We create chemistry

Safety data sheet

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

1.1. Product identifier

Dioxolane

Chemical name: 1,3-Dioxolane stab. (BHT)
CAS Number: 646-06-0

REACH registration number: 01-2119490744-29-0004

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

Relevant identified uses: Chemical used in synthesis and/or formulation of industrial products

For the detailed identified uses of the product see appendix of the safety data sheet.

1.3. Details of the supplier of the safety data sheet

Company:
BASF SE
67056 Ludwigshafen
GERMANY

Contact address:
BASF plc
PO Box 4, Earl Road, Cheadle Hulme,
Cheadle, Cheshire
SK8 6QG, UNITED KINGDOM

Telephone: +44 161 485-6222
E-mail address: product-safety-north@basf.com

1.4. Emergency telephone number

International emergency number:
Telephone: +49 180 2273-112

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

According to Regulation (EC) No 1272/2008 [CLP]

Flam. Liq. 2
Eye Dam./Irrit. 2

According to Directive 67/548/EEC or 1999/45/EC

Possible Hazards:
Highly flammable.
Irritating to eyes.

For the classifications not written out in full in this section the full text can be found in section 16.

2.2. Label elements

Globally Harmonized System, EU (GHS)

Pictogram:

Signal Word:
Danger

Hazard Statement:

H319	Causes serious eye irritation.
H225	Highly flammable liquid and vapour.

Precautionary Statements (Prevention):

P210	Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P280f	Wear protective gloves and eye/face protection.
P280d	Wear eye/face protection.
P243	Take precautionary measures against static discharge.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P233	Keep container tightly closed.
P242	Use only non-sparking tools.
P240	Ground/bond container and receiving equipment.
P264	Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):

P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303 + P361 + P352	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water.
P337 + P311	If eye irritation persists: Call a POISON CENTER or doctor/physician.
P370 + P378.15	In case of fire: Use dry powder, alcohol-resistant foam or carbon dioxide for extinction.

Precautionary Statements (Storage):
P403 + P235 Store in a well-ventilated place. Keep cool.

Precautionary Statements (Disposal):
P501 Dispose of contents/container to hazardous or special waste collection point.

According to Directive 67/548/EEC or 1999/45/EC

according to Annex I and Annex VI of the Regulation (EC) No 1272/2008

Hazard symbol(s)

F	Highly flammable.	
Xi	Irritant.	

R-phrase(s)
R11 Highly flammable.
R36 Irritating to eyes.

S-phrase(s)
S16 Keep away from sources of ignition - No smoking.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

2.3. Other hazards

According to Regulation (EC) No 1272/2008 [CLP]

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

SECTION 3: Composition/Information on Ingredients

3.1. Substances

Chemical nature

1,3-dioxolane

CAS Number: 646-06-0
EC-Number: 211-463-5
INDEX-Number: 605-017-00-2

Hazardous ingredients (GHS)
according to Regulation (EC) No. 1272/2008

1,3-dioxolane

Content (W/W): >= 99.9 % - <= 99.99 % CAS Number: 646-06-0 EC-Number: 211-463-5 INDEX-Number: 605-017-00-2	Flam. Liq. 2 Eye Dam./Irrit. 2 H225, H319

Hazardous ingredients
according to Directive 1999/45/EC

1,3-dioxolane

Content (W/W): >= 99.9 % - <= 99.99 %
CAS Number: 646-06-0
EC-Number: 211-463-5
INDEX-Number: 605-017-00-2
Hazard symbol(s): F, Xi
R-phrase(s): 11, 36

For the classifications not written out in full in this section, including the indication of danger, the hazard symbols, the R phrases, and the hazard statements, the full text is listed in section 16.

3.2. Mixtures

Not applicable

SECTION 4: First-Aid Measures

4.1. Description of first aid measures

Remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention.

On skin contact:
Wash thoroughly with soap and water.

On contact with eyes:
Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:
Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11.

4.3. Indication of any immediate medical attention and special treatment needed
Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing media
Suitable extinguishing media:
dry powder, carbon dioxide, alcohol-resistant foam

5.2. Special hazards arising from the substance or mixture
nitrogen oxides, carbon oxides
The substances/groups of substances mentioned can be released in case of fire. Under certain conditions in case of fire other hazardous combustion products may be generated.

5.3. Advice for fire-fighters
Special protective equipment:
Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:
Cool endangered containers with water-spray. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

SECTION 6: Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures
Breathing protection required. Avoid contact with the skin, eyes and clothing.

