

# Otto Chemie Pvt Ltd

An ISO 9001 : 2015 & GMP Certified Company  
Office : No 603, 6th Floor, Tardeo AC Market, 87, Tardeo Road,  
Tardeo, Mumbai, Maharashtra 400034, India (BHARAT)  
Tel : + 91 98200 41841 Email : [info@ottokemi.com](mailto:info@ottokemi.com) Web : [www.ottokemi.com](http://www.ottokemi.com)

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## MATERIAL SAFETY DATA SHEET (MSDS)

### SECTION 1: Product identifiers

Product Name : 1,4-Dioxane, anhydrous, 99.8%  
Product Code : D 2234  
CAS No: 123-91-1

1.2. Relevant identified uses of the substance or mixture and uses advised against  
Use : Industrial. For professional use only.

1.3. Details of the supplier of the safety data sheet

Company identification  
OTTO CHEMIE PVT LTD  
No 603, 6th Floor, Tardeo AC Market, 87, Tardeo Road,  
Tardeo, Mumbai, Maharashtra 400034, India (BHARAT)

1.4. Emergency telephone number  
Phone no. : + 91 98200 41841 (10 : 00 am – 06 : 00 pm)

### SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Flammable liquids, (Category 2)

Eye irritation, (Category 2)

Carcinogenicity, (Category 1B)

Specific target organ toxicity -  
single exposure, (Category 3),

Respiratory system

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram

Signal Word

Hazard Statements

H225

H319

H335

H350

Precautionary Statements

P202

P210

P233

P240

P305 + P351 + P338

P308 + P313

Supplemental Hazard information (EU)

EUH019

EUH066

Restricted to professional users.

Reduced Labeling (<= 125 ml)

Pictogram

Signal Word

Hazard Statements

H350

Precautionary Statements

P202

P308 + P313

H225: Highly flammable liquid and vapor.

H319: Causes serious eye irritation.

H350: May cause cancer.

H335: May cause respiratory irritation.

Danger

Highly flammable liquid and vapor.

Causes serious eye irritation.

May cause respiratory irritation.

May cause cancer.

Do not handle until all safety precautions have been read and understood.

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Keep container tightly closed.

Ground and bond container and receiving equipment.

IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

IF exposed or concerned: Get medical advice/ attention.

May form explosive peroxides.

Repeated exposure may cause skin dryness or cracking.

Danger

May cause cancer.

Do not handle until all safety precautions have been read and understood.

IF exposed or concerned: Get medical advice/ attention.

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## Supplemental Hazard information (EU)

EUH019

May form explosive peroxides.

EUH066

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.

#### Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

#### Toxicological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

#### Synonyms

: Dioxane  
Diethylene oxide

#### Formula

: C<sub>4</sub>H<sub>8</sub>O<sub>2</sub>

#### 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 Included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH) |   |               |
| CAS-No. 123-91-1  | Flam. Liq. 2; Eye Irrit. 2; Carc. 1B; STOT SE 3; H225, H319, H350, H335 | <= 100 %      |
| EC-No 204-661-8   | Concentration limits: >= 20 %: STOT SE 3, H335;                         |               |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Call in physician.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

#### In case of eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

#### If swallowed

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately.

### 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

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media

Water Foam Carbon dioxide (CO<sub>2</sub>) Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

### 5.2 Special hazards arising from the substance or mixture

Carbon oxides

Combustible.

Pay attention to flashback.

Vapors are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Forms explosive mixtures with air at ambient temperatures.

### 5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

### 5.4 Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.

Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

### 6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

### 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

### 6.4 Reference to other sections

For disposal see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Test for peroxide formation periodically and before distillation.

Storage class

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

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Ingredients with workplace control parameters

Derived No Effect Level (DNEL)

| Application Area Rou | Routes of exposure | Health effect              | Value     |
|----------------------|--------------------|----------------------------|-----------|
| Workers              | Inhalation         | Long-term local effects    | 144 mg/m3 |
| Workers              | Inhalation         | Long-term systemic effects | 73 mg/m3  |
| Workers              | Skin contac        | Long-term systemic effects | 21 mg/m3  |

Predicted No Effect Concentration (PNEC)

| Compartment                  | Value       |
|------------------------------|-------------|
| Soil                         | 0.153 mg/kg |
| Sea 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     |

Application Area Routes of exposure

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/m3

Predicted No Effect Concentration (PNEC)

Compartment Value

Soil 0,153 mg/kg

Sea 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

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Full contact

Material: butyl-rubber

Minimum layer thickness: 0,7 mm

Break through time: 480 min

Material tested: Butoject® (KCL 898)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Splash contact

Material: Viton®

Minimum layer thickness: 0,7 mm

Break through time: 120 min

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## Body Protection

Flame retardant antistatic protective clothing.

