Safety Data Sheet

Date of Issue: 22.10.2020 Date of Expiry: 22.10.2025

1: IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Company Name : **ECP Limited**
Address : PO Box 34125, Birkenhead, Auckland 0746
Telephone : +64 9 480 4386
Facsimile : +64 9 480 4385
Emergency phone number : 0800 243 622 (24 hours)

Product	**1,4-Dioxane**			**Code**	**2227**
CAS#	**HSNO#**	**UN #**	**DG Class/es**	**Packing group #**	
123-91-1	HSR001140	1165	3	II	

Recommended use : Laboratory Investigations

2: Hazards identification

2.1 GHS Classification

Flammable Liquids (Category B), H225
Acute toxicity, Oral (Category E), H303
Acute toxicity, Inhalation (Category E), H333
Eye irritation (Category A), H319
Carcinogenicity (Category B), H351
Aquatic toxicity (Acute or Chronic) (Category D), H413

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word : **Danger**

Hazard statement(s)

H225 Highly flammable liquid and vapour.
H303 May be harmful if swallowed.
H319 Causes serious eye irritation.
H333 May be harmful if inhaled.
H351 Suspected of causing cancer.
H413 May cause long lasting harmful effects to aquatic life.

Precautionary statement(s)
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.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P264 Wash skin thoroughly after handling.

P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P312 IF INHALED: Call a POISON CENTER/ doctor if you feel unwell.
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.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

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.

2.3 Other hazards
May form explosive peroxides., Repeated exposure may cause skin dryness or cracking.

3: Composition/information on ingredients

3.1 Substances

Synonyms	: Dioxane Diethylene oxide
Formula	: C4H8O2
Molecular weight	: 88.11 g/mol
CAS-No.	: 123-91-1
EC-No.	: 204-661-8
Index-No.	: 603-024-00-5

Component	Classification	Concentration
1,4-Dioxane		
	3.1 B; 6.1 E; 6.4 A; 6.7 B; 9.1 D; H225, H303, H333, H319, H351, H413 Concentration limits: >= 20 %: STOT SE 3, H335;	<= 100 %

4: First aid measures

4.1 Description of first-aid measures
General advice
Consult a physician. Show this material safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media
Dry powder Dry sand

Unsuitable extinguishing media
Do NOT use water jet.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

6: Accidental release measures

6.1 Personal precautions, protective equipment, and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8: Exposure controls/personal protection

8.1 Control parameters
Occupational Exposure Limits Table

Component	CAS No.	Value	Control parameters	Basis
1,4-Dioxane	123-91-1	WES-TWA	25 ppm 90 mg/m3	New Zealand. Workplace Exposure Standards for Atmospheric Contaminants
	Remarks	Carcinogen - known or presumed human carcinogen		
		skin absorption		

Predicted No Effect Concentration (PNEC)

Compartment	Value
Soil	0.153 mg/kg
Marine water	0.67 mg/l
Fresh water	10 mg/l
Fresh water sediment	37 mg/kg
Sewage treatment plant	2700 mg/l
Aquatic intermittent release	10 mg/l

8.2 Exposure controls
Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment
Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a fullface respirator with multi-purpose combination (US) or type ABEK (EN 14387)
respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance	
Form	: liquid
Colour	: colourless
b) Odour	: No data available
c) Odour Threshold	: No data available
d) pH	: 6.0 - 8 at 500 g/l at 20 °C
e) Melting point/freezing point	
Melting point/range	: 10 - 12 °C - lit.
f) Initial boiling point	
and boiling range	: 100 - 102 °C - lit.
g) Flash point	: 12 °C - closed cup
h) Evaporation rate	: No data available
i) Flammability (solid, gas)	: No data available
j) Upper/lower flammability or explosive limits	
Upper explosion limit	:22 %(V)
Lower explosion limit	: 2 %(V)
k) Vapour pressure	: 36 hPa at 20 °C 53 hPa at 25.20 °C
l) Vapour density	: 3.04 - (Air = 1.0)
m) Relative density	: 1.034 g/cm3 at 25 °C
n) Water solubility	: completely miscible
o) Partition coefficient:	
n-octanol/water	: log Pow: -0.27
p) Auto-ignition temperature	: 190.55 °C
q) Decomposition temperature	: No data available
r) Viscosity	: No data available
s) Explosive properties	: No data available
t) Oxidizing properties	: No data available

9.2 Other safety information

Surface tension	: 36.9 mN/m at 25 °C
Relative vapour Density	: 3.04 - (Air = 1.0)

10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Heat, flames, and sparks.

