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Safety data sheet

BASF Safety data sheet according to Regulation UK SI 2019/758 and UK SI 2020/1577 as amended from time to time.
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Product: **n-BUTANOL**

(ID no. 30034729/SDS_GEN_GB/EN)
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

n-BUTANOL

Chemical name: Butan-1-ol
INDEX-Number: 603-004-00-6
CAS Number: 71-36-3

REACH registration number: 01-2119484630-38-0000, 01-2119484630-38-0006, 01-2119484630-38-0005, 01-2119484630-38-0004, 01-2119484630-38

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

Relevant identified uses: solvent(s)

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
4th and 5th Floors, 2 Stockport Exchange
Railway Road, Stockport, SK1 3GG
UNITED KINGDOM

Telephone: +44 161 475 3000
E-mail address: product-safety-uk-and-ireland@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 GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

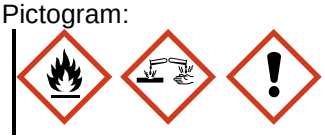
Flam. Liq. 3	H226 Flammable liquid and vapour.
Acute Tox. 4 (oral)	H302 Harmful if swallowed.
Skin Corr./Irrit. 2	H315 Causes skin irritation.
Eye Dam./Irrit. 1	H318 Causes serious eye damage.
STOT SE 3	H336 May cause drowsiness or dizziness.
STOT SE 3	H335 May cause respiratory irritation.

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

2.2. Label elements

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

Pictogram:



Signal Word:
Danger

Hazard Statement:

H226	Flammable liquid and vapour.
H318	Causes serious eye damage.
H315	Causes skin irritation.
H302	Harmful if swallowed.
H336	May cause drowsiness or dizziness.
H335	May cause respiratory irritation.

Precautionary Statements (Prevention):

P280	Wear protective gloves and eye protection or face protection.
P271	Use only outdoors or in a well-ventilated area.

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.
P310	Immediately call a POISON CENTER or physician.

Precautionary Statements (Storage):

P233	Keep container tightly closed.

Precautionary Statements (Disposal):

P501	Dispose of contents and container to hazardous or special waste collection point.

2.3. Other hazards

According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567

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.

See section 12 - Results of PBT and vPvB assessment.

Product does not contain a substance above legal limits included in the list established in accordance with Article 59(1) of Regulation (EC) No 1907/2006 for having endocrine disrupting properties or is identified to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 3: Composition/Information on Ingredients

3.1. Substances

Chemical nature

butan-1-ol (Content (W/W): >= 99.8 %)
CAS Number: 71-36-3
EC-Number: 200-751-6

Hazardous ingredients (GHS)

butan-1-ol

Content (W/W): >= 99.8 % - < 100 %	Flam. Liq. 3
CAS Number: 71-36-3	Acute Tox. 4 (oral)
EC-Number: 200-751-6	Skin Corr./Irrit. 2
	Eye Dam./Irrit. 1
	STOT SE 3 (drowsiness and dizziness)
	STOT SE 3 (irr. to respiratory syst.)
	H226, H318, H315, H302, H336, H335

2-methylpropan-1-ol

Content (W/W): > 0 % - <= 0.1 %	Flam. Liq. 3
CAS Number: 78-83-1	Skin Corr./Irrit. 2
EC-Number: 201-148-0	Eye Dam./Irrit. 1
	STOT SE 3 (drowsiness and dizziness)
	STOT SE 3 (irr. to respiratory syst.)
	H226, H318, H315, H336, H335

For the classifications not written out in full in this section, including the hazard classes 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

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention. Immediately administer a corticosteroid from a controlled/metered dose inhaler.

On skin contact:
Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

On contact with eyes:
Immediately 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: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

Hazards: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11. (Further) symptoms and / or effects are not known so far

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, water spray, carbon dioxide, alcohol-resistant foam

Unsuitable extinguishing media for safety reasons:
water jet

Additional information:
Use extinguishing measures to suit surroundings.

5.2. Special hazards arising from the substance or mixture

Advice: Flammable liquid Cool endangered containers with water-spray. See SDS section 7 - Handling and storage.

5.3. Advice for fire-fighters

Special protective equipment:
Wear a self-contained breathing apparatus. Special protective equipment for firefighters

Further information:
Evacuate area of all unnecessary personnel. Fight fire from maximum distance.

Extend fire extinguishing measures to the surroundings. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6: Accidental Release Measures

High risk of slipping due to leakage/spillage of product.

Release of substance/product can cause fire or explosion. Shut off or stop source of leak. Shut off or stop released substance/product under safe conditions.

Pack in tightly closed containers for disposal.

6.1. Personal precautions, protective equipment and emergency procedures

Handle in accordance with good industrial hygiene and safety practice.

Avoid all sources of ignition: heat, sparks, open flame. Use antistatic tools.

6.2. Environmental precautions

Discharge into the environment must be avoided.

6.3. Methods and material for containment and cleaning up

Pick up with suitable appliance and dispose of. Spills should be contained, solidified, and placed in suitable containers for disposal. Dispose of absorbed material in accordance with regulations.

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
Handle in accordance with good industrial hygiene and safety practice.

Protection against fire and explosion:
Avoid all sources of ignition: heat, sparks, open flame. Ground all transfer equipment properly to prevent electrostatic discharge.

7.2. Conditions for safe storage, including any incompatibilities
Further information on storage conditions: Keep container tightly closed and dry; store in a cool place.

