SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
UK REACH Regulations (SI 2019/758 as amended)

Supercedes date 30-Mar-2023 **Revision date** 28-Aug-2024 **Revision Number** 4

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

1.1. Product identifier

Product Code(s)	00462
Safety data sheet number	00462
Product Name	n-BUTANOL
Index No	603-004-00-6
EC Number	200-751-6
CAS No	71-36-3
Synonyms	NORMAL BUTYL ALCOHOL, BUTAN-1-OL, 1- HYDROXY BUTANE, NBA, BUTANOL, N-BUTANOL, 1 BUTANOL, BUTANOL-N, N-BUTANOL EU
Pure substance/mixture	Substance
Contains n-BUTANOL	
Molecular weight	74.12

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

Recommended use	Industrial use Solvent Coatings Cleaning agent Lubricant Metal working fluids Laboratory chemicals For further information, see attached Exposure Scenario

1.3. Details of the supplier of the safety data sheet

Supplier
Univar Solutions UK Ltd
Aquarius House
6 Mid Point Business Park
Bradford
GBR

For further information, please contact

E-mail address	SDS.EMEA@univarsolutions.com
Non-Emergency Telephone Number	+44 1274 267300 / +44 1274 267306

1.4. Emergency telephone number

Emergency Telephone	SGS - +32 (0)3 575 55 55 (24h)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Flammable liquids	Category 3 - (H226)
Acute toxicity - Oral	Category 4 - (H302)

Skin corrosion/irritation	Category 2 - (H315)
Serious eye damage/eye irritation	Category 1 - (H318)
Specific target organ toxicity — single exposure	Category 3 - (H335, H336)
Category 3 Narcotic effects, Respiratory irritation	

2.2. Label elements

Contains n-BUTANOL

Signal word
Danger

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

Precautionary statements
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P264 - Wash face, hands and any exposed skin thoroughly after handling
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 doctor
P370 + P378 - In case of fire: Use dry chemical, CO2, water spray or alcohol-resistant foam to extinguish
P501 - Dispose of contents/ container to an approved waste disposal plant

Additional information
This product requires tactile warnings if supplied to the general public.

2.3. Other hazards

Vapours can form explosive mixtures with air. Vapours are heavier than air and may travel along the floor and in the bottom of containers. Vapours may be ignited by a spark, a hot surface or an ember.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Weight-%	EC No (EU Index No)	UK REACH registration number	Classification according to GB CLP (SI 2020/1567 as amended)	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
n-BUTANOL 71-36-3	> 99.80%	200-751-6 (603-004-00-6)	-	Flam. Liq. 3 (H226) STOT SE 3 (H335) (H336) Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Dam. 1 (H318)	-	-	-

Full text of H- and EUH-phrases: see section 16

This product does not contain candidate substances of very high concern at a concentration >= 0.1% (UK REACH Article 59)

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation	Remove to fresh air. Get medical attention immediately if symptoms occur. IF exposed or concerned: Get medical advice/attention.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Get immediate medical attention. Remove contact lenses, if present and easy to do. Continue rinsing.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.
Ingestion	Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. Call a doctor. Drink 1 or 2 glasses of water.
Self-protection of the first aider	Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing.

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

Symptoms	Burning sensation. Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Inhalation	Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.
Eyes	Burning sensation. May cause permanent damage if eye is not immediately irrigated.
Dermal	Irritating. Erythema (skin redness). Prolonged contact may cause redness and irritation.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea

4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors	Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media	Dry chemical. Carbon dioxide (CO_2). Water spray. Alcohol resistant foam.
Large Fire	CAUTION: Use of water spray when fighting fire may be inefficient.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	Risk of ignition. Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Hazardous combustion products	Carbon oxides.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.
Other information	Ventilate the area. Refer to protective measures listed in Sections 7 and 8.
For emergency responders	Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

6.3. Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapour suppressing foam may be used to reduce vapours. Dyke far ahead of spill to collect run-off water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Methods for cleaning up Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labelled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling Use personal protection equipment. Avoid breathing vapours or mists. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use with local exhaust ventilation. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment.

General hygiene considerations Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Ensure that eyewash stations and safety showers are close to the workstation location.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labelled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Keep out of the reach of children. Store locked up.

7.3. Specific end use(s)

Specific use(s)
See section 1 for more information.

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	United Kingdom
n-BUTANOL 71-36-3	STEL: 50 ppm STEL: 154 mg/m^3 Sk*

Biological occupational exposure limits This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies.

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
n-BUTANOL 71-36-3			310 mg/m^3 [5] [6]

[5] Local health effects.

[6] Long term.

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
n-BUTANOL 71-36-3	1.5625 mg/kg bw/day [4] [6]	3.125 mg/kg bw/day [4] [6]	55.357 mg/m^3 [4] [6] 155 mg/m^3 [5] [6]

[4] Systemic health effects.
[5] Local health effects.
[6] Long term.