6.2. Environmental precautions
Do not discharge into drains/surface waters/groundwater.

6.3. Methods and material for containment and cleaning up
For small amounts: Rinse away with water.
For large amounts: Dike spillage. Pump off product.
For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr). Dispose of absorbed material in accordance with regulations.
Cleaning operations should be carried out only while wearing breathing apparatus.

6.4. Reference to other sections
Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

SECTION 7: Handling and Storage

7.1. Precautions for safe handling
Ensure thorough ventilation of stores and work areas. Handle under dry inert gas.

Protection against fire and explosion:
Vapours may form explosive mixture with air. Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

7.2. Conditions for safe storage, including any incompatibilities

Suitable materials for containers: carbon steel (iron), Stainless steel 1.4401, Stainless steel 1.4301 (V2), aluminum, tin (tinplate), glass, zinc coated
Further information on storage conditions: Keep container tightly closed and in a cool place.

additives:
2,6-di-tert-Butyl-p-cresol (CAS Number: 128-37-0)

7.3. Specific end use(s)
For the relevant identified use(s) listed in Section 1 the advice mentioned in this section 7 is to be observed.

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Components with occupational exposure limits

none

DNEL
worker:
Long-term exposure- systemic effects, Inhalation: 19.0 mg/m3

worker:
Long-term exposure- systemic effects, dermal: 4.1 mg/kg

8.2. Exposure controls

Personal protective equipment

Respiratory protection:
Breathing protection if breathable aerosols/dust are formed. Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A)

Hand protection:
Chemical resistant protective gloves (EN 374)
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):
butyl rubber (butyl) - 0.7 mm coating thickness
Suitable materials short-term contact and/or splashes (recommended: At least protective index 2, corresponding > 30 minutes of permeation time according to EN 374)
fluoroelastomer (FKM) - 0.7 mm coating thickness
chloroprene rubber (CR) - 0.5 mm coating thickness

polyvinylchloride (PVC) - 0.7 mm coating thickness
Manufacturer's directions for use should be observed because of great diversity of types.
Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Eye protection:
Tightly fitting safety goggles (splash goggles) (e.g. EN 166)

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wearing of closed work clothing is required additionally to the stated personal protection equipment. Avoid contact with the skin, eyes and clothing. Do not inhale gases/vapours/aerosols. Take off immediately all contaminated clothing. Store work clothing separately.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Form:	liquid	
Colour:	colourless	
Odour:	ether-like	
Odour threshold:	not determined	
pH value:	The substance does not dissociate.	
Melting temperature:	-95 °C	
boiling temperature:	75.6 °C	
Flash point:	-6 °C	
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.	
Flammability:	Highly flammable.	
Lower explosion limit:	2.3 %(V) 70 g/m3 For liquids not relevant for classification and labelling., The lower explosion point may be 5 - 15 °C below the flash point.	
Upper explosion limit:	For liquids not relevant for classification and labelling.	
Ignition temperature:	250 °C	(Directive 92/69/EEC, A.15)

Vapour pressure:	114 hPa (20 °C) Literature data.	
Density:	1.06 g/cm3 (20 °C) Literature data. 1.021 g/cm3 (55 °C)	
Relative density:	1.06 (20 °C)	(OECD Guideline 109)
Relative vapour density (air):	2.55 Literature data.	
Solubility in water:	Literature data. > 1,000 g/l (25 °C)	
Partitioning coefficient n-octanol/water (log Kow):	-0.37 (25 °C)	(calculated)
Self ignition:	Based on its structural properties the product is not classified as self-igniting.	Test type: Spontaneous self-ignition at room-temperature. (Method: Directive 92/69/EEC, A.13)
Thermal decomposition:	300 °C Thermal decomposition above the indicated temperature is possible.	
Viscosity, dynamic:	0.6 mPa.s (20 °C)	
Explosion hazard:	Based on the chemical structure there is no indicating of explosive properties.	(other)
Fire promoting properties:	Based on its structural properties the product is not classified as oxidizing.	

9.2. Other information

Self heating ability:	It is not a substance capable of spontaneous heating.	
pKA:	(20 °C) The substance does not dissociate.	(OECD Guideline 112)
Surface tension:	71.7 mN/m (20 °C; 1 g/l)	(OECD-Guideline 115, OECD harmonized ring method)
Grain size distribution:	The substance / product is marketed or used in a non solid or granular form.	
Molar mass:	74.08 g/mol	

SECTION 10: Stability and Reactivity

10.1. Reactivity

Vapours may form explosive mixture with air.