## Respiratory protection

Recommended Filter type: Filter A (acc. to DIN 3181) for vapours of organic compounds

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

|   |   |
|---|---|
| a) Physical state                               | liquid  |
| b) Color  | colorless   |
| c) Odor   | No data available   |
| d) Melting point/freezing point                 | Melting point/range: 10 - 12 °C - lit.  |
| e) Initial boiling point and boiling range      | 100 - 102 °C - lit.   |
| f) Flammability (solid, gas)                    | No data available   |
| g) Upper/lower flammability or explosive limits | Upper explosion limit: 22 %(V)<br>Lower explosion limit: 2 %(V)   |
| h) Flash point                                  | 11 °C - closed cup  |
| i) Autoignition temperature                     | 190,55 °C   |
| j) Decomposition temperature                    | No data available   |
| k) pH   | 6,0 - 8 at 500 g/l at 20 °C   |
| l) Viscosity                                    | Viscosity, kinematic: 1,27 mm <sup>2</sup> /s at 20 °C - OECD Test Guideline 1140,93 mm <sup>2</sup> /s at 40 °C - OECD Test Guideline 114<br>Viscosity, dynamic: 1,2 mPa.s at 25 °C 1,32 mPa.s at 20 °C<br>1.000 g/l at 20 °C - completely miscible<br>log Pow: -0,42 - Bioaccumulation is not expected. |
| m) Water solubility                             | 36 hPa at 20 °C   |
| n) Partition coefficient: n-octanol/water       | 53 hPa at 25,20 °C  |
| o) Vapor pressure                               | 1,034 g/cm <sup>3</sup> at 25 °C - lit.<br>1,03 at 20 °C  |
| p) Density                                      | 3,04 - (Air = 1.0)  |
| q) Relative density                             | No data available   |
| r) Relative vapor density                       | No data available   |
| s) Particle characteristics                     | none  |
| t) Explosive properties                         | No data available   |
| u) Oxidizing properties                         | none  |
| 9.2 Other safety information                    |   |
| Surface tension 36,9 mN/m at 25 °C              |   |
| Relative vapor density                          |   |
| 3,04 - (Air = 1.0)                              |   |

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Formation of peroxides possible.

Vapors may form explosive mixture with air.

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Stable under recommended storage conditions.

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Contains the following stabilizer(s):  
butyl hydroxytoluene (BHT) (0,0025 %)

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Warming.

Moisture.

10.5 Incompatible materials

No data available

10.6 Hazardous decomposition products

Peroxides

In the event of fire: see section 5

## SECTION 11: Toxicological information

11.1 Information on toxicological effects

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Toxicity to Animals:

Oral LD50 Rat: 1500 mg/kg; Dermal LD50 Rabbit: 2000mg/kg

Inhalation LC50 Rat: > 50mg/L.

Chronic Effects on Humans: CARCINOGENIC EFFECTS: Classified None. by NTP, None. by OSHA, None. by NIOSH.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of inhalation (lung irritant).

Special Remarks on Toxicity

to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

## SECTION 12: Ecological information

12.1 Toxicity

Toxicity to daphnia

and other aquatic

invertebrates

semi-static test EC50 - Daphnia magna (Water flea) - > 1.000 mg/l

- 48 h

(OECD Test Guideline 202)

Toxicity to algae static test ErC50 - Pseudokirchneriella subcapitata (green algae) - >

1.000 mg/l - 72 h

(OECD Test Guideline 201)

Toxicity to

fish(Chronic toxicity)

flow-through test NOEC - Pimephales promelas (fathead minnow) - >

103 mg/l - 32 d

Remarks: (ECHA)

Toxicity to daphnia

and other aquatic

invertebrates(Chronic

toxicity)

NOEC - Daphnia magna (Water flea) - 1.000 mg/l - 21 d

(OECD Test Guideline 211)

12.2 Persistence and degradability

Biodegradability aerobic - Exposure time 29 d

Result: < 10 % - Not readily biodegradable.