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
n-BUTANOL 71-36-3	0.082 mg/L	2.25 mg/L	0.0082 mg/L		

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
n-BUTANOL 71-36-3	0.324 mg/kg sediment dw	0.0324 mg/kg sediment dw	2476 mg/L	0.0166 mg/kg soil dw	

8.2. Exposure controls

Engineering controls Apply technical measures to comply with the occupational exposure limits. Ensure adequate ventilation, especially in confined areas. Use explosion-proof ventilating equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection Tight sealing safety goggles. Use eye protection according to EN 166.

Hand protection Wear suitable gloves. Impervious gloves. Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves. Gloves must conform to standard EN 374.

Gloves			
Duration of contact	PPE - Glove material	Glove thickness	Break through time
	Butyl rubber	0.7 mm	>480 minutes
	Nitrile rubber	0.4 mm	>480 minutes

Skin and body protection Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. Antistatic boots.

Respiratory protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Gas filter, type A.

General hygiene considerations Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Ensure that eyewash stations and safety showers are close to the workstation location.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Liquid
Colour	Colourless
Odour	Alcoholic.
Odour threshold	No information available

Property	Values	Remarks • Method
Melting point / freezing point	-90 °C	No information available.
Initial boiling point and boiling range	119 °C	No information available.
Flammability		No information available.
Flammability Limit in Air		No information available.
Upper flammability or explosive limits	11.3 Vol %	

Lower flammability or explosive limits	1.4 Vol %	
Flash point	35 °C	Closed cup.
Autoignition temperature	355 °C	No information available.
Decomposition temperature		No information available.
pH	4.6 - 5.0	No information available.
pH (as aqueous solution)		No information available.
Kinematic viscosity		No information available.
Dynamic viscosity	2.947 mPa s @ 20°C	No information available.
Water solubility	66 g/l @ 20 °C	No information available.
Solubility(ies)		No information available.
Partition coefficient	log Pow: 1.0, OECD 117	No information available.
Vapour pressure	1 kpa @ 20 °C	No information available.
Relative density	0.81 @ 20°C	No information available.
Bulk density		No information available
Liquid Density	No information available	No information available
Relative vapour density	2.6	No information available.
Particle characteristics		No information available.
Particle Size	No information available	
Particle Size Distribution	No information available	
Explosive properties	Not considered to be explosive.	
Oxidising properties	Does not meet the criteria for classification as oxidising	

9.2. Other information

Molecular weight	74.12
Refractive Index	1.399 @ 20 °C

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity Stable under recommended storage conditions.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact	None.
Sensitivity to static discharge	Yes.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Flammable liquid and vapour. Vapours can form explosive mixtures with air. Vapours are heavier than air and may travel along the floor and in the bottom of containers. Vapours may be ignited by a spark, a hot surface or an ember.

10.4. Conditions to avoid

Conditions to avoid Heat, flames and sparks. static discharge (electrostatic discharge).

10.5. Incompatible materials

Incompatible materials Strong acids. Strong oxidising agents. Reducing agents.

10.6. Hazardous decomposition products

Hazardous decomposition products Carbon oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on likely routes of exposure

Product Information

Inhalation	Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract. May cause drowsiness or dizziness.
Eye contact	Specific test data for the substance or mixture is not available. Causes serious eye damage. May cause irreversible damage to eyes.
Skin contact	Specific test data for the substance or mixture is not available. Causes skin irritation. (based on components).

Ingestion Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Harmful if swallowed. (based on components).

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Redness. Burning. May cause blindness. May cause redness and tearing of the eyes. Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Acute toxicity

Numerical measures of toxicity

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
n-BUTANOL	= 2292 mg/kg (Rat)	= 3430 mg/kg (Rabbit)	> 17.76 mg/l (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Classification based on data available for ingredients. Causes skin irritation.

n-BUTANOL (71-36-3)

Method	Species	Exposure route	Effective dose	Exposure time	Results
	Rabbit	Dermal	20 mg	24 hours	Causes skin irritation Dryness and/or cracking

Serious eye damage/eye irritation Classification based on data available for ingredients. Causes burns. Causes serious eye damage.

n-BUTANOL (71-36-3)

Method	Species	Exposure route	Effective dose	Exposure time	Results
	Rabbit	eye	0.005 Ml		Severe eye irritation Causes serious eye damage
	Rabbit	eye	2 mg	24 hours	Severe eye irritation Causes serious eye damage

Respiratory or skin sensitisation Based on available data the classification criteria are not met.

n-BUTANOL (71-36-3)

Method	Species	Exposure route	Results
	Mouse	Dermal	Not a skin sensitiser

Germ cell mutagenicity Based on available data the classification criteria are not met.

Component Information
n-BUTANOL (71-36-3)

Method	Species	Results
	in vitro	Negative
		Did not show mutagenic effects in animal experiments

Carcinogenicity Based on available data the classification criteria are not met.