Corrosion to metals:	Corrosive effects to metal are not anticipated.	
Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.
	Method:	Flammability (contact with water)

10.2. Chemical stability
The product is stable if stored and handled as prescribed/indicated.

10.3. Possibility of hazardous reactions
May form explosive peroxides when exposed to air. Reacts with acids. Evolution of explosive gases/vapours. Reacts with strong oxidizing agents. Risk of polymerization. Uncontrolled or accidental polymerization may result in a strongly exothermic reaction. Polymerization produces gases which may burst closed or confined containers.

10.4. Conditions to avoid
Avoid heat.

10.5. Incompatible materials

Substances to avoid:
oxidizing agents, acids, bases, amines, atmospheric oxygen, reducing agents

10.6. Hazardous decomposition products

Possible decomposition products:
carbon monoxide, formaldehyde...%, hydrogen
carbon oxides

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
In animal studies the substance is virtually nontoxic after a single ingestion. In animal studies the substance is virtually nontoxic after short-term inhalation.

Experimental/calculated data:
rat (oral): > 2,000 mg/kg (OECD Guideline 401)

LC50 rat (by inhalation): 68.4 mg/l 4 h (similar to OECD guideline 403)
The vapour was tested.

Irritation

Assessment of irritating effects:
May cause slight irritation to the skin. Eye contact causes irritation.

Experimental/calculated data:
Skin corrosion/irritation rabbit: non-irritant

Serious eye damage/irritation rabbit: Irritant.

Respiratory/Skin sensitization

Assessment of sensitization:
Skin sensitizing effects were not observed in animal studies.

Experimental/calculated data:
Mouse Local Lymph Node Assay (LLNA) mouse: Non-sensitizing. (OECD Guideline 429)

Germ cell mutagenicity

Assessment of mutagenicity:
Results from a number of mutagenicity studies with microorganisms, mammalian cell culture and mammals are available. Taking into account all of the information, there is no indication that the substance is mutagenic.

Carcinogenicity

Assessment of carcinogenicity:
No reliable data was available concerning carcinogenic activity.

Reproductive toxicity

Assessment of reproduction toxicity:
On the basis of animal study findings, an effect on fertility cannot be excluded when given in high doses. Based on available Data, the classification criteria are not met.

Developmental toxicity

Assessment of teratogenicity:
The potential to cause toxicity to development cannot be excluded at maternally toxic doses. Based on available Data, the classification criteria are not met.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Based on the available information there is no specific target organ toxicity to be expected after a single exposure.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
The substance may cause damage to the hematological system after repeated ingestion of high doses. The substance may cause damage to the hematological system after repeated inhalation of high doses. The effects were only observed at doses/concentrations not relevant for classification and/or practical use conditions.

Aspiration hazard

not applicable

SECTION 12: Ecological Information

12.1. Toxicity

Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms. Inhibition of degradation activity in activated sludge is not to be anticipated during correct introduction of low concentrations.

Toxicity to fish:
LC50 (96 h) > 4,600 mg/l, Leuciscus idus (DIN 38412 Part 15, static)
Nominal concentration. No effects at the highest test concentration.

LC50 (96 h) 10,000 mg/l, Cyprinodon variegatus (static)
Nominal concentration. Literature data.

LC50 (96 h) > 95.4 mg/l, Lepomis macrochirus (OECD 203; ISO 7346; 84/449/EEC, C.1, semistatic)
The statement of the toxic effect relates to the analytically determined concentration. Limit concentration test only (LIMIT test). No effects at the highest test concentration.

Aquatic invertebrates:
EC50 (48 h) 7,650 mg/l, Daphnia magna (static)
Nominal concentration. Literature data.

EC50 (48 h) > 772 mg/l, Daphnia magna (OECD Guideline 202, part 1, semistatic)
The statement of the toxic effect relates to the analytically determined concentration.

Aquatic plants:
(14 d) 1,000 mg/l, Pseudokirchneriella subcapitata (static)
Nominal concentration. Literature data.

EC50 (72 h) > 877 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)
The statement of the toxic effect relates to the analytically determined concentration. The product is highly volatile. Tested in a closed test system. No effects at the highest test concentration.