7.3. Specific end use(s)
See exposure scenario(s) in the attachment to this safety data sheet.

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Components with occupational exposure limits

71-36-3: butan-1-ol

Skin Designation (WEL/EH 40 (UK))
The substance can be absorbed through the skin.
STEL value 154 mg/m3 ; 50 ppm (WEL/EH 40 (UK))
Ceiling limit value/factor: 15 min

PNEC
freshwater: 0.082 mg/l

marine water: 0.0082 mg/l

intermittent release: 2.25 mg/l

STP: 2476 mg/l

sediment (freshwater): 0.324 mg/kg

sediment (marine water): 0.0324 mg/kg

soil: 0.0166 mg/kg

DNEL
worker:
Long-term exposure - systemic and local effects, Inhalation: 310 mg/m3

consumer:
Long-term exposure- systemic effects, Inhalation: 55.357 mg/m3

consumer:
Long-term exposure- systemic effects, oral: 1.5625 mg/kg

consumer:
Long-term exposure - local effects, Inhalation: 155 mg/m3

consumer:
Long-term exposure- systemic effects, dermal: 3.125 mg/kg

8.2. Exposure controls

Personal protective equipment

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. 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 ISO 374-1)
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1):
butyl rubber (butyl) - 0.7 mm coating thickness
nitrile rubber (NBR) - 0.4 mm coating thickness
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.
Manufacturer's directions for use should be observed because of great diversity of types.

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
Avoid contact with the skin, eyes and clothing. Avoid inhalation of vapour. Wearing of closed work clothing is required additionally to the stated personal protection equipment.

Environmental exposure controls

All appropriate measures must be taken to prevent the release of this product to the environment and to limit the dispersion of any release when it occurs. Suitable risk management measures should be in place.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Form:	liquid	
Colour:	colourless	
Odour:	alcohol-like	
Odour threshold:	not determined	
pH value:	4.6 - 5.0 (100 %(m))	
Melting point:	< -90 °C	(ASTM D97)
Boiling point:	119 °C (1,013 hPa)	(OECD Guideline 103)
Flash point:	35 °C	(ISO 2719, closed cup)
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.	
Flammability:	Flammable.	(derived from flash point)
Lower explosion limit:	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:	355 °C	(DIN 51794)
Vapour pressure:	< 10 hPa (20 °C)	
Density:	0.8095 g/cm3 (20 °C) 0.7824 g/cm3 (55 °C)	(ASTM D4052)
Relative density:	0.8095 (20 °C)	
Relative vapour density (air):	2.55 (20 °C) Heavier than air.	(calculated)
Solubility in water:	66 g/l (20 °C)	(OECD Guideline 105)

Solubility (qualitative) solvent(s):	organic solvents soluble	
Partitioning coefficient n-octanol/water (log Kow):	1 (25 °C)	(OECD Guideline 117)
Self ignition:	Temperature: 20 °C Based on its structural properties the product is not classified as self-igniting.	Test type: Spontaneous self-ignition at room-temperature.

Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

Viscosity, dynamic:	2.947 mPa.s (20 °C)	
Explosion hazard:	Based on the chemical structure there is no indication of explosive properties.	
Fire promoting properties:	Based on its structural properties the product is not classified as oxidizing.	

9.2. Other information

Self heating ability: not applicable, the product is a liquid

pKA:
The substance does not dissociate.

Adsorption/water - soil:	KOC: 3.471; log KOC: 0.54	(calculated)
Surface tension:	69.9 mN/m (20 °C; 1 g/l)	(OECD-Guideline 115, Ring method)

Grain size distribution: The substance / product is marketed or used in a non solid or granular form.

Molar mass: 74.12 g/mol

SECTION 10: Stability and Reactivity

10.1. Reactivity
Vapours may form explosive mixture with air.

Corrosion to metals:	No corrosive effect on metal.	
Formation of flammable gases:	Remarks:	Forms no flammable gases in the presence of water.

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

10.3. Possibility of hazardous reactions
Reacts with strong oxidizing agents.

10.4. Conditions to avoid
No special precautions other than good housekeeping of chemicals.

10.5. Incompatible materials

Substances to avoid:
strong oxidizing agents

10.6. Hazardous decomposition products

Hazardous decomposition products:
No hazardous decomposition products if stored and handled as prescribed/indicated.

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Of low toxicity after short-term skin contact. Virtually nontoxic by inhalation. Of low toxicity after single ingestion. The European Union (EU) has classified this substance as 'harmful' after oral exposure.

Experimental/calculated data:
LD50 rat (oral): 2,292 mg/kg (OECD Guideline 401)
The European Union (EU) has classified this substance as 'harmful'.

LC50 rat (by inhalation): > 17.76 mg/l 4 h (OECD Guideline 403)
Highest concentration technically achievable. No mortality was observed. The vapour was tested.

LC50 rat (by inhalation): > 24 mg/l > 8000 ppm 4 h (other)
No mortality was observed. The vapour was tested.

LD50 rabbit (dermal): 3,430 mg/kg (OECD Guideline 402)

Irritation

Assessment of irritating effects:
Skin contact causes irritation. Risk of serious damage to eyes.

Experimental/calculated data:
Skin corrosion/irritation
rabbit: Irritant. (BASF-Test)

Serious eye damage/irritation
rabbit: irreversible damage (OECD Guideline 405)

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. (similar to OECD guideline 429)

Germ cell mutagenicity

Assessment of mutagenicity:
The substance was not mutagenic in bacteria. The substance was not mutagenic in mammalian cell culture. The substance was not mutagenic in studies with mammals.

Carcinogenicity

Assessment of carcinogenicity:
No reliable data was available concerning carcinogenic activity. The chemical structure does not suggest a specific alert for such an effect.

Reproductive toxicity

Assessment of reproduction toxicity:
The results of animal studies gave no indication of a fertility impairing effect.

Developmental toxicity

Assessment of teratogenicity:
Animal studies gave no indication of a developmental toxic effect at doses that were not toxic to the parental animals.

