hen	nical and restrictions on use

Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accor Acute toxicity (Oral)	dar :	nce with 29 CFR 1910.1200 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/



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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	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 :	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.
Most important symptoms and : effects, both acute and delayed	Harmful if swallowed. 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)
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
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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.	A
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.	s al
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
рН	:	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/cm ³
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. <u>Product:</u> Acute oral toxicity	:	Acute toxicity estimate: 1,989 mg/kg	
-		Method: Calculation method	
<u>Components:</u> 2-Propenoic acid, 2-[2-(et	honvl	oxv)ethoxv]ethvl ester:	
Acute oral toxicity	:		
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	alvcol	diacrvlate esters:	
Acute oral toxicity		LD50 (Rat): > 5,000 mg/kg	
Acute inhalation toxicity	:	LC50 (Rat): > 2 mg/l Exposure time: 4 h Test atmosphere: dust/mist	
Acute dermal toxicity	:	LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity	



Diphenyl(2,4,6-trimethylbenz Acute oral toxicity	oyl)phosphine oxide: : 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
	 boxylated, esters with acrylic acid: LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 423 Remarks: Based on data from similar materials
Phenylbis (2,4,6-trimethylber Acute oral toxicity	 hzoyl) phosphine oxide: 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-methylthionher	nyl)-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, ester	rs with acrylic acid:
	 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- Acute oral toxicity	morpholinobutyrophenone: : 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. <u>Components:</u> 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. <u>Components:</u> 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.
<u>Components:</u>
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

: 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	diacr	ylate	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

Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
		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:
	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Glycerol, propoxylated, esters	with acrylic acid:
	Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative
	Test Type: Chromosome aberration test in vitro Result: negative
	igomeric 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

	Result negative
2-Benzyl-2-dimethylamino-4-m 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	e information.
IARC	Not classifiable.
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 toxicityMay damage fertility. May damageComponents:2-Propenoic acid, 2-[2-(etheny)Effects on fertility:	-
Effects on fetal development :	Remarks: May cause developmental effects Based on a Significant New Use Rule regulation
Propoxylated neopentyl glyco Effects on fertility :	I diacrylate esters: 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

Application Route: Ingestion

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide:Effects on fertility: Test Type: FertilitySpecies: Rat



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-trimethylbe Effects on fetal development	 nzoyl) phosphine oxide: Test Type: Fertility/early embryonic development Species: Rat Application Route: Ingestion Method: OECD Test Guideline 414 Result: negative
2-Methyl-1-(4-methylthiophe 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, este Effects on fetal development	
4,4'-Isopropylidenediphenol esters with acrylic acid:	oligomeric reaction products with 1-chloro-2,3-epoxypropane,
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	
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



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Reproductive toxicity -Assessment : Clear evidence of adverse effects on development, 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 <u>Components:</u>

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-(ethenylo Toxicity to fish :	bxy)ethoxy]ethyl ester: 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 Toxicity to fish :	diacrylate esters: 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 Toxicity to fish :	l)phosphine oxide: 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, propox Toxicity to fish :	cylated, esters with acrylic acid: 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-trimethylbenzo Toxicity to fish :	yl) phosphine oxide: 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-methylthiopheny Toxicity to fish :	I)-2-morpholinopropan-1-one: 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 Toxicity to fish :	with acrylic acid: 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		



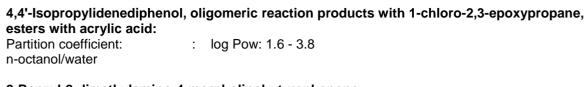
Toxicity to algae/aquatic plants :	EL50 (Pseudokirchneriella subcapitata (green algae)): 105 mg/l Exposure time: 72 h Test substance: Water Accommodated Fraction Method: OECD Test Guideline 201
	NOELR (Pseudokirchneriella subcapitata (green algae)): 1.2 mg/l Exposure time: 72 h Test substance: Water 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-m Toxicity to fish :	orpholinobutyrophenone: 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 degradabilityComponents:2-Propenoic acid, 2-[2-(ethenyleBiodegradability	oxy)ethoxy]ethyl ester: Result: Readily biodegradable. Biodegradation: 84.4 % Exposure time: 28 d
Propoxylated neopentyl glycol Biodegradability :	diacrylate esters: Result: Not readily biodegradable. Biodegradation: 51 % Exposure time: 28 d Method: OECD Test Guideline 301D
Diphenyl(2,4,6-trimethylbenzoy Biodegradability :	/I)phosphine oxide: Result: Not readily biodegradable. Biodegradation: 0 - 10 % Exposure time: 28 d Method: OECD Test Guideline 301F
Propylidynetrimethanol, propo Biodegradability :	xylated, esters with acrylic acid: 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-trimethylbenzo	



