SAFETY DATA SHEET

Product Name :1,4-Dioxane CAS No. : 123-91-1 Revision No. : 00

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name	:	1,4-Dioxane
Product Number	:	10190 , 10589 , 10191 , 10189
Brand	:	AZYTUS MATERIAL SCIENCES PVT. LTD
CAS No.	:	123-91-1

1.2 Relevant identified user of the substance or mixture and uses advised against

Identified Uses	:	Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the Safety Data Sheet

Company	:	AZYTUS MATERIAL SCIENCES PVT. LTD. Block C, Survey No. 156, 157 & 174, Dhulapally Road, Kompally, Secunderabad – 500014, India

1.4 Emergency telephone number

Emergency Number, #	:	**+91-8418-232316**

SECTION 2: Hazards Identification

2.1 Classification of the substance or mixture

Flammable liquids (Category 2)	:	H225
Eye irritation (Category 2)	:	H319
Carcinogenicity (Category 2)	:	H351
Specific target organ toxicity - single exposure (Category 3), Respiratory system	:	H335

2.2 Label elements

Pictogram

Signal word	:	Danger
Hazard statement(s)		
H225	:	Highly flammable liquid and vapour
H319	:	Causes serious eye irritation.
H335	:	May cause respiratory irritation.
H351	:	Suspected of causing cancer
Precautionary statement(s)		
P210	:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280	:	Wear protective gloves/ protective clothing/ eye protection/ face protection
P305 + P351 + P338	:	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370 + P378	:	In case of fire: Use dry powder or dry sand to extinguish.
P403 + P235	:	Store in a well-ventilated place. Keep cool.
Supplemental Hazard Statements	:	May form explosive peroxides. Repeated exposure may cause skin dryness or cracking.

2.3 Other hazards : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. Rapidly absorbed through skin.

SECTION 3: Composition/information on ingredients

Substances

Synonyms	:	Diethylene oxide
Formula	:	C4H8O2
Molecular Weight	:	88.11
CAS-No.	:	123-91-1

Hazardous ingredients according to Regulation (EC) No 1272/2008		
Component	**Classification**	**Concentration**
1,4-Dioxane		
CAS-No 123-91-1	Flam. Liq. 2; Eye Irrit. 2; Carc. 2; STOT SE 3; H225, H319, H351, H335	<= 100 %

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice	:	Consult a physician. Show this 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	:	Flush eyes with water as a precaution.
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

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

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.

SECTION 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.

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 an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations

6.4 Reference to other sections : For disposal see section 13

SECTION 7: Handling and storage

7.1 Precautions for safe handling : Avoid exposure - obtain special instructions before use.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.

7.2 Conditions for safe storage, including any incompatibilities : Store in cool place. 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.

Storage class (TRGS 510): 3: Flammable liquids

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

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Derived No Effect Level (DNEL)			
Application Area	**Exposure routes**	**Health effect**	**Value**
Workers	Inhalation	Long-term local effects	144 mg/m3
Workers	Inhalation	Long-term systemic effects	73 mg/m3
Workers	Skin contact	Long-term systemic effects	21 mg/kg
Predicted No Effect Concentration (PNEC)			
Compartment	**Value**		
Soil	0.153 mg/kg		
Marine water	0.67 mg/l		
Fresh water	0.10 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.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact Material: butyl-rubber
Minimum layer thickness: 0.3 mm
Break through time: 480 min

Splash contact Material: Chloroprene
Minimum layer thickness: 0.6 mm
Break through time: 35 min

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

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 full-face 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.

SECTION 9: Physical and chemical properties

Appearance : Clear colorless liquid.

Odour : No data available

Odour Threshold	:	No data available
pH	:	6.0 - 8 at 500 g/l at 20 °C
Melting point/freezing point	:	10 - 12 °C - lit.
Initial boiling point and boiling range	:	100 - 102 °C - lit.
Flash point	:	12 °C - closed cup
Evapouration rate	:	No data available
Flammability (solid, gas)	:	No data available
Upper/lower flammability or explosive limits	:	Upper explosion limit: 22 %(V) Lower explosion limit: 2 %(V)
Vapour pressure	:	27 mmHg at 20 °C 40 mmHg at 25.20 °C
Vapour density	:	3.04 - (Air = 1.0)
Relative density	:	1.034 g/cm3 at 25 °C
Water solubility	:	completely miscible
Partition coefficient: noctanol/water	:	log Pow: -0.27
Auto-ignition temperature	:	375 °C
Decomposition temperature	:	No data available
Viscosity	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Surface tension	:	36.9 mN/m at 25 °C
Relative vapour density	:	3.04 - (Air = 1.0)

SECTION 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

SECTION 11: Toxicological information

11.1 Acute toxicity :

LD50 Oral - Rat - 4,200 mg/kg(1,4-Dioxane)

LC50 Inhalation - Rat - 2 h - 46,000 mg/m3(1,4-Dioxane)

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Other.

LD50 Dermal - Rabbit - 7,858 mg/kg(1,4-Dioxane)

Skin corrosion/irritation :

Skin - Human(1,4-Dioxane)

Remarks: Chronic exposure causes drying effect on the skin and eczema.

Skin - Rabbit(1,4-Dioxane)

Result: No skin irritation

Serious eye damage/eye irritation :

Eyes - Rabbit(1,4-Dioxane)

Result: Eye irritation - 24 h

Respiratory or skin sensitisation : No data available(1,4-Dioxane)

	Germ cell mutagenicity	:	Laboratory experiments have shown mutagenic effects.(1,4-Dioxane)
	Carcinogenicity	:	This product is or contains a component that has been reported to be possi classification.(1,4-Dioxane) Limited evidence of carcinogenicity in animal studies(1,4-Dioxane) (1,4-Dioxane) IARC: 2B - Group 2B: Possibly carcinogenic to humans (1,4-Dioxane)
	Reproductive toxicity	:	No data available(1,4-Dioxane)
	Specific target organ toxicity - single exposure	:	May cause respiratory irritation.(1,4-Dioxane)
	Specific target organ toxicity - repeated exposure	:	No data available
	Aspiration hazard	:	No data available
	Additional Information	:	Nausea, Vomiting, Weakness, Dizziness, Vertigo, Headache, Sweating, loss of appetite, Kidney injury may occur., Liver injury may occur.(1,4-Dioxane) To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.(1,4-Dioxane)

SECTION 12: Ecological information

12.1	Toxicity	:	Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 985 mg/l - 96 h(1,4-Dioxane) Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 8,450 mg/l - 24 h(1,4-Dioxane) Toxicity to algae EC50 - Desmodesmus subspicatus (green algae) - > 500 mg/l - 72 h(1,4- Dioxane)
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	:	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
12.6	Other adverse effects	:	No data available.

SECTION 13: Disposal considerations

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

SECTION 14: Transport information

	ADR/RID	IMDG	IATA
UN number	1165	1165	1165
UN proper shipping name	DIOXANE	DIOXANE	Dioxane
Transport hazard class(es)	3	3	3
Packaging group	II	II	II
Environmental hazard	No	No	No
Special precautions for user	No data available	No data available	No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture : This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical Safety Assessment : For this product a chemical safety assessment was not carried out

SECTION 16: Other information

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Version : 00

Disclaimer:

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