Microorganisms/Effect on activated sludge:
EC0 (30 min) 3,000 mg/l, activated sludge, domestic, adapted (DIN EN ISO 8192, static)

Chronic toxicity to fish:
No data available regarding toxicity to fish.

Chronic toxicity to aquatic invertebrates:
No data available regarding toxicity to daphnids.

Assessment of terrestrial toxicity:

No data available concerning terrestrial toxicity.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H2O):
Not readily biodegradable (by OECD criteria). Poorly biodegradable. Easily eliminated from water. The product is highly volatile and can be eliminated from water by stripping.

Elimination information:
0 % BOD of the ThOD (28 d) (OECD 301C; ISO 9408; 92/69/EEC, C.4-F) (aerobic, activated sludge, domestic)

94 % DOC reduction (28 d) (OECD 302B; ISO 9888; 88/302/EEC,part C) (aerobic, activated sludge, industrial, non-adapted)

3.7 % BOD of the ThOD (35 d) (OECD 301D; EEC 92/69, C.4-E) (aerobic, municipal sewage treatment plant effluent)

Assessment of stability in water:
In contact with water the substance will hydrolyse slowly.
Information on Stability in Water (Hydrolysis):
< 5 % (4 d), (OECD Guideline 111, pH4)

< 5 % (4 d), (OECD Guideline 111, pH7)

< 5 % (4 d), (OECD Guideline 111, pH9)

12.3. Bioaccumulative potential

Assessment bioaccumulation potential:
No significant accumulation in organisms is expected as a result of the distribution coefficient of n-octanol/water (log Pow).

12.4. Mobility in soil

Assessment transport between environmental compartments:
not determined

12.5. Results of PBT and vPvB assessment

under evaluation

12.6. Other adverse effects

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

12.7. Additional information

Other ecotoxicological advice:
Do not discharge product into the environment without control.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Incinerate in suitable incineration plant, observing local authority regulations.

The UK Environmental Protection (Duty of Care) Regulations (EP) and amendments should be noted (United Kingdom).
This product and any uncleaned containers must be disposed of as hazardous waste in accordance with the 2005 Hazardous Waste Regulations and amendments (United Kingdom)

Contaminated packaging:
Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

SECTION 14: Transport Information

Land transport

ADR

UN number	UN1166
UN proper shipping name:	DIOXOLANE
Transport hazard class(es):	3
Packing group:	II
Environmental hazards:	no
Special precautions for user:	Tunnel code: D/E

RID

UN number	UN1166
UN proper shipping name:	DIOXOLANE
Transport hazard class(es):	3
Packing group:	II
Environmental hazards:	no
Special precautions for user:	None known

Inland waterway transport

ADN

UN number	UN1166
UN proper shipping name:	DIOXOLANE
Transport hazard class(es):	3
Packing group:	II

Environmental hazards:	no
Special precautions for user:	None known
Transport in inland waterway vessel:	Not evaluated

Sea transport

IMDG

UN number:	UN 1166
UN proper shipping name:	DIOXOLANE
Transport hazard class(es):	3
Packing group:	II
Environmental hazards:	no Marine pollutant: NO
Special precautions for user:	None known

Air transport

IATA/ICAO

UN number:	UN 1166
UN proper shipping name:	DIOXOLANE
Transport hazard class(es):	3
Packing group:	II
Environmental hazards:	No Mark as dangerous for the environment is needed
Special precautions for user:	None known

14.1. UN number
See corresponding entries for “UN number” for the respective regulations in the tables above.

14.2. UN proper shipping name
See corresponding entries for “UN proper shipping name” for the respective regulations in the tables above.

14.3. Transport hazard class(es)
See corresponding entries for “Transport hazard class(es)” for the respective regulations in the tables above.

14.4. Packing group
See corresponding entries for “Packing group” for the respective regulations in the tables above.

14.5. Environmental hazards

See corresponding entries for “Environmental hazards” for the respective regulations in the tables above.

14.6. Special precautions for user

See corresponding entries for “Special precautions for user” for the respective regulations in the tables above.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Regulation:	Not evaluated
Shipment approved:	Not evaluated
Pollution name:	Not evaluated
Pollution category:	Not evaluated
Ship Type:	Not evaluated

Further information
This product is subject to the most recent edition of "The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations" and their amendments (United Kingdom).