Reproductive toxicity Based on available data the classification criteria are not met.

n-BUTANOL (71-36-3)

Method	Species	Results
		This product does not contain any known or suspected reproductive hazards

STOT - single exposure May cause respiratory irritation. May cause drowsiness or dizziness.

n-BUTANOL (71-36-3)

Method	Species	Exposure route	Effective dose	Exposure time	Results
					May cause respiratory irritation
					May cause drowsiness or dizziness

STOT - repeated exposure Based on available data the classification criteria are not met.

Component Information
n-BUTANOL (71-36-3)

Method	Species	Exposure route	Effective dose	Exposure time	Results
					May cause respiratory irritation
					Narcotic effects

Aspiration hazard Based on available data the classification criteria are not met.

Other adverse effects No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

n-BUTANOL (71-36-3)

Method	Species	Endpoint type	Effective dose	Exposure time	Results
OECD Test No. 202: Daphnia sp., Acute Immobilisation Test or Equivalent.	Daphnia magna	EC50	1328 mg/L	48 hours	
OECD Test No. 203: Fish, Acute Toxicity Test or Equivalent.	Pimephales promelas	LC50	1376 mg/L	96 hours	
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test or Equivalent.	Pseudokirchneriella subcapitata	EC50	225 mg/L	96 hours	
DIN 38412	Pseudomonas putida	EC50	> 1000 mg/L	17 hours	
Chronic toxicity	Daphnia magna	NOEC	4.1 mg/L	21 days	

12.2. Persistence and degradability

Persistence and degradability Readily biodegradable.

n-BUTANOL (71-36-3)

Method	Exposure time	Value	Results
OECD Test No. 301E: Ready Biodegradability: Modified OECD Screening Test (TG 301 E) or Equivalent.	19 days	Biodegradation 98%	Readily biodegradable

12.3. Bioaccumulative potential

Bioaccumulation Not likely to bioaccumulate.

Bioconcentration factor (BCF) 3.16

Component Information

Chemical name	Partition coefficient
n-BUTANOL	1

12.4. Mobility in soil

Mobility in soil No information available.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment The product does not contain any substance(s) classified as PBT or vPvB.

Chemical name	PBT and vPvB assessment
n-BUTANOL	The substance is not PBT / vPvB

12.6. Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products Waste is classified as hazardous waste. Disposal to licensed waste disposal site in accordance with the local Waste Disposal Authority.

Contaminated packaging Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

SECTION 14: Transport information

IATA

14.1 UN number or ID number UN1120
14.2 UN proper shipping name BUTANOLS
14.3 Transport hazard class(es) 3
14.4 Packing group III
14.5 Environmental hazards No
14.6 Special precautions for user
Special Provisions A3
ERG Code 3L

IMDG

14.1 UN number or ID number UN1120
UN proper shipping name BUTANOLS
14.3 Transport hazard class(es) 3
14.4 Packing group III
14.5 Environmental hazards No
14.6 Special precautions for user
Special Provisions 223
EmS-No F-E, S-D
14.7 Maritime transport in bulk according to IMO instruments No information available

RID

14.1 UN number or ID number UN1120
14.2 UN proper shipping name BUTANOLS
14.3 Transport hazard class(es) 3
14.4 Packing group III
14.5 Environmental hazards No
14.6 Special precautions for user
Special Provisions None
Classification code F1

ADR

14.1 UN number or ID number UN1120
14.2 UN proper shipping name BUTANOLS
14.3 Transport hazard class(es) 3
14.4 Packing group III
14.5 Environmental hazards No
14.6 Special precautions for user
Special Provisions None
Classification code F1
Tunnel restriction code (D/E)

SECTION 15: Regulatory information

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

National regulations

Authorisations and/or restrictions on use:
This product does not contain substances subject to authorisation (UK REACH - Annex XIV).
This product does not contain substances subject to restriction (UK REACH - Annex XVII).

Persistent Organic Pollutants
Not applicable

Export Notification requirements
Not applicable

Dangerous substance category per COMAH Regulations 2015 (as amended)
P5c - FLAMMABLE LIQUIDS

Named dangerous substances per COMAH Regulations 2015 (as amended)
Not applicable

The Ozone-Depleting Substances Regulations 2015
Not applicable

The Biocidal Products Regulations 2001 (as amended)
Not applicable

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)
Not applicable

Poisons Act 1972 (Explosive Precursors) Regulations (as Amended)
Not applicable

International Inventories

TSCA	Contact supplier for inventory compliance status
DSL/NDSL	Contact supplier for inventory compliance status
EINECS/ELINCS	Contact supplier for inventory compliance status
ENCS	Contact supplier for inventory compliance status
IECSC	Contact supplier for inventory compliance status
KECI	Contact supplier for inventory compliance status
PICCS	Contact supplier for inventory compliance status
AIIC	Contact supplier for inventory compliance status
NZIoC	Contact supplier for inventory compliance status

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AIIC - Australian Inventory of Industrial Chemicals
NZIoC - New Zealand Inventory of Chemicals

15.2. Chemical safety assessment

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

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3
H226 - Flammable liquid and vapour
H302 - Harmful if swallowed
H315 - Causes skin irritation
H318 - Causes serious eye damage
H335 - May cause respiratory irritation
H336 - May cause drowsiness or dizziness

