SAFETY DATA SHEET

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

1.1 Product identifiers

Product name	1,4-Dioxane
CAS number	123-91-1
Synonyms	Diox

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

Identified uses	Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

Company	Lab Alley, LLC 12501 Pauls Valley Road Austin, Texas 78737 U.S.A.
Telephone	512-668-9918
Fax	512-886-4008

1.4 Emergency telephone

Emergency Phone #	US & Canada: 1-800-535-5053	INFOTRAC
	International 1-352-323-3500	INFOTRAC

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system, central nervous system (CNS)	

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal Word	Danger
Hazard statements	Highly flammable liquid and vapor. Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness. May cause cancer
Precautionary Statements:	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wash face, hands and any exposed skin thoroughly after handling. Wear eye/face protection. Do not breathe dust/fume/gas/mist/vapors/spray. Use only outdoors or in a well-ventilated area. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep cool.
Response	IF exposed or concerned: Get medical attention/advice.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Skin	IF ON SKIN (on hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Eyes	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Fire	In cause of fire: Use CO2, dry chemical, or foam for extinction.
Storage	Store locked up. Store in a well-ventilated place. Keep container tightly closed.
Disposal	Dispose of contents/container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

May form explosive peroxides. Repeated exposure may cause skin dryness or cracking. WARNING. Cancer- https://www.p65warnings.ca.gov/.

SECTION 3: Composition/information on ingredients

3.1 Components

Chemical name	Common name and synonyms	CAS number	Concentration
1,4-Dioxane	Diox	123-91-1	>95%

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

If inhaled Remove to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth methoc if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

In case of skin contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

In case of eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

If swallowed Do NOT induce vomiting. Call a physician or poison control center immediately.

4.2 Most important symptoms and effects, both acute and delayed

Difficulty in breathing. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.

Unsuitable extinguishing medi Water may be ineffective.

5.2 Specific hazards arising from the substance or mixture

Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated. May form explosive peroxides. Vapors may form explosive mixtures with air. Hazardous combustion products: carbon monoxide, carbon dioxide, peroxides.

5.3 Special protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

5.4 Further information

Flash Point 12 °C / 53.6 °F

Autoignition Temperature 355 °C / 671 °F

Explosion limits

Upper 22%

Lower 2%

Sensitivity to Mechanical Impact No information available

Sensitivity to Static Discharge No information available

NFPA

Health	Flammability	Instability	Physical hazards
2	3	1	N/A

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition. Use personal protection equipment as required. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing. Ensure adequate ventilation.

6.2 Environmental precautions

Should not be released into the environment. See Section 12 for additional ecological information.

6.3 Methods and materials for containment and cleaning up

Remove all sources of ignition. Soak up with inery absorbent material. Take precautionary measures against static discharges. Keep in suitable, closed containers for disposal. Use spark proof tooks and explosion-proof equipment.

6.4 Reference to other sections

See section 2 for full list of hazard and precaution statements.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Precautions on safe handling

Wear personal protective equipment/face protection. Ensure adequate ventilation. Handle under an inert atmosphere. Keep away from open flames, hot surfaces and sources of ignition. Do not breathe mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Take precautionary measures against static discharges. If peroxide formation is suspected, do not open or move container. Use only non-sparking tooks. To avoid ignition of vapors by static electricity discharge, all metals parts of the equipment must be grounded. Wash hands before breaks and immediately after handling the product.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep containers tightly closed in a dry, cool and well-ventilated place. Store under an inert atmosphere. Flammables area. May form explosive peroxides. Containers should be dated when opened and test periodically for the presence of peroxides. Should crystals form in a perioxidizable liquid, peroxidation may have ocured and the product should be considered extremely dangerous. In this instance, the container should only be opened remotely be professionals. Keep away from heat, sparks and flame.

Incompatibilities
Strong oxidzing agents. Reducing agent. Halogens

SECTION 8: Exposure controls/personal protection

8.1 Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Component	Type	Value	
1,4-Dioxane	(vacated) TWA	25 ppm	90 mg/m3
	TWA	100 ppm	360 mg/m3

US. ACGIH Threshold Limit Values

Component	Type	Value
1,4-Dioxane	TWA	200 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Component	Type	Value	
1,4-Dioxane	IDLH	500 ppm	
	Ceiling	1 ppm	3.6 mg/m3

Biological occupational exposure limits
No information available

8.2 Exposure controls

Appropriate engineering controls
Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection
Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory protection
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits or if irritation or other symptoms are experienced.