SECTION 15: Regulatory Information

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

Prohibitions, Restrictions and Authorizations

Annex XVII of Regulation (EC) No 1907/2006
Number on List: 40

The data should be considered when making any assessment under the Control of Substances Hazardous to Health Regulations (COSHH), and related guidance, for example, 'COSHH Essentials' (United Kingdom).
This product is classified under the Chemicals (Hazard Information and Packaging) Regulations, (CHIP) (United Kingdom).
This product may be subject to the Control of Major Accident Hazards Regulations (COMAH), and amendments if specific threshold tonnages are exceeded (United Kingdom).

15.2. Chemical Safety Assessment

Chemical Safety Assessment performed

SECTION 16: Other Information

Assessment of the hazard classes according to UN GHS criteria (most recent version):

Eye Dam./Irrit. 2A
Flam. Liq. 2

Full text of the classifications, including the indication of danger, the hazard symbols, the R phrases, and the hazard statements, if mentioned in section 2 or 3:

F	Highly flammable.
Xi	Irritant.
11	Highly flammable.
36	Irritating to eyes.
Flam. Liq.	Flammable liquid
Eye Dam./Irrit.	Serious eye damage/eye irritation
H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.

If you have any queries relating to this MSDS, it's contents or any other product safety related questions, please write to the following e-mail address: product-safety-north@basf.com

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. The data do not describe the product's properties (product specification). Neither should any agreed property nor the suitability of the product for any specific purpose be deduced from the data contained in the safety data sheet. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Annex: Exposure Scenarios

Index

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1. Short title of exposure scenario

Charging and discharging of substances and mixtures
SU3; ERC4; PROC8a, PROC8b, PROC9

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	

Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.4114 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.100348
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	11.115 mg/m³
Risk Characterization Ratio (RCR)	0.585
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor

Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.2743 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.066899
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	12.35 mg/m³
Risk Characterization Ratio (RCR)	0.65
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 90 %
Wear chemically resistant gloves in combination with ‘basic’ employee training.	Effectiveness: 90 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.2743 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.066899
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic

Exposure estimate	15.4375 mg/m³
Risk Characterization Ratio (RCR)	0.8125
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.4114 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.100348
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	13.8937 mg/m³
Risk Characterization Ratio (RCR)	0.73125
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Use domain: industrial

Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 95 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.8229 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.200697
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	9.7256 mg/m³
Risk Characterization Ratio (RCR)	0.511875
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C

Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 90 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.2743 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.066899
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	9.2625 mg/m³
Risk Characterization Ratio (RCR)	0.4875
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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2. Short title of exposure scenario

Charging and discharging of substances and mixtures
SU22; ERC8a; PROC8a, PROC8b, PROC9

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Wide dispersive indoor use of processing aids in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 2 %
Physical state	liquid

Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - dermal, long-term - systemic
Exposure estimate	0.1646 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.040139
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	9.2625 mg/m³
Risk Characterization Ratio (RCR)	0.4875
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 2 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - dermal, long-term - systemic

Exposure estimate	0.1646 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.040139
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	12.9675 mg/m³
Risk Characterization Ratio (RCR)	0.6825
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	1.6457 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.401394
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	6.9469 mg/m³
Risk Characterization Ratio (RCR)	0.365625
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or preparation (charging/discharging) from/to ves-sels/large containers at non-dedicated facilities Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	60 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 90 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.5486 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.133798
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	9.2625 mg/m³
Risk Characterization Ratio (RCR)	0.4875
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid

Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.8229 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.200697
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	6.9469 mg/m³
Risk Characterization Ratio (RCR)	0.365625
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing). Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 2 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - dermal, long-term - systemic

Exposure estimate	0.0823 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.02007
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	9.2625 mg/m³
Risk Characterization Ratio (RCR)	0.4875
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

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3. Short title of exposure scenario

Formulation
SU3; ERC2; PROC1, PROC2, PROC3, PROC5

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.2743 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.066899
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic

Exposure estimate	7.7187 mg/m³
Risk Characterization Ratio (RCR)	0.40625
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.1371 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.033449
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	15.4375 mg/m³
Risk Characterization Ratio (RCR)	0.8125
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %

Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Wear chemically resistant gloves in combination with specific activity training	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.4114 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.100348
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	13.8937 mg/m³
Risk Characterization Ratio (RCR)	0.73125
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC1: Use in closed process, no likelihood of exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0343 mg/kg bw/day

Risk Characterization Ratio (RCR)	0.008362
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	0.0309 mg/m³
Risk Characterization Ratio (RCR)	0.001625
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	ERC2: Formulation of preparations As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