Experiences in humans

Experimental/calculated data:

High concentrations have a narcotizing effect.
Irritates the respiratory organs.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Possible narcotic effects (drowsiness or dizziness). Causes temporary irritation of the respiratory tract.

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

Assessment of repeated dose toxicity:
No substance-specific organtoxicity was observed after repeated administration to animals.

Aspiration hazard

Some authorities consider isobutyl alcohol, n-primary alcohols and ketones with C3-C13 as "May be harmful if swallowed and enters airways"

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. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish:
LC50 (96 h) 1,376 mg/l, Pimephales promelas (OECD 203; ISO 7346; 92/69/EEC, C.1, static)

Aquatic invertebrates:
EC50 (48 h) 1,328 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

Aquatic plants:
EC50 (96 h) 225 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)

No observed effect concentration (96 h) 129 mg/l (growth rate), Pseudokirchneriella subcapitata (OECD Guideline 201, static)

Microorganisms/Effect on activated sludge:
EC10 (17 h) 2,476 mg/l, Pseudomonas putida (DIN 38412 Part 8, aerobic)

Chronic toxicity to fish:
No data available.

Chronic toxicity to aquatic invertebrates:
No observed effect concentration (21 d) 4.1 mg/l, Daphnia magna (OECD Guideline 211, semistatic)

Assessment of terrestrial toxicity:
No data available.

12.2. Persistence and degradability

Assessment biodegradation and elimination (H2O):
Readily biodegradable (according to OECD criteria).

Elimination information:
92 % BOD of the ThOD (20 d) (APHA 'Standard Methods', No. 219, 1971) (aerobic, activated sludge, domestic, non-adapted)
Literature data.

Assessment of stability in water:
No data available.

Information on Stability in Water (Hydrolysis):
No data available.

12.3. Bioaccumulative potential

Assessment bioaccumulation potential:
Significant accumulation in organisms is not to be expected.

Bioaccumulation potential:
No data available.

12.4. Mobility in soil

Assessment transport between environmental compartments:
Volatility: The substance will not evaporate into the atmosphere from the water surface.
Adsorption in soil: Adsorption to solid soil phase is not expected.

12.5. Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative). Self classification

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

Adsorbable organically-bound halogen (AOX):
This product contains no organically-bound halogen.

Other ecotoxicological advice:
The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Dispose of in accordance with national, state and local 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:
Disposal must be made according to official regulations.

SECTION 14: Transport Information

Land transport

ADR

UN number or ID number:	UN1120
UN proper shipping name:	BUTANOLS
Transport hazard class(es):	3
Packing group:	III
Environmental hazards:	no
Special precautions for user:	Tunnel code: D/E

RID

UN number or ID number:	UN1120
UN proper shipping name:	BUTANOLS
Transport hazard class(es):	3
Packing group:	III
Environmental hazards:	no
Special precautions for user:	None known

Inland waterway transport

ADN

UN number or ID number:	UN1120
UN proper shipping name:	BUTANOLS
Transport hazard class(es):	3
Packing group:	III
Environmental hazards:	no
Special precautions for user:	None known

Transport in inland waterway vessel

UN number or ID number:	UN1120
UN proper shipping name:	BUTANOLS (n-BUTYLALKOHOL)
Transport hazard class(es):	3
Packing group:	III
Environmental hazards:	no
Type of inland waterway	N

vessel:
Cargo tank design: 3
Cargo tank type: 2

Sea transport

IMDG

UN number or ID number:	UN 1120
UN proper shipping name:	BUTANOLS
Transport hazard class(es):	3
Packing group:	III
Environmental hazards:	no Marine pollutant: NO
Special precautions for user:	

Air transport

IATA/ICAO

UN number or ID number:	UN 1120
UN proper shipping name:	BUTANOLS
Transport hazard class(es):	3
Packing group:	III
Environmental hazards:	No Mark as dangerous for the environment is needed
Special precautions for user:	None known

14.1. UN number or ID number
See corresponding entries for “UN number or ID 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. Maritime transport in bulk according to IMO instruments

Regulation:	IBC-Code
Product name:	n-Butyl alcohol
Pollution category:	Z
Ship Type:	Not applicable

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

Directive 2012/18/EU - Control of Major Accident Hazards involving dangerous substances (EU):
List entry in regulation: P5a
List entry in regulation: P5b
List entry in regulation: P5c

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 may be subject to the Control of Major Accident Hazards Regulations (COMAH), and amendments if specific threshold tonnages are exceeded (United Kingdom).

If other regulatory information applies that is not already provided elsewhere in this safety data sheet, then it is described in this subsection.

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)

Flam. Liq. 3
Acute Tox. 5 (dermal)
Skin Corr./Irrit. 2
STOT SE 3 (irritating to respiratory system)
STOT SE 3 (Vapours may cause drowsiness and dizziness.)
Acute Tox. 5 (oral)
Eye Dam./Irrit. 1

Full text of the classifications, including the hazard classes and the hazard statements, if mentioned in section 2 or 3:

Flam. Liq.	Flammable liquids
Acute Tox.	Acute toxicity
Skin Corr./Irrit.	Skin corrosion/irritation
Eye Dam./Irrit.	Serious eye damage/eye irritation
STOT SE	Specific target organ toxicity — single exposure
H226	Flammable liquid and vapour.
H318	Causes serious eye damage.
H315	Causes skin irritation.
H302	Harmful if swallowed.
H336	May cause drowsiness or dizziness.
H335	May cause respiratory irritation.