Legend
SVHC: Substances of Very High Concern for Authorisation:

Legend Section 8: Exposure controls/personal protection

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
+	Sensitisers		

Revision Note SDS sections updated 1 9 16

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS
Agency for Toxic Substances and Disease Registry (ATSDR)
U.S. Environmental Protection Agency ChemView Database
European Food Safety Authority (EFSA)
European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
European Chemicals Agency (ECHA) (ECHA_API)
Environmental Protection Agency
Acute Exposure Guideline Level(s) (AEGL(s))
U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act
U.S. Environmental Protection Agency High Production Volume Chemicals
Food Research Journal
Hazardous Substance Database
International Uniform Chemical Information Database (IUCLID)
National Institute of Technology and Evaluation (NITE)
Australian National Industrial Chemicals Notification and Assessment Scheme (NICNAS)
NIOSH (National Institute for Occupational Safety and Health)
National Library of Medicine's ChemID Plus (NLM CIP)
National Library of Medicine’s PubMed database (NLM PUBMED)
U.S. National Toxicology Program (NTP)
New Zealand's Chemical Classification and Information Database (CCID)
Organisation for Economic Co-operation and Development Environment, Health, and Safety Publications
Organisation for Economic Co-operation and Development High Production Volume Chemicals Programme
Organisation for Economic Co-operation and Development Screening Information Data Set
World Health Organization

Prepared By K Winter

Supercedes date 30-Mar-2023

Revision date 28-Aug-2024

This material safety data sheet complies with the requirements of UK REACH Regulations (SI 2019/758 as amended)
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

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

End of Safety Data Sheet

Exposure scenario
Manufacture of substance

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Manufacture of substance
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals

Environment

Environmental release category	ERC1 Manufacture of the substance ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC6a Use of intermediate

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC15 Use as laboratory reagent.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 97

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker

Manufacture of substance

Exposure	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001 PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996 PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Worker - inhalation, long-term - systemic: Exposure 77.13 mg/m³, DNEL 310 mg/m³, RCR 0.249 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Worker - inhalation, long-term - systemic: Exposure 4.63 mg/m³, DNEL 310 mg/m³, RCR 0.0149 PROC4 Chemical production where opportunity for exposure arises Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992 PROC15 Use as laboratory reagent. Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996 Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

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

Exposure scenario
Use as an intermediate

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as an intermediate
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals

Environment

Environmental release category	ERC6a Use of intermediate

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 97

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker

Use as an intermediate

Exposure	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001 PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996 PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Worker - inhalation, long-term - systemic: Exposure 77.13 mg/m³, DNEL 310 mg/m³, RCR 0.249 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Worker - inhalation, long-term - systemic: Exposure 4.63 mg/m³, DNEL 310 mg/m³, RCR 0.0149 PROC4 Chemical production where opportunity for exposure arises Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498 Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

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

Exposure scenario
Formulation & (re)packing of substances and mixtures

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Formulation & (re)packing of substances and mixtures
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging

Environment

Environmental release category	ERC2 Formulation into mixture

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC14 Tabletting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent.

Formulation & (re)packing of substances and mixtures

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC5 Mixing or blending in batch processes Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 97

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker

Formulation & (re)packing of substances and mixtures

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
Worker - inhalation, long-term - systemic: Exposure 77.13 mg/m³, DNEL 310 mg/m³, RCR 0.249
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 4.63 mg/m³, DNEL 310 mg/m³, RCR 0.0149
PROC4 Chemical production where opportunity for exposure arises
Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC5 Mixing or blending in batch processes
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0497
PROC15 Use as laboratory reagent.
Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996

Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

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

Exposure scenario
Distribution of substance - Industrial

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Distribution of substance - Industrial
Main sector	SU3 Industrial uses
Sector of use	SU8 Manufacture of bulk, large-scale chemicals (including petroleum products) SU9 Manufacture of fine chemicals

Environment

Environmental release category	ERC1 Manufacture of the substance ERC2 Formulation into mixture

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 97

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker

Distribution of substance - Industrial

Exposure	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001 PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996 PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Worker - inhalation, long-term - systemic: Exposure 77.13 mg/m³, DNEL 310 mg/m³, RCR 0.249 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Worker - inhalation, long-term - systemic: Exposure 4.63 mg/m³, DNEL 310 mg/m³, RCR 0.0149 PROC4 Chemical production where opportunity for exposure arises Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498 Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

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

Exposure scenario
Use in Coatings, Use in Printing inks, Use in Adhesives - Industrial

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Coatings, Use in Printing inks, Use in Adhesives - Industrial
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC15 Use as laboratory reagent.

