Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 18.11.2025 *Version number 6 (replaces version 5)* *Revision: 18.11.2025*

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

· **1.1 Product identifier**
· **Creation date** 23.01.2018

· **Trade name: 1,4-dioxane**

· **Article number:** 0484
· **CAS Number:**
123-91-1
· **EC number:**
204-661-8
· **Index number:**
603-024-00-5
· **Registration number** 01-2119462837-26-XXXX
· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
· **Life cycle stages**
M Manufacture
F Formulation or re-packing
IS Use at industrial Sites
PW Widespread use by professional workers
· **Sector of Use**
SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
· **Product category**
PC19 Intermediate
PC21 Laboratory chemicals
· **Process category**
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC15 Use as laboratory reagent
· **Environmental release category**
ERC1 Manufacture of the substance
ERC2 Formulation into mixture
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC6a Use of intermediate
ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)
· **Application of the substance / the mixture**
Chemical for research, development, manufacturing, laboratory chemical for analysis.

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· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Biosolve Chimie
20 Rue Roger Husson, 57260 Dieuze, France
Tel: +33 3 878 675 80/81/82/83/84/85
Email: info@biosolvechimie.com

Biosolve B.V.
Kerkhofstraat 21, 5554HG Valkenswaard, the Netherlands.
Tel: +31-(0)40-2071300
Fax:+31-(0)40-2048537
Email: info@biosolve-chemicals.com

· **Further information obtainable from:** Product safety department.
· **1.4 Emergency telephone number:**
Contact list of appointed bodies for information relating to emergency health response, according to Art. 45(1) Reg. (EC) No 1272/2008.
See at https://poisoncentres.echa.europa.eu/appointed-bodies
Help desk: http://echa.europa.eu/web/guest/support/helpdesks/national-helpdesks/list-of-national-helpdesks.
For more information see section 16.

*
SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**

GHS02 flame

Flam. Liq. 2 H225 Highly flammable liquid and vapour.

GHS08 health hazard

Carc. 1B H350 May cause cancer.

GHS07

Eye Irrit. 2 H319 Causes serious eye irritation.
STOT SE 3 H335 May cause respiratory irritation.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008**
The substance is classified and labelled according to the CLP regulation.

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· ***Hazard pictograms***

GHS02 GHS07 GHS08

· ***Signal word*** *Danger*
· ***Hazard statements***
H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
H350 May cause cancer.
H335 May cause respiratory irritation.
· ***Precautionary statements***

P210	*Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.*
P241	*Use explosion-proof [electrical/ventilating/lighting] equipment.*
P303+P361+P353	*IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].*
P305+P351+P338	*IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
P405	*Store locked up.*
P501	*Dispose of contents/container in accordance with local/regional/national/international regulations.*

· ***Additional information:***
Restricted to professional users.
EUH019 May form explosive peroxides.
EUH066 Repeated exposure may cause skin dryness or cracking.
· ***2.3 Other hazards***
· ***Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable.*
· ***vPvB:*** *Not applicable.*

*
SECTION 3: Composition/information on ingredients

· ***3.1 Substances***
· ***CAS No. Description***
CAS: 123-91-1 1,4-dioxane
· ***Identification number(s)***
· ***EC number:*** *204-661-8*
· ***Index number:*** *603-024-00-5*

· ***SVHC***	
CAS: 123-91-1	*1,4-dioxane*

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SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **General information:** Immediately remove any clothing soiled by the product.
· **After inhalation:** Supply fresh air; consult doctor in case of complaints.
· **After skin contact:** Immediately rinse with water.
· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing:** If symptoms persist consult doctor.
· **4.2 Most important symptoms and effects, both acute and delayed**
No further relevant information available.
· **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Firefighting measures

· **5.1 Extinguishing media**
· **Suitable extinguishing agents:**
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **5.2 Special hazards arising from the substance or mixture** No further relevant information available.
· **5.3 Advice for firefighters**
· **Protective equipment:** No special measures required.

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
· **6.2 Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
· **6.3 Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
· **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.

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· ***Information about fire - and explosion protection:***
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Keep respiratory protective device available.