Abbreviations
ADR = The European Agreement concerning the International Carriage of Dangerous Goods by Road. ADN = The European Agreement concerning the International Carriage of Dangerous Goods by Inland waterways. ATE = Acute Toxicity Estimates. CAO = Cargo Aircraft Only. CAS = Chemical Abstract Service. CLP = Classification, Labelling and Packaging of substances and mixtures. DIN = German national organization for standardization. DNEL = Derived No Effect Level. EC50 = Effective concentration median for 50% of the population. EC = European Community. EN = European Standards. IARC = International Agency for Research on Cancer. IATA = International Air Transport Association. IBC-Code = Intermediate Bulk Container code. IMDG = International Maritime Dangerous Goods Code. ISO = International Organization for Standardization. STEL = Short-Term Exposure Limit. LC50 = Lethal concentration median for 50% of the population. LD50 = Lethal dose median for 50% of the population. TLV = Threshold Limit Value. MARPOL = The International Convention for the Prevention of Pollution from Ships. NEN = Dutch Norm. NOEC = No Observed Effect Concentration. OEL = Occupational Exposure Limit. OECD = Organization for Economic Cooperation and Development. PBT = Persistent, Bioaccumulative and Toxic. PNEC = Predicted No Effect Level. PPM = Parts per million. RID = The European Agreement concerning the International Carriage of Dangerous Goods by Rail. TWA = Time Weight Average. UN-number = UN number at transport. vPvB = very Persistent and very Bioaccumulative.

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. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the

responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Vertical lines in the left hand margin indicate an amendment from the previous version.

Annex: Exposure Scenarios

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1. Short title of exposure scenario

Production
ERC1; PROC1, PROC2, PROC3, PROC4

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC1: Manufacture of the substance 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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week

Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	0.0309 mg/m³
Risk Characterization Ratio (RCR)	0.0001
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	

Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	15.442 mg/m³
Risk Characterization Ratio (RCR)	0.049813
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	30.884 mg/m³
Risk Characterization Ratio (RCR)	0.099626
Assessment method	Qualitative assessment
	Worker - dermal

Guidance to Downstream Users
For scaling see: http://www.ecetoc.org/tra

Contributing exposure scenario	
Use descriptors covered	PROC4: Chemical production where opportunity for exposure arises Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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2. Short title of exposure scenario

Distribution of substance
ERC2; PROC8a, PROC8b, PROC9

Control of exposure and risk management measures

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

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities

	Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	77.21 mg/m³
Risk Characterization Ratio (RCR)	0.249065
Assessment method	Qualitative assessment
	Worker - dermal
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	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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3. Short title of exposure scenario

Distribution of substance, (use in professional settings)
ERC2; PROC8a, PROC8b, PROC9

Control of exposure and risk management measures

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

Contributing exposure scenario	
Use descriptors covered	PROC8a: Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %

Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC8b: Transfer of substance or mixture (charging and discharging) at dedicated facilities Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual	

phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
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	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	

Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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4. Short title of exposure scenario

Formulation
ERC2; PROC1, PROC2, PROC3, PROC4, PROC5

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC2: Formulation into mixture 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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs	

followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	0.0309 mg/m³
Risk Characterization Ratio (RCR)	0.0001
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	15.442 mg/m³
Risk Characterization Ratio (RCR)	0.049813

Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	30.884 mg/m³
Risk Characterization Ratio (RCR)	0.099626
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC4: Chemical production where opportunity for exposure arises Use domain: industrial

Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
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 Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week

Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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5. Short title of exposure scenario

Formulation
ERC8a, ERC8d; PROC19

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario

Use descriptors covered	PROC19: Manual activities involving hand contact Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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6. Short title of exposure scenario

Use in Metal working fluids / rolling oils
ERC4; PROC7, PROC10, PROC13, PROC17

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) As no environmental hazard was identified no

	environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC7: Industrial spraying Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Ensure that a spraying booth is used.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario

Use descriptors covered	PROC10: Roller application or brushing Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC17: Lubrication at high energy conditions in metal working operations Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	

Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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7. Short title of exposure scenario

Use in Metal working fluids / rolling oils
ERC8a, ERC8d; PROC10, PROC11, PROC13, PROC17

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance	1000 Pa

during use	
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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place	

are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure doors and windows are opened (general ventilation). Avoid splashing.	
Use a local exhaust ventilation with adequate effectiveness., Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	220 mg/m³
Risk Characterization Ratio (RCR)	0.709677
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Avoid splashing. Ensure doors and windows are opened (general ventilation).	

Wear a half mask respirator with type P2L filter or better.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	167 mg/m³
Risk Characterization Ratio (RCR)	0.53871
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid splashing.	
Ensure that a spraying booth is used.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	

Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC17: Lubrication at high energy conditions in metal working operations

	Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	123.536 mg/m³
Risk Characterization Ratio (RCR)	0.398503
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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8. Short title of exposure scenario

Use as an intermediate
ERC6a; PROC1, PROC2, PROC3, PROC4

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC6a: Use of intermediate 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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	0.0309 mg/m³
Risk Characterization Ratio (RCR)	0.0001
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Use domain: industrial
Operational conditions	

Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	15.442 mg/m³
Risk Characterization Ratio (RCR)	0.049813
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week

Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	30.884 mg/m³
Risk Characterization Ratio (RCR)	0.099626
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC4: Chemical production where opportunity for exposure arises Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	

Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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9. Short title of exposure scenario

Use as a Process chemical
ERC4; PROC1, PROC2, PROC3, PROC4

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) 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: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions. Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual	

phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	0.0309 mg/m³
Risk Characterization Ratio (RCR)	0.0001
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	

Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	15.442 mg/m³
Risk Characterization Ratio (RCR)	0.049813
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	30.884 mg/m³
Risk Characterization Ratio (RCR)	0.099626
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC4: Chemical production where opportunity for exposure arises Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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10. Short title of exposure scenario

Use in Cleaning Agents
ERC4; PROC7, PROC10, PROC13

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

	As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC7: Industrial spraying Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Ensure that a spraying booth is used.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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11. Short title of exposure scenario