Use in Coatings, Use in Printing inks, Use in Adhesives - Industrial

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur. PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 97 PROC7 Industrial spraying Ensure that a spraying booth is used. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance. Clean equipment and the work area every day.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker Unless otherwise stated. PROC7 Industrial spraying Stoffenmanager v4.0

Use in Coatings, Use in Printing inks, Use in Adhesives - Industrial

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
Worker - inhalation, long-term - systemic: Exposure 77.13 mg/m³, DNEL 310 mg/m³, RCR 0.249
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 4.63 mg/m³, DNEL 310 mg/m³, RCR 0.0149
PROC4 Chemical production where opportunity for exposure arises
Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC5 Mixing or blending in batch processes
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0497
PROC15 Use as laboratory reagent.
Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996
PROC10 Roller application or brushing
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC7 Industrial spraying
Worker - inhalation, long-term - systemic: Exposure 0 mg/m³, DNEL 310 mg/m³, RCR 0

Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see http://www.ecetoc.org/tra https://www.stoffenmanager.nl/default.aspx

Exposure scenario
Use in Cleaning Agents - Industrial

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Cleaning Agents - Industrial
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 97 PROC7 Industrial spraying Ensure that a spraying booth is used. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance. Clean equipment and the work area every day.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker Unless otherwise stated. PROC7 Industrial spraying Stoffenmanager v4.0

Use in Cleaning Agents - Industrial

Exposure	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001 PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996 PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Worker - inhalation, long-term - systemic: Exposure 77.13 mg/m³, DNEL 310 mg/m³, RCR 0.249 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Worker - inhalation, long-term - systemic: Exposure 4.63 mg/m³, DNEL 310 mg/m³, RCR 0.0149 PROC4 Chemical production where opportunity for exposure arises Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498 PROC10 Roller application or brushing Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498 PROC7 Industrial spraying Worker - inhalation, long-term - systemic: Exposure 0 mg/m³, DNEL 310 mg/m³, RCR 0 Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see http://www.ecetoc.org/tra https://www.stoffenmanager.nl/default.aspx

Exposure scenario
Use in Lubricants - Industrial

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Lubricants - Industrial
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC7 Use of functional fluid at industrial site

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions

Use in Lubricants - Industrial

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 97 PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions Local exhaust ventilation - efficiency of at least [%]: 95 PROC7 Industrial spraying Ensure that a spraying booth is used. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance. Clean equipment and the work area every day.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker Unless otherwise stated. PROC7 Industrial spraying Stoffenmanager v4.0

Use in Lubricants - Industrial

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
Worker - inhalation, long-term - systemic: Exposure 77.13 mg/m³, DNEL 310 mg/m³, RCR 0.249
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 4.63 mg/m³, DNEL 310 mg/m³, RCR 0.0149
PROC4 Chemical production where opportunity for exposure arises
Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC10 Roller application or brushing
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC7 Industrial spraying
Worker - inhalation, long-term - systemic: Exposure 0 mg/m³, DNEL 310 mg/m³, RCR 0
PROC17 Lubrication at high energy conditions in metal working operations
PROC18 General greasing/lubrication at high kinetic energy conditions
Without local exhaust ventilation
Worker - dermal, long-term - systemic: Exposure 154.38 mg/m³, DNEL 310 mg/m³, RCR 0.498
PROC17 Lubrication at high energy conditions in metal working operations
PROC18 General greasing/lubrication at high kinetic energy conditions
With local exhaust ventilation
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498

Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see http://www.ecetoc.org/tra https://www.stoffenmanager.nl/default.aspx

Exposure scenario
Use in Metal working fluids / rolling oils - Industrial

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Metal working fluids / rolling oils - Industrial
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC5 Mixing or blending in batch processes PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations

2. Conditions of use affecting exposure (Industrial - Environment 1)

Use in Metal working fluids / rolling oils - Industrial

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Provide extract ventilation to points where emissions occur. PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing Local exhaust ventilation - efficiency of at least [%]: 90 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 97 PROC17 Lubrication at high energy conditions in metal working operations Local exhaust ventilation - efficiency of at least [%]: 95 PROC7 Industrial spraying Ensure that a spraying booth is used. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance. Clean equipment and the work area every day.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker Unless otherwise stated. PROC7 Industrial spraying Stoffenmanager v4.0

Use in Metal working fluids / rolling oils - Industrial

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0996
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
Worker - inhalation, long-term - systemic: Exposure 77.13 mg/m³, DNEL 310 mg/m³, RCR 0.249
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 4.63 mg/m³, DNEL 310 mg/m³, RCR 0.0149
PROC5 Mixing or blending in batch processes
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0497
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC10 Roller application or brushing
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498
PROC7 Industrial spraying
Worker - inhalation, long-term - systemic: Exposure 0 mg/m³, DNEL 310 mg/m³, RCR 0
PROC17 Lubrication at high energy conditions in metal working operations
Without local exhaust ventilation
Worker - dermal, long-term - systemic: Exposure 154.38 mg/m³, DNEL 310 mg/m³, RCR 0.498
PROC17 Lubrication at high energy conditions in metal working operations
With local exhaust ventilation
Worker - inhalation, long-term - systemic: Exposure 15.44 mg/m³, DNEL 310 mg/m³, RCR 0.0498

Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see http://www.ecetoc.org/tra https://www.stoffenmanager.nl/default.aspx

Exposure scenario
Distribution of substance - Professional

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Distribution of substance - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC1 Manufacture of the substance ERC2 Formulation into mixture

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 Use as laboratory reagent.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

Distribution of substance - Professional

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure 0.5 - 10 kPa at STP.
Concentration details	Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
Covers daily exposure up to 4hours

Other given operational conditions affecting workers exposure

Temperature	Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA v2.0 Worker

Distribution of substance - Professional

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
Worker - inhalation, long-term - systemic: Exposure 77.19 mg/m³, DNEL 310 mg/m³, RCR 0.249
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 92.63 mg/m³, DNEL 310 mg/m³, RCR 0.2988
PROC4 Chemical production where opportunity for exposure arises
Worker - inhalation, long-term - systemic: Exposure 154.38 mg/m³, DNEL 310 mg/m³, RCR 0.498
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC15 Use as laboratory reagent.
Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0997

Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

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

Exposure scenario
Use in Coatings, Use in Printing inks, Use in Adhesives - Professional

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Coatings, Use in Printing inks, Use in Adhesives - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8c Widespread use leading to inclusion into/onto article (indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ERC8f Widespread use leading to inclusion into/onto article (outdoor)

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC15 Use as laboratory reagent. PROC19 Manual activities involving hand contact

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure 0.5 - 10 kPa at STP.
Concentration details	Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.
PROC19 Manual activities involving hand contact
Covers daily exposure up to 4hours
PROC11 Non industrial spraying
With local exhaust ventilation
Covers daily exposure up to 6hours

Other given operational conditions affecting workers exposure

Temperature	Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	PROC11 Non industrial spraying Ensure that a spraying booth is used. , or: Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 47 , or: Provide enhanced general ventilation by mechanical means.

Organisational measures to prevent/limit releases, dispersion and exposure

Use in Coatings, Use in Printing inks, Use in Adhesives - Professional

Organisational measures	Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance. PROC11 Non industrial spraying Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean equipment and the work area every day.
Risk management measures	
	Wear gloves to EN374 resistant to the solvent(s) in use. Use suitable eye protection. PROC11 Non industrial spraying Without local exhaust ventilation Wear a respirator providing a minimum efficiency of (%): 80

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA v2.0 Worker Unless otherwise stated. PROC11 Non industrial spraying Stoffenmanager v4.0

Use in Coatings, Use in Printing inks, Use in Adhesives - Professional

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
Worker - inhalation, long-term - systemic: Exposure 77.19 mg/m³, DNEL 310 mg/m³, RCR 0.249
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 92.63 mg/m³, DNEL 310 mg/m³, RCR 0.2988
PROC4 Chemical production where opportunity for exposure arises
Worker - inhalation, long-term - systemic: Exposure 154.38 mg/m³, DNEL 310 mg/m³, RCR 0.498
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC15 Use as laboratory reagent.
Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0997
PROC5 Mixing or blending in batch processes
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC10 Roller application or brushing
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC11 Non industrial spraying
Ensure that a spraying booth is used.
Worker - inhalation, long-term - systemic: Exposure 0 mg/m³, DNEL 310 mg/m³, RCR 0
PROC11 Non industrial spraying
With local exhaust ventilation
Worker - inhalation, long-term - systemic: Exposure 300 mg/m³, DNEL 310 mg/m³, RCR 0.9677
PROC11 Non industrial spraying
Without local exhaust ventilation
Worker - inhalation, long-term - systemic: Exposure 187.5 mg/m³, DNEL 310 mg/m³, RCR 0.6048
PROC13 Treatment of articles by dipping and pouring.
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC19 Manual activities involving hand contact
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976

Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

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

Exposure scenario
Use in Cleaning Agents - Professional

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Cleaning Agents - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring.

Use in Cleaning Agents - Professional

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.
Covers daily exposure up to 4hours
PROC11 Non industrial spraying
With local exhaust ventilation
Covers daily exposure up to 6hours

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures PROC11 Non industrial spraying Ensure that a spraying booth is used. , or: Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 47 , or: Provide enhanced general ventilation by mechanical means.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance. PROC11 Non industrial spraying Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean equipment and the work area every day.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.
PROC11 Non industrial spraying
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 80

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Use in Cleaning Agents - Professional