· ***7.2 Conditions for safe storage, including any incompatibilities***
· ***Storage:***
· ***Requirements to be met by storerooms and receptacles:*** *Store in a cool location.*
· ***Information about storage in one common storage facility:*** *Not required.*
· ***Further information about storage conditions:***
Keep container tightly sealed.
Store in cool, dry conditions in well sealed receptacles.
· ***7.3 Specific end use(s)*** *No further relevant information available.*

*
SECTION 8: Exposure controls/personal protection

· ***8.1 Control parameters***

· **Ingredients with limit values that require monitoring at the workplace:**	
CAS: 123-91-1 1,4-dioxane	
IOELV	Long-term value: 73 mg/m³, 20 ppm

· ***PNECs***
123-91-1
Fresh water 10 mg/l
Fresh water sediment 37 mg/kg
Sea water 0.67 mg/l
Aquatic intermittent release 10 mg/l
Sewage treatment plan t2700 mg/l
Soil 0.153 mg/kg
· ***Additional information:*** *The lists valid during the making were used as basis.*

· ***8.2 Exposure controls***
· ***Appropriate engineering controls*** *No further data; see section 7.*
· ***Individual protection measures, such as personal protective equipment***
· ***General protective and hygienic measures:***
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.
· ***Respiratory protection:***
Recommended Filter type: Filter A (acc. to DIN 3181) for vapours of organic compounds
The entrepeneur 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.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

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· ***Hand protection***
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· ***Material of gloves***
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· ***Penetration time of glove material***
Full contact
Material: butyl-rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min

Splash contact Material: Viton®
Minimum layer thickness: 0.7 mm
Break through time: 120 min
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
· ***For the permanent contact gloves made of the following materials are suitable:*** *Butyl rubber, BR*
· ***As protection from splashes gloves made of the following materials are suitable:***
Fluorocarbon rubber (Viton)
· ***Eye/face protection***
Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Tightly sealed goggles

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SECTION 9: Physical and chemical properties

· ***9.1 Information on basic physical and chemical properties***
· ***General Information***

· ***Physical state***	*Liquid*
· ***Colour:***	*Colourless*
· ***Odour:***	*Ether-like*
· ***Odour threshold:***	*No data available.*
· ***Melting point/freezing point:***	*11.8 °C*

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· **Boiling point or initial boiling point and boiling range**	101.3 °C
· **Flammability**	Highly flammable.
· **Lower and upper explosion limit**	
· **Lower:**	1.9 Vol %
· **Upper:**	22.5 Vol %
· **Flash point:**	12 °C
· **Auto-ignition temperature:**	375 °C
· **Decomposition temperature:**	No data available
· **pH**	6-8
· **Viscosity:**	
· **Dynamic at 20 °C:**	1.2 mPas
· **Solubility**	
· **water:**	Fully miscible.
· **Partition coefficient n-octanol/water (log value)**	-0.56864
· **Vapour pressure at 20 °C:**	41 hPa
· **Density and/or relative density**	
· **Density at 20 °C:**	1.03 g/cm³
· **Relative density**	No data available
· **Vapour density**	No data available

· **9.2 Other information**	
· **Appearance:**	
· **Form:**	Fluid
· **Important information on protection of health and environment, and on safety.**	
· **Ignition temperature:**	No data available
· **Explosive properties:**	May form explosive peroxides.
· **Organic solvents:**	100.0 %
· **Solids content:**	0.0 %
· **Molecular weight**	88.11 g/mol
· **Change in condition**	
· **Evaporation rate**	No data available

· **Information with regard to physical hazard classes**	
· **Explosives**	Void
· **Flammable gases**	Void
· **Aerosols**	Void
· **Oxidising gases**	Void
· **Gases under pressure**	Void
· **Flammable liquids**	Highly flammable liquid and vapour.
· **Flammable solids**	Void
· **Self-reactive substances and mixtures**	Void
· **Pyrophoric liquids**	Void
· **Pyrophoric solids**	Void
· **Self-heating substances and mixtures**	Void

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· **Substances and mixtures, which emit flammable gases in contact with water**	Void
· **Oxidising liquids**	Void
· **Oxidising solids**	Void
· **Organic peroxides**	Void
· **Corrosive to metals**	Void
· **Desensitised explosives**	Void

· **Molecular Weight**

123-91-1	1,4-dioxane	88.11 gr/mole

· **Molecular Formula**

123-91-1	1,4-dioxane	C4H8O2

SECTION 10: Stability and reactivity

· **10.1 Reactivity** No further relevant information available.
· **10.2 Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **10.3 Possibility of hazardous reactions** No dangerous reactions known.
· **10.4 Conditions to avoid** No further relevant information available.
· **10.5 Incompatible materials:** No further relevant information available.
· **10.6 Hazardous decomposition products:** No dangerous decomposition products known.