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4. Short title of exposure scenario

Formulation
SU22; ERC2; PROC3, PROC5

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC2: Formulation of preparations As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	

Wear suitable respiratory protection.	Effectiveness: 95 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Wear chemically resistant gloves in combination with 'basic' employee training.	Effectiveness: 90 %
Wash off any skin contamination immediately.	
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The duration of activity has been considered using a linear approach.
	Worker - dermal, long-term - systemic
Exposure estimate	0.6857 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.167247
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The duration of activity has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	11.5781 mg/m³
Risk Characterization Ratio (RCR)	0.609375
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 90 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Use suitable chemically resistant	Effectiveness: 80 %

gloves.	
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.1371 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.033449
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	9.2625 mg/m³
Risk Characterization Ratio (RCR)	0.4875
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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5. Short title of exposure scenario

Use in laboratories
SU3; ERC4; PROC15

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC15: Use a laboratory reagent. Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %

Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0686 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.016725
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	15.4375 mg/m³
Risk Characterization Ratio (RCR)	0.8125
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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6. Short title of exposure scenario

Use in laboratories
SU22; ERC8a; PROC15

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Wide dispersive indoor use of processing aids in open systems As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC15: Use a laboratory reagent. Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	240 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	

Local exhaust ventilation	Effectiveness: 80 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
Provide a good standard of general ventilation (not less than 3 - 5 air changes per hour)	Effectiveness: 30 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0411 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.010035
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	12.9675 mg/m³
Risk Characterization Ratio (RCR)	0.6825
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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7. Short title of exposure scenario

Use as a Process chemical
SU3; ERC4; PROC1, PROC2, PROC3

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C

Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.2743 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.066899
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	7.7187 mg/m³
Risk Characterization Ratio (RCR)	0.40625
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Local exhaust ventilation	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.1371 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.033449
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker

	Worker - inhalative, long-term - systemic
Exposure estimate	15.4375 mg/m³
Risk Characterization Ratio (RCR)	0.8125
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC1: Use in closed process, no likelihood of exposure. Use domain: industrial
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0343 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.008362
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	0.0309 mg/m³
Risk Characterization Ratio (RCR)	0.001625
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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8. Short title of exposure scenario

Use as a Process chemical
SU22; ERC4; PROC1, PROC2, PROC3

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC1: Use in closed process, no likelihood of exposure. Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.0343 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.008362
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	0.3087 mg/m³
Risk Characterization Ratio (RCR)	0.01625
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled exposure. Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 90 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %

In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.2743 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.066899
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	15.4375 mg/m³
Risk Characterization Ratio (RCR)	0.8125
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Wear suitable respiratory protection.	Effectiveness: 90 %
Provide a good standard of general or controlled ventilation (5 to 10 air changes per hour)	Effectiveness: 70 %
Use suitable chemically resistant gloves.	Effectiveness: 80 %
In case of potential exposure:, Use suitable eye protection.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - dermal, long-term - systemic
Exposure estimate	0.1371 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.033449
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, Worker
	Worker - inhalative, long-term - systemic
Exposure estimate	9.2625 mg/m³
Risk Characterization Ratio (RCR)	0.4875
Guidance to Downstream Users	

For scaling see: http://www.ecetoc.org/tra

Contributing exposure scenario	
Use descriptors covered	PROC2: Use in closed, continuous process with occasional controlled exposure. Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 2 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - dermal, long-term - systemic
Exposure estimate	0.0274 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.00669
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	3.0875 mg/m³
Risk Characterization Ratio (RCR)	0.1625
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

Contributing exposure scenario	
Use descriptors covered	PROC3: Use in closed batch process (synthesis or formulation). Use domain: professional
Operational conditions	
Concentration of the substance	1,3-dioxolane Content: >= 0 % - <= 2 %
Physical state	liquid
Vapour pressure of the substance during use	10100 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week

Indoor/Outdoor	Indoor
Exposure estimate and reference to its source	
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - dermal, long-term - systemic
Exposure estimate	0.0137 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.003345
Assessment method	EASY TRA v3.5, ECETOC TRA v3.0, worker, modified version, The concentration of the substance has been considered using a linear approach.
	Worker - inhalative, long-term - systemic
Exposure estimate	6.175 mg/m³
Risk Characterization Ratio (RCR)	0.325
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra Please note that a modified version has been used (see exposure estimates)	

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