Assessment method	ECETOC TRA v2.0 Worker Unless otherwise stated. PROC11 Non industrial spraying Stoffenmanager v4.0
Exposure	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001 PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992 PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Worker - inhalation, long-term - systemic: Exposure 77.19 mg/m³, DNEL 310 mg/m³, RCR 0.249 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Worker - inhalation, long-term - systemic: Exposure 92.63 mg/m³, DNEL 310 mg/m³, RCR 0.2988 PROC4 Chemical production where opportunity for exposure arises Worker - inhalation, long-term - systemic: Exposure 154.38 mg/m³, DNEL 310 mg/m³, RCR 0.498 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976 PROC10 Roller application or brushing Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976 PROC11 Non industrial spraying Ensure that a spraying booth is used. Worker - inhalation, long-term - systemic: Exposure 0 mg/m³, DNEL 310 mg/m³, RCR 0 PROC11 Non industrial spraying With local exhaust ventilation Worker - inhalation, long-term - systemic: Exposure 300 mg/m³, DNEL 310 mg/m³, RCR 0.9677 PROC11 Non industrial spraying Without local exhaust ventilation Worker - inhalation, long-term - systemic: Exposure 187.5 mg/m³, DNEL 310 mg/m³, RCR 0.6048 PROC13 Treatment of articles by dipping and pouring. Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976 Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

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

Exposure scenario
Use in Lubricants - Professional

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Lubricants - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ERC9a Widespread use of functional fluid (indoor) ERC9b Widespread use of functional fluid (outdoor)

Worker

Use in Lubricants - Professional

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions PROC20 Use of functional fluids in small devices

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure 0.5 - 10 kPa at STP.
Concentration details	Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.
Covers daily exposure up to 4hours
PROC11 Non industrial spraying
With local exhaust ventilation
Covers daily exposure up to 6hours

Other given operational conditions affecting workers exposure

Temperature	Assumes activities are at ambient temperature (unless stated differently). PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions Operation is carried out at elevated temperature (> 20°C above ambient temperature).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures PROC11 Non industrial spraying Ensure that a spraying booth is used. , or: Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 47 , or: Provide enhanced general ventilation by mechanical means. PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 90 , or: Wear a respirator providing a minimum efficiency of (%): 90

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance. PROC11 Non industrial spraying Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean equipment and the work area every day.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.
PROC11 Non industrial spraying
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 80

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker Unless otherwise stated. PROC11 Non industrial spraying Stoffenmanager v4.0

Use in Lubricants - Professional

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions
Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001
PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992
PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition
Worker - inhalation, long-term - systemic: Exposure 77.19 mg/m³, DNEL 310 mg/m³, RCR 0.249
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
Worker - inhalation, long-term - systemic: Exposure 92.63 mg/m³, DNEL 310 mg/m³, RCR 0.2988
PROC4 Chemical production where opportunity for exposure arises
Worker - inhalation, long-term - systemic: Exposure 154.38 mg/m³, DNEL 310 mg/m³, RCR 0.498
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC10 Roller application or brushing
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC11 Non industrial spraying
Ensure that a spraying booth is used.
Worker - inhalation, long-term - systemic: Exposure 0 mg/m³, DNEL 310 mg/m³, RCR 0
PROC11 Non industrial spraying
With local exhaust ventilation
Worker - inhalation, long-term - systemic: Exposure 300 mg/m³, DNEL 310 mg/m³, RCR 0.9677
PROC11 Non industrial spraying
Without local exhaust ventilation
Worker - inhalation, long-term - systemic: Exposure 187.5 mg/m³, DNEL 310 mg/m³, RCR 0.6048
PROC13 Treatment of articles by dipping and pouring.
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC17 Lubrication at high energy conditions in metal working operations
PROC18 General greasing/lubrication at high kinetic energy conditions
Worker - inhalation, long-term - systemic: Exposure 154.38 mg/m³, DNEL 310 mg/m³, RCR 0.498

Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

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

Exposure scenario
Use in Metal working fluids / rolling oils - Professional

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Metal working fluids / rolling oils - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.
Covers daily exposure up to 4hours
PROC11 Non industrial spraying
With local exhaust ventilation
Covers daily exposure up to 6hours

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures PROC11 Non industrial spraying Ensure that a spraying booth is used. , or: Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 47 , or: Provide enhanced general ventilation by mechanical means. PROC17 Lubrication at high energy conditions in metal working operations Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 90 , or: Wear a respirator providing a minimum efficiency of (%): 90

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance. PROC11 Non industrial spraying Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean equipment and the work area every day.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.
PROC11 Non industrial spraying
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 80

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Use in Metal working fluids / rolling oils - Professional