10.5 Incompatible materials
Oxygen, Oxidizing agents, Halogens, Reducing agents, Perchlorates., Trimethylaluminum

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - No data available
In the event of fire: see section 5

11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 4,200 mg/kg
LC50 Inhalation - Rat - 2 h - 46,000 mg/m3
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye: Other.
LD50 Dermal - Rabbit - 7,858 mg/kg

Skin corrosion/irritation

Skin - Human
Remarks: Chronic exposure causes drying effect on the skin and eczema.
Skin - Rabbit
Result: No skin irritation

Serious eye damage/eye irritation

Eyes - Rabbit
Result: Eye irritation - 24 h
Respiratory or skin sensitisation
No data available

Germ cell mutagenicity

Laboratory experiments have shown mutagenic effects.

Carcinogenicity

This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.
Limited evidence of carcinogenicity in animal studies
IARC: 2B - Group 2B: Possibly carcinogenic to humans (1,4-Dioxane)

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Additional Information

RTECS: JG8225000

Nausea, Vomiting, Weakness, Dizziness, Vertigo, Headache, Sweating, loss of appetite, Kidney injury may occur., Liver injury may occur.
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated

12: Ecological information

12.1 Toxicity

Toxicity to fish
LC50 - Pimephales promelas (fathead minnow) - 985 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates
EC50 - Daphnia magna (Water flea) - 8,450 mg/l - 24 h

Toxicity to algae
EC50 - Desmodesmus subspicatus (green algae) - > 500 mg/l - 72 h

12.2 Persistence and degradability
Biodegradability Result: < 5 % - Not readily biodegradable.

12.3 Bioaccumulative potential
Does not bioaccumulate.

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
No data available

13: Disposal considerations

13.1 Waste treatment methods
Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable.

Contaminated packaging
Dispose of as unused product.

14: Transport Information Table

		ADR/RID – European packaging certification	IMDG International Maritime Dangerous Goods Code	IATA – DGR International Air Travel Association – Dangerous Goods Regulations
14.1	**UN Number**	1165	1165	1165
14.2	**UN Proper Shipping name**	DIOXANE	DIOXANE	Dioxane
14.3	**Transport Hazard Class**	3	3	3
14.4	**Packaging group**	II	II	II
14.5	**Environmental Hazards**	no	no	no
14.6	**Special precautions for user**	none		
14.7	**Incompatible materials**	Oxygen, Oxidizing agents, Halogens, Reducing agents, Perchlorates., Trimethylaluminum		

15: Regulatory information

15.1 Safety, health, and environmental regulations/legislation specific for the substance or mixture

National regulatory information
HSNO Approval Code: HSR001140
HSNO Group Standard Approval: HSR002596 - Laboratory Chemicals and Reagent Kits Group Standard 2006
Tracking Required: not required
Approved Handler Cert.: not required

Notification status
AICS : On the inventory, or in compliance with the inventory
DSL : All components of this product are on the Canadian DSL
ENCS : On the inventory, or in compliance with the inventory
ISHL : On the inventory, or in compliance with the inventory
KECI : On the inventory, or in compliance with the inventory
NZIoC : On the inventory, or in compliance with the inventory
PICCS : On the inventory, or in compliance with the inventory

16: Disclaimer

The information above is believed to be accurate and represents the best information currently available to us. However, the information is not a guarantee expressed or implied, with respect to such information, and we assume no liability resulting from its use. Anyone using the chemical described here should ensure that he or she has the appropriate training and has the expertise and any equipment required for safe handling. If clarification or further information is required, please contact ECP Ltd or refer to the official handler of dangerous goods within your own company. The user should also make their own investigations to determine the suitability of the product for their particular purposes. In no event shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages howsoever arising, even if the company has been advised of the possibility of such damages.

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