Exposure time: 28 d Method: OECD Test Guideline 301B

Biodegradability	: Result: Not readily biodegradable. Biodegradation: 1 %
	Exposure time: 28 d
	Method: OECD Test Guideline 301E
	esters with acrylic acid:
Biodegradability	: Result: Readily biodegradable.
	Biodegradation: 72 - 85 % Exposure time: 28 d
	Method: OECD Test Guideline 301B
4,4'-lsopropylidenediphesters with acrylic acid:	enol, oligomeric reaction products with 1-chloro-2,3-epoxyprop
Biodegradability	. Result: Not readily biodegradable.
0 ,	Biodegradation: 42 %
	Exposure time: 28 d
	Method: OECD Test Guideline 301F
	no-4-morpholinobutyrophenone:
Biodegradability	: Result: Not readily biodegradable. Biodegradation: 3 %
	Exposure time: 28 d
	Method: OECD Test Guideline 301B
Partition coefficient: n-octanol/water	: log Pow: 1.7
Partition coefficient:	I glycol diacrylate esters: : log Pow: 2.41 - 3.87
n-octanol/water	. 10g F 0w. 2.41 - 3.07
Diphenyl(2,4,6-trimethyl	Ibenzoyl)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-trimeth	ylbenzoyl) phosphine oxide:
	: Species: Fish
Phenylbis (2,4,6-trimeth	
Phenylbis (2,4,6-trimeth Bioaccumulation Partition coefficient:	: Species: Fish
Phenylbis (2,4,6-trimeth Bioaccumulation	: Species: Fish Bioconcentration factor (BCF): < 5
Phenylbis (2,4,6-trimeth Bioaccumulation Partition coefficient: n-octanol/water 2-Methyl-1-(4-methylthic	 Species: Fish Bioconcentration factor (BCF): < 5 log Pow: 5.8 ophenyl)-2-morpholinopropan-1-one:
Phenylbis (2,4,6-trimeth Bioaccumulation Partition coefficient: n-octanol/water	 Species: Fish Bioconcentration factor (BCF): < 5 log Pow: 5.8
 Phenylbis (2,4,6-trimeth Bioaccumulation Partition coefficient: n-octanol/water 2-Methyl-1-(4-methylthic Bioaccumulation Partition coefficient: 	 Species: Fish Bioconcentration factor (BCF): < 5 log Pow: 5.8 ophenyl)-2-morpholinopropan-1-one:
Phenylbis (2,4,6-trimeth Bioaccumulation Partition coefficient: n-octanol/water 2-Methyl-1-(4-methylthic Bioaccumulation	 Species: Fish Bioconcentration factor (BCF): < 5 log Pow: 5.8 Ophenyl)-2-morpholinopropan-1-one: Bioconcentration factor (BCF): 13
 Phenylbis (2,4,6-trimeth Bioaccumulation Partition coefficient: n-octanol/water 2-Methyl-1-(4-methylthic Bioaccumulation Partition coefficient: n-octanol/water 	 Species: Fish Bioconcentration factor (BCF): < 5 log Pow: 5.8 Ophenyl)-2-morpholinopropan-1-one: Bioconcentration factor (BCF): 13





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
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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



Chemicals Agency,

compile the Material Safety	eChem Portal search results and European
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: 2014-02-07

SECTION 1. IDENTIFICATION

Product name	:	LED UV Curable INK White VJ-LUH1-WH220U / VJ-LUH1-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 1910.1200Acute 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 : effects, both acute and delayed	Harmful if swallowed. 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.



