

## MATERIAL SAFETY DATA SHEET

Ref. No. : LS3510

Issue date : October 2003

Issued by LABSCAN ASIA

**PRODUCT NAME : 1,4-DIOXAN**

### COMPANY DETAILS

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### HAZARDS IDENTIFICATION

**Product Name** 1,4-DIOXAN  
**Proper Shipping Name** 1,4-DIOXAN  
**Other Names**

<u>Name</u>	<u>Grade</u>	<u>Labscan Code</u>
1,4-DIOXAN	AR	A3510
1,4-DIOXAN	HPLC	C2512
1,4-DIOXAN	GPR	G4510
1,4-DIOXAN	ANHYDRO	H6510
DIOXAN		
DIETHYLENE ETHER		
DIOXYETHYLENE ETHER		
DIOXANE		
DIETHYLENE OXIDE		

**UN No.** 1165  
**D.G. Class** 3  
**Packing Group** II  
**Hazchem Code** 2YE  
**Poisons schedule** S6  
**EEC-No** 603-024-00-5  
**Class** F; R11 R19 Carc. Cat.3; R40 Xi; R36/37 R66  
**CAS-No** 123-91-1  
**Weight** 100%  
**Most Important hazards** Highly flammable, Harmful  
**Specific hazards** The vapor has irritant effect on eyes, skin and air passages. Possible risks of irreversible effects.

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### FIRST AID

<b>General advice:</b>	Show this safety data sheet to the doctor in attendance.
<b>Inhalation:</b>	Move to fresh air in case of accidental inhalation of vapors. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical supervision. No artificial aspiration mouth-to-mouth or mouth to nose. Use suitable instruments/apparatus. Consult a physician after significant exposure.
<b>Skin contact:</b>	Remove contaminated clothing and wash affected skin with soap and water. Wash contaminated clothing before re-use. If skin irritation persists, call a physician.
<b>Eye contact:</b>	If the substance has got into the eyes, wash out with water or saline solution for at least 15 minutes. Keep eye wide open while rinsing. Consult a physician for severe cases.
<b>Ingestion:</b>	Rinse mouth. Do not induce vomiting without medical advice. If signs of poisoning appear, treat as for inhalation. Consult a physician for severe cases. Never give anything by mouth to and unconscious person.

### FIRE-FIGHTING MEASURES

<b>Suitable extinguishing media:</b>	Extinguish preferably with dry chemical powder, foam, sand carbon dioxide (CO <sub>2</sub> )
<b>Extinguishing media which must not be used for safety reasons:</b>	Do not use a solid water stream as it may scatter and spread fire.
<b>Specific hazards:</b>	Highly flammable liquid. Vapors may form explosive mixtures with air.
<b>Special protective equipment for firefighters:</b>	Wear a positive-pressure supplied-air respirator / full protective flameproof clothing.
<b>Specific methods:</b>	Standard procedure for chemical fires. Water mist may be used to cool closed containers.
<b>Hazchem Code:</b>	2YE

### ACCIDENTAL RELEASE MEASURES

<b>Personal precautions:</b>	Evacuate personnel to safe areas. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Wear a positive-pressure supplied-air respirator, flame retardant antistatic protective clothing. Shut off leaks if without risk. Keep people away from and upwind of spill/leak. Take precautionary measures against static discharges.
<b>Environmental precautions:</b>	Contain or absorb leaking liquid with sand or earth. Prevent liquid entering sewers, basements and work pits; vapor may create explosive and toxic atmosphere. If substance has entered a water course or sewer or contaminated soil or vegetation, advise police.
<b>Methods for cleaning up:</b>	Absorb in earth or sand or other suitable material. Do not absorb in sawdust or other combustible materials. Transfer to covered steel drums. Contact waste disposal services. Dispose of as special waste in compliance with local and national regulations.

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### SAFE HANDLING AND STORAGE INFORMATION

**Handling:** Use only in areas provided with appropriate exhaust ventilation. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

**Storage:** Keep container tightly closed in a cool and well-ventilated place. Keep away from heat and sources of ignition. Protect from light. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Electrical equipment should be protected to the appropriate standard. Store in original container.

### EXPOSURE CONTROLS / PERSONAL PROTECTION

**Chemical Name**  
1,4-DIOXAN

**National occupational exposure limits**  
IRL OEL : 25 ppm (90 mg/m<sup>3</sup>) 8h TLV.  
IRL OEL : 100 ppm (360 mg/m<sup>3</sup>) 15h TLV.

**Engineering measures to reduce exposure:**

The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Ventilation hoods and fans required when working with organic solvents or in hot melt applications.

**Personal protection equipment:**

- **Respiratory protection:** In case of insufficient ventilation wear suitable respiratory equipment.
- **Hand protection:** Polyvinyl alcohol or nitrile-butyl rubber gloves.
- **Eye protection:** Goggles giving complete protection to eyes.
- **Skin and body protection:** Chemical-proof suit / flame retardant antistatic protective clothing, heavy duty work shoes.

