

SAFETY DATA SHEET

Date of last issue: -Date of first issue: 2020-07-01

SECTION 1. IDENTIFICATION

Product name	:	VJ-MS31-BK1000U / VJ-MS31-BK440U / VJ-MS31-BK220U
Manufacturer or supplier's d Company name of supplier	eta :	ils MUTOH America Inc
Address	:	4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042
Telephone	:	480-968-7772
Emergency telephone	:	480-968-7772 During normal opening times

Recommended use of the chemical and restrictions on use Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accord Flammable liquids	lan :	ce with 29 CFR 1910.1200 Category 4
Skin irritation	:	Category 2
Eye irritation	:	Category 2A
Reproductive toxicity	:	Category 1B
GHS label elements		
Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	H227 Combustible liquid. H315 Causes skin irritation. H319 Causes serious eye 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. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy



to do. Continue rinsing.

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

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

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

P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

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

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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 Methyl Ethyl Ether	1002-67-1	>= 40 -< 50
Bis(2-ethoxyethyl) ether	112-36-7	>= 20 -< 30
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	>= 10 -< 20
Propylene carbonate	108-32-7	>= 5 -< 10
Carbon black	1333-86-4	>= 1 -< 5
Gamma-Butyrolactone	96-48-0	>= 1 -< 3

SECTION 4. FIRST AID MEASURES

General advice :	:	In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled :	:	If inhaled, remove to fresh air. Get medical attention.
In case of skin contact :	:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.
If swallowed :	:	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.
Most important symptoms and a effects, both acute and delayed	:	Causes skin irritation. Causes serious eye 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.
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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.
Advice on safe handling	 Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Do not get in eyes. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Keep container tightly closed. 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

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Ingredients with workplace control parameters

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

Engineering measures

: Minimize workplace exposure concentrations. Use with local exhaust ventilation.

Personal protective equipment

Respiratory protection

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



respirators may not provide adequate protection.

Hand protection Material	:	Chemical-resistant gloves
Remarks	:	Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. Breakthrough time is not determined for the product. Change gloves often! For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Take note that the product is flammable, which may impact the selection of hand protection. 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, unless assessment demonstrates that the risk of explosive atmospheres or flash fires is low 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	:	slight
Odor Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	>= 70 °C Method: Seta closed cup
Flash point Evaporation rate	:	>= 70 °C Method: Seta closed cup No data available
Flash point Evaporation rate Flammability (solid, gas)	: :	>= 70 °C Method: Seta closed cup No data available Not applicable
Flash point Evaporation rate Flammability (solid, gas) Flammability (liquids)	::	>= 70 °C Method: Seta closed cup No data available Not applicable No data available
Flash point Evaporation rate Flammability (solid, gas) Flammability (liquids) Upper explosion limit / Upper flammability limit		>= 70 °C Method: Seta closed cup No data available Not applicable No data available No data available



flammability limit

Vapor pressure	:	No data available
Relative vapor density	:	No data available
Density	:	0.9 - 1.1 g/cm ³
Solubility(ies) Water solubility	:	soluble
Solubility in other solvents	:	soluble Solvent: organic solvents
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, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle size	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Combustible liquid. Vapors may form explosive mixture with air. Can react with strong oxidizing agents.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure Inhalation Skin contact Ingestion Eye contact Acute toxicity Not classified based on available information. Product: Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method Components:



Diethylene Glycol Methyl Et Acute oral toxicity	hyl :	Ether: LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg
Bis(2-ethoxyethyl) ether: Acute oral toxicity	:	LD50 (Rat): 4,970 mg/kg
bis(2-(2-methoxyethoxy)eth) Acute oral toxicity	yl) e :	e ther: LD50 (Rat): 3,850 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 11 mg/l Exposure time: 7 h Test atmosphere: vapor Method: OECD Test Guideline 403 Remarks: Based on data from similar materials
Acute dermal toxicity	:	LD50 (Rat): > 5,000 mg/kg Remarks: Based on data from similar materials
Propylene carbonate: Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity
Carbon black: Acute oral toxicity	:	LD50 (Rat): > 10,000 mg/kg
Gamma-Butyrolactone: Acute oral toxicity	:	LD50 (Rat): 1,582 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 5.1 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Skin corrosion/irritation Causes skin irritation. Components:	hvi	Ethory

Diethylene Glycol Methyl Ethyl Ether: Result: Skin irritation

Bis(2-ethoxyethyl) ether:

Result: Skin irritation Remarks: Based on data from similar materials

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

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

Propylene carbonate:

Species: Rabbit Result: No skin irritation

Carbon black:

Species: Rabbit Result: No skin irritation

Gamma-Butyrolactone: Species: Rabbit



Result: No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405 Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) 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

Propylene carbonate:

Species: Rabbit Result: Irritation to eyes, reversing within 21 days Method: OECD Test Guideline 405

Carbon black:

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

Gamma-Butyrolactone:

Species: Rabbit Result: Irreversible effects on the eye 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 Methyl Ethyl Ether:** Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse

Method: OECD Test Guideline 429 Result: negative

Bis(2-ethoxyethyl) 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

Carbon black:

Test Type: Buehler Test Routes of exposure: Skin contact Species: Guinea pig Method: OECD Test Guideline 406 Result: negative

Gamma-Butyrolactone:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Germ cell mutagenicity

Not classified based on available information. **Components: Diethylene Glycol Methyl Ethyl Ether:** Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test Result: positive Remarks: Based on data from similar materials Test Type: Chromosome aberration test in vitro Result: negative Remarks: Based on data from similar materials Test Type: Bacterial reverse mutation assay (AMES) 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 Germ cell mutagenicity -Weight of evidence does not support classification as a germ cell Assessment mutagen. **Bis(2-ethoxyethyl) ether:** Genotoxicity in vitro Test Type: Bacterial reverse mutation assay (AMES) 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 Test Type: In vitro mammalian cell gene mutation test 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				
		Test Type: In vitro mammalian cell gene mutation test Result: negative				
		Test Type: In vitro sister chromatid exchange assay in mammalian cells Result: positive				
Genotoxicity in vivo	:	Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis) Species: Rat				
		Result: negative Remarks: Based on data from similar materials				
Bronylong carbonato:						
Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) Result: negative				
Genotoxicity in vivo	:	Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse				
		Application Route: Intraperitoneal injection Result: negative				
Carbon black:						
Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative				
		Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative				
		Test Type: In vitro sister chromatid exchange assay in mammalian cells Method: OECD Test Guideline 479				
		Result: negative				
		Test Type: in vitro micronucleus test Method: OECD Test Guideline 487 Result: negative				
Genotoxicity in vivo	:	Test Type: Sex-linked recessive lethal test in Drosophila melanogaster (in vivo)				
		Application Route: Ingestion Method: OECD Test Guideline 477 Result: negative				
Commo Buturoloctoro						
Genotoxicity in vitro		Test Type: Bacterial reverse mutation assay (AMES)				
	•	Result: negative				
Carcinogenicity Not classified based on availab	ole i	information.				

Propylene carbonate:



Species: Mouse Application Route: Skin contact Exposure time: 2 Years Result: negative

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

Gamma-Butyrolactone: Species: Rat Application Route: Ingestion Exposure time: 103 weeks Result: negative

IARC	Group 2B: Possibly carcinogenic to humans Carbon black	1333-86-4			
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.				
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogo by NTP.				
Reproductive toxicity May damage the unborn child. Suspected of damaging fertility. Components: Distributions Clyscal Methyl Ethyl Ethyl					
Effects on fertility :	Test Type: Two-generation reproduction tox Species: Mouse Application Route: Ingestion Result: negative Remarks: Based on data from similar materi	city study als			
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative Remarks: Based on data from similar materi	als			
Bis(2-ethoxyethyl) ether: Effects on fertility :	Test Type: One-generation reproduction toxi Species: Rat Application Route: Ingestion Result: negative Remarks: Based on data from similar materi	city study als			
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative				



bis(2-(2-methoxyethoxy)ethyl) ether:						
Effects on fertility	:	Test Type: Reproduction/Developmental toxicity screening test Species: Rat Application Route: Ingestion Method: OECD Test Guideline 421 Result: positive				
Effects on fetal development :		Test Type: Embryo-fetal development Species: Rat Application Route: inhalation (vapor) Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials				
		Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials				
		Test Type: Embryo-fetal development Species: Mouse Application Route: Ingestion Result: positive Remarks: Based on data from similar materials				
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.				
Propylene carbonate: Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat, female Application Route: Ingestion Result: negative				
Carbon black: Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Method: OECD Test Guideline 414 Result: negative Test Type: Embryo-fetal development Species: Mouse Application Route: inhalation (dust/mist/fume) Result: negative				
Gamma-Butyrolactone: Effects on fertility	:	Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test Species: Rat Application Route: Ingestion Method: OECD Test Guideline 422 Result: negative Remarks: Based on data from similar materials				
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative				



STOT-single exposure

Not classified based on available information.

Components:

Gamma-Butyrolactone: Assessment: May cause drowsiness or dizziness.

STOT-repeated exposure

Not classified based on available information.

Components:

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

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

Repeated dose toxicity

Components: Diethylene Glycol Methyl Ethyl Ether: Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 90 Days Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) ether:

Species: Rat NOAEL: 2.49 mg/l Application Route: inhalation (dust/mist/fume) Exposure time: 4 Weeks Method: OECD Test Guideline 412

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

Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 28 Days Method: OECD Test Guideline 407 Remarks: Based on data from similar materials

Propylene carbonate:

Species: Rat NOAEL: > 5,000 mg/kg Application Route: Ingestion Exposure time: 90 Days

Gamma-Butyrolactone:

Species: Rat NOAEL: 225 mg/kg Application Route: Ingestion Exposure time: 13 Weeks

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Toxicity to fish : LC50: > 100 mg/l Exposure time: 96 h

Exposure time: 96 h Remarks: Based on data from similar materials



Toxicity to daphnia and other aquatic invertebrates	:	EC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials	
Toxicity to microorganisms	:	NOEC: > 1,000 mg/l Exposure time: 3 h Remarks: Based on data from similar materials	
Bis(2-ethoxyethyl) 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)): > 1 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)ethy	l) e	ether:	
Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): > 100 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	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 8,996 mg/l Exposure time: 72 h Method: OECD Test Guideline 201	
		EC10 (Pseudokirchneriella subcapitata (green algae)): 2,871 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)): > 100 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: Based on data from similar materials	
Toxicity to microorganisms	:	EC10: > 100 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Remarks: Based on data from similar materials	
Propylene carbonate: Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): > 1,000 mg/l Exposure time: 96 h	
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 48 h	
Toxicity to algae	:	ErC50 (Desmodesmus subspicatus (green algae)): > 900 mg/l Exposure time: 72 h	



Toxicity to microorganisms	:	EC50 (Pseudomonas putida): 25,619 mg/l Exposure time: 16 h
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	:	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
Gamma-Butyrolactone: Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 56 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 500 mg/l Exposure time: 48 h
Toxicity to algae	:	EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l Exposure time: 72 h
		NOEC (Desmodesmus subspicatus (green algae)): 31.25 mg/l Exposure time: 72 h
Toxicity to microorganisms	:	IC50: 4,518 mg/l Exposure time: 40 h
Persistence and degradabili <u>Components:</u>	ty	Eth and
Biodegradability	nyl :	Ether: Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) ether: Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F
bis(2-(2-methoxyethoxy)ethy Biodegradability	∕I) e ∶	ether: Result: Inherently biodegradable. Method: OECD Test Guideline 302B Remarks: Based on data from similar materials
Propylene carbonate: Biodegradability	:	Result: Readily biodegradable.



			Biodegradation: 87.7 % Exposure time: 29 d Method: OECD Test Guideline 301B
	Gamma-Butyrolactone: Biodegradability	:	Result: Readily biodegradable. Biodegradation: 77 % Exposure time: 14 d Method: OECD Test Guideline 301C
	Bioaccumulative potential <u>Components:</u> Bis(2-ethoxyethyl) ether: Partition coefficient: n-octanol/water	:	log Pow: 0.39
	bis(2-(2-methoxyethoxy)ethy Partition coefficient: n-octanol/water	/I) € :	ether: log Pow: -0.84
	Propylene carbonate: Partition coefficient: n-octanol/water	:	log Pow: -0.41
	Gamma-Butyrolactone: Partition coefficient: n-octanol/water	:	log Pow: -0.566
	Mobility in soil No data available		
	Other adverse effects No data available		
SE	CTION 13. DISPOSAL CONSID	ER	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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. 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

UN/ID/NA number	:	NA 1993
Proper shipping name	:	Combustible liquid, n.o.s.
		(Diethylene Glycol Methyl Ethyl Ether, Bis(2-ethoxyethyl) ether)
Class	:	CBL
Packing group	:	
Labels	:	None
ERG Code	:	128
Marine pollutant	:	no
Remarks	:	Above applies only to containers over 119 gallons or 450 liters.
		Not regulated if shipped in packages less than or equal to 119 gallons (450 liters).

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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	:	Flammable (gases, aerosols, liquids, or solids) Skin corrosion or irritation Serious eye damage or eye irritation Reproductive toxicity		
SARA 313	:	The following components are subject to reporting le- established by SARA Title III, Section 313:		
		Diethylene Glycol Methyl Ethyl Ether	1002-67-1	>= 40 - < 50 %
		Bis(2-ethoxyethyl) ether	112-36-7	>= 20 - < 30 %

US State Regulations

Pennsylvania Right To Know

1002-67-1
112-36-7
143-24-8
108-32-7
1333-86-4

California Prop. 65

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

California List of Hazardous Substances Carbon black	1333-86-4
California Permissible Exposure Limits for Chemical Contaminants Carbon black	1333-86-4



Additional regulatory information

Bis(2-ethoxyethyl) 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

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits
		for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour
		workday during a 40-hour workweek
OSHA Z-1 / TWA	:	8-hour time weighted average

AICS - Australian Inventory of Chemical Substances: ASTM - American Society for the Testing of Materials: bw - Body weight: CERCLA - Comprehensive Environmental Response. Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN -Standard of the German Institute for Standardisation: DOT - Department of Transportation: DSL -Domestic Substances List (Canada): ECx - Concentration associated with x% response: EHS -Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS -Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx -Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA -International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration: ICAO - International Civil Aviation Organization: IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO -International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic 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



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

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



SAFETY DATA SHEET

Date of last issue: -Date of first issue: 2020-06-22

SECTION 1. IDENTIFICATION

Product name	:	VJ-MS31-CL220U
Manufacturer or supplier's de Company name of supplier	etai :	i ls MUTOH America Inc
Address	:	4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042
Telephone	:	480-968-7772
Emergency telephone	:	480-968-7772 During normal opening times

Recommended use of the chemical and restrictions on use Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accord Flammable liquids	an :	ce with 29 CFR 1910.1200 Category 4
Skin irritation	:	Category 2
GHS label elements		
Hazard pictograms	:	
Signal Word	:	Warning
Hazard Statements	:	H227 Combustible liquid. H315 Causes skin irritation.
Precautionary Statements	:	 Prevention: P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking. P264 Wash skin thoroughly after handling. P280 Wear protective gloves/ eye protection/ face protection. Response: P302 + P352 IF ON SKIN: Wash with plenty of soap and water. 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. 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)
Bis(2-ethoxyethyl) ether	112-36-7	>= 35 -< 45
(2-Methoxymethylethoxy)propanol	34590-94-8	>= 35 -< 45

SECTION 4. FIRST AID MEASURES

General advice	:	In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled	:	If inhaled, remove to fresh air. Get medical attention if symptoms occur.
In case of skin contact	:	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 if symptoms occur. Rinse mouth thoroughly with water.
Most important symptoms and effects, both acute and delayed	: k	Causes skin irritation.
Protection of first-aiders	:	First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists.
Notes to physician	:	Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Water spray Alcohol-resistant foam Carbon dioxide (CO2) Dry chemical
Unsuitable extinguishing media	:	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.
Advice on safe handling	:	Do not get on skin or clothing. Avoid inhalation of vapor or 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.



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 Explosives Gases

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters					
Components	CAS-No.	Value type (Form	Control parameters /	Basis	
(2-Methoxymethyl ethoxy)propanol	34590-94-8	TWA	100 ppm	ACGIH	
<u> </u>		STEL	150 ppm	ACGIH	
		TWA	100 ppm 600 mg/m ³	NIOSH REL	
		ST	150 ppm 900 mg/m ³	NIOSH REL	
		TWA	100 ppm 600 mg/m ³	OSHA Z-1	
Engineering measures : Personal protective equipment Respiratory protection : Hand protection		Ensure adequate ventilation, especially in confined areas. Minimize workplace exposure concentrations. 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.			
Material	:	Chemical-resistant g	loves		
Remarks	:	Choose gloves to pro the concentration sp not determined for th applications, we reco chemicals of the afor manufacturer. Take may impact the selec breaks and at the en	otect hands against chemicals ecific to place of work. Breakt he product. Change gloves oft ommend clarifying the resistan rementioned protective gloves note that the product is flamm ction of hand protection. Was d of workday.	s depending on hrough time is en! For special nce to s with the glove hable, which h hands before	
Eye protection	:	Wear the following p Safety glasses	ersonal protective equipment	:	
Skin and body prote	ction :	Select appropriate presistance data and potential. Wear the following p Flame retardant antis	rotective clothing based on ch an assessment of the local ex ersonal protective equipment static protective clothing, unle	nemical kposure : ss assessment	



demonstrates that the risk of explosive atmospheres or flash fires is low
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).
Ensure that eye flushing systems and safety showers are located close to the working place.

 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	:	slight
Odor Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	>= 160 °F / >= 71 °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	:	No data available
Density	:	0.9 - 1.1 g/cm ³
Solubility(ies) Water solubility	:	soluble
Solubility in other solvents	:	soluble Solvent: organic solvent
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, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle size	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Combustible liquid. Vapors may form explosive mixture with air. Can react with strong oxidizing agents.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure Inhalation Skin contact Ingestion Eye contact				
Acute toxicity Not classified based on availab Product:	ole i	nformation.		
	•	Method: Calculation method		
<u>Components:</u> Bis(2-ethoxyethyl) ether:				
Acute oral toxicity	:	LD50 (Rat): 4,970 mg/kg		
(2-Methoxymethylethoxy)prop Acute oral toxicity	pa :	n ol: LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 401		
Acute inhalation toxicity	:	LC50 (Rat): > 5.296 mg/l Exposure time: 4 h Test atmosphere: dust/mist Assessment: The substance or mixture has no acute inhalation toxicity		
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg		
Skin corrosion/irritation Causes skin irritation. <u>Components:</u> Bis(2-ethoxyethyl) ether: Result: Skin irritation Remarks: Based on data from s	sim	ilar materials		



(2-Methoxymethylethoxy)propanol:

Species: Rabbit Result: No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

Bis(2-ethoxyethyl) ether: Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405

(2-Methoxymethylethoxy)propanol:

Result: No eye irritation

Respiratory or skin sensitization

Skin sensitization Not classified based on available information. Respiratory sensitization Not classified based on available information. Components: Bis(2-ethoxyethyl) 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

(2-Methoxymethylethoxy)propanol:

Routes of exposure: Skin contact Species: Humans Result: negative

Germ cell mutagenicity

Not classified based on available information. <u>Components:</u> **Bis(2-ethoxyethyl) ether:** Capetoxicity in vitro

Genotoxicity in vitro	Test Type: Bacterial reverse mutation assay (AMES) 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
	Test Type: In vitro mammalian cell gene mutation test 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
(2-Methoxymethylethoxy)propa	anol:

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

Carcinogenicity



Not classified based on available information. Components: (2-Methoxymethylethoxy)propanol: Species: Rat Application Route: Inhalation (vapor) Exposure time: 2 Years Method: OECD Test Guideline 453 Result: negative			
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 Not classified based on available <u>Components:</u> Bis(2-ethoxyethyl) ether: Effects on fertility :	information. Test Type: One-generation reproduction toxicity study Species: Rat Application Route: Ingestion Result: negative		
Effects on fetal development :	Remarks: Based on data from similar materials Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative		
(2-Methoxymethylethoxy)propa Effects on fertility :	nol: Test Type: Two-generation reproduction toxicity study Species: Rat Application Route: Inhalation (vapor) Method: OECD Test Guideline 416 Result: negative		
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rat Application Route: Inhalation (vapor) Result: negative		
STOT-single exposure Not classified based on available information.			
STOT-repeated exposure Not classified based on available information.			

Repeated dose toxicity <u>Components:</u> Bis(2-ethoxyethyl) ether: Species: Rat NOAEL: 2.49 mg/l Application Route: inhalation (dust/mist/fume) Exposure time: 4 Weeks Method: OECD Test Guideline 412



(2-Methoxymethylethoxy)propanol:

Species: Rat NOAEL: 1.21 mg/l Application Route: Inhalation (vapor) Exposure time: 13 Weeks Method: OECD Test Guideline 413

Species: Rat NOAEL: 1,000 mg/kg Application Route: Ingestion Exposure time: 4 Weeks

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity <u>Components:</u> Bis(2-ethoxyethyl) 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)): > 1 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
(2-Methoxymethylethoxy)pro Toxicity to fish	pa :	nol: LC50 (Poecilia reticulata (guppy)): > 1,000 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1,919 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae	:	EC50 (Selenastrum capricornutum (green algae)): > 969 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)): >= 0.5 mg/l Exposure time: 22 d Method: OECD Test Guideline 211
Toxicity to microorganisms	:	EC50 (Pseudomonas putida): 4,168 mg/l Exposure time: 18 h
Persistence and degradabilit Components:	y	
Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F



(2-Methoxymethylethoxy)propanol:

Biodegradability	 · ·	Result: Readily biodegradable
2.00.09.0000.00	-	Biodegradation: 96 %
		Exposure time: 28 d
		Method: OECD Test Guideline 301F

Bioaccumulative potential <u>Components:</u>

Bis(2-ethoxyethyl) ether: Partition coefficient: : log Pow: 0.39 n-octanol/water

(2-Methoxymethylethoxy)propanol:

Partition coefficient: : log Pow: 0.004 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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. 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		
UN/ID/NA number	:	NA 1993
Proper shipping name	:	Combustible liquid, n.o.s.
		((2-Methoxymethylethoxy)propanol, Bis(2-ethoxyethyl) ether)
Class	:	CBL
Packing group	:	III
Labels	:	None
ERG Code	:	128
Marine pollutant	:	no
Remarks	:	Above applies only to containers over 119 gallons or 450 liters. Not regulated if shipped in packages less than or equal to 119 gallons (450 liters).



34590-94-8

112-36-7

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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	:	Flammable (gases, aerose Skin corrosion or irritation	ols, liquids, or so	olids)
SARA 313	:	The following components established by SARA Title	s are subject to r e III, Section 313	reporting levels
		Bis(2-ethoxyethyl) ether	112-36-7	>= 35 - < 45 %
		Triethylene glycol monomethyl ether	112-35-6	>= 15 - < 25 %
US State Regulations				
Pennsylvania Right To Know	N			

(2-Methoxymethylethoxy)propanol	34590-94-8
Bis(2-ethoxyethyl) ether	112-36-7
Triethylene glycol monomethyl ether	112-35-6
California List of Hazardous Substances	
(2-Methoxymethylethoxy)propanol	34590-94-8

California Permissible Exposure Limits for Chemical Contaminants (2-Methoxymethylethoxy)propanol

Additional regulatory information

Bis(2-ethoxyethyl) ether

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 abbreviatio	ns	
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
ACGIH / STEL	:	Short-term exposure limit
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour



		workday during a 40-hour workweek
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded at
		any time during a workday
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 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	:	Internal technical data, data from raw material SDSs, OECD
compile the Material Safety		eChem Portal search results and European Chemicals Agency,
Data Sheet		http://echa.europa.eu/

Revision Date : 2020-06-22

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SAFETY DATA SHEET

Date of last issue: -Date of first issue: 2020-07-01

SECTION 1. IDENTIFICATION

Product name	:	VJ-MS31-CY1000U / VJ-MS31-CY440U / VJ-MS31-CY220U
Manufacturer or supplier's d Company name of supplier	eta :	ils MUTOH America Inc
Address	:	4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042
Telephone	:	480-968-7772
Emergency telephone	:	480-968-7772 During normal opening times

Recommended use of the chemical and restrictions on use Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accord Flammable liquids	lan :	ce with 29 CFR 1910.1200 Category 4
Skin irritation	:	Category 2
Eye irritation	:	Category 2A
Reproductive toxicity	:	Category 1B
GHS label elements		
Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	H227 Combustible liquid. H315 Causes skin irritation. H319 Causes serious eye 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. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy



to do. Continue rinsing.

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

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

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

P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

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

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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 Methyl Ethyl Ether	1002-67-1	>= 40 -< 50
Bis(2-ethoxyethyl) ether	112-36-7	>= 20 -< 30
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	>= 10 -< 20
Propylene carbonate	108-32-7	>= 5 -< 10
Pigment Blue 15	147-14-8	>= 1 -< 5
Gamma-Butyrolactone	96-48-0	>= 1 -< 3

SECTION 4. FIRST AID MEASURES

General advice :	:	In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled :	:	If inhaled, remove to fresh air. Get medical attention.
In case of skin contact :	:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.
If swallowed :	:	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.
Most important symptoms and a effects, both acute and delayed	:	Causes skin irritation. Causes serious eye 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	y and supp	oortively.
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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 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	:	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.
Advice on safe handling	:	Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Do not get in eyes. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Keep container tightly closed. 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

Components	CAS-No.	Value type (Form of	Control parameters /	Basis
		exposure)	Permissible concentration	
Pigment Blue 15	147-14-8	TWA	1 mg/m³ (Copper)	NIOSH REL

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. Take note that the product is flammable, which may impact the selection of hand protection. 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, unless assessment demonstrates that the risk of explosive atmospheres or flash fires is low Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).
Hygiene measures	:	Ensure that eye flushing systems and safety showers are located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Color	:	cyan
Odor	:	slight
Odor Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	>= 70 °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


Vapor pressure	:	No data available
Relative vapor density	:	No data available
Density	:	0.9 - 1.1 g/cm ³
Solubility(ies) Water solubility	:	soluble
Solubility in other solvents	:	soluble Solvent: organic solvents
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, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle size	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Combustible liquid. Vapors may form explosive mixture with air. Can react with strong oxidizing agents.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

Not classified based on available information. <u>Product:</u> Acute oral toxicity : Acute toxicit

: Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method

<u>Components:</u> Diethylene Glycol Methyl Ethyl Ether:



Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg		
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg		
Bis(2-ethoxyethyl) ether: Acute oral toxicity : LD50 (Rat): 4,970 mg/kg				
bis(2-(2-methoxyethoxy)ethyl) ether: Acute oral toxicity : LD50 (Rat): 3,850 mg/kg				
Acute inhalation toxicity	:	LC50 (Rat): > 11 mg/l Exposure time: 7 h Test atmosphere: vapor Method: OECD Test Guideline 403 Remarks: Based on data from similar materials		
Acute dermal toxicity	:	LD50 (Rat): > 5,000 mg/kg Remarks: Based on data from similar materials		
Propylene carbonate:				
Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg		
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity		
Pigment Blue 15: Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 401 Assessment: The substance or mixture has no acute oral toxicity		
Acute dermal toxicity	:	LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 402		
Gamma-Butyrolactone: Acute oral toxicity	:	LD50 (Rat): 1,582 mg/kg		
Acute inhalation toxicity	:	LC50 (Rat): > 5.1 mg/l Exposure time: 4 h Test atmosphere: dust/mist		
Skin corrosion/irritation Causes skin irritation. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Result: Skin irritation				
Bis(2-ethoxyethyl) ether: Result: Skin irritation Remarks: Based on data from similar materials				
bis(2-(2-methoxyethoxy)ethyl) ether: Species: Rabbit Method: OECD Test Guideline 404				

Result: No skin irritation

Propylene carbonate:

Species: Rabbit Result: No skin irritation

Pigment Blue 15: Species: Rabbit



Result: No skin irritation

Gamma-Butyrolactone:

Species: Rabbit Result: No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405 Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) 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

Propylene carbonate:

Species: Rabbit Result: Irritation to eyes, reversing within 21 days Method: OECD Test Guideline 405

Pigment Blue 15:

Species: Rabbit Result: No eye irritation

Gamma-Butyrolactone:

Species: Rabbit Result: Irreversible effects on the eye 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 Methyl Ethyl Ether:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Bis(2-ethoxyethyl) 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

Pigment Blue 15:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Gamma-Butyrolactone:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Germ cell mutagenicity

Not classified based on available information.

Components:

Diethylene Glycol Methyl Et	thyl	Ether:
Genotoxicity in vitro :		Test Type: In vitro mammalian cell gene mutation test Result: positive Remarks: Based on data from similar materials
		Test Type: Chromosome aberration test in vitro Result: negative Remarks: Based on data from similar materials
		Test Type: Bacterial reverse mutation assay (AMES) 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
Germ cell mutagenicity - Assessment	:	Weight of evidence does not support classification as a germ cell mutagen.
Bis(2-ethoxyethyl) ether: Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) 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
		Test Type: In vitro mammalian cell gene mutation test 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
	Test Type: In vitro mammalian cell gene mutation test Result: negative
	Test Type: In vitro sister chromatid exchange assay in mammalian cells Result: positive
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
Propylene carbonate:	
Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Genotoxicity in vivo :	Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Intraperitoneal injection Result: negative
Diamont Dive 45	
Genotoxicity in vitro :	Test Type: Chromosome aberration test in vitro Result: negative
	Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative
	Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro) Result: negative
Genotoxicity in vivo :	Test Type: Mouse spot test (in vivo) Species: Mouse
	Application Route: Intraperitoneal injection Result: negative
Gamma-Butvrolactone:	
Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Carcinogenicity Not classified based on available <u>Components:</u> Propylene carbonate: Species: Mouse	information.
Application Route: Skin contact Exposure time: 2 Years Result: negative	



Gamma-Butyrolactone: Species: Rat Application Route: Ingestion Exposure time: 103 weeks Result: negative	
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. Su <u>Components:</u> Diethylene Glycol Methyl Ethyl Effects on fertility :	Ispected of damaging fertility. Ether: Test Type: Two-generation reproduction toxicity study Species: Mouse Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) ether: Effects on fertility :	Test Type: One-generation reproduction toxicity study Species: Rat Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative
bis(2-(2-methoxyethoxy)ethyl) Effects on fertility :	ether: 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: Rat Application Route: inhalation (vapor) Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials
	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion

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		Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials	
		Test Type: Embryo-fetal development Species: Mouse Application Route: Ingestion Result: positive Remarks: Based on data from similar materials	
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.	
Propylene carbonate: Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat, female Application Route: Ingestion Result: negative	
Pigment Blue 15: Effects on fertility	:	Test Type: Two-generation reproduction toxicity study Species: Rat Application Route: Ingestion Result: negative	
Effects on fetal development	:	Test Type: Reproduction/Developmental toxicity screening test Species: Rat Application Route: Ingestion Result: negative	
Gamma-Butyrolactone: Effects on fertility	:	Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test Species: Rat Application Route: Ingestion Method: OECD Test Guideline 422 Result: negative Remarks: Based on data from similar materials	
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative	
STOT-single exposure Not classified based on available information. <u>Components:</u> Gamma-Butyrolactone: Assessment: May cause drowsiness or dizziness.			
STOT-repeated exposure Not classified based on available information. <u>Components:</u> bis(2-(2-methoxyethoxy)etby() other:			

bis(2-(2-methoxyethoxy)ethyl) ether: Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Repeated dose toxicity <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Species: Rat



NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 90 Days Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) ether:

Species: Rat NOAEL: 2.49 mg/l Application Route: inhalation (dust/mist/fume) Exposure time: 4 Weeks Method: OECD Test Guideline 412

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

Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 28 Days Method: OECD Test Guideline 407 Remarks: Based on data from similar materials

Propylene carbonate:

Species: Rat NOAEL: > 5,000 mg/kg Application Route: Ingestion Exposure time: 90 Days

Pigment Blue 15:

Species: Rat NOAEL: 4,500 mg/kg Application Route: Ingestion Exposure time: 91 Days

Gamma-Butyrolactone:

Species: Rat NOAEL: 225 mg/kg Application Route: Ingestion Exposure time: 13 Weeks

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity <u>Components:</u> Diethylene Glycol Methyl Ethyl	Ether:
Toxicity to fish	LC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to daphnia and other : aquatic invertebrates	EC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to microorganisms :	NOEC: > 1,000 mg/l Exposure time: 3 h Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) 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)): > 1 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)ethy	ı) e	ther:
Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): > 100 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	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 8.996
		mg/l Exposure time: 72 h Method: OECD Test Guideline 201
		FC10 (Pseudokirchneriella subcapitata (green algae)): 2 871
		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)): > 100 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: Based on data from similar materials
Toxicity to microorganisms	:	EC10: > 100 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Remarks: Based on data from similar materials
Propylene carbonate:		
Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): > 1,000 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 48 h
Toxicity to algae	:	ErC50 (Desmodesmus subspicatus (green algae)): > 900 mg/l Exposure time: 72 h
Toxicity to microorganisms	:	EC50 (Pseudomonas putida): 25,619 mg/l Exposure time: 16 h
Pigment Blue 15:		
Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): > 100 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 500 mg/l Exposure time: 48 h



Toxicity to algae	:	ErC50 (Desmodesmus subspicatus (green algae)): > 100 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)): > 1 mg/l Exposure time: 21 d Method: OECD Test Guideline 211
Gamma-Butyrolactone: Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 56 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 500 mg/l Exposure time: 48 h
Toxicity to algae	:	EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l Exposure time: 72 h
		NOEC (Desmodesmus subspicatus (green algae)): 31.25 mg/l Exposure time: 72 h
Toxicity to microorganisms	:	IC50: 4,518 mg/l Exposure time: 40 h
Persistence and degradabilit <u>Components:</u> Diethylene Glycol Methyl Eth Biodegradability	y iyl :	Ether: Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) ether: Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F
bis(2-(2-methoxyethoxy)ethy Biodegradability	'l) e :	ether: Result: Inherently biodegradable. Method: OECD Test Guideline 302B Remarks: Based on data from similar materials
Propylene carbonate: Biodegradability	:	Result: Readily biodegradable. Biodegradation: 87.7 % Exposure time: 29 d Method: OECD Test Guideline 301B
Pigment Blue 15: Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301C
Gamma-Butyrolactone: Biodegradability	:	Result: Readily biodegradable. Biodegradation: 77 % Exposure time: 14 d Method: OECD Test Guideline 301C



Bioaccumulative potential

Components:		
Bis(2-ethoxyethyl) ether:		
Partition coefficient:	:	log Pow: 0.39
n-octanol/water		

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

Partition coefficient:	:	log Pow: -0.84
n-octanol/water		

Propylene carbonate:

Partition coefficient:	:	log Pow: -0.41
n-octanol/water		

Gamma-Butyrolactone:

Partition coefficient:	:	log Pow: -0.566
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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. 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		
UN/ID/NA number	:	NA 1993
Proper shipping name	:	Combustible liquid, n.o.s.
		(Diethylene Glycol Methyl Ethyl Ether, Bis(2-ethoxyethyl) ether)
Class	:	CBL
Packing group	:	
Labels	:	None
ERG Code	:	128
Marine pollutant	:	no
Remarks	:	Above applies only to containers over 119 gallons or 450 liters.



Not regulated if shipped in packages less than or equal to 119 gallons (450 liters).

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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	:	Flammable (gases, aeroso Skin corrosion or irritation Serious eye damage or ey Reproductive toxicity	ols, liquids, or so re irritation	lids)
	SARA 313	:	The following components established by SARA Title	are subject to re III, Section 313	eporting levels
			Diethylene Glycol Methyl Ethyl Ether	1002-67-1	>= 40 - < 50 %
			Bis(2-ethoxyethyl) ether	112-36-7	>= 20 - < 30 %
	US State Regulations				
	Pennsylvania Right To Know Diethylene Glycol Methy Bis(2-ethoxyethyl) ether bis(2-(2-methoxyethoxy) Propylene carbonate Pigment Blue 15 California Prop. 65 This product does not contain an or any other reproductive defect	ny:s.	thyl Ether nyl) ether chemicals known to the St	ate of California	1002-67-1 112-36-7 143-24-8 108-32-7 147-14-8 to cause cancer, birth,
	California List of Hazardous S Pigment Blue 15	u	ostances		147-14-8
	Additional regulatory informat Bis(2-ethoxyethyl) ether The United States Environmenta Use Rule (SNUR) for one of the See 40 CFR § 721.10229.	tic al	Protection Agency (USEPA components in this product.	۱) has establishe	112-36-7 ed a Significant New
SEC	CTION 16. OTHER INFORMATIC)N			

 Further information

 Full text of other abbreviations

 ACGIH
 :

 USA. ACGIH Threshold Limit Values (TLV)



NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits
		for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour
		workday during a 40-hour workweek
OSHA Z-1 / TWA	:	8-hour time weighted average

AICS - Australian Inventory of Chemical Substances: ASTM - American Society for the Testing of Materials: bw - Body weight: CERCLA - Comprehensive Environmental Response. Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN -Standard of the German Institute for Standardisation: DOT - Department of Transportation: DSL -Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS -Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS -Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx -Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA -International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO -International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified: NFPA - National Fire Protection Association: NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate: NTP - National Toxicology Program: NZIoC - New Zealand Inventory of Chemicals: OECD - Organization for Economic Co-operation and Development: OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic 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	:	Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency,
Data Sheet		http://echa.europa.eu/

Revision Date : 2020-07-01

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

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



SAFETY DATA SHEET

Date of last issue: -Date of first issue: 2021-01-21

SECTION 1. IDENTIFICATION

Product name	:	VJ-MS31-LC1000U / VJ-MS31-LC220U
Manufacturer or supplier's d Company name of supplier	eta :	ils MUTOH America Inc
Address	:	4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042
Telephone	:	480-968-7772
Emergency telephone	:	480-968-7772 During normal opening times

Recommended use of the chemical and restrictions on use Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accord Flammable liquids	dan :	ce with 29 CFR 1910.1200 Category 4
Skin irritation	:	Category 2
Eye irritation	:	Category 2A
Reproductive toxicity	:	Category 1B
GHS label elements		
Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	H227 Combustible liquid. H315 Causes skin irritation. H319 Causes serious eye 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. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy



to do. Continue rinsing.

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

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

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

P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

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

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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 Methyl Ethyl Ether	1002-67-1	>= 40 -< 50
Bis(2-ethoxyethyl) ether	112-36-7	>= 30 -< 40
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	>= 10 -< 20
Propylene carbonate	108-32-7	>= 5 -< 10
Gamma-Butyrolactone	96-48-0	>= 1 -< 3
Pigment Blue 15	147-14-8	< 1

SECTION 4. FIRST AID MEASURES

General advice	:	In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled	:	If inhaled, remove to fresh air. Get medical attention.
In case of skin contact	:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.
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	: b	Causes skin irritation. Causes serious eye 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.
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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 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	:	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.
Advice on safe handling	:	Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Do not get in eyes. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Keep container tightly closed. 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

Components	CAS-No.	Value type (Form of	Control parameters /	Basis
		exposure)	Permissible concentration	
Pigment Blue 15	147-14-8	TWA	1 mg/m³ (Copper)	NIOSH REL

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. Take note that the product is flammable, which may impact the selection of hand protection. 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, unless assessment demonstrates that the risk of explosive atmospheres or flash fires is low Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).
Hygiene measures :	•	Ensure that eye flushing systems and safety showers are located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Color	:	cyan
Odor	:	slight
Odor Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	>= 70 °C Method: Seta closed cup
Evaporation rate	:	No data available
Evaporation rate Flammability (solid, gas)	:	No data available Not applicable
Evaporation rate Flammability (solid, gas) Flammability (liquids)	: : :	No data available Not applicable No data available
Evaporation rate Flammability (solid, gas) Flammability (liquids) Upper explosion limit / Upper flammability limit	:	No data available Not applicable No data available No data available



Vapor pressure	:	No data available
Relative vapor density	:	No data available
Density	:	0.9 - 1.1 g/cm ³
Solubility(ies) Water solubility	:	soluble
Solubility in other solvents	:	soluble Solvent: organic solvents
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, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle size	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Combustible liquid. Vapors may form explosive mixture with air. Can react with strong oxidizing agents.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

Not classified based on available information. <u>Product:</u> Acute oral toxicity : Acute toxicit

: Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method

<u>Components:</u> Diethylene Glycol Methyl Ethyl Ether:



Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg
Bis(2-ethoxyethyl) ether: Acute oral toxicity	:	LD50 (Rat): 4,970 mg/kg
bis(2-(2-methoxyethoxy)eth Acute oral toxicity	nyl) e :	ether: LD50 (Rat): 3,850 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 11 mg/l Exposure time: 7 h Test atmosphere: vapor Method: OECD Test Guideline 403 Remarks: Based on data from similar materials
Acute dermal toxicity	:	LD50 (Rat): > 5,000 mg/kg Remarks: Based on data from similar materials
Propylene carbonate: Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity
Gamma-Butyrolactone: Acute oral toxicity	:	LD50 (Rat): 1,582 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 5.1 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Pigment Blue 15: Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 401 Assessment: The substance or mixture has no acute oral toxicity
Acute dermal toxicity	:	LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 402
Skin corrosion/irritation Causes skin irritation. <u>Components:</u> Diethylene Glycol Methyl E Result: Skin irritation	thyl	Ether:
Bis(2-ethoxyethyl) ether: Result: Skin irritation Remarks: Based on data fror	n sirr	nilar materials
bis(2-(2-methoxyethoxy)eth Species: Rabbit Method: OECD Test Guidelin Result: No skin irritation	n yl) e ne 40	ether: 4
Propylene carbonate: Species: Rabbit		

Result: No skin irritation

Gamma-Butyrolactone: Species: Rabbit



Result: No skin irritation

Pigment Blue 15:

Species: Rabbit Result: No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405 Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) 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

Propylene carbonate:

Species: Rabbit Result: Irritation to eyes, reversing within 21 days Method: OECD Test Guideline 405

Gamma-Butyrolactone:

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

Pigment Blue 15:

Species: Rabbit Result: No eye irritation

Respiratory or skin sensitization Skin sensitization

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

Diethylene Glycol Methyl Ethyl Ether:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Bis(2-ethoxyethyl) 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

Gamma-Butyrolactone:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Pigment Blue 15:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Germ cell mutagenicity

Not classified based on available information.

Components:

Diethylene Glycol Methyl E	thyl	Ether:
Genotoxicity in vitro	:	Test Type: In vitro mammalian cell gene mutation test Result: positive Remarks: Based on data from similar materials
		Test Type: Chromosome aberration test in vitro Result: negative Remarks: Based on data from similar materials
		Test Type: Bacterial reverse mutation assay (AMES) 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
Germ cell mutagenicity - Assessment	:	Weight of evidence does not support classification as a germ cell mutagen.
Bis(2-ethoxyethyl) ether: Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) 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
		Test Type: In vitro mammalian cell gene mutation test 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) e Genotoxicity in vitro :	e ther: Test Type: Bacterial reverse mutation assay (AMES) Result: negative
	Test Type: In vitro mammalian cell gene mutation test Result: negative
	Test Type: In vitro sister chromatid exchange assay in mammalian cells Result: positive
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
Propylene carbonate: Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Genotoxicity in vivo :	Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse
	Application Route: Intraperitoneal injection Result: negative
Gamma-Butyrolactone:	
Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Pigment Blue 15:	
Genotoxicity in vitro :	Test Type: Chromosome aberration test in vitro Result: negative
	Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative
	Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro) Result: negative
Genotoxicity in vivo :	Test Type: Mouse spot test (in vivo) Species: Mouse Application Route: Intraperitoneal injection Result: negative
Carcinogenicity Not classified based on available <u>Components:</u> Propylene carbonate: Species: Mouse	information.

Application Route: Skin contact Exposure time: 2 Years Result: negative



Gamma-Butyrolactone: Species: Rat Application Route: Ingestion Exposure time: 103 weeks Result: negative	
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. Su <u>Components:</u> Diethylene Glycol Methyl Ethyl Effects on fertility :	spected of damaging fertility. Ether: Test Type: Two-generation reproduction toxicity study Species: Mouse Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) ether: Effects on fertility :	Test Type: One-generation reproduction toxicity study Species: Rat Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative
bis(2-(2-methoxyethoxy)ethyl) e Effects on fertility :	ether: 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: Rat Application Route: inhalation (vapor) Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials
	Species: Rabbit Application Route: Ingestion

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		Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials
		Test Type: Embryo-fetal development Species: Mouse Application Route: Ingestion Result: positive Remarks: Based on data from similar materials
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.
Propylene carbonate: Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat, female Application Route: Ingestion Result: negative
Gamma-Butyrolactone: Effects on fertility	:	Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test Species: Rat Application Route: Ingestion Method: OECD Test Guideline 422 Result: negative Remarks: Based on data from similar materials
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative
Pigment Blue 15: Effects on fertility	:	Test Type: Two-generation reproduction toxicity study Species: Rat Application Route: Ingestion Result: negative
Effects on fetal development	:	Test Type: Reproduction/Developmental toxicity screening test Species: Rat Application Route: Ingestion Result: negative
STOT-single exposure Not classified based on available information. Components: Gamma-Butyrolactone: Assessment: May cause drowsiness or dizziness		
STOT-repeated exposure		

Not classified based on available information. <u>Components:</u> **bis(2-(2-methoxyethoxy)ethyl) ether:** Assessment: No significant health effects observed in animals at concentrations of 100 mg/kg bw or less.

Repeated dose toxicity <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Species: Rat



NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 90 Days Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) ether:

Species: Rat NOAEL: 2.49 mg/l Application Route: inhalation (dust/mist/fume) Exposure time: 4 Weeks Method: OECD Test Guideline 412

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

Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 28 Days Method: OECD Test Guideline 407 Remarks: Based on data from similar materials

Propylene carbonate:

Species: Rat NOAEL: > 5,000 mg/kg Application Route: Ingestion Exposure time: 90 Days

Gamma-Butyrolactone:

Species: Rat NOAEL: 225 mg/kg Application Route: Ingestion Exposure time: 13 Weeks

Pigment Blue 15:

Species: Rat NOAEL: 4,500 mg/kg Application Route: Ingestion Exposure time: 91 Days

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity <u>Components:</u> Diethylene Glycol Methyl Ethyl	Ether:
Toxicity to fish :	LC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to daphnia and other : aquatic invertebrates	EC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to microorganisms :	NOEC: > 1,000 mg/l Exposure time: 3 h Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) 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)): > 1 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)ethy Toxicity to fish	rl) e :	ether: LC50 (Danio rerio (zebra fish)): > 100 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	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 8,996 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
		EC10 (Pseudokirchneriella subcapitata (green algae)): 2,871 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)): > 100 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: Based on data from similar materials
Toxicity to microorganisms	:	EC10: > 100 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Remarks: Based on data from similar materials
Propylene carbonate: Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): > 1,000 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 48 h
Toxicity to algae	:	ErC50 (Desmodesmus subspicatus (green algae)): > 900 mg/l Exposure time: 72 h
Toxicity to microorganisms	:	EC50 (Pseudomonas putida): 25,619 mg/l Exposure time: 16 h
Gamma-Butyrolactone: Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 56 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 500 mg/l Exposure time: 48 h
Toxicity to algae	:	EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l



Exposure time: 72 h

	NOEC (Desmodesmus subspicatus (green algae)): 31.25 mg/l Exposure time: 72 h
Toxicity to microorganisms :	IC50: 4,518 mg/l Exposure time: 40 h
Pigment Blue 15:	
Toxicity to fish :	LC50 (Danio rerio (zebra fish)): > 100 mg/l Exposure time: 96 h Method: OECD Test Guideline 203
Toxicity to daphnia and other : aquatic invertebrates	EC50 (Daphnia magna (Water flea)): > 500 mg/l Exposure time: 48 h
Toxicity to algae :	ErC50 (Desmodesmus subspicatus (green algae)): > 100 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)): > 1 mg/l Exposure time: 21 d Method: OECD Test Guideline 211
Persistence and degradability	
Components:	Eth and
Biodegradability	Result: Not readily biodegradable.
	Biodegradation: 0 %
	Exposure time: 28 d Method: OECD Test Guideline 301E
	Remarks: Based on data from similar materials
Biodegradability :	Result: Not readily biodegradable.
5 ,	Biodegradation: 0 %
	Exposure time: 28 d Method: OECD Test Guideline 301F
bis(2-(2-methoxyethoxy)ethyl) e Biodegradability	ether: Result: Inherently biodegradable
Diddegradability .	Method: OECD Test Guideline 302B
	Remarks: Based on data from similar materials
Propylene carbonate:	
Biodegradability :	Result: Readily biodegradable.
	Biodegradation: 87.7 %
	Method: OECD Test Guideline 301B
Gamma-Butyrolactone:	
Biodegradability :	Result: Readily biodegradable.
	Biodegradation: 77 %
	Method: OECD Test Guideline 301C
Pigment Blue 15:	
Biodegradability	Result: Not readily biodegradable.
	Biodegradation: 0 %
	Method: OECD Test Guideline 301C



Bioaccumulative potential

Components:		
Bis(2-ethoxyethyl) ether:		
Partition coefficient:	:	log Pow: 0.39
n-octanol/water		

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

Partition coefficient:	:	log Pow: -0.84
n-octanol/water		

Propylene carbonate:

Partition coefficient:	:	log Pow: -0.41
n-octanol/water		

Gamma-Butyrolactone:

Partition coefficient:	:	log Pow: -0.566
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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. 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		
UN/ID/NA number	:	NA 1993
Proper shipping name	:	Combustible liquid, n.o.s. (Diethylene Glycol Methyl Ethyl Ether, Bis(2-ethoxyethyl) ether)
Class	:	CBL
Packing group	:	III
Labels	:	None
ERG Code	:	128
Marine pollutant Remarks	:	no Above applies only to containers over 119 gallons or 450 liters.



Not regulated if shipped in packages less than or equal to 119 gallons (450 liters).

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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 :	: Flammable (gases, aerosols, liquids, or solids) Skin corrosion or irritation Serious eye damage or eye irritation Reproductive toxicity			
	SARA 313 :	The following co established by S	mponents SARA Title	are subject to rolling III, Section 313	eporting levels :
		Diethylene Glyco Ethyl Ether	ol Methyl	1002-67-1	>= 40 - < 50 %
		Bis(2-ethoxyethy	/l) ether	112-36-7	>= 30 - < 40 %
	US State Regulations				
	Pennsylvania Right To Know Diethylene Glycol Methyl Bis(2-ethoxyethyl) ether bis(2-(2-methoxyethoxy)e Propylene carbonate Pigment Blue 15 California Prop. 65 This product does not contain an	Ethyl Ether hyl) ether / chemicals knowr	n to the St	ate of California	1002-67-1 112-36-7 143-24-8 108-32-7 147-14-8 to cause cancer, birth,
	California List of Hazardous Su Pigment Blue 15	bstances			147-14-8
	Additional regulatory informati Bis(2-ethoxyethyl) ether The United States Environmental Use Rule (SNUR) for one of the of See 40 CFR § 721.10229.	on Protection Agenc components in this	ey (USEPA s product.	۱) has establishe	112-36-7 ed a Significant New
SEC	TION 16. OTHER INFORMATIO	1			

Further information Full text of other abbreviations ACGIH : USA. ACGIH Threshold Limit Values (TLV)



NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits
		for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour
		workday during a 40-hour workweek
OSHA Z-1 / TWA	:	8-hour time weighted average

AICS - Australian Inventory of Chemical Substances: ASTM - American Society for the Testing of Materials: bw - Body weight: CERCLA - Comprehensive Environmental Response. Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN -Standard of the German Institute for Standardisation: DOT - Department of Transportation: DSL -Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS -Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS -Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx -Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA -International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO -International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified: NFPA - National Fire Protection Association: NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate: NTP - National Toxicology Program: NZIoC - New Zealand Inventory of Chemicals: OECD - Organization for Economic Co-operation and Development: OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic 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 :	Internal technical data, data from raw material SDSs, OECD
compile the Material Safety	eChem Portal search results and European Chemicals Agency,
Data Sheet	http://echa.europa.eu/

Revision Date : 2021-01-21

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

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



SAFETY DATA SHEET

Date of last issue: -Date of first issue: 2021-01-21

SECTION 1. IDENTIFICATION

Product name	:	VJ-MS31-LK1000U / VJ-MS31-LK220U	
Manufacturer or supplier's d Company name of supplier	eta :	ils MUTOH America Inc	
Address	:	4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042	
Telephone	:	480-968-7772	
Emergency telephone	:	480-968-7772 During normal opening times	

Recommended use of the chemical and restrictions on use Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accord Flammable liquids	lan :	ce with 29 CFR 1910.1200 Category 4
Skin irritation	:	Category 2
Eye irritation	:	Category 2A
Reproductive toxicity	:	Category 1B
GHS label elements		
Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	H227 Combustible liquid. H315 Causes skin irritation. H319 Causes serious eye 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. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy



to do. Continue rinsing.

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

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

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

P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

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

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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 Methyl Ethyl Ether	1002-67-1	>= 40 -< 50
Bis(2-ethoxyethyl) ether	112-36-7	>= 30 -< 40
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	>= 10 -< 20
Propylene carbonate	108-32-7	>= 5 -< 10
Gamma-Butyrolactone	96-48-0	>= 1 -< 3
Carbon black	1333-86-4	< 1

SECTION 4. FIRST AID MEASURES

General advice	:	In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled	:	If inhaled, remove to fresh air. Get medical attention.
In case of skin contact	:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.
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	: b	Causes skin irritation. Causes serious eye 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.
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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.
Advice on safe handling	 Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Do not get in eyes. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Keep container tightly closed. 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

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Ingredients with workplace control parameters

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

Engineering measures

: Minimize workplace exposure concentrations. Use with local exhaust ventilation.

Personal protective equipment

Respiratory protection

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

Μ	L	ΓΟ	

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. Take note that the product is flammable, which may impact the selection of hand protection. 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, unless assessment demonstrates that the risk of explosive atmospheres or flash fires is low 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	:	slight
Odor Threshold		No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range		No data available
Flash point	:	>= 70 °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


flammability limit

Vapor pressure	:	No data available
Relative vapor density	:	No data available
Density	:	0.9 - 1.1 g/cm ³
Solubility(ies) Water solubility	:	soluble
Solubility in other solvents	:	soluble Solvent: organic solvents
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, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Particle size	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not classified as a reactivity hazard.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Combustible liquid. Vapors may form explosive mixture with air. Can react with strong oxidizing agents.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	No hazardous decomposition products are known.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure Inhalation Skin contact Ingestion Eye contact Acute toxicity Not classified based on available information. Product: : Acute toxicity estimate: > 5,000 mg/kg Acute oral toxicity Method: Calculation method

Components:



Diethylene Glycol Methyl Eth Acute oral toxicity	hyl :	Ether: LD50 (Rat): > 5,000 mg/kg		
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg		
Bis(2-ethoxyethyl) ether: Acute oral toxicity	:	LD50 (Rat): 4,970 mg/kg		
bis(2-(2-methoxyethoxy)ethy Acute oral toxicity	yl) e :	e ther: LD50 (Rat): 3,850 mg/kg		
Acute inhalation toxicity	:	LC50 (Rat): > 11 mg/l Exposure time: 7 h Test atmosphere: vapor Method: OECD Test Guideline 403 Remarks: Based on data from similar materials		
Acute dermal toxicity	:	LD50 (Rat): > 5,000 mg/kg Remarks: Based on data from similar materials		
Propylene carbonate: Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg		
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity		
Gamma-Butyrolactone: Acute oral toxicity	:	LD50 (Rat): 1,582 mg/kg		
Acute inhalation toxicity	:	LC50 (Rat): > 5.1 mg/l Exposure time: 4 h Test atmosphere: dust/mist		
Carbon black: Acute oral toxicity	:	LD50 (Rat): > 10,000 mg/kg		
Skin corrosion/irritation Causes skin irritation. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Result: Skin irritation				
Bis(2-ethoxyethyl) ether: Result: Skin irritation Remarks: Based on data from similar materials				
bis(2-(2-methoxyethoxy)ethyl) ether: Species: Rabbit Method: OECD Test Guideline 404 Result: No skin irritation				
Propylene carbonate: Species: Rabbit Result: No skin irritation				
Gamma-Butyrolactone: Species: Rabbit Result: No skin irritation				
Carbon black:				

Species: Rabbit



Result: No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405 Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) 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

Propylene carbonate:

Species: Rabbit Result: Irritation to eyes, reversing within 21 days Method: OECD Test Guideline 405

Gamma-Butyrolactone:

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

Carbon black:

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 Methyl Ethyl Ether:** Test Type: Local lymph node assay (LLNA)

Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Bis(2-ethoxyethyl) 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

Gamma-Butyrolactone:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Carbon black:

Test Type: Buehler Test Routes of exposure: Skin contact Species: Guinea pig Method: OECD Test Guideline 406 Result: negative

Germ cell mutagenicity Not classified based on available information. **Components: Diethylene Glycol Methyl Ethyl Ether:** Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test Result: positive Remarks: Based on data from similar materials Test Type: Chromosome aberration test in vitro Result: negative Remarks: Based on data from similar materials Test Type: Bacterial reverse mutation assay (AMES) 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 Germ cell mutagenicity -Weight of evidence does not support classification as a germ cell Assessment mutagen. **Bis(2-ethoxyethyl) ether:** Genotoxicity in vitro Test Type: Bacterial reverse mutation assay (AMES) 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 Test Type: In vitro mammalian cell gene mutation test 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

Remarks: Based on data from similar materials

Result: negative



bis(2-(2-methoxyethoxy)ethyl) ether:					
Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Result: negative				
	Test Type: In vitro mammalian cell gene mutation test Result: negative				
	Test Type: In vitro sister chromatid exchange assay in mammalian cells Result: positive				
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				
Pronylana carbonata:					
Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Result: negative				
Genotoxicity in vivo :	Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Intraperitoneal injection Result: negative				
Gamma-Butyrolactone:					
Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Result: negative				
Carbon black: Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Method: OECD Test Guideline 471 Result: negative				
	Test Type: In vitro mammalian cell gene mutation test Method: OECD Test Guideline 476 Result: negative				
	Test Type: In vitro sister chromatid exchange assay in mammalian cells Method: OECD Test Guideline 479 Result: negative				
	Test Type: in vitro micronucleus test Method: OECD Test Guideline 487 Result: negative				
Genotoxicity in vivo :	Test Type: Sex-linked recessive lethal test in Drosophila melanogaster (in vivo) Species: Drosophila melanogaster (vinegar fly) Application Route: Ingestion Method: OECD Test Guideline 477 Result: negative				
Carcinogenicity					

Carcinogenicity Not classified based on available information. <u>Components:</u> Propylene carbonate:



Species: Mouse Application Route: Skin contact Exposure time: 2 Years Result: negative

Gamma-Butyrolactone:

Species: Rat Application Route: Ingestion Exposure time: 103 weeks Result: negative

Carbon black:

Species: Rat Application Route: Inhalation Exposure time: 24 Months Result: positive

Species: Rat Application Route: Ingestion Exposure time: 2 Years Result: negative

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

IARC	Group 2B: Possibly carcinogenic to humans Carbon black	1333-86-4				
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.					
NTP	No ingredient of this product present at level equal to 0.1% is identified as a known or ant by NTP.	s greater than or icipated carcinogen				
Reproductive toxicity May damage the unborn child. Suspected of damaging fertility. Components: Diethylene Glycol Methyl Ethyl Ether:						
Effects on fertility :	Test Type: Two-generation reproduction toxi Species: Mouse Application Route: Ingestion Result: negative Remarks: Based on data from similar materi	city study als				
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative Remarks: Based on data from similar materi	als				
Bis(2-ethoxyethyl) ether: Effects on fertility :	Test Type: One-generation reproduction toxi Species: Rat Application Route: Ingestion Result: negative Remarks: Based on data from similar materi	icity study als				
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative					



bis(2-(2-methoxyethoxy)ethyl) ether:					
Effects on fertility	:	Test Type: Reproduction/Developmental toxicity screening test Species: Rat Application Route: Ingestion Method: OECD Test Guideline 421 Result: positive			
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat Application Route: inhalation (vapor) Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials			
		Test Type: Embryo-fetal development Species: Mouse Application Route: Ingestion Result: positive Remarks: Based on data from similar materials			
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.			
Propylene carbonate: Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat, female Application Route: Ingestion Result: negative			
Gamma-Butyrolactone: Effects on fertility	:	Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test Species: Rat Application Route: Ingestion Method: OECD Test Guideline 422 Result: negative Remarks: Based on data from similar materials			
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative			
Carbon black: Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Method: OECD Test Guideline 414 Result: negative			
		Lest Type: Embryo-fetal development Species: Mouse Application Route: inhalation (dust/mist/fume) Result: negative			



STOT-single exposure

Not classified based on available information.

Components:

Gamma-Butyrolactone: Assessment: May cause drowsiness or dizziness.

STOT-repeated exposure

Not classified based on available information.

Components:

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

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

Repeated dose toxicity

Components: Diethylene Glycol Methyl Ethyl Ether: Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 90 Days Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) ether:

Species: Rat NOAEL: 2.49 mg/l Application Route: inhalation (dust/mist/fume) Exposure time: 4 Weeks Method: OECD Test Guideline 412

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

Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 28 Days Method: OECD Test Guideline 407 Remarks: Based on data from similar materials

Propylene carbonate:

Species: Rat NOAEL: > 5,000 mg/kg Application Route: Ingestion Exposure time: 90 Days

Gamma-Butyrolactone:

Species: Rat NOAEL: 225 mg/kg Application Route: Ingestion Exposure time: 13 Weeks

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Toxicity to fish : LC50: > 100 mg/l Exposure time: 96 h

Exposure time: 96 h Remarks: Based on data from similar materials



Toxicity to daphnia and other aquatic invertebrates	:	EC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to microorganisms	:	NOEC: > 1,000 mg/l Exposure time: 3 h Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) 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)): > 1 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)ethy	l) e	ether:
Toxicity to fish	:	LC50 (Danio rerio (zebra fish)): > 100 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	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 8,996 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
		EC10 (Pseudokirchneriella subcapitata (green algae)): 2,871 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)): > 100 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: Based on data from similar materials
Toxicity to microorganisms	:	EC10: > 100 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Remarks: Based on data from similar materials
Propylene carbonate: Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): > 1,000 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 48 h
Toxicity to algae	:	ErC50 (Desmodesmus subspicatus (green algae)): > 900 mg/l Exposure time: 72 h



Toxicity to microorganisms	:	EC50 (Pseudomonas putida): 25,619 mg/l Exposure time: 16 h
Gamma-Butyrolactone: Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 56 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 500 mg/l Exposure time: 48 h
Toxicity to algae	:	EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l Exposure time: 72 h
		NOEC (Desmodesmus subspicatus (green algae)): 31.25 mg/l Exposure time: 72 h
Toxicity to microorganisms	:	IC50: 4,518 mg/l Exposure time: 40 h
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	:	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
Persistence and degradabili <u>Components:</u>	ty	
Diethylene Glycol Methyl Eth Biodegradability	hyl∣ ∶	Ether: Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) ether: Biodegradability	:	Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F
bis(2-(2-methoxyethoxy)ethy Biodegradability	/l) e :	ther: Result: Inherently biodegradable. Method: OECD Test Guideline 302B Remarks: Based on data from similar materials
Propylene carbonate: Biodegradability	:	Result: Readily biodegradable.



			Biodegradation: 87.7 % Exposure time: 29 d Method: OECD Test Guideline 301B
	Gamma-Butyrolactone: Biodegradability	:	Result: Readily biodegradable. Biodegradation: 77 % Exposure time: 14 d Method: OECD Test Guideline 301C
	Bioaccumulative potential <u>Components:</u> Bis(2-ethoxyethyl) ether: Partition coefficient: n-octanol/water	:	log Pow: 0.39
	bis(2-(2-methoxyethoxy)ethy Partition coefficient: n-octanol/water	/I) € :	ether: log Pow: -0.84
	Propylene carbonate: Partition coefficient: n-octanol/water	:	log Pow: -0.41
	Gamma-Butyrolactone: Partition coefficient: n-octanol/water	:	log Pow: -0.566
	Mobility in soil No data available		
	Other adverse effects No data available		
SEC	CTION 13. DISPOSAL CONSID	ER	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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. 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

UN/ID/NA number	:	NA 1993
Proper shipping name	:	Combustible liquid, n.o.s. (Diethylene Glycol Methyl Ethyl Ether, Bis(2-ethoxyethyl) ether)
Class	:	CBL
Packing group	:	III
Labels	:	None
ERG Code	:	128
Marine pollutant	:	no
Remarks	:	Above applies only to containers over 119 gallons or 450 liters. Not regulated if shipped in packages less than or equal to 119
		galions (450 liters).

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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	:	Flammable (gases, aeroso Skin corrosion or irritation Serious eye damage or ey Reproductive toxicity	ols, liquids, or so /e irritation	blids)
SARA 313	:	: The following components are subject to reporting established by SARA Title III, Section 313:		
		Diethylene Glycol Methyl Ethyl Ether	1002-67-1	>= 40 - < 50 %
		Bis(2-ethoxyethyl) ether	112-36-7	>= 30 - < 40 %

US State Regulations

Pennsylvania Right To Know

Diethylene Glycol Methyl Ethyl Ether	1002-67-1
Bis(2-ethoxyethyl) ether	112-36-7
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8
Propylene carbonate	108-32-7
Carbon black	1333-86-4

California Prop. 65

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

California List of Hazardous Substances Carbon black	1333-86-4	
California Permissible Exposure Limits for Chemical Contaminants Carbon black	1333-86-4	



Additional regulatory information

Bis(2-ethoxyethyl) 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

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits
		for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour
		workday during a 40-hour workweek
OSHA Z-1 / TWA	:	8-hour time weighted average

AICS - Australian Inventory of Chemical Substances: ASTM - American Society for the Testing of Materials: bw - Body weight: CERCLA - Comprehensive Environmental Response. Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN -Standard of the German Institute for Standardisation: DOT - Department of Transportation: DSL -Domestic Substances List (Canada): ECx - Concentration associated with x% response: EHS -Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS -Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx -Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA -International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration: ICAO - International Civil Aviation Organization: IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO -International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic 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



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

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



SAFETY DATA SHEET

Date of last issue: -Date of first issue: 2021-01-21

SECTION 1. IDENTIFICATION

Product name	:	VJ-MS31-LM1000U / VJ-MS31-LM220U
Manufacturer or supplier's d Company name of supplier	eta :	ils MUTOH America Inc
Address	:	4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042
Telephone	:	480-968-7772
Emergency telephone	:	480-968-7772 During normal opening times

Recommended use of the chemical and restrictions on use Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accord Flammable liquids	lan :	ce with 29 CFR 1910.1200 Category 4
Skin irritation	:	Category 2
Eye irritation	:	Category 2A
Reproductive toxicity	:	Category 1B
GHS label elements		
Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	H227 Combustible liquid. H315 Causes skin irritation. H319 Causes serious eye 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. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy



to do. Continue rinsing.

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

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

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

P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

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

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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 Methyl Ethyl Ether	1002-67-1	>= 40 -< 50
Bis(2-ethoxyethyl) ether	112-36-7	>= 30 -< 40
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	>= 10 -< 20
Propylene carbonate	108-32-7	>= 5 -< 10
Gamma-Butyrolactone	96-48-0	>= 1 -< 3

SECTION 4. FIRST AID MEASURES

General advice	:	In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled	:	If inhaled, remove to fresh air. Get medical attention.
In case of skin contact	:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.
If swallowed	:	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.
Most important symptoms and effects, both acute and delayed	: k	Causes skin irritation. Causes serious eye 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 MEAS	SU	RES
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.
Advice on safe handling	:	Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Do not get in eyes. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Keep container tightly closed. 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 with local exhaust ventilation.
Personal protective equipment	nt	
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. Take note that the product is flammable, which may impact the selection of hand protection. 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, unless assessment demonstrates that the risk of explosive atmospheres or flash fires is low 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	:	slight
Odor Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	>= 70 °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	:	No data available



Density	:	0.9 - 1.1 g/cm ³
Solubility(ies) Water solubility	:	soluble
Solubility in other solvents	:	soluble Solvent: organic solvents
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, 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 route Inhalation Skin contact Ingestion Eye contact	es of	exposure		
Acute toxicity Not classified based on ava Product:	ilable	information.		
Acute oral toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method		
<u>Components:</u>				
Diethylene Glycol Methyl Ethyl Ether:				
Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg		
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg		



Bis(2-ethoxyethyl) ether: Acute oral toxicity	:	LD50 (Rat): 4,970 mg/kg
bis(2-(2-methoxyethoxy)ethy Acute oral toxicity	/l) e :	t her: LD50 (Rat): 3,850 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 11 mg/l Exposure time: 7 h Test atmosphere: vapor Method: OECD Test Guideline 403 Remarks: Based on data from similar materials
Acute dermal toxicity	:	LD50 (Rat): > 5,000 mg/kg Remarks: Based on data from similar materials
Propylene carbonate: Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity
Gamma-Butyrolactone: Acute oral toxicity	:	LD50 (Rat): 1,582 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 5.1 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Skin corrosion/irritation Causes skin irritation. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Result: Skin irritation		
Bis(2-ethoxyethyl) ether: Result: Skin irritation Remarks: Based on data from	sim	ilar materials
bis(2-(2-methoxyethoxy)ethyl) ether: Species: Rabbit Method: OECD Test Guideline 404 Result: No skin irritation		
Propylene carbonate: Species: Rabbit Result: No skin irritation		
Gamma-Butyrolactone: Species: Rabbit Result: No skin irritation		
Serious eye damage/eye irritation Causes serious eye irritation. Components: Diethylene Glycol Methyl Ethyl Ether: Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405 Remarks: Based on data from similar materials		

Bis(2-ethoxyethyl) 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

Propylene carbonate:

Species: Rabbit Result: Irritation to eyes, reversing within 21 days Method: OECD Test Guideline 405

Gamma-Butyrolactone:

Species: Rabbit Result: Irreversible effects on the eye 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 Methyl Ethyl Ether:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Bis(2-ethoxyethyl) 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

Gamma-Butyrolactone:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Germ cell mutagenicity

Not classified based on available information. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Genotoxicity in vitro : Test Type:

: Test Type: In vitro mammalian cell gene mutation test Result: positive Remarks: Based on data from similar materials

MUTOH		SDS-VJMS31LM-01US 9 / 17
		Test Type: Chromosome aberration test in vitro Result: negative Remarks: Based on data from similar materials
		Test Type: Bacterial reverse mutation assay (AMES) 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
Germ cell mutagenicity - Assessment	:	Weight of evidence does not support classification as a germ cell mutagen.
Bis(2-ethoxyethyl) ether: Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) 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
		Test Type: In vitro mammalian cell gene mutation test 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)et Genotoxicity in vitro	hyl) (:	ether: Test Type: Bacterial reverse mutation assay (AMES) Result: negative
		Test Type: In vitro mammalian cell gene mutation test Result: negative
		Test Type: In vitro sister chromatid exchange assay in mammalian cells Result: positive
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
Propylene carbonate: Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Genotoxicity in vivo	:	Test Type: Mammalian erythrocyte micronucleus test (in vivo



cytogenetic assay) Species: Mouse Application Route: Intraperitoneal injection Result: negative

D ~ 1 G

Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Carcinogenicity Not classified based on available i <u>Components:</u> Propylene carbonate: Species: Mouse Application Route: Skin contact Exposure time: 2 Years Result: negative	nformation.
Gamma-Butyrolactone: Species: Rat Application Route: Ingestion Exposure time: 103 weeks Result: negative	
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. Sus Components: Diethylene Glycol Methyl Ethyl I	spected of damaging fertility. Ether:
Effects on fertility :	Test Type: Two-generation reproduction toxicity study Species: Mouse Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) ether:	

Effects on fertility	:	Test Type: One-generation reproduction toxicity study Species: Rat Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative



bis(2-(2-methoxyethoxy)ethy	l) e	ther:
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: Rat Application Route: inhalation (vapor) Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials Test Type: Embryo-fetal development Species: Mouse Application Route: Ingestion Result: positive Remarks: Based on data from similar materials
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.
Propylene carbonate: Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat, female Application Route: Ingestion Result: negative
Gamma-Butyrolactone: Effects on fertility	:	Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test Species: Rat Application Route: Ingestion Method: OECD Test Guideline 422 Result: negative Remarks: Based on data from similar materials
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative
STOT-single exposure		

Not classified based on available information. <u>Components:</u> <u>Gamma-Butyrolactone:</u> Assessment: May cause drowsiness or dizziness.

STOT-repeated exposure

Not classified based on available information. <u>Components:</u> bis(2-(2-methoxyethoxy)ethyl) ether:



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

Repeated dose toxicity

Components:

Diethylene Glycol Methyl Ethyl Ether: Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 90 Days Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) ether:

Species: Rat NOAEL: 2.49 mg/l Application Route: inhalation (dust/mist/fume) Exposure time: 4 Weeks Method: OECD Test Guideline 412

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

Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 28 Days Method: OECD Test Guideline 407 Remarks: Based on data from similar materials

Propylene carbonate:

Species: Rat NOAEL: > 5,000 mg/kg Application Route: Ingestion Exposure time: 90 Days

Gamma-Butyrolactone:

Species: Rat NOAEL: 225 mg/kg Application Route: Ingestion Exposure time: 13 Weeks

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity Components:		
Diethylene Glycol Methyl Ethy	yl I	Ether:
Toxicity to fish	:	LC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to daphnia and other aquatic invertebrates	:	EC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to microorganisms	:	NOEC: > 1,000 mg/l Exposure time: 3 h Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) 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)): > 1 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)ethy Toxicity to fish	′I) € ∶	ether: LC50 (Danio rerio (zebra fish)): > 100 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	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 8,996 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
		EC10 (Pseudokirchneriella subcapitata (green algae)): 2,871 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)): > 100 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: Based on data from similar materials
Toxicity to microorganisms	:	EC10: > 100 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Remarks: Based on data from similar materials
Propylene carbonate: Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): > 1,000 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 48 h
Toxicity to algae	:	ErC50 (Desmodesmus subspicatus (green algae)): > 900 mg/l Exposure time: 72 h
Toxicity to microorganisms	:	EC50 (Pseudomonas putida): 25,619 mg/l Exposure time: 16 h
Gamma-Butyrolactone: Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 56 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 500 mg/l Exposure time: 48 h



Toxicity to algae :	EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l Exposure time: 72 h
	NOEC (Desmodesmus subspicatus (green algae)): 31.25 mg/l Exposure time: 72 h
Toxicity to microorganisms :	IC50: 4,518 mg/l Exposure time: 40 h
Persistence and degradability <u>Components:</u> Diethylene Glycol Methyl Ethy Biodegradability :	I Ether: Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F
	Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) ether: Biodegradability :	Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F
bis(2-(2-methoxyethoxy)ethyl) Biodegradability :	ether: Result: Inherently biodegradable. Method: OECD Test Guideline 302B Remarks: Based on data from similar materials
Propylene carbonate: Biodegradability :	Result: Readily biodegradable. Biodegradation: 87.7 % Exposure time: 29 d Method: OECD Test Guideline 301B
Gamma-Butyrolactone: Biodegradability :	Result: Readily biodegradable. Biodegradation: 77 % Exposure time: 14 d Method: OECD Test Guideline 301C
Bioaccumulative potential <u>Components:</u> Bis(2-ethoxyethyl) ether: Partition coefficient: : : n-octanol/water	log Pow: 0.39
bis(2-(2-methoxyethoxy)ethyl) Partition coefficient: : n-octanol/water	ether: log Pow: -0.84
Propylene carbonate: Partition coefficient: : : n-octanol/water	log Pow: -0.41
Gamma-Butyrolactone: Partition coefficient: : : n-octanol/water	log Pow: -0.566
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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. 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

UN/ID/NA number	:	NA 1993
Proper shipping name	:	Combustible liquid, n.o.s.
		(Diethylene Glycol Methyl Ethyl Ether, Bis(2-ethoxyethyl) ether)
Class	:	CBL
Packing group	:	III
Labels	:	None
ERG Code	:	128
Marine pollutant	:	no
Remarks	:	Above applies only to containers over 119 gallons or 450 liters.
		Not regulated if shipped in packages less than or equal to 119
		gallons (450 liters).

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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 :	 Flammable (gases, aeroson Skin corrosion or irritation Serious eye damage or ey Reproductive toxicity 	ols, liquids, or so e irritation	lids)
SARA 313 :	: The following components established by SARA Title	are subject to re III, Section 313:	eporting levels
	Diethylene Glycol Methyl Ethyl Ether	1002-67-1	>= 40 - < 50 %
	Bis(2-ethoxyethyl) ether	112-36-7	>= 30 - < 40 %
US State Regulations			

Pennsylvania Right To Know

Diethylene Glycol Methyl Ethyl Ether	1002-67-1
Bis(2-ethoxyethyl) ether	112-36-7
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8
Propylene carbonate	108-32-7

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

Bis(2-ethoxyethyl) 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 -



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(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 :	Internal technical data, data from raw material SDSs, OECD
compile the Material Safety	eChem Portal search results and European Chemicals Agency,
Data Sheet	http://echa.europa.eu/

Revision Date : 2021-01-21

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

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



SAFETY DATA SHEET

Date of last issue: -Date of first issue: 2020-07-01

SECTION 1. IDENTIFICATION

Product name	:	VJ-MS31-MA1000U / VJ-MS31-MA440U / VJ-MS31-MA220U
Manufacturer or supplier's d Company name of supplier	eta :	ils MUTOH America Inc
Address	:	4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042
Telephone	:	480-968-7772
Emergency telephone	:	480-968-7772 During normal opening times

Recommended use of the chemical and restrictions on use Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accord Flammable liquids	dan :	ce with 29 CFR 1910.1200 Category 4
Skin irritation	:	Category 2
Eye irritation	:	Category 2A
Reproductive toxicity	:	Category 1B
GHS label elements		
Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	H227 Combustible liquid. H315 Causes skin irritation. H319 Causes serious eye 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. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy



to do. Continue rinsing.

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

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

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

P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

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

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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 Methyl Ethyl Ether	1002-67-1	>= 40 -< 50
Bis(2-ethoxyethyl) ether	112-36-7	>= 20 -< 30
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	>= 10 -< 20
Propylene carbonate	108-32-7	>= 5 -< 10
Gamma-Butyrolactone	96-48-0	>= 1 -< 3

SECTION 4. FIRST AID MEASURES

General advice	:	In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled	:	If inhaled, remove to fresh air. Get medical attention.
In case of skin contact	:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact	:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.
If swallowed	:	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.
Most important symptoms and effects, both acute and delayed	: k	Causes skin irritation. Causes serious eye 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.
SE	CTION 5. FIRE-FIGHTING MEASU	U	RES
	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	:	In the event of fire, wear self-contained breathing apparatus.
for fire-fighters		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.
Advice on safe handling	Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Do not get in eyes. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Keep container tightly closed. 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 with local exhaust ventilation.		
Personal protective equipment 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. Take note that the product is flammable, which may impact the selection of hand protection. 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, unless assessment demonstrates that the risk of explosive atmospheres or flash fires is low 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	:	slight
Odor Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	>= 70 °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	:	No data available


Density	:	0.9 - 1.1 g/cm ³
Solubility(ies) Water solubility	:	soluble
Solubility in other solvents	:	soluble Solvent: organic solvents
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, 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 route Inhalation Skin contact Ingestion Eye contact	es of e	exposure
Acute toxicity Not classified based on ava Product:	ailable	information.
Acute oral toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method
<u>Components:</u>		
Diethylene Glycol Methyl	Ethyl	Ether:
Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg



Bis(2-ethoxyethyl) ether: Acute oral toxicity	LD50 (Rat): 4,970 mg/kg	
bis(2-(2-methoxyethoxy)ethy Acute oral toxicity	ether: LD50 (Rat): 3,850 mg/kg	
Acute inhalation toxicity	LC50 (Rat): > 11 mg/l Exposure time: 7 h Test atmosphere: vapor Method: OECD Test Guideline 403 Remarks: Based on data from similar materials	
Acute dermal toxicity	LD50 (Rat): > 5,000 mg/kg Remarks: Based on data from similar materials	
Propylene carbonate: Acute oral toxicity	LD50 (Rat): > 5,000 mg/kg	
Acute dermal toxicity	LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute toxicity	dermal
Gamma-Butyrolactone: Acute oral toxicity	LD50 (Rat): 1,582 mg/kg	
Acute inhalation toxicity	LC50 (Rat): > 5.1 mg/l Exposure time: 4 h Test atmosphere: dust/mist	
Skin corrosion/irritation Causes skin irritation. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Result: Skin irritation		
Bis(2-ethoxyethyl) ether: Result: Skin irritation Remarks: Based on data from	nilar materials	
bis(2-(2-methoxyethoxy)ethyl) ether: Species: Rabbit Method: OECD Test Guideline 404 Result: No skin irritation		
Propylene carbonate: Species: Rabbit Result: No skin irritation		
Gamma-Butyrolactone: Species: Rabbit Result: No skin irritation		
Serious eye damage/eye irritation Causes serious eye irritation. Components: Diethylene Glycol Methyl Ethyl Ether: Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405 Remarks: Based on data from similar materials		

Bis(2-ethoxyethyl) 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

Propylene carbonate:

Species: Rabbit Result: Irritation to eyes, reversing within 21 days Method: OECD Test Guideline 405

Gamma-Butyrolactone:

Species: Rabbit Result: Irreversible effects on the eye 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 Methyl Ethyl Ether:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Bis(2-ethoxyethyl) 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

Gamma-Butyrolactone:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Germ cell mutagenicity

Not classified based on available information. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Genotoxicity in vitro : Test Type:

: Test Type: In vitro mammalian cell gene mutation test Result: positive Remarks: Based on data from similar materials

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		Test Type: Chromosome aberration test in vitro Result: negative Remarks: Based on data from similar materials
		Test Type: Bacterial reverse mutation assay (AMES) 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
Germ cell mutagenicity - Assessment	:	Weight of evidence does not support classification as a germ cell mutagen.
Bis(2-ethoxyethyl) ether: Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) 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
		Test Type: In vitro mammalian cell gene mutation test 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)ethy Genotoxicity in vitro	∕I)€ :	e ther: Test Type: Bacterial reverse mutation assay (AMES) Result: negative
		Test Type: In vitro mammalian cell gene mutation test Result: negative
		Test Type: In vitro sister chromatid exchange assay in mammalian cells Result: positive
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
Propylene carbonate: Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Genotoxicity in vivo	:	Test Type: Mammalian erythrocyte micronucleus test (in vivo



cytogenetic assay) Species: Mouse Application Route: Intraperitoneal injection Result: negative

(

Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Carcinogenicity Not classified based on available i <u>Components:</u> Propylene carbonate: Species: Mouse Application Route: Skin contact Exposure time: 2 Years Result: negative	information.
Gamma-Butyrolactone: Species: Rat Application Route: Ingestion Exposure time: 103 weeks Result: negative	
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. Su <u>Components:</u> Diethylene Glycol Methyl Ethyl Effects on fertility :	spected of damaging fertility. Ether: Test Type: Two-generation reproduction toxicity study Species: Mouse Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) ether: Effects on fertility :	Test Type: One-generation reproduction toxicity study Species: Rat Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development :	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion

Result: negative



bis(2-(2-methoxyethoxy)ethy	/l) e	ther:
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: Rat Application Route: inhalation (vapor) Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials Test Type: Embryo-fetal development Species: Mouse Application Route: Ingestion Result: positive Remarks: Based on data from similar materials
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.
Propylene carbonate: Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat, female Application Route: Ingestion Result: negative
Gamma-Butyrolactone: Effects on fertility	:	Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test Species: Rat Application Route: Ingestion Method: OECD Test Guideline 422 Result: negative Remarks: Based on data from similar materials
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative
STOT-single exposure		

Not classified based on available information. <u>Components:</u> Gamma-Butyrolactone: Assessment: May cause drowsiness or dizziness.

STOT-repeated exposure

Not classified based on available information. <u>Components:</u> bis(2-(2-methoxyethoxy)ethyl) ether:



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

Repeated dose toxicity

Components:

Diethylene Glycol Methyl Ethyl Ether: Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 90 Days Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) ether:

Species: Rat NOAEL: 2.49 mg/l Application Route: inhalation (dust/mist/fume) Exposure time: 4 Weeks Method: OECD Test Guideline 412

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

Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 28 Days Method: OECD Test Guideline 407 Remarks: Based on data from similar materials

Propylene carbonate:

Species: Rat NOAEL: > 5,000 mg/kg Application Route: Ingestion Exposure time: 90 Days

Gamma-Butyrolactone:

Species: Rat NOAEL: 225 mg/kg Application Route: Ingestion Exposure time: 13 Weeks

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity Components:	
Diethylene Glycol Methyl Ethy	l Ether:
Toxicity to fish :	LC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to daphnia and other : aquatic invertebrates	EC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to microorganisms :	NOEC: > 1,000 mg/l Exposure time: 3 h Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) 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)): > 1 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)ethy Toxicity to fish	'l) e :	e ther: LC50 (Danio rerio (zebra fish)): > 100 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	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 8,996 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
		EC10 (Pseudokirchneriella subcapitata (green algae)): 2,871 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)): > 100 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: Based on data from similar materials
Toxicity to microorganisms	:	EC10: > 100 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Remarks: Based on data from similar materials
Propylene carbonate: Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): > 1,000 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 48 h
Toxicity to algae	:	ErC50 (Desmodesmus subspicatus (green algae)): > 900 mg/l Exposure time: 72 h
Toxicity to microorganisms	:	EC50 (Pseudomonas putida): 25,619 mg/l Exposure time: 16 h
Gamma-Butyrolactone: Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 56 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 500 mg/l Exposure time: 48 h



Toxicity to algae :	EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l Exposure time: 72 h
	NOEC (Desmodesmus subspicatus (green algae)): 31.25 mg/l Exposure time: 72 h
Toxicity to microorganisms :	IC50: 4,518 mg/l Exposure time: 40 h
Persistence and degradability <u>Components:</u> Diethylene Glycol Methyl Ethyl Biodegradability :	Ether: Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) ether: Biodegradability :	Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F
bis(2-(2-methoxyethoxy)ethyl) Biodegradability	ether: Result: Inherently biodegradable. Method: OECD Test Guideline 302B Remarks: Based on data from similar materials
Propylene carbonate: Biodegradability :	Result: Readily biodegradable. Biodegradation: 87.7 % Exposure time: 29 d Method: OECD Test Guideline 301B
Gamma-Butyrolactone: Biodegradability :	Result: Readily biodegradable. Biodegradation: 77 % Exposure time: 14 d Method: OECD Test Guideline 301C
Bioaccumulative potential <u>Components:</u> Bis(2-ethoxyethyl) ether: Partition coefficient: : n-octanol/water	log Pow: 0.39
bis(2-(2-methoxyethoxy)ethyl) Partition coefficient: : n-octanol/water	ether: log Pow: -0.84
Propylene carbonate: Partition coefficient: : n-octanol/water	log Pow: -0.41
Gamma-Butyrolactone: Partition coefficient: : n-octanol/water	log Pow: -0.566
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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. 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

UN/ID/NA number	:	NA 1993
Proper shipping name	:	Combustible liquid, n.o.s. (Diethylene Glycol Methyl Ethyl Ether, Bis(2-ethoxyethyl) ether)
Class	:	CBL
Packing group	:	III
Labels	:	None
ERG Code	:	128
Marine pollutant	:	no
Remarks	:	Above applies only to containers over 119 gallons or 450 liters.
		Not regulated if shipped in packages less than or equal to 119 gallons (450 liters).

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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 :	:	Flammable (gases, aeroso Skin corrosion or irritation Serious eye damage or ey Reproductive toxicity	ls, liquids, or so e irritation	lids)
SARA 313 :		The following components established by SARA Title	are subject to re III, Section 313:	eporting levels
		Diethylene Glycol Methyl Ethyl Ether	1002-67-1	>= 40 - < 50 %
		Bis(2-ethoxyethyl) ether	112-36-7	>= 20 - < 30 %
US State Regulations				

Pennsylvania Right To Know

Diethylene Glycol Methyl Ethyl Ether	1002-67-1
Bis(2-ethoxyethyl) ether	112-36-7
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8
Propylene carbonate	108-32-7

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

Bis(2-ethoxyethyl) 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 -



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(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 :	Internal technical data, data from raw material SDSs, OECD
compile the Material Safety	eChem Portal search results and European Chemicals Agency,
Data Sheet	http://echa.europa.eu/

Revision Date : 2020-07-01

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

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



SAFETY DATA SHEET

Date of last issue: -Date of first issue: 2021-03-01

SECTION 1. IDENTIFICATION

Product name	:	VJ-MS31-MT220U
Manufacturer or supplier's d Company name of supplier	etai :	ils MUTOH America Inc
Address	:	4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042
Telephone	:	480-968-7772
Emergency telephone	:	480-968-7772 During normal opening times

Recommended use of the chemical and restrictions on use Recommended use : Inkjet printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in acco Flammable liquid	rdan :	ce with 29 CFR 1910.1200 Category 4
Skin irritation	:	Category 2
Reproductive toxicity	:	Category 1B
GHS label elements		
Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	Combustible liquid Causes skin irritation May damage fertility or the unborn child
Precautionary Statements	:	 Prevention: Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces No smoking. Wear protective gloves/protective clothing/eye protection/face protection. Response: IF exposed or concerned: Get medical advice/attention. IF ON SKIN: Wash with plenty of soap and water. Storage: Store in a well-ventilated place. Keep cool. Disposal: Dispose of contents/ container in accordance with related laws and local/ regional regulations.

Description of any hazards not otherwise classified;



Ink contact with skin may cause irritation, swelling or redness.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Diethylene glycol diethyl ether	112-36-7	70 - 80
Tetraethylene glycol dimethyl ether	143-24-8	10 - 20
Gamma-butyrolactone	96-48-0	about 10
Proprietary organic materials	Trade secret	1 - 5
Colorant	Trade secret	1 - 5

SECTION 4. FIRST AID MEASURES

Description of first aid measures Inhalation :	IF exposed or concerned: Get medical advice/attention. Remove subject to ventilated fresh air. If not breathing, give artificial respiration right away. If breathing is difficult, give oxygen.
Skin :	IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs: Get medical advice/attention.
Eyes :	Immediately flush with room temperature, low pressure and clean water for at least 15 minutes. Seek medical attention if eye irritation continues.
Ingestion :	IF exposed or concerned: Get medical advice/attention. IF SWALLOWED: Do not induce vomiting.
Most important symptoms and : effects, both acute and delayed	Skin: Ink contact with skin may cause irritation, swelling or redness.
Indication of any immediate : medical attention and special treatment needed	Not necessary

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media Suitable extinguishing media:		Water spray Dry chemical Carbon dioxide (CO2) Alcohol-resistant foam
Unsuitable extinguishing : media	:	None known.
Special hazards arising from : the substance or mixture	:	None
Advice for firefighters :	:	Extinguish to use fire fighting media or plentiful fog water. Put protection wear without fail in case of fire fighting work; do not work in the leeward.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures



	For non-emergency personnel	:	Eye or Skin protection required during clean-up. Use proper ventilation.
	For emergency responder	s:	None
Env	vironmental precautions	:	Do not release to sewer, surface-or ground-water.
Me	thods and materials for con Advice on how to contain a spill	tain :	ment and cleaning up Use sponges to wipe-up ink.
	Advice how to clean-up a spill	:	Rinse area with damp cloth. Place waste in closed container for disposal. Wash hands with soap and water.
	Any other information	:	Do not dispose of waste to the sewer.
Ref	erence to other sections	:	Please refer SECTION 13 for disposal.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling Recommendations	:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink ink. Do not dismantle cartridge.
Advice on general occupational hygiene	:	Avoid contact with skin, eyes or clothing. In the case of skin contact, wash with soap and water.
Conditions for safe storage, including any incompatibilities	:	Store locked up. Do not store the cartridge in high or freezing temperatures. Keep cartridge out of direct sunlight. Do not store the cartridge with oxidizing agents or explosives. Make sure cartridge is dry before insertion into printer housing.
Specific end use(s):	:	Not specified.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters:

Diethylene glycol diethyl ether(CAS No.112-36-7) California OELs(California Code of Regulations,Title 8,Section5155.Airborne Contaminants) The 8-Hour TWA Exposure Value:5 ppm The 8-Hour TWA Exposure Value:33mg/m3

Exposure Controls

Appropriate engineering : Proper ventilation. controls

Individual protection measures, such as personal protective equipment

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Use of personal protective Equipment	:	Not required under suitable use as setting the cartridge on the printer under ventilation. If there is a possibility of exposure to raw ink: Wear protective gloves/ protective clothing/ eye protection/ face protection/ respiratory protection.

Detailed specification on equipment to provide adequate and suitable protection (a) eye/face protection : Not required under suitable use as setting the cartridge on the printer.



If there is a possibility of exposure to raw ink: Wear eye protection/ face protection.

(b) skin protection: hand protection & others	:	Not required under suitable use as setting the cartridge on the printer. If there is a possibility of exposure to raw ink: Wear protective gloves/ protective clothing
(c) respiratory protection	:	Not required under suitable use as setting the cartridge on the printer under ventilation. In case of inadequate ventilation wear respiratory protection.
(d) thermal hazards	:	Not required under suitable use as setting the cartridge on the printer.
Environmental exposure controls	:	Not established

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical a Appearance	and :	chemical properties: liquid
Color	:	silver
Odor	:	Slightly
Odor Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	about 78.7 °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
Vapor density	:	No data available
Relative density	:	No data available
Solubility(ies)	:	Soluble
Partition coefficient: n-octanol/water	:	No data available



Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity	:	Less than 5 mPa⋅s at 20°C
Explosive properties	:	Explosive limits:1.4-6.9v/v% as Gamma-butyrolactone
Oxidizing properties	:	None
Particle size	:	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable under normal temperature
Chemical stability	:	Stable under normal temperature
Possibility of hazardous reactions	:	None
Conditions to avoid	:	High and freezing temperatures
Incompatible materials	:	Oxidizers and explosives
Hazardous decomposition products	:	No data available

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects:					
Acute toxicity	:	Not meet the criteria for classification according to EU Directive 1999/45/EC			
Irritation					
Eye	:	Not meet the criteria for classification according to EU Directive 1999/45/EC			
Skin	:	Xi; R38 for classification according to EU Directive 1999/45/EC Category2 for classification according to EU Directive (EC) No 1272/2008			
Corrosivity	:	Not meet the criteria for classification according to EU Directive 1999/45/EC			
Sensitisation					
Skin	:	Not meet the criteria for classification according to EU Directive 1999/45/EC			
Carcinogenicity	:	Not meet the criteria for classification according to EU Directive 1999/45/EC			
		Not contain any substances listed in IARC Monographs (1,2A and 2B)			
Mutagenicity	:	Not meet the criteria for classification according to EU Directive 1999/45/EC			
Toxicity for reproduction	:	T; R61,62 for classification according to EU Directive 1999/45/EC Category1B for classification according to EU Directive (EC) No 1272/2008			



SECTION 12. ECOLOGICAL INFORMATION

Toxicity	:	No data available
Persistence and degradability	:	No data available
Bioaccumulative potential	:	No data available
Mobility in soil	:	No data available
Results of PBT and vPvB assessment	:	Has not carried out PBT and vPvB assessment
Other adverse effects	:	No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods	:	Dispose of contents/container to an appropriate treatment and
		disposal facility in accordance with applicable laws and
		regulations, and product characteristics at time of disposal.

SECTION 14. TRANSPORT INFORMATION

UN number	:	Not applicable
UN proper shipping name	:	Not applicable
Transport hazard class(es)	:	Not applicable
Packing group	:	Not applicable
Environmental hazards	:	Not applicable
Special precautions for user	:	Not applicable
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	:	Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the product in question: US Information:

TSCA Section 4(a) Final Test Rules Regulated	:	Not regulated		
TSCA Section 5 Significar	nt N	lew Use Rule Regulation:		
Ingredient Reference	:	Diethylene glycol diethyl ether 40 CFR 721.10229 (Listed)	112-36-7	
Ingredient	:	Tetraethylene glycol dimethyl ether	143-24-8	
Reference	:	76 FR 40850 (Proposed)		
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	:	Not regulated		
TSCA Section 12(b) One-Time Export Notification Regulated:				
Ingredient	:	Diethylene glycol diethyl ether	112-36-7	
Regulation	•	ISCA 5 SNUR		
Ingredient	:	Tetraethylene glycol dimethyl ether	143-24-8	



Regulation :	TSCA 5 Proposed SNUR	
Clean Air Act Section 112, : Hazardous Air Pollutants	Diethylene glycol diethyl ether	112-36-7
EPCRA (SARA Title III) : Section 313	Diethylene glycol diethyl ether	112-36-7
NFPA/HMIS Hazard Rating:	Health (3), Flammability (2), Instability/Rea	activity (0), Other (0)
HMIS Hazard Rating :	Health (3), Flammability (2), Instability/Rea	activity (0), PPE (D)
California Proposition 65 :	Not regulated	

SECTION 16. OTHER INFORMATION

Revision Date : 2021-03-01

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

This "Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of preparation, but should only be used as a guide. It is subject to revision from time to time. MUTOH does not warrant the completeness or accuracy of the information contained herein.



SAFETY DATA SHEET

Date of last issue: -Date of first issue: 2021-03-01

SECTION 1. IDENTIFICATION

Product name	:	VJ-MS31-WH220U
Manufacturer or supplier's d Company name of supplier	eta :	ils MUTOH America Inc
Address	:	4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042
Telephone	:	480-968-7772
Emergency telephone	:	480-968-7772 During normal opening times

Recommended use of the chemical and restrictions on use Recommended use : Inkjet printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accord Flammable liquid	lan :	ce with 29 CFR 1910.1200 Category 4
Skin irritation	:	Category 2
GHS label elements		
Hazard pictograms	:	
Signal Word	:	Warning
Hazard Statements	:	Combustible liquid Causes skin irritation
Precautionary Statements	:	 Prevention: Keep away from heat/sparks/open flames/hot surfaces No smoking. Wear protective gloves/protective clothing/eye protection/face protection. Response: IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. Storage: Store in a well-ventilated place. Keep cool. Dispose of contents/ container in accordance with related laws and local/ regional regulations.

Description of any hazards not otherwise classified;

Ink contact with skin may cause irritation, swelling or redness.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS



Substance / Mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Diethylene glycol diethyl ether	112-36-7	50 - 60
Diethylene Glycol Methyl Ethyl Ether	1002-67-1	15 - 25
Titanium dioxide	13463-67-7	10 - 20
Proprietary organic materials	Trade secret	5 - 15

SECTION 4. FIRST AID MEASURES

Description of first aid measures Inhalation :	Remove subject to ventilated fresh air. If not breathing, give artificial respiration right away. If breathing is difficult, give oxygen. Seek immediate medical attention.
Skin :	IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs: Get medical advice/attention.
Eyes :	Immediately flush with room temperature, low pressure and clean water for at least 15 minutes. Seek medical attention if eye irritation continues.
Ingestion :	Seek medical advice; and attention if stomach continues to be upset. IF SWALLOWED: Do not induce vomiting.
Most important symptoms and : effects, both acute and delayed	Skin: Ink contact with skin may cause irritation, swelling or redness.
Indication of any immediate : medical attention and special treatment needed	Not necessary

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media Suitable extinguishing media:	Water spray Dry chemical Carbon dioxide (CO2) Alcohol-resistant foam		
Unsuitable extinguishing : media	None known.		
Special hazards arising from : the substance or mixture	None		
Advice for firefighters :	Extinguish to use fire fighting media or plentiful fog water. Put protection wear without fail in case of fire fighting work; do not work in the leeward.		

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures				
For non-emergency personnel	:	Eye or Skin protection required during clean-up. Use proper ventilation.		

For emergency responders: None



Environmental precautions : Do not release to sewer, surface-or ground-water.

Me	thods and materials for con Advice on how to contain a spill	tain :	iment and cleaning up Use sponges to wipe-up ink.	
	Advice how to clean-up a spill	:	Rinse area with damp cloth. Place waste in closed container for disposal. Wash hands with soap and water.	
	Any other information	:	Do not dispose of waste to the sewer.	
Ref	erence to other sections	:	Please refer SECTION 13 for disposal.	

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling Recommendations	:	Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink ink. Do not dismantle cartridge.
Advice on general occupational hygiene	:	Avoid contact with skin, eyes or clothing. In the case of skin contact, wash with soap and water.
Conditions for safe storage, including any incompatibilities	:	Do not store the cartridge in high or freezing temperatures. Keep cartridge out of direct sunlight. Do not store the cartridge with oxidizing agents or explosives. Make sure cartridge is dry before insertion into printer housing.
Specific end use(s):	:	Not specified.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Diethylene glycol diethyl ether(CAS No.112-36-7)					
California OELs(California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)					
alue:5 ppm					
alue:33mg/m3					
Proper ventilation, in prevention.					
s, such as personal protective equipment					
Not required under suitable use as setting the cartridge on the printer.					
If there is a possibility of exposure to raw ink: Wear protective					
gloves/ protective clothing/ eye protection/ face protection.					
quipment to provide adequate and suitable protection					
Not required under suitable use as setting the cartridge on the					
If there is a possibility of exposure to raw ink: Wear eve					
protection/ face protection.					
Not required under suitable use as setting the cartridge on the					
printer.					
If there is a possibility of exposure to raw ink: Wear protective gloves/ protective clothing					
Not required under suitable use as setting the cartridge on the					



protection		printer.
(d) thermal hazards	:	Not required under suitable use as setting the cartridge on the printer.
Environmental exposure controls	:	Not established

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical a Appearance	and :	chemical properties: liquid
Color	:	white
Odor	:	Slightly
Odor Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	73.7 °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
Vapor density	:	No data available
Relative density	:	No data available
Solubility(ies)	:	Soluble
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity	:	Less than 5 mPa⋅s at 20°C
Explosive properties	:	None
Oxidizing properties	:	None



Particle size

: Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable under normal temperature
Chemical stability	:	Stable under normal temperature
Possibility of hazardous reactions	:	None
Conditions to avoid	:	High and freezing temperatures
Incompatible materials	:	Oxidizers and explosives
Hazardous decomposition products	:	No data available

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological e	ffect	is:
Acute toxicity	:	Oral LD50: Not meet the criteria for classification according to EU Directive 1999/45/EC Dermal LD50: Not meet the criteria for classification according to EU Directive 1999/45/EC
Irritation		
Eye	:	Not meet the criteria for classification according to EU Directive 1999/45/EC
Skin	:	Xi; R38 for classification according to EU Directive 1999/45/EC Category2 for classification according to EU Directive (EC) No 1272/2008
Corrosivity	:	Not meet the criteria for classification according to EU Directive 1999/45/EC
Sensitisation		
Skin	:	Not meet the criteria for classification according to EU Directive 1999/45/EC
Carcinogenicity	:	Titanium dioxide is classified as "possibly carcinogen to human" (Group 2B) in animal chronic inhalation studies. The tumor formulation observed in only rats with animal chronic inhalation study are attributed to "lung overloading", a generic response to excessive amounts of any dust retained in the lungs for a prolonged interval. Use of this product, as intended does not result in inhalation of excessive dust. Epidemiological study to date have not revealed any evidence of the relation between exposure to titanium dioxide and diseases of the reparatory tract beyond general effects of dust.
Mutagenicity	:	Not meet the criteria for classification according to EU Directive 1999/45/EC
Toxicity for reproduction	:	Not meet the criteria for classification according to EU Directive 1999/45/EC

SECTION 12. ECOLOGICAL INFORMATION

Toxicity



Persistence and degradability	:	No data available
Bioaccumulative potential	:	No data available
Mobility in soil	:	No data available
Results of PBT and vPvB assessment	:	Has not carried out PBT and vPvB assessment
Other adverse effects	:	No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods	:	Dispose of contents/container to an appropriate treatment and
		disposal facility in accordance with applicable laws and
		regulations, and product characteristics at time of disposal.

SECTION 14. TRANSPORT INFORMATION

UN number	:	Not applicable
UN proper shipping name	:	Not applicable
Transport hazard class(es)	:	Not applicable
Packing group	:	Not applicable
Environmental hazards	:	Not applicable
Special precautions for user	:	Not applicable
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	:	Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the product in question: US Information:

TSCA Section 4(a) Final : Test Rules Regulated	Not regulated	
TSCA Section 5 Significant N Ingredient : Reference :	lew Use Rule Regulation: Diethylene glycol diethyl ether 40 CFR 721.10229 (Listed)	112-36-7
TSCA Section 8(a) : Preliminary Assessment Information Rule (PAIR)	Not regulated	
TSCA Section 12(b) One-Tim Ingredient : Regulation :	ne Export Notification Regulated: Diethylene glycol diethyl ether TSCA 5 SNUR	112-36-7
Clean Air Act Section 112, : Hazardous Air Pollutants	Diethylene glycol diethyl ether Diethylene Glycol Methyl Ethyl Ether	112-36-7 1002-67-1
EPCRA (SARA Title III) : Section 313	Diethylene glycol diethyl ether Diethylene Glycol Methyl Ethyl Ether	112-36-7 1002-67-1



NFPA/HMIS Hazard Rating: Health (1), Flammability (2), Instability/Reactivity (0), Other (0) HMIS Hazard Rating : Health (1), Flammability (2), Instability/Reactivity (0), PPE (D)

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California Proposition 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.

SECTION 16. OTHER INFORMATION

Revision Date : 2021-03-01

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

This "Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of preparation, but should only be used as a guide. It is subject to revision from time to time. MUTOH does not warrant the completeness or accuracy of the information contained herein.



SAFETY DATA SHEET

Date of last issue: -Date of first issue: 2020-07-01

SECTION 1. IDENTIFICATION

Product name	:	VJ-MS31-YE1000U / VJ-MS31-YE440U / VJ-MS31-YE220U
Manufacturer or supplier's de Company name of supplier	eta :	ils MUTOH America Inc
Address	:	4405 East Baseline Road, Suite 120 Phoenix, Arizona 85042
Telephone	:	480-968-7772
Emergency telephone	:	480-968-7772 During normal opening times

Recommended use of the chemical and restrictions on use Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accord Flammable liquids	dan :	ce with 29 CFR 1910.1200 Category 4
Skin irritation	:	Category 2
Eye irritation	:	Category 2A
Reproductive toxicity	:	Category 1B
GHS label elements		
Hazard pictograms	:	
Signal Word	:	Danger
Hazard Statements	:	H227 Combustible liquid. H315 Causes skin irritation. H319 Causes serious eye 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. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy



to do. Continue rinsing.

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

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

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

P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

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

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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 Methyl Ethyl Ether	1002-67-1	>= 40 -< 50
Bis(2-ethoxyethyl) ether	112-36-7	>= 20 -< 30
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8	>= 10 -< 20
Propylene carbonate	108-32-7	>= 5 -< 10
Gamma-Butyrolactone	96-48-0	>= 1 -< 3

SECTION 4. FIRST AID MEASURES

General advice :	In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice.
If inhaled :	If inhaled, remove to fresh air. Get medical attention.
In case of skin contact :	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
In case of eye contact :	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lens, if worn. Get medical attention.
If swallowed :	If swallowed, DO NOT induce vomiting. Get medical attention. Rinse mouth thoroughly with water.
Most important symptoms and : effects, both acute and delayed	Causes skin irritation. Causes serious eye irritation. May damage the unborn child. Suspected of damaging fertility.



	Protection of first-aiders :	First Aid responders should pay attention to self-protection, and
		potential for exposure exists.
	Notes to physician :	Treat symptomatically and supportively.
SEC	CTION 5. FIRE-FIGHTING MEASU	RES
	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 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	:	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.
Advice on safe handling	:	Do not get on skin or clothing. Do not breathe vapors or spray mist. Do not swallow. Do not get in eyes. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Keep container tightly closed. 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 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. Take note that the product is flammable, which may impact the selection of hand protection. 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, unless assessment demonstrates that the risk of explosive atmospheres or flash fires is low Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).
Hygiene measures	:	Ensure that eye flushing systems and safety showers are located close to the working place. When using do not eat, drink or smoke. Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Color	:	yellow
Odor	:	slight
Odor Threshold	:	No data available
рН	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	>= 70 °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	:	No data available
Density	:	0.9 - 1.1 g/cm ³
Solubility(ies) Water solubility	:	soluble
Solubility in other solvents	:	soluble Solvent: organic solvents
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, 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	es of e	exposure
Acute toxicity Not classified based on ava	ailable i	information.
Acute oral toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method
Components:		
Diethylene Glycol Methyl	Ethyl	Ether:
Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg



Bis(2-et Acute of	hoxyethyl) ether: al toxicity	:	LD50 (Rat): 4,970 mg/kg
bis(2-(2 Acute of	-methoxyethoxy)eth ral toxicity	yl) e :	e ther: LD50 (Rat): 3,850 mg/kg
Acute in	halation toxicity	:	LC50 (Rat): > 11 mg/l Exposure time: 7 h Test atmosphere: vapor Method: OECD Test Guideline 403 Remarks: Based on data from similar materials
Acute de	ermal toxicity	:	LD50 (Rat): > 5,000 mg/kg Remarks: Based on data from similar materials
Propyle Acute or	ne carbonate: ral toxicity	:	LD50 (Rat): > 5,000 mg/kg
Acute de	ermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity
Gamma Acute or	-Butyrolactone: ral toxicity	:	LD50 (Rat): 1,582 mg/kg
Acute in	halation toxicity	:	LC50 (Rat): > 5.1 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Skin corrosion/irritation Causes skin irritation. <u>Components:</u> Diethylene Glycol Methyl Ethyl Ether: Result: Skin irritation			
Bis(2-ethoxyethyl) ether: Result: Skin irritation Remarks: Based on data from similar materials			
bis(2-(2-methoxyethoxy)ethyl) ether: Species: Rabbit Method: OECD Test Guideline 404 Result: No skin irritation			
Propylene carbonate: Species: Rabbit Result: No skin irritation			
Gamma-Butyrolactone: Species: Rabbit Result: No skin irritation			
Serious Causes	eye damage/eye irristion.	itati	on

Components: Diethylene Glycol Methyl Ethyl Ether: Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405 Remarks: Based on data from similar materials



Bis(2-ethoxyethyl) 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

Propylene carbonate:

Species: Rabbit Result: Irritation to eyes, reversing within 21 days Method: OECD Test Guideline 405

Gamma-Butyrolactone:

Species: Rabbit Result: Irreversible effects on the eye 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. <u>Components:</u>

Diethylene Glycol Methyl Ethyl Ether:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Bis(2-ethoxyethyl) 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

Gamma-Butyrolactone:

Test Type: Local lymph node assay (LLNA) Routes of exposure: Skin contact Species: Mouse Method: OECD Test Guideline 429 Result: negative

Germ cell mutagenicity

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

:

Diethylene Glycol Methyl Ethyl Ether:

Genotoxicity in vitro

Test Type: In vitro mammalian cell gene mutation test Result: positive

MUTOH	SDS-VJMS31YE-01US 9 / 17
	Remarks: Based on data from similar materials
	Test Type: Chromosome aberration test in vitro Result: negative Remarks: Based on data from similar materials
	Test Type: Bacterial reverse mutation assay (AMES) 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
Germ cell mutagenicity - : Assessment	Weight of evidence does not support classification as a germ cell mutagen.
Bis(2-ethoxyethyl) ether: Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) 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
	Test Type: In vitro mammalian cell gene mutation test 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) Genotoxicity in vitro :	ether: Test Type: Bacterial reverse mutation assay (AMES) Result: negative
	Test Type: In vitro mammalian cell gene mutation test Result: negative
	Test Type: In vitro sister chromatid exchange assay in mammalian cells Result: positive
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
Propylene carbonate: Genotoxicity in vitro :	Test Type: Bacterial reverse mutation assay (AMES) Result: negative



Genotoxicity in vivo	:	Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay) Species: Mouse Application Route: Intraperitoneal injection Result: negative
Gamma-Butyrolactone: Genotoxicity in vitro	:	Test Type: Bacterial reverse mutation assay (AMES) Result: negative
Carcinogenicity Not classified based on availab <u>Components:</u> Propylene carbonate: Species: Mouse Application Route: Skin contact Exposure time: 2 Years Result: negative	le i	nformation.
Gamma-Butyrolactone: Species: Rat Application Route: Ingestion Exposure time: 103 weeks Result: negative		
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 toxicity May damage the unborn child. Components: Diethylene Glycol Methyl Ethy Effects on fertility	Su: yl I :	spected of damaging fertility. Ether: Test Type: Two-generation reproduction toxicity study Species: Mouse Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) ether: Effects on fertility	:	Test Type: One-generation reproduction toxicity study Species: Rat Application Route: Ingestion Result: negative Remarks: Based on data from similar materials
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Result: negative


bis(2-(2-methoxyethoxy)ethy	/l) e	ther:
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: Rat Application Route: inhalation (vapor) Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials Test Type: Embryo-fetal development Species: Rabbit Application Route: Ingestion Method: OECD Test Guideline 414 Result: positive Remarks: Based on data from similar materials Test Type: Embryo-fetal development Species: Mouse Application Route: Ingestion Result: positive Remarks: Based on data from similar materials
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.
Propylene carbonate: Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat, female Application Route: Ingestion Result: negative
Gamma-Butyrolactone: Effects on fertility	:	Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test Species: Rat Application Route: Ingestion Method: OECD Test Guideline 422 Result: negative Remarks: Based on data from similar materials
Effects on fetal development	:	Test Type: Embryo-fetal development Species: Rat Application Route: Ingestion Result: negative
STOT-single exposure		

Not classified based on available information. <u>Components:</u> Gamma-Butyrolactone: Assessment: May cause drowsiness or dizziness.

STOT-repeated exposure

Not classified based on available information. <u>Components:</u> bis(2-(2-methoxyethoxy)ethyl) ether:



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

Repeated dose toxicity

Components:

Diethylene Glycol Methyl Ethyl Ether: Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 90 Days Remarks: Based on data from similar materials

Bis(2-ethoxyethyl) ether:

Species: Rat NOAEL: 2.49 mg/l Application Route: inhalation (dust/mist/fume) Exposure time: 4 Weeks Method: OECD Test Guideline 412

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

Species: Rat NOAEL: 250 mg/kg Application Route: Ingestion Exposure time: 28 Days Method: OECD Test Guideline 407 Remarks: Based on data from similar materials

Propylene carbonate:

Species: Rat NOAEL: > 5,000 mg/kg Application Route: Ingestion Exposure time: 90 Days

Gamma-Butyrolactone:

Species: Rat NOAEL: 225 mg/kg Application Route: Ingestion Exposure time: 13 Weeks

Aspiration toxicity

Not classified based on available information.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity Components:	
Diethylene Glycol Methyl Ethy	I Ether:
Toxicity to fish :	LC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to daphnia and other : aquatic invertebrates	EC50: > 100 mg/l Exposure time: 96 h Remarks: Based on data from similar materials
Toxicity to microorganisms :	NOEC: > 1,000 mg/l Exposure time: 3 h Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) 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)): > 1 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)ethy Toxicity to fish	'l) e :	ether: LC50 (Danio rerio (zebra fish)): > 100 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	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): 8,996 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
		EC10 (Pseudokirchneriella subcapitata (green algae)): 2,871 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)): > 100 mg/l Exposure time: 21 d Method: OECD Test Guideline 211 Remarks: Based on data from similar materials
Toxicity to microorganisms	:	EC10: > 100 mg/l Exposure time: 3 h Method: OECD Test Guideline 209 Remarks: Based on data from similar materials
Propylene carbonate: Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): > 1,000 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 48 h
Toxicity to algae	:	ErC50 (Desmodesmus subspicatus (green algae)): > 900 mg/l Exposure time: 72 h
Toxicity to microorganisms	:	EC50 (Pseudomonas putida): 25,619 mg/l Exposure time: 16 h
Gamma-Butyrolactone: Toxicity to fish	:	LC50 (Lepomis macrochirus (Bluegill sunfish)): 56 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 500 mg/l Exposure time: 48 h



Toxicity to algae :	EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l Exposure time: 72 h
	NOEC (Desmodesmus subspicatus (green algae)): 31.25 mg/l Exposure time: 72 h
Toxicity to microorganisms :	IC50: 4,518 mg/l Exposure time: 40 h
Persistence and degradability <u>Components:</u> Diethylene Glycol Methyl Ethyl Biodegradability :	Ether: Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F Remarks: Based on data from similar materials
Bis(2-ethoxyethyl) ether: Biodegradability :	Result: Not readily biodegradable. Biodegradation: 0 % Exposure time: 28 d Method: OECD Test Guideline 301F
bis(2-(2-methoxyethoxy)ethyl) Biodegradability :	ether: Result: Inherently biodegradable. Method: OECD Test Guideline 302B Remarks: Based on data from similar materials
Propylene carbonate: Biodegradability :	Result: Readily biodegradable. Biodegradation: 87.7 % Exposure time: 29 d Method: OECD Test Guideline 301B
Gamma-Butyrolactone: Biodegradability :	Result: Readily biodegradable. Biodegradation: 77 % Exposure time: 14 d Method: OECD Test Guideline 301C
Bioaccumulative potential Components:Bis(2-ethoxyethyl) ether:Partition coefficient::n-octanol/water	log Pow: 0.39
bis(2-(2-methoxyethoxy)ethyl) Partition coefficient: : n-octanol/water	ether: log Pow: -0.84
Propylene carbonate: Partition coefficient: : n-octanol/water	log Pow: -0.41
Gamma-Butyrolactone: Partition coefficient: : n-octanol/water	log Pow: -0.566
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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. 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

UN/ID/NA number	:	NA 1993
Proper shipping name	:	Combustible liquid, n.o.s.
		(Diethylene Glycol Methyl Ethyl Ether, Bis(2-ethoxyethyl) ether)
Class	:	CBL
Packing group	:	III
Labels	:	None
ERG Code	:	128
Marine pollutant	:	no
Remarks	:	Above applies only to containers over 119 gallons or 450 liters.
		Not regulated if shipped in packages less than or equal to 119
		gallons (450 liters).

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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 :	Flammable (gases, aeroso Skin corrosion or irritation Serious eye damage or ey Reproductive toxicity	ols, liquids, or so e irritation	lids)
SARA 313 :	The following components are subject to reporting levels established by SARA Title III, Section 313:		
	Diethylene Glycol Methyl Ethyl Ether	1002-67-1	>= 40 - < 50 %
	Bis(2-ethoxyethyl) ether	112-36-7	>= 20 - < 30 %
US State Regulations			

Pennsylvania Right To Know

Diethylene Glycol Methyl Ethyl Ether	1002-67-1
Bis(2-ethoxyethyl) ether	112-36-7
bis(2-(2-methoxyethoxy)ethyl) ether	143-24-8
Propylene carbonate	108-32-7

California Prop. 65

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

Additional regulatory information

Bis(2-ethoxyethyl) 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 -



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(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 :	Internal technical data, data from raw material SDSs, OECD
compile the Material Safety	eChem Portal search results and European Chemicals Agency,
Data Sheet	http://echa.europa.eu/

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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.