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 wo	rkplace cont	trol parameters		
Components CAS-No.		Value type (Form	Control parameters /	Basis
		of exposure)	Permissible concentration	
Titanium dioxide	13463-67-7	TWA (total dust)	15 mg/m ³	OSHA Z-1
		TWA	10 mg/m ³ (Titanium dioxide)	ACGIH
Engineering measu	res :	Minimize workplace Use with local exhau	exposure concentrations. Ist ventilation.	
Personal protective	equinment			
Respiratory protectio		maintain vapor expo concentrations are a appropriate respirator respirator regulations approved respirators respirators against e limited. Use a positiv any potential for unc unknown, or any oth	chaust ventilation is recommended sures below recommended limit bove recommended limits or are ory protection should be worn. F is (29 CFR 1910.134) and use N is. Protection provided by air puri xposure to any hazardous chen re pressure air supplied respirat ontrolled release, exposure leve er circumstance where air purify provide adequate protection.	ts. Where e unknown, ollow OSHA IIOSH/MSHA fying nical is or if there is els are
Hand protection Material	:	Chemical-resistant g	loves	
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 protec	tion :		rotective clothing based on cher	

resistance data and an assessment of the local exposure

Ingredients with workplace control parameters



	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
рН	:	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/cm ³ (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 o Inhalation Skin contact Ingestion Eye contact	of exposure	
Acute toxicity Harmful if swallowed. <u>Product:</u>		
Acute oral toxicity	: Acute toxicity estimate: 1,989 mg/kg Method: Calculation method	
Components:		
2-Propenoic acid, 2-[2-(ethen 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	



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 glyco Acute oral toxicity :	I diacrylate esters: 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 Acute oral toxicity :	with acrylic acid: 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, c esters with acrylic acid:	ligomeric reaction products with 1-chloro-2,3-epoxypropane,		
	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/irritationNot classified based on available information.Components:2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester:Species: RabbitMethod: OECD Test Guideline 404Result: No skin irritationRemarks: 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			

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. <u>Components:</u> 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 Genotoxicity in vitro :	diacrylate esters: 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 of Genotoxicity in vitro :	with acrylic acid: Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative		
	Test Type: Chromosome aberration test in vitro Result: negative		
	gomeric 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			
	le of action may not be relevant in humans. Limited evidence of carcinogenicity in inhalation studies with animals.		
IARC	Group 2B: Possibly carcinogenic to humans Titanium dioxide 13463-67-7		
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 Suspected of damaging fertility <u>Components:</u> 2. Propagaio acid. 2.12 (other	
2-Propenoic acid, 2-[2-(ether 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-trimethylben Effects on fertility	coyl phosphine oxide: : 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.
Propoxylated neopentyl glyd Effects on fertility	 col diacrylate esters: 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, este Effects on fetal development	rs with acrylic acid: : Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative
4,4'-lsopropylidenediphenol esters with acrylic acid:	oligomeric reaction products with 1-chloro-2,3-epoxypropane
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



<u>Components:</u> 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 <u>Components:</u>			
2-Propenoic acid, 2-[2-(ethen Toxicity to fish	יאר :		
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)		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	
Titanium dioxide: Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l Exposure time: 96 h Method: OECD Test Guideline 203	
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h	
Toxicity to algae	:	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-trimethylbenz Toxicity to fish	zoy :	I phosphine oxide: 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 glyc	ol	diacrvlate esters:	
Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): 2.7 mg/l Exposure time: 96 h Method: OECD Test Guideline 203	
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 37 mg/l Exposure time: 48 h Method: OECD Test Guideline 202	
Toxicity to algae	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 11 mg/l Exposure time: 72 h Method: OECD Test Guideline 201	
		NOEC (Pseudokirchneriella subcapitata (green algae)): 1 mg/l Exposure time: 72 h Method: OECD Test Guideline 201	
Toxicity to microorganisms	:	NOEC: 2 mg/l Exposure time: 28 d	
Glycerol, propoxylated, ester	rs۱	with acrvlic 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	:	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	:	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 degradabil	ity	
Components: 2-Propenoic acid, 2-[2-(ethe Biodegradability	nylo :	Dxy)ethoxy]ethyl ester: Result: Readily biodegradable. Biodegradation: 84.4 % Exposure time: 28 d
Diphenyl-2,4,6-trimethylben Biodegradability	zoy :	I phosphine oxide: Result: Not readily biodegradable. Biodegradation: 0 - 10 % Exposure time: 28 d Method: OECD Test Guideline 301F
Propoxylated neopentyl gly Biodegradability	col :	diacrylate esters: Result: Not readily biodegradable. Biodegradation: 51 % Exposure time: 28 d Method: OECD Test Guideline 301D
Glycerol, propoxylated, este Biodegradability	ers v :	with acrylic acid: Result: Readily biodegradable. Biodegradation: 72 - 85 % Exposure time: 28 d Method: OECD Test Guideline 301B
	l, oli	igomeric 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-(ethe Partition coefficient: n-octanol/water	nylo	bxy)ethoxy]ethyl ester: log Pow: 1.7
Diphenyl-2,4,6-trimethylben Bioaccumulation	zoy :	I phosphine oxide: Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 18 - 72
Partition coefficient: n-octanol/water	:	log Pow: 3.1 - 3.8
Propoxylated neopentyl gly Partition coefficient:	col :	diacrylate esters: 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: n-octanol/water : log Pow: 1.6 - 3.8