Use in Cleaning Agents
ERC8a, ERC8d; PROC10, PROC11, PROC13

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

Operational conditions

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid

Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure doors and windows are opened (general ventilation). Avoid splashing.	
Use a local exhaust ventilation with adequate effectiveness., Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	220 mg/m³
Risk Characterization Ratio (RCR)	0.709677
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor

Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Avoid splashing. Ensure doors and windows are opened (general ventilation).	
Wear a half mask respirator with type P2L filter or better.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	167 mg/m³
Risk Characterization Ratio (RCR)	0.53871
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the	

work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid splashing.	
Ensure that a spraying booth is used.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	

Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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12. Short title of exposure scenario

Use in Cleaning Agents
ERC8a, ERC8d; PC4, PC9a, PC9c, PC24, PC35

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PC4: Anti-Freeze and De-icing products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 1 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	365 uses per year

Room size	58 m3
Ventilation rate per hour	0.5
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	42 sec
Contact rate	46 mg/min
Release duration	0.7 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.005 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.001585
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC4: Anti-Freeze and De-icing products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 10 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 0.75 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 0.3 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	104 uses per year
Room size	1 m3
Ventilation rate per hour	0.5

Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 0.04 g Relevant for dermal exposure estimates
Release area	20 cm²
	Release area is constant
Release duration	0.3 min
	Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0175 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.005611
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.114 mg/m³
Risk Characterization Ratio (RCR)	0.00206
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC4: Anti-Freeze and De-icing products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 1 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	365 uses per year
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 0.29 g Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant

	application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0446 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.014277
	The calculation is based on the internal chronic dose.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC4: Anti-Freeze and De-icing products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 50 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 60 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	365 uses per year
Room size	15 m3
Ventilation rate per hour	2.5
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	24.6 sec
Contact rate	46 mg/min
Release duration	0.41 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.1451 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.046425
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000002
	The exposure calculation is based on the mean concentration per year.

Guidance to Downstream Users
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp

Contributing exposure scenario	
Use descriptors covered	PC9a: Coatings and paints, thinners, paint removers
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 4 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	< 1 uses per year
Room size	30 m3
Ventilation rate per hour	1.5
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	50000 cm²
	Release area increases over time
Release duration	240 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	240 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.003 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000971
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0423 mg/m³
Risk Characterization Ratio (RCR)	0.000764
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	

For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp

Contributing exposure scenario	
Use descriptors covered	PC9a: Coatings and paints, thinners, paint removers
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 5 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 132 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 120 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	100000 cm²
	Release area increases over time
Release duration	120 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	120 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0076 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.002428
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.2988 mg/m³
Risk Characterization Ratio (RCR)	0.005399
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC9a: Coatings and paints, thinners, paint removers
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 2 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 132 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 120 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	2 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	150000 cm^2
	Release area increases over time
Release duration	120 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	120 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0061 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.001942
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.4243 mg/m^3
Risk Characterization Ratio (RCR)	0.007666
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC9a: Coatings and paints, thinners, paint removers
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 25 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 20 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	2 uses per year
Room size	34 m3
Ventilation rate per hour	1.5
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	900 sec
Contact rate	100 mg/min
Release duration	15 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0316 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.010116
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0072 mg/m³
Risk Characterization Ratio (RCR)	0.000129
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC9c: Finger paints
Operational conditions	
Concentration of the substance	butan-1-ol

	Content: >= 0 % - <= 1 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	365 uses per year
Exposed skin area	Palm of both hands (480 cm²)
Uptake fraction dermal	100 %
Uptake fraction oral	50 %
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - dermal, long-term - systemic
Exposure estimate	1.272 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.40704
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - oral, long-term - systemic
Exposure estimate	0.318 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.20352
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PC24: Lubricants, Greases and Release Products Exposure is considered negligible.
Operational conditions	
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

Contributing exposure scenario	
Use descriptors covered	PC35: Washing and Cleaning Products (including solvent based products).
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 20 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 25 min Relevant for inhalative exposure estimates

Duration and Frequency of activity	52 uses per year
Room size	10 m3
Ventilation rate per hour	2
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	90 sec
Contact rate	46 mg/min
Release duration	1.5 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0302 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.009679
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC35: Washing and Cleaning Products (including solvent based products).
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 50 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 0.75 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 0.3 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	104 uses per year

Room size	1 m3
Ventilation rate per hour	0.5
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 0.01 g Relevant for dermal exposure estimates
Release area	20 cm²
	Release area is constant
Release duration	0.3 min
	Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0219 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.007014
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.8174 mg/m³
Risk Characterization Ratio (RCR)	0.014767
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC35: Washing and Cleaning Products (including solvent based products).
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 20 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 25 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 20 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	52 uses per year
Room size	10 m3

Ventilation rate per hour	2
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 0.3 g Relevant for dermal exposure estimates
Release area	64000 cm²
	Release area is constant
Release duration	20 min
	Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.1315 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.042082
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	1.0062 mg/m³
Risk Characterization Ratio (RCR)	0.018179
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC35: Washing and Cleaning Products (including solvent based products).
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 1.5 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 1 h 365 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Exposed skin area	Both hands (820 cm²)
Uptake fraction dermal	100 %
	Amount per use 15 g Relevant for inhalative exposure

	estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - dermal, long-term - systemic
Exposure estimate	2.1437 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.686
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - inhalation, long-term - systemic
Exposure estimate	7.0312 mg/m³
Risk Characterization Ratio (RCR)	0.127033
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PC35: Washing and Cleaning Products (including solvent based products).
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 3 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 30 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	104 uses per year
Room size	58 m3
Ventilation rate per hour	0.5
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 19 g Relevant for dermal exposure estimates
Release area	220000 cm²
	Release area increases over time
Release duration	30 min
	Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	2.4986 mg/kg bw/day