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SECTION 11: Toxicological information

· **11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**
· **Acute toxicity** Based on available data, the classification criteria are not met.

· **LD/LC50 values relevant for classification:**

CAS: 123-91-1 1,4-dioxane

Oral	LD50	5,700 mg/kg (mouse)
Dermal	LD50	7,600 mg/kg (rabbit)
Inhalative	LC50/4 h	46 mg/l (rat)

· **Primary irritant effect:**
· **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
· **Serious eye damage/irritation** Causes serious eye irritation.
· **Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.
· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
· **Carcinogenicity** May cause cancer.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** May cause respiratory irritation.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

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· ***11.2 Information on other hazards***

· ***Endocrine disrupting properties***
Substance is not listed.

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SECTION 12: Ecological information

· ***12.1 Toxicity***
· ***Aquatic toxicity:*** *No further relevant information available.*
· ***12.2 Persistence and degradability*** *No further relevant information available.*
· ***12.3 Bioaccumulative potential*** *No further relevant information available.*
· ***12.4 Mobility in soil*** *No further relevant information available.*
· ***12.5 Results of PBT and vPvB assessment***
· ***PBT:*** *Not applicable.*
· ***vPvB:*** *Not applicable.*
· ***12.6 Endocrine disrupting properties***
The product does not contain substances with endocrine disrupting properties.
· ***12.7 Other adverse effects***
· ***Additional ecological information:***
· ***General notes:***
Water hazard class 2 (German Regulation) (Assessment by list): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.

SECTION 13: Disposal considerations

· ***13.1 Waste treatment methods***
· ***Recommendation***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· ***European waste catalogue***	
HP3	*Flammable*
HP4	*Irritant - skin irritation and eye damage*
HP5	*Specific Target Organ Toxicity (STOT)/Aspiration Toxicity*
HP7	*Carcinogenic*
HP15	*Waste capable of exhibiting a hazardous property listed above not directly displayed by the original waste.*

· ***Uncleaned packaging:***
· ***Recommendation:*** *Disposal must be made according to official regulations.*
· ***Recommended cleansing agents:*** *Water, if necessary together with cleansing agents.*

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SECTION 14: Transport information

· **14.1 UN number or ID number**	
· **ADR, IMDG, IATA**	UN1165
· **14.2 UN proper shipping name**	
· **ADR**	UN1165 DIOXANE
· **IMDG, IATA**	DIOXANE
· **14.3 Transport hazard class(es)**	
· **ADR**	

· **Class**	3 (F1) Flammable liquids.
· **Label**	3
· **IMDG, IATA**	

· **Class**	3 Flammable liquids.
· **Label**	3
· **14.4 Packing group**	
· **ADR, IMDG, IATA**	II
· **14.5 Environmental hazards:**	
· **Marine pollutant:**	No
· **14.6 Special precautions for user**	Warning: Flammable liquids.
· **Hazard identification number (Kemler code):**	33
· **EMS Number:**	F-E,S-D
· **Stowage Category**	B
· **14.7 Maritime transport in bulk according to IMO instruments**	Not applicable.
· **Transport/Additional information:**	
· **ADR**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· **Transport category**	2
· **Tunnel restriction code**	D/E

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· **IMDG**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml

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SECTION 15: Regulatory information

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

· **Directive 2012/18/EU**
· **Named dangerous substances - ANNEX I** Substance is not listed.
· **Seveso category** P5c FLAMMABLE LIQUIDS
· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 5,000 t
· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 50,000 t
· **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3, 28

· **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**

Substance is not listed.

· **REGULATION (EU) 2019/1148**

· **Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))**

Substance is not listed.

· **Annex II - REPORTABLE EXPLOSIVES PRECURSORS**

Substance is not listed.

· **Regulation (EC) No 273/2004 on drug precursors**

Substance is not listed.

· **Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors**

Substance is not listed.