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

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

USA. ACGIH Threshold Limit Values (TLV) ACGIH USA. NIOSH Recommended Exposure Limits NIOSH REL 2 USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits OSHA Z-1 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

13463-67-7

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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

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: 2014-02-07

SECTION 1. IDENTIFICATION

Product name	:	LED UV Curable INK Yellow VJ-LUH1-YE220U / VJ-LUH1-YE800U		
Manufacturer or supplier's	deta	ails		
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 1910.1200Acute 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

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 :	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person.
Most important symptoms and : effects, both acute and delayed	Harmful if swallowed. 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.



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). Ensure that eye flushing systems and safety showers are :

Hygiene measures 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
рН	:	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/cm ³
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. <u>Product:</u> Acute oral toxicity	:	Acute toxicity estimate: 1,989 mg/kg Method: Calculation method		
<u>Components:</u> 2-Propenoic acid, 2-[2-(ethe	nyl	oxy)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 glyd Acute oral toxicity	col :	diacrylate esters: LD50 (Rat): > 5,000 mg/kg		
Acute inhalation toxicity	:	LC50 (Rat): > 2 mg/l Exposure time: 4 h Test atmosphere: dust/mist		
Acute dermal toxicity	:	LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity		



Diphenyl(2,4,6-trimethylbe	enzoyl)phosphine oxide:
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
	ropoxylated, 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-trimethylk	penzoyl) phosphine oxide:
Acute oral toxicity	
	Method: OECD Test Guideline 401 Assessment: The substance or mixture has no acute oral toxi
Acute dermal toxicity	: LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 402
	Assessment: The substance or mixture has no acute dermal
	toxicity
	henyl)-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, es	ters 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 toxic
Acute dermal toxicity	: LD50 (Rabbit): > 2,000 mg/kg
,	Assessment: The substance or mixture has no acute dermal
	toxicity
	ol, 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 toxi
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
	-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. <u>Components:</u> 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:

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



Diphenvl(2.4.6-trimethvlbenzovl)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

Not classified based on available information. **Components:**

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

:

Genotoxicity in vitro

Germ cell mutagenicity

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 Genotoxicity in vitro :	diacrylate esters: 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-trimethylbenzoy		
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-trimethylbenzo Genotoxicity in vitro :	byl) phosphine oxide: 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 Genotoxicity in vitro :)-2-morpholinopropan-1-one: 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	
	igomeric 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	



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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-m Genotoxicity in vitro :	orpholinobutyrophenone: 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	e information.
IARC	Group 1: Carcinogenic to humans Nickel compounds
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 toxicityMay damage fertility. May damageComponents:2-Propenoic acid, 2-[2-(ethenyleEffects on fertility:	
Effects on fetal development :	Remarks: May cause developmental effects Based on a Significant New Use Rule regulation
Propoxylated neopentyl glycol Effects on fertility :	diacrylate esters: 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-trimethylbe			
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-methylthionhe	nvl)-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, este Effects on fetal development			
4,4'-Isopropylidenediphenol	, oli	igomeric reaction products with 1-chloro-2,3-epoxypropane,	
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	



Result: positive

Method: OECD Test Guideline 415

Reproductive toxicity -Assessment : Clear evidence of adverse effects on development, 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: 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 <u>Components:</u>