Risk Characterization Ratio (RCR)	0.799562
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	8.6759 mg/m³
Risk Characterization Ratio (RCR)	0.156745
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

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13. Short title of exposure scenario

Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives
ERC4; PROC7, PROC10, PROC13

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC7: Industrial spraying Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Clean equipment and the work area every day. Regular	

inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Ensure that a spraying booth is used.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant	

gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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14. Short title of exposure scenario

Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives
ERC8a, ERC8d; PROC10, PROC11, PROC13

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	

Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure doors and windows are opened (general ventilation). Avoid splashing.	
Use a local exhaust ventilation with adequate effectiveness., Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	

Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	220 mg/m³
Risk Characterization Ratio (RCR)	0.709677
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Avoid splashing. Ensure doors and windows are opened (general ventilation).	
Wear a half mask respirator with type P2L filter or better.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	167 mg/m³
Risk Characterization Ratio (RCR)	0.53871
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid splashing.	
Ensure that a spraying booth is used.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol

	Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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15. Short title of exposure scenario

Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives
ERC8a, ERC8d; PC1, PC4, PC9a, PC9c, PC15, PC18, PC23, PC24, PC31

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PC1: Adhesives, Sealants
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 2 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 75 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 75 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	< 1 uses per year
Room size	58 m3
Ventilation rate per hour	0.6
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	40000 cm²
	Release area is constant
Release duration	75 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	75 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0005 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000152
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation

	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0779 mg/m³
Risk Characterization Ratio (RCR)	0.001407
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC1: Adhesives, Sealants
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 12 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 30 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 0.5 g Relevant for dermal exposure estimates
Release area	15000 cm²
	Release area increases over time
Release duration	30 min
	Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0025 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000809
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.3979 mg/m³

Risk Characterization Ratio (RCR)	0.007188
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC1: Adhesives, Sealants
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 30 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	12 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	169.8 sec
Contact rate	100 mg/min
Release duration	2.83 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0429 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.013741
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0034 mg/m³
Risk Characterization Ratio (RCR)	0.000062
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC1: Adhesives, Sealants
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 30 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 4 h 50 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Exposed skin area	Fingertips (36 cm2)
Uptake fraction dermal	100 %
	Amount per use 9 g Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - dermal, long-term - systemic
Exposure estimate	0.3573 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.114333
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - inhalation, long-term - systemic
Exposure estimate	7.9412 mg/m³
Risk Characterization Ratio (RCR)	0.143472
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PC1: Adhesives, Sealants
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 0.2 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 6 h 50 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Exposed skin area	Both hands (820 cm²)

Uptake fraction dermal	100 %
	Amount per use 6,390 g Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0286 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.009147
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - inhalation, long-term - systemic
Exposure estimate	27.7826 mg/m³
Risk Characterization Ratio (RCR)	0.501944
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PC4: Anti-Freeze and De-icing products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 1 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	365 uses per year
Room size	58 m3
Ventilation rate per hour	0.5
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	42 sec
Contact rate	46 mg/min
Release duration	0.7 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.005 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.001585

	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC4: Anti-Freeze and De-icing products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 10 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 0.75 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 0.3 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	104 uses per year
Room size	1 m3
Ventilation rate per hour	0.5
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 0.04 g Relevant for dermal exposure estimates
Release area	20 cm²
	Release area is constant
Release duration	0.3 min
	Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0175 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.005611
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model:

	exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.114 mg/m³
Risk Characterization Ratio (RCR)	0.00206
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC4: Anti-Freeze and De-icing products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 1 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	365 uses per year
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 0.29 g Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0446 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.014277
	The calculation is based on the internal chronic dose.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC4: Anti-Freeze and De-icing products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 50 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

Duration and Frequency of activity	Exposure duration: 60 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	365 uses per year
Room size	15 m3
Ventilation rate per hour	2.5
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	24.6 sec
Contact rate	46 mg/min
Release duration	0.41 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.1451 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.046425
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000002
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC9a: Coatings and paints, thinners, paint removers
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 4 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	< 1 uses per year

Room size	30 m3
Ventilation rate per hour	1.5
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	50000 cm²
	Release area increases over time
Release duration	240 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	240 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.003 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000971
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0423 mg/m³
Risk Characterization Ratio (RCR)	0.000764
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC9a: Coatings and paints, thinners, paint removers
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 5 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 132 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 120 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year

Room size	20 m3
Ventilation rate per hour	0.6
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	100000 cm²
	Release area increases over time
Release duration	120 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	120 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0076 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.002428
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.2988 mg/m³
Risk Characterization Ratio (RCR)	0.005399
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC9a: Coatings and paints, thinners, paint removers
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 2 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 132 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 120 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	2 uses per year
Room size	20 m3

Ventilation rate per hour	0.6
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	150000 cm²
	Release area increases over time
Release duration	120 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	120 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0061 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.001942
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.4243 mg/m³
Risk Characterization Ratio (RCR)	0.007666
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC9a: Coatings and paints, thinners, paint removers
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 25 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 20 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	2 uses per year
Room size	34 m3
Ventilation rate per hour	1.5
body weight	65 kg

Uptake fraction dermal	100 %
Spray duration	900 sec
Contact rate	100 mg/min
Release duration	15 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0316 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.010116
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0072 mg/m³
Risk Characterization Ratio (RCR)	0.000129
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC9c: Finger paints
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 1 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	365 uses per year
Exposed skin area	Palm of both hands (480 cm²)
Uptake fraction dermal	100 %
Uptake fraction oral	50 %
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - dermal, long-term - systemic
Exposure estimate	1.272 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.40704
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer

	Consumer - oral, long-term - systemic
Exposure estimate	0.318 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.20352
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PC15: Non-metal-surface treatment products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 4 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	< 1 uses per year
Room size	30 m3
Ventilation rate per hour	1.5
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	50000 cm²
	Release area increases over time
Release duration	240 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	240 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.003 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000971
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0423 mg/m³
Risk Characterization Ratio (RCR)	0.000764

	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC15: Non-metal-surface treatment products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 5 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 132 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 120 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	100000 cm²
	Release area increases over time
Release duration	120 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	120 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0076 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.002428
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.2988 mg/m³
Risk Characterization Ratio (RCR)	0.005399
	The exposure calculation is based on the mean

	concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC15: Non-metal-surface treatment products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 2 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 132 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 120 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	2 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	150000 cm²
	Release area increases over time
Release duration	120 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	120 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0061 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.001942
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.4243 mg/m³
Risk Characterization Ratio (RCR)	0.007666
	The exposure calculation is based on the mean concentration per year.

Guidance to Downstream Users
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp

Contributing exposure scenario	
Use descriptors covered	PC15: Non-metal-surface treatment products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 25 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 20 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	2 uses per year
Room size	34 m3
Ventilation rate per hour	1.5
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	900 sec
Contact rate	100 mg/min
Release duration	15 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0316 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.010116
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0072 mg/m³
Risk Characterization Ratio (RCR)	0.000129
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC18: Ink and Toners.

Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 4 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 25 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	365 uses per year
Room size	34 m3
Ventilation rate per hour	1.5
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	798 sec
Contact rate	110 mg/min
Release duration	13.3 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.9003 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.288098
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0047 mg/m³
Risk Characterization Ratio (RCR)	0.000085
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC23: Leather tanning, dye, finishing, impregnation and care products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 50 %

Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year
Room size	58 m3
Ventilation rate per hour	0.5
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	180 sec
Contact rate	100 mg/min
Release duration	3 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0063 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.002023
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0011 mg/m³
Risk Characterization Ratio (RCR)	0.000021
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC23: Leather tanning, dye, finishing, impregnation and care products.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 20 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 90 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year
Room size	58 m3
Ventilation rate per hour	0.5
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 5.5 g Relevant for dermal exposure estimates
Release area	220000 cm²
	Release area increases over time
Release duration	90 min
	Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0464 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.014837
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.3456 mg/m³
Risk Characterization Ratio (RCR)	0.006245
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC24: Lubricants, Greases and Release Products Exposure is considered negligible.
Operational conditions	
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

Contributing exposure scenario	
Use descriptors covered	PC31: Polishes and Wax Blends.

Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 50 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year
Room size	58 m3
Ventilation rate per hour	0.5
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	180 sec
Contact rate	100 mg/min
Release duration	3 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0063 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.002023
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0011 mg/m³
Risk Characterization Ratio (RCR)	0.000021
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC31: Polishes and Wax Blends.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 20 %

Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 90 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year
Room size	58 m3
Ventilation rate per hour	0.5
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 5.5 g Relevant for dermal exposure estimates
Release area	220000 cm²
	Release area increases over time
Release duration	90 min
	Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0464 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.014837
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.3456 mg/m³
Risk Characterization Ratio (RCR)	0.006245
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

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16. Short title of exposure scenario

Use in laboratories
ERC4; PROC15

Control of exposure and risk management measures

Contributing exposure scenario

Use descriptors covered	ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) 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	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	30.884 mg/m³
Risk Characterization Ratio (RCR)	0.099626
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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17. Short title of exposure scenario

Use in laboratories
ERC8a; PROC15

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) 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	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	30.884 mg/m³
Risk Characterization Ratio (RCR)	0.099626
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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18. Short title of exposure scenario

Use in Lubricants
ERC4, ERC7; PROC7, PROC10, PROC13, PROC17, PROC18

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	ERC7: Use of functional fluid at industrial site As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC7: Industrial spraying Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside	

the breathing zone of a worker (distance head-product greater than 1m). Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Ensure that a spraying booth is used.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker

	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC17: Lubrication at high energy conditions in metal working operations Use domain: industrial

Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC18: General greasing /lubrication at high kinetic energy conditions Use domain: industrial
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week

Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	154.42 mg/m³
Risk Characterization Ratio (RCR)	0.498129
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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19. Short title of exposure scenario

Use in Lubricants
ERC8a, ERC8d; PROC10, PROC11, PROC13, PROC17, PROC18, PROC20

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PROC10: Roller application or brushing Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa

Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure doors and windows are opened (general ventilation). Avoid splashing.	
Use a local exhaust ventilation with adequate effectiveness., Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	220 mg/m³
Risk Characterization Ratio (RCR)	0.709677
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual	

phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Avoid splashing. Ensure doors and windows are opened (general ventilation).	
Wear a half mask respirator with type P2L filter or better.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	167 mg/m³
Risk Characterization Ratio (RCR)	0.53871
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC11: Non industrial spraying Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of	

equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid splashing.	
Ensure that a spraying booth is used.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, Workplace measurements
	Worker - inhalation, long-term - local
Exposure estimate	0.0001 mg/m³
Risk Characterization Ratio (RCR)	0.000001
Assessment method	Qualitative assessment
	Worker - dermal

Contributing exposure scenario	
Use descriptors covered	PROC13: Treatment of articles by dipping and pouring. Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local

Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC17: Lubrication at high energy conditions in metal working operations Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	123.536 mg/m³
Risk Characterization Ratio (RCR)	0.398503
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC18: General greasing /lubrication at high kinetic energy conditions

	Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 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: 80 %
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	123.536 mg/m³
Risk Characterization Ratio (RCR)	0.398503
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PROC20: Use of functional fluids in small devices Use domain: professional
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 100 %
Physical state	liquid
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