**Hygiene measures:**

Keep working clothes separately. Keep away from food, drink and animal feeding stuffs. Wash hands and face before breaks and immediately after handling the products.

### PHYSICAL DATA AND OTHER PROPERTIES

<b>Formula</b>	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub>
<b>Form</b>	Liquid,
<b>Colour</b>	Colourless - yellow.
<b>Odour</b>	Ether-like
<b>pH</b>	(20°C) 6-8 (500 g/l H <sub>2</sub> O)
<b>Boiling point/range</b>	101°C
<b>Melting point/range</b>	12°C
<b>Flash point</b>	11°C
<b>Autoignition temperature</b>	300°C
<b>Explosion limits</b>	-lower 1.7 vol.% -upper 25.2 vol.%
<b>Relative density</b>	(20°C) >= 1.031 g/cm <sup>3</sup> <= 1.034 g/cm <sup>3</sup>
<b>Viscosity</b>	(20°C) 1.32 mPa.S
<b>Partition coefficient (n-octanol/water)</b>	Log P <sub>ow</sub> = -0.42

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### STABILITY AND REACTIVITY

**Stability:** Stable at normal conditions.  
Stable under recommended storage conditions.

**Conditions to avoid:** Protect from light. Keep away from heat and sources of ignition. Take precautionary measures against static discharges.

**Materials to avoid:** None reasonably foreseeable.

**Hazardous decomposition products:** Burning produces obnoxious and toxic fumes, Carbon monoxide / Carbon dioxide (CO<sub>2</sub>).

### TOXICOLOGICAL INFORMATION

**Acute toxicity:**

**Inhalation:** High concentration of vapors may induce unconsciousness, dizziness, headache, cyanosis.

**Ingestion:** Ingestion causes irritation of upper respiratory system and gastrointestinal disturbance. Possible risks of irreversible effects.

**Skin contact :** The substance can be absorbed through skin. Irritant effect on skin. Possible risks of irreversible effects.

**Sensitization:** Irritating to eyes, respiratory system and skin.

**Long term toxicity:** Danger of serious damage to health by prolonged exposure to solvent. Danger of very serious irreversible effects.

**Chronic toxicity:** Did show carcinogenic effects in animal experiments.

### ECOLOGICAL INFORMATION

**Mobility:**  
No data is available on the product itself.

**Persistence / degradability:**  
According to the results of tests of biodegradability this product is not readily biodegradable.

**Bio accumulation:**  
Volatile liquid. Bio accumulation not applicable.

**Ecotoxicity:**  
Fish : LC50/96h/Fathead minnows = 9850 – 10,800 mg/l.  
Toxicity to algae : EC/LC50 (172 h) > 500 mg/l.  
Toxicity to bacteria : EC/LC50 (16 h) : 2,700 mg/l.

### DISPOSAL CONSIDERATIONS

**Waste from residues / unused products:**  
If recycling is not practicable, dispose of in compliance with local regulations.  
Can be incinerated, when in compliance with local regulations.

**Contaminated packaging:**  
Empty containers should be taken for local recycling, recovery or waste disposal.  
Empty containers can be land filled after cleaning, when in compliance with local regulations.

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### TRANSPORT INFORMATION

<b>UN-No</b> .....1165 <b>ADR/RID</b> <b>Class</b> .....3. <b>TREM-CARD</b> .....LAB30TRM30 <b>Proper shipping name</b> .....DIOXAN  <b>IMO</b> <b>Class</b> .....3.2 <b>MFAG</b> .....330 <b>Proper shipping name</b> ..... DIOXAN  <b>ICAO</b> <b>Class</b> .....3 <b>Proper shipping name</b> .....DIOXAN	<b>Marine pollutant</b> .....Not applicable.  <b>Item</b> .....3 (b) <b>HI/UN No</b> .....33/1165  <b>EmS</b> .....3-06 <b>IMDG Page</b> .....3217  <b>UN/ID No</b> .....1165 <b>Packaging group</b> .....II
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### REGULATORY INFORMATION

**Classification according to European directive on classification of hazardous preparations 90/492/EEC**

<b>Contains</b>	DIOXANE	
<b>Symbol(s)</b>	F – Highly flammable	Xn – Harmful



<b>R – phrase(s)</b>	R11	– High flammable
	R19	- May form explosive peroxides.
	R36/37	- Irritating to eyes, respiratory system.
	R40	- Possible risks of irreversible effects.
	R66	- Repeated exposure may cause skin dryness or cracking
<b>S – phrase(s)</b>	S9	- Keep container in a well-ventilated place
	S16	- Keep away from sources of ignition – No smoking.
	S36/37	- Wear suitable protective clothing and gloves.
	S46	- If swallowed, seek medical advice immediately and show this container or label
<b>Recommended restrictions:</b>	Take notice of labels and material safety data sheets for the working chemicals.	
<b>Recommended use:</b>	General purpose solvent.	

### CONTACT POINT

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