· **National regulations:**

· **Information about limitation of use:**
Workers are not allowed to be exposed to this hazardous material. Exceptions can be made by the authorities in certain cases.

· **Other regulations, limitations and prohibitive regulations**

· **Substances of very high concern (SVHC) according to REACH, Article 57**

CAS: 123-91-1	1,4-dioxane

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has been carried out.

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SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· ***Contact:***
Austria Vergiftungsinformationszentrale (VIZ) (+43) 1 406 43 43

Belgium Centre Antipoisons (+32) 070 245 245
Antigifcentrum 070 245 245 (+32)

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Informationszentrale gegen Vergiftungen Zentrum für Kinderheilkunde Universitätsklinikum Bonn: 0228/19240
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Giftinformationszentrum der Länder Rheinland-Pfalz und Hessen - Klinische Toxikologie -

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Universitätsmedizin der Johannes Gutenberg-Universität Mainz: 06131/19240
Vergiftungs-Informations-Zentrale Zentrum für Kinder- und Jugendmedizin Universitätsklinikum: 0761/19240
Giftnotruf München Toxikologische Abteilung der II. Med. Klinik und Poliklinik: 089/19240

Great Britain Members of the public seeking specific information on poisons should contact: In England and Wales: NHS 111 - dial 111 In Scotland: NHS 24 - dial 111

Greece Κέντρο Δηλητηριάσεων (+30) 2107793777

Hungary Országos Kémiai Biztonsági Intézet (OKBI) +(36)-80-201-199

Iceland LANDSPITALI - THE NATIONAL UNIVERSITY HOSPITAL Tel. (+354) 543 1000

Ireland National Poisons Information Centre: +353 (1) 809 2166 (8.00 a.m. to 10.00 p.m. 7 days a week)
Healthcare Professionals: +353 (1) 809 2566 (24 hour service)

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CAV "Ospedale Pediatrico Bambino Gesù" – Roma Tel. (+39) 06.6859.3726
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Slovakia Národné toxikologické informačné centrum (NTIC) (+421) 2 5477 4166

Slovenia Urad Republike Slovenije za kemikalije +38614006051

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Safety data sheet
according to Regulation (EC) No 1907/2006, Article 31

Printing date 18.11.2025 *Version number 6 (replaces version 5)* *Revision: 18.11.2025*

Trade name: 1,4-dioxane

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· ***Date of previous version:*** *04.11.2025*
· ***Version number of previous version:*** *5*
· ***Abbreviations and acronyms:***
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
SVHC: Substances of Very High Concern
vPvB: very Persistent and very Bioaccumulative
Flam. Liq. 2: Flammable liquids – Category 2
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Carc. 1B: Carcinogenicity – Category 1B
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
· **** Data compared to the previous version altered.***

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Annex: Exposure scenario

· ***Short title of the exposure scenario***
· ***Sector of Use***
SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
SU9 Manufacture of fine chemicals
SU10 Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
· ***Product category***
PC19 Intermediate
PC21 Laboratory chemicals
· ***Process category***
PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions.
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC15 Use as laboratory reagent
· ***Environmental release category***
ERC1 Manufacture of the substance
ERC2 Formulation into mixture
ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ERC6a Use of intermediate
ERC6b Use of reactive processing aid at industrial site (no inclusion into or onto article)
· ***Description of the activities / processes covered in the Exposure Scenario***
See section 1 of the annex to the Safety Data Sheet.
123-91-1
1. Short title of Exposure Scenario: Industrial use

Main User Groups: SU 3
Sectors of end-use: SU 3, SU9, SU 10
Chemical product category: PC19, PC21
Process categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC15
Environmental Release Categories : ERC1, ERC2, ERC4, ERC6a, ERC6b:

2. Short title of Exposure Scenario: Professional use

Main User Groups: SU 22
Sectors of end-use: SU 22
Chemical product category: PC21
Process categories: PROC15