Control of environmental exposure
No information available

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Petroleum distillates
Odor Threshold	No information available
pH	6-8 500 g/l aq.sol
Melting Point/Range	12 °C / 53.6 °F
Boiling Point/Range	101 °C / 213.8 °F @ 760 mmHg
Evaporation Rate	12 °C / 53.6 °F
Flammability (solid)	No information available
Flammability or explosive limit	
Upper	22%
Lower	2%
Vapor Pressure	41 mbar @ 20 °C
Vapor Density	3
Density	1.034
Solubility	Soluble in water
Partition coefficient; n-octanol/wa	No data available
Autoignition Temp	355 °C / 671 °F
Decomposition Temp	No information available
Viscosity	1.32 mPa.s @ 20 °C
Molecular Formula	C4H8O2
Molecular Weight	88.11
VOC Content(%)	No information available
Oxidizing properties	No information available

9.2 Other safety information

No information available.

SECTION 10: Stability and reactivity

10.1 Reactivity
None known, based on information available

10.2 Chemical stability
May form explosive peroxides. Hygroscopic

10.3 Possibility of hazardous reactions
May form explosive peroxides

10.4 Conditions to avoid
Incompatible products. Heat, flames and sparks. Exposure to air or moisture over prolonged periods. Keep away from open flames, hot surfaces and sources of ignition.

10.5 Incompatible materials
Strong oxidizing agents, reducing agent, halogens

10.6 Hazardous decomposition products
Carbon monoxide, carbon dioxide, peroxides

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Product Information, Component Information

Acute toxicity

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
1,4-Dioxane	5170 mg/kg (rat)	7600 mg/kg (rabbit)	48.5 mg/L (rat) 4 h
	4200 mg/kg (rat)	-	-

Toxicologically Synergistic Products
Acetonitrile, Tetrachloroethylene

Skin corrosion/irritation
Irritating to skin

Serious eye damage/eye irritation
Irritating to eyes

Respiratory or skin sensitization
Irritating to respiratory system

Germ cell mutagenicity
No information available

Carcinogenicity

Component	CAS	IARC	NTP	ACGIH	OSHA	Mexico

1,4-Dioxane	123-91-1	Not listed	Not listed	Not listed	Not listed	Not listed

Specific target organ toxicity - single exposure
Respiratory system, Central nervous system (CNS)

Specific target organ toxicity - repeated exposure
None known

Reproductive toxicity
No information available

Chronic effects
No information available

11.2 Additional Information
No information available

SECTION 12: Ecological information

12.1 Toxicity

Product		Species	Test Results
1,4-Dioxane	LC50	Pimephales promelas	9850 mg/L 96 h
	LC50	Pimephales promelas	10306 - 14741 mg/L 96 h
	LC50	Pimephales promelas	9850 mg/L 96 h
	LC50	Lepomis macrochirus	>10000 mg/L, 96 h
	LC50	Lepomis macrochirus	>10000 mg/L 96 h
	EC50	Microtox	610 mg/L 5 min
	EC50	Microtox	668 mg/L 15 min
	EC50	Microtox	733 mg/L 30 min
	EC50	Water Flea	163 mg/L 48 h

12.2 Persistence and degradability
Soluble in water, persistence is unlikely based on information available

12.3 Bio accumulative potential
No information available

12.4 Mobility in soil
Will likely be mobile in the environment due to its water solubility, log Pow: -0.42

12.5 Results of PBT and vPvB assessment
No information available

12.6 Endocrine disrupting properties
No information available

12.7 Other adverse effects

See actual entry in RTECS for complete information.

SECTION 13: Disposal considerations

13.1 Waste Disposal Methods

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

SECTION 14: Transport information

DOT (US)

UN-No	UN1165
Proper Shipping Name	DIOXANE
Hazard Class	3
Packing Group	II

IMDG

UN-No	UN1165
Proper Shipping Name	DIOXANE
Hazard Class	3
Packing Group	II

IATA

UN-No	UN1165
Proper Shipping Name	DIOXANE
Hazard Class	3
Packing Group	II

SECTION 15: Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Listed (1,4-DIOXANE (123-91-1))

CERCLA Hazardous Substance List (40 CFR 302.4)

Listed (1,4-DIOXANE (123-91-1))

Hazardous Substances RQs: 100 lb

SARA 304 Emergency release notification

Not listed

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous

See section 2 for more information

SARA 313 (TRI reporting)

Regulated. Weight: > 95%; Threshold values: 0.1%

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Listed (1,4-DIOXANE (123-91-1))

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not listed

Safe Drinking Water Act

Not listed

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

Not listed

US state regulations

US. Massachusetts RTK - Substance List

Listed (1,4-DIOXANE (123-91-1))

US. New Jersey Worker and Community Right-to-Know Act

Listed (1,4-DIOXANE (123-91-1))

US. Pennsylvania Worker and Community Right-to-Know Law

Listed (1,4-DIOXANE (123-91-1))

California Proposition 65

Listed (1,4-DIOXANE (123-91-1))
Carcinogen, NSRL: 30 μg/day

SECTION 16: Other information

Issue date: 07/22/2024
Revision Date: 11/06/2026

SECTION 17: Disclaimer

The information provided on this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.