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 <u>Components:</u> 2-Propenoic acid, 2-[2-(ethenylo Toxicity to fish :	bxy)ethoxy]ethyl ester: 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 Toxicity to fish :	diacrylate esters: 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-trimethylbenzoy Toxicity to fish :	I)phosphine oxide: 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, propo Toxicity to fish :	xylated, esters with acrylic acid: 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-trimethylbenzo Toxicity to fish :	byl) phosphine oxide: 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-methylthiopheny Toxicity to fish :	I)-2-morpholinopropan-1-one: 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 Toxicity to fish :	with acrylic acid: 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-m	orpholinobutvrophenone:
	LC50 (Danio rerio (zebra fish)): 0.46 mg/l
	Exposure time: 96 h Method: OECD Test Guideline 203
Tovicity to dophysic 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-(ethenyl	oxv)ethoxvlethyl ester:
Biodegradability	Result: Readily biodegradable.
	Biodegradation: 84.4 % Exposure time: 28 d
Propoxylated neopentyl glycol	diacrvlate esters:
Biodegradability :	Result: Not readily biodegradable.
	Biodegradation: 51 % Exposure time: 28 d
	Method: OECD Test Guideline 301D
Diphenyl(2,4,6-trimethylbenzoy	
Biodegradability :	Result: Not readily biodegradable. Biodegradation: 0 - 10 %
	Exposure time: 28 d
	Method: OECD Test Guideline 301F
	xylated, 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:



Exposure tir Method: OE	eadily biodegradable. ion: 1 % ne: 28 d CD Test Guideline 301B
Biodegradat Exposure tir	eadily biodegradable. on: 1 %
Biodegradat Exposure tir	dily biodegradable. ion: 72 - 85 %
4,4'-Isopropylidenediphenol, oligomeric rea esters with acrylic acid:	ction products with 1-chloro-2,3-epoxypropane,
Biodegradability : Result: Not Biodegradat Exposure tir	
Biodegradat Exposure tir	eadily biodegradable. ion: 3 %
Bioaccumulative potential <u>Components:</u> 2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]e Partition coefficient: : log Pow: 1.7 n-octanol/water	
Propoxylated neopentyl glycol diacrylate es Partition coefficient: : log Pow: 2.4 n-octanol/water	
	oxide: orinus carpio (Carp) ation factor (BCF): 18 - 72
Bioaccumulation : Species: Cy	orinus carpio (Carp) ation factor (BCF): 18 - 72
Bioaccumulation : Species: Cy Bioconcentr Partition coefficient: : log Pow: 3.1 n-octanol/water	orinus carpio (Carp) ation factor (BCF): 18 - 72 - 3.8
Bioaccumulation : Species: Cy Bioconcentr Partition coefficient: : log Pow: 3.1 n-octanol/water Phenylbis (2,4,6-trimethylbenzoyl) phosphir Bioaccumulation : Species: Fis	orinus carpio (Carp) ation factor (BCF): 18 - 72 - 3.8 e oxide:
Bioaccumulation : Species: Cy Bioconcentr Partition coefficient: : log Pow: 3.1 n-octanol/water Phenylbis (2,4,6-trimethylbenzoyl) phosphir Bioaccumulation : Species: Fis	orinus carpio (Carp) ation factor (BCF): 18 - 72 - 3.8 e oxide: h ation factor (BCF): < 5
Bioaccumulation : Species: Cy Bioconcentr Partition coefficient: : log Pow: 3.1 n-octanol/water : log Pow: 3.1 Phenylbis (2,4,6-trimethylbenzoyl) phosphir Bioaccumulation : Species: Fis Bioaccumulation : Species: Fis Partition coefficient: : log Pow: 5.8 n-octanol/water : log Pow: 5.8 Partition coefficient: : log Pow: 5.8 n-octanol/water : log Pow: 5.8	orinus carpio (Carp) ation factor (BCF): 18 - 72 - 3.8 e oxide: h ation factor (BCF): < 5
Bioaccumulation : Species: Cy Bioconcentr Partition coefficient: : log Pow: 3.1 n-octanol/water : log Pow: 3.1 Phenylbis (2,4,6-trimethylbenzoyl) phosphir Bioaccumulation : Species: Fis Bioaccumulation : Species: Fis Partition coefficient: : log Pow: 5.8 n-octanol/water : log Pow: 5.8 Partition coefficient: : log Pow: 5.8 n-octanol/water : log Pow: 5.8	orinus carpio (Carp) ation factor (BCF): 18 - 72 - 3.8 e oxide: h ation factor (BCF): < 5



n-octanol/water

4,4'-Isopropylidenediphen esters with acrylic acid:	ol, oligomeric reaction products with 1-chloro-2,3-epoxypropane,	
Partition coefficient: n-octanol/water	: log Pow: 1.6 - 3.8	

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.