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Environmental Release Categories : ERC2, ERC6a, ERC6b:
· **Conditions of use**
· **Duration and frequency** 5 workdays/week.
· **Worker**
Application duration : > 4 h
Frequency of use : 220 days/year
· **Environment**
Indoor use
Do not allow contact to soil, surface water and ground water.
· **Physical parameters** See section 9 to the Safety Data Sheet.
· **Physical state** Fluid
· **Concentration of the substance in the mixture**
Raw material.
Covers the percentage of the substance in the product up to 100 %.
· **Used amount per time or activity** According to directions for use.
· **Other operational conditions** Observe the general safety regulations when handling chemicals.
· **Other operational conditions affecting environmental exposure**
Observe section 6 of the Safety Data Sheet (Accidental release measures).
· **Other operational conditions affecting worker exposure**
Avoid contact with eyes.
Take precautionary measures against static discharge.
Keep away from sources of ignition - No smoking.
· **Other operational conditions affecting consumer exposure** No special measures required.
· **Other operational conditions affecting consumer exposure during the use of the product** Not applicable.
· **Risk management measures**
· **Worker protection** Observe section 7.1 and 8.1-8.2 of the Safety Data Sheet
· **Organisational protective measures**
Avoid contact with drinking water and / or food during application.
Ensure that activities are executed by specialists or authorised personnel only.
Ensure that the working area is organised, well lit and ventilated, with enough space to handle spilled product.
Ensure good ventilation. This can be achieved by using a local exhaustion or general exhaust system. If these measures are insufficient to keep the solvent vapour concentration below the workplace limit, wear an adequate respiratory protective device.
Consider section 4 of the Safety Data Sheet (First aid measures).
· **Technical protective measures**
Provide explosion-proof electrical equipment.
Ensure that suitable extractors are available on processing machines
· **Personal protective measures**
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes.
Tightly sealed goggles
Recommended Filter type: Filter A (acc. to DIN 3181) for vapours of organic compounds
The entrepeneur 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.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

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Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Protective gloves
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
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.

· ***Measures for consumer protection*** *Ensure adequate labelling.*
· ***Environmental protection measures***
· ***Air*** *Exhaust air is introduced into the gas scrubber.*
· ***Water*** *Do not allow to reach ground water, water bodies or sewage system.*
· ***Soil*** *Avoid contact with soil and / or ground water during the application.*
· ***Notes*** *In case of unintended release of the product: See section 6 of the Safety Data Sheet.*
· ***Disposal measures***
Ensure that waste is collected and contained.
Disposal must be made according to official regulations.
· ***Disposal procedures***
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
· ***Waste type*** *Partially emptied and uncleaned packaging*
· ***Exposure estimation***
· ***Worker (dermal)***
Detailed information on the exposure estimation can be found at http://www.ecetoc.org/tra.
123-91-1
PROC1 longterm, dermal, systemic 0.016
PROC2 longterm, dermal, systemic 0.065
PROC3 longterm, dermal, systemic 0.016
PROC4 longterm, dermal, systemic 0.327
PROC5 longterm, dermal, systemic 0.131
PROC8a longterm, dermal, systemic 0.131
PROC8b longterm, dermal, systemic 0.327
PROC9 longterm, dermal, systemic 0.327
PROC15 longterm, dermal, systemic 0.016
The calculated value is smaller than the DNEL.
Risk Characterization ratio <1
· ***Worker (inhalation)***
Detailed information on the exposure estimation can be found at http://www.ecetoc.org/tra.
123-91-1
PROC1 longterm, inhalative, local < 0.001
PROC1 longterm, inhalative, systemic < 0.001
PROC2 longterm, inhalative, local 0.509
PROC2 longterm, inhalative, systemic 0.502
PROC2 longterm, inhalative, local 0.509
PROC2 longterm, inhalative, systemic 0.502
PROC3 longterm, inhalative, local 0.127
PROC3 longterm, inhalative, systemic 0.126

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PROC4 longterm, inhalative, local 0.102
PROC4 longterm, inhalative, systemic 0.101
PROC8b longterm, inhalative, local 0.076
PROC8b longterm, inhalative, systemic 0.075
PROC9 longterm, inhalative, local 0.255
PROC9 longterm, inhalative, systemic 0.251
PROC5 longterm, inhalative, local 0.255
PROC5 longterm, inhalative, systemic 0.251
PROC8a longterm, inhalative, local 0.255
PROC8a longterm, inhalative, systemic 0.251
The calculated value is smaller than the DNEL.
Risk Characterization ratio <1

· ***Environment***
A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterization is not necessary (REACH Annex I section 5.0).

· ***Consumer*** *Not relevant for this Exposure Scenario.*

· ***Guidance for downstream users***
Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).