Assessment method	ECETOC TRA v2.0 Worker Unless otherwise stated. PROC11 Non industrial spraying Stoffenmanager v4.0
Exposure	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions Worker - dermal, long-term - systemic: Exposure 0.03 mg/m³, DNEL 310 mg/m³, RCR 0.0001 PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992 PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Worker - inhalation, long-term - systemic: Exposure 77.19 mg/m³, DNEL 310 mg/m³, RCR 0.249 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Worker - inhalation, long-term - systemic: Exposure 92.63 mg/m³, DNEL 310 mg/m³, RCR 0.2988 PROC4 Chemical production where opportunity for exposure arises Worker - inhalation, long-term - systemic: Exposure 154.38 mg/m³, DNEL 310 mg/m³, RCR 0.498 PROC5 Mixing or blending in batch processes Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976 PROC10 Roller application or brushing Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976 PROC11 Non industrial spraying Ensure that a spraying booth is used. Worker - inhalation, long-term - systemic: Exposure 0 mg/m³, DNEL 310 mg/m³, RCR 0 PROC11 Non industrial spraying With local exhaust ventilation Worker - inhalation, long-term - systemic: Exposure 300 mg/m³, DNEL 310 mg/m³, RCR 0.9677 PROC11 Non industrial spraying Without local exhaust ventilation Worker - inhalation, long-term - systemic: Exposure 187.5 mg/m³, DNEL 310 mg/m³, RCR 0.6048 PROC13 Treatment of articles by dipping and pouring. Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976 PROC17 Lubrication at high energy conditions in metal working operations Application duration: <60 minutes Worker - inhalation, long-term - systemic: Exposure 61.75 mg/m³, DNEL 310 mg/m³, RCR 0.1992 PROC17 Lubrication at high energy conditions in metal working operations Worker - inhalation, long-term - systemic: Exposure 154.38 mg/m³, DNEL 310 mg/m³, RCR 0.498 Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

Use in Metal working fluids / rolling oils - Professional

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

Exposure scenario
Use in laboratories - Professional

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in laboratories - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor)

Worker

Process category	PROC10 Roller application or brushing PROC15 Use as laboratory reagent.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure 0.5 - 10 kPa at STP.
Concentration details	Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
PROC10 Roller application or brushing
Covers daily exposure up to 4hours

Other given operational conditions affecting workers exposure

Temperature Assumes activities are at ambient temperature (unless stated differently).

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure operatives are trained to minimise exposures. Avoid frequent contact with substance.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
Use suitable eye protection.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA v2.0 Worker

Exposure PROC10 Roller application or brushing
Worker - inhalation, long-term - systemic: Exposure 185.25 mg/m³, DNEL 310 mg/m³, RCR 0.5976
PROC15 Use as laboratory reagent.
Worker - inhalation, long-term - systemic: Exposure 30.88 mg/m³, DNEL 310 mg/m³, RCR 0.0997

Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

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

Exposure scenario
Use in Coatings, Use in Printing inks, Use in Adhesives - Consumer

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Coatings, Use in Printing inks, Use in Adhesives - Consumer
Product category	PC1 Adhesives, sealants. PC4 Anti-freeze and de-icing products. PC9a Coatings and paints, thinners, paint removers. PC9c Finger paints. PC15 Non-metal-surface treatment products. PC18 Ink and toners. PC23 Leather treatment products PC24 Lubricants, greases and release products. PC31 Polishes and wax blends.
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8c Widespread use leading to inclusion into/onto article (indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ERC8f Widespread use leading to inclusion into/onto article (outdoor)

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Use in Coatings, Use in Printing inks, Use in Adhesives - Consumer

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure 0.5 - 10 kPa at STP.

Concentration details Covers concentrations up to 50 %. Unless otherwise stated. PC1_1 Glues, hobby use PC1_3 Glue from spray Covers concentrations up to 30 %. PC9a_1 Water-borne latex wall paint PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Covers concentrations up to 2 %. PC1_4 Sealants Covers concentrations up to 12 %. PC4_1 Washing car window Covers concentrations up to 1 %. PC4_2 Pouring into radiator Covers concentrations up to 10 %. PC9a_2 Solvent-rich, high-solid, water-borne paint Covers concentrations up to 5 %. PC31_1 Polishes, wax/cream (floor, furniture, shoes) Covers concentrations up to 20 %. PC9a_3 Aerosol spray can Covers concentrations up to 25 %. PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover) PC18 Ink and toners. Covers concentrations up to 4 %. PC9c Finger paints Covers concentrations up to 15 %.

Amounts used

Amount per use: 2000 g
Unless otherwise stated.
PC1_1 Glues, hobby use
Amount per use: 9 g
PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)
Amount per use: 9000 g
PC1_4 Sealants
Amount per use: 390 g
PC4_1 Washing car window
Amount per use: 0.5 g
PC4_3 Lock de-icer
Amount per use: 4 g
PC31_2 Polishes, spray (furniture, shoes)
Amount per use: 56 g
PC9a_1 Water-borne latex wall paint
Amount per use: 3750 g
PC9a_2 Solvent-rich, high-solid, water-borne paint
Amount per use: 1300 g
PC31_1 Polishes, wax/cream (floor, furniture, shoes)
Amount per use: 550 g
PC9c Finger paints
Amount per use: 1.35 g
PC18 Ink and toners.
Amount per use: 40 g

Frequency and duration of use

Covers daily exposure up to 240minutes
Unless otherwise stated.
PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)
Covers daily exposure up to 360minutes
PC4_2 Pouring into radiator
Covers daily exposure up to 10minutes
PC4_3 Lock de-icer
Covers daily exposure up to 15minutes
PC9a_2 Solvent-rich, high-solid, water-borne paint
PC18 Ink and toners.
Covers daily exposure up to 150minutes
PC9a_3 Aerosol spray can.
Covers daily exposure up to 20minutes
PