



SAFETY DATA SHEET

Date of last issue: 2019-08-01 Date of first issue: 2019-03-01

SECTION 1. IDENTIFICATION

Product name : MS41-MA1000U / MS41-MA300U MS41-MA1000A / MS41-MA300A

Manufacturer or supplier's details

Company : MUTOH AUSTRALIA PTY. LTD.

Address : Unit 19/76 Reserve Road, Artarmon, NSW 2064, Australia

Contact section : admin@mutoh-au.com or +61 2 9437 1366

Telephone : +61 2 94371366

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

Recommended use of the chemical and restrictions on use

Recommended use : Digital printing

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with 29 CFR 1910.1200

Flammable liquids : Category 4

Skin irritation : Category 2

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

smokina.

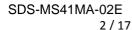
P264 Wash skin thoroughly after handling.

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

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 : Causes skin irritation.

effects, both acute and delayed Causes serious eye irritation.

May damage the unborn child. Suspected of damaging fertility.



3 / 17



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.

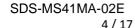
Methods and materials for containment and cleaning up

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.

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

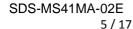
Respiratory protection : General and local exhaust ventilation is recommended to

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 : magenta

Odor : slight

Odor Threshold : No data available

pH : No data available

Melting point/freezing point : No data available

Initial boiling point and boiling:

range

No data available

Flash point : $>= 70 \, ^{\circ}\text{C}$

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 : $0.9 - 1.1 \text{ g/cm}^3$

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 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

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:

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 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

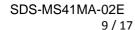
Not classified based on available information.

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 -

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)

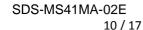
Result: negative

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

Gamma-Butyrolactone:

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

Result: negative

Carcinogenicity

Not classified based on available information.

Components:

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

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

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

human carcinogen by IARC.

OSHANo component of this product present at levels greater than or

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

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

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

by NTP.

Reproductive toxicity

May damage the unborn child. Suspected of damaging fertility.

Components:

Diethylene Glycol Methyl Ethyl 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



11 / 17



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

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

Components:

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 : EC50: > 100 mg/l

aquatic invertebrates

Exposure time: 96 h

Remarks: Based on data from similar materials

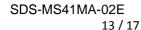
Toxicity to microorganisms : NOEC: > 1,000 mg/l

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)ethyl) 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



14 / 17

MUTOH

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

Components:

Diethylene Glycol Methyl Ethyl Ether:

Biodegradability : 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) ether:

Biodegradability : 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: : 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 : 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

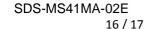
This material does not contain any components with a CERCLA RQ.

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 levels

established by SARA Title III, Section 313:

Diethylene Glycol Methyl 1002-67-1 >= 40 - < 50 %

Ethyl Ether

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

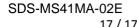
The United States Environmental Protection Agency (USEPA) has established a Significant New Use Rule (SNUR) for one of the components in this product. See 40 CFR § 721.10229.

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 -





(Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Sources of key data used to compile the Material Safety

Data Sheet

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

http://echa.europa.eu/

Revision Date : 2019-08-01

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.