Duration and Frequency of activity	480 min 5 days per week
Indoor/Outdoor	Indoor
Risk Management Measures	
Ensure minimization of manual phases Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing.	
Wear suitable working clothes.	
Use suitable eye protection.	
Use suitable chemically resistant gloves.	
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA v3.0, Worker
	Worker - inhalation, long-term - local
Exposure estimate	61.768 mg/m³
Risk Characterization Ratio (RCR)	0.199252
Assessment method	Qualitative assessment
	Worker - dermal
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

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20. Short title of exposure scenario

Use in Lubricants
ERC8a, ERC8d; PC1, PC24, PC31

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PC1: Adhesives, Sealants
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 2 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 75 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 75 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	< 1 uses per year
Room size	58 m3
Ventilation rate per hour	0.5
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
Release area	40000 cm²
	Release area is constant
Release duration	75 min
	Relevant for inhalative exposure estimates
Contact rate	30 mg/min
Release duration	75 min
	Relevant for dermal exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0005 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000152
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0823 mg/m³
Risk Characterization Ratio (RCR)	0.001487
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC1: Adhesives, Sealants
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 12 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 30 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 0.5 g Relevant for dermal exposure estimates
Release area	15000 cm²
	Release area increases over time
Release duration	30 min
	Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0025 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.000809
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.3979 mg/m³
Risk Characterization Ratio (RCR)	0.007188
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC1: Adhesives, Sealants

Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 30 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	12 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	169.8 sec
Contact rate	100 mg/min
Release duration	2.83 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0429 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.013741
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0034 mg/m³
Risk Characterization Ratio (RCR)	0.000062
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC1: Adhesives, Sealants
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 30 %

Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 4 h 50 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Exposed skin area	Fingertips (36 cm2)
Uptake fraction dermal	100 %
	Amount per use 9 g Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - dermal, long-term - systemic
Exposure estimate	0.3573 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.114333
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - inhalation, long-term - systemic
Exposure estimate	7.9412 mg/m³
Risk Characterization Ratio (RCR)	0.143472
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PC1: Adhesives, Sealants
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 0.2 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 6 h 50 uses per year
Room size	20 m3
Ventilation rate per hour	0.6
Exposed skin area	Both hands (820 cm²)
Uptake fraction dermal	100 %
	Amount per use 6,390 g Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0286 mg/kg bw/day

Risk Characterization Ratio (RCR)	0.009147
Assessment method	EASY TRA v4.2, ECETOC TRA, Consumer
	Consumer - inhalation, long-term - systemic
Exposure estimate	27.7826 mg/m³
Risk Characterization Ratio (RCR)	0.501944
Guidance to Downstream Users	
For scaling see: http://www.ecetoc.org/tra	

Contributing exposure scenario	
Use descriptors covered	PC24: Lubricants, Greases and Release Products Exposure is considered negligible.
Operational conditions	
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

Contributing exposure scenario	
Use descriptors covered	PC31: Polishes and Wax Blends.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 50 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year
Room size	58 m3
Ventilation rate per hour	0.5
body weight	65 kg
Uptake fraction dermal	100 %
Spray duration	180 sec
Contact rate	100 mg/min
Release duration	3 min
	Relevant for dermal exposure estimates
Risk Management Measures	
Consumer Measures	Ensure spraying away from persons.
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: constant application rate, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic

Exposure estimate	0.0063 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.002023
	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: Exposure to spray/dust
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.0011 mg/m³
Risk Characterization Ratio (RCR)	0.000021
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

Contributing exposure scenario	
Use descriptors covered	PC31: Polishes and Wax Blends.
Operational conditions	
Concentration of the substance	butan-1-ol Content: >= 0 % - <= 20 %
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C
Duration and Frequency of activity	Exposure duration: 240 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	Application duration: 90 min Relevant for inhalative exposure estimates
Duration and Frequency of activity	1 uses per year
Room size	58 m3
Ventilation rate per hour	0.5
Temperature (Application)	20 °C
body weight	65 kg
Uptake fraction dermal	100 %
	Amount per use 5.5 g Relevant for dermal exposure estimates
Release area	220000 cm²
	Release area increases over time
Release duration	90 min
	Relevant for inhalative exposure estimates
Exposure estimate and reference to its source	
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Dermal model: instant application, Uptake model: Uptake fraction
	Consumer - dermal, long-term - systemic
Exposure estimate	0.0464 mg/kg bw/day
Risk Characterization Ratio (RCR)	0.014837

	The calculation is based on the internal chronic dose.
Assessment method	EASY TRA v4.2, ConsExpo v4.1, Inhalation model: exposure to vapour - evaporation
	Consumer - inhalation, long-term - systemic
Exposure estimate	0.3456 mg/m³
Risk Characterization Ratio (RCR)	0.006245
	The exposure calculation is based on the mean concentration per year.
Guidance to Downstream Users	
For scaling see: http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp	

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21. Short title of exposure scenario

Consumer applications
ERC8a, ERC8d; PC28, PC39

Control of exposure and risk management measures

Contributing exposure scenario	
Use descriptors covered	ERC8a: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.
Operational conditions	

Contributing exposure scenario	
Use descriptors covered	PC28: Perfumes, Fragrances. In accordance to the Article 14 (5b) of the REACh Regulation (EC) No 1907/2006, exposure estimation and risk characterisation needs not to be performed for end uses in cosmetic products within the scope of Directive EC 1223/2009.
Operational conditions	
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

Contributing exposure scenario	
Use descriptors covered	PC39: Cosmetics, personal care products. In accordance to the Article 14 (5b) of the REACh Regulation (EC) No 1907/2006, exposure estimation and risk characterisation needs not to be performed for end uses in cosmetic products within the scope of Directive EC 1223/2009.
Operational conditions	
Vapour pressure of the substance during use	1000 Pa
Process temperature	20 °C

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