(OECD Test Guideline 301F)

12.3 Bioaccumulative potential

Bioaccumulation Cyprinus carpio (Carp) - 10 mg/l(1,4-Dioxane)

Bioconcentration factor (BCF): 0,3 - 0,7

(OECD Test Guideline 305C)

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.

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## 12.6 Endocrine disrupting properties

Product:

Assessment :

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## 12.7 Other adverse effects

Forms toxic mixtures in water, dilution measures notwithstanding.

Discharge into the environment must be avoided.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

No data available

## SECTION 14: Transport information

### 14.1 UN number

ADR/RID: 1165

IMDG: 1165

IATA: 1165

### 14.2 UN proper shipping name

ADR/RID: DIOXANE

IMDG: DIOXANE

IATA: Dioxane

### 14.3 Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

### 14.4 Packaging group

ADR/RID: II

IMDG: II

IATA: II

### 14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

### 14.6 Special precautions for user

Tunnel restriction code : (D/E)

Further information : No data available

## SECTION 15: Regulatory information

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

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Authorisations and/or restrictions on use

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).

: 1,4-Dioxane

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII)

: 1,4-Dioxane

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

P5c FLAMMABLE LIQUIDS

Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

### 15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

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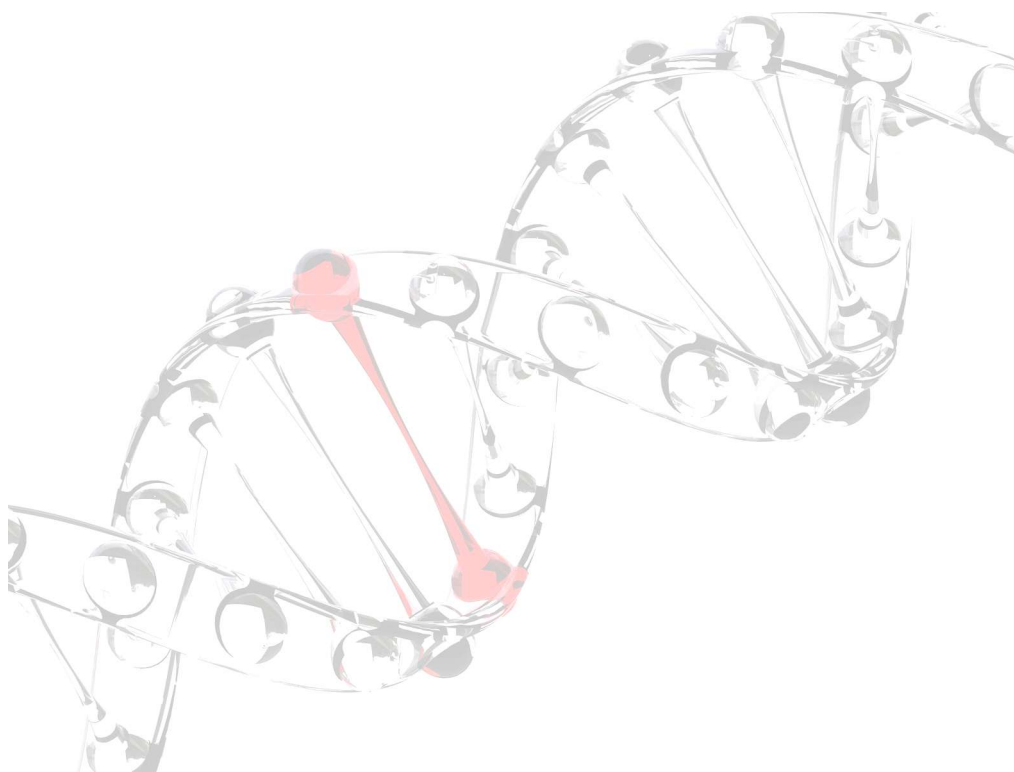
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## **Section 16: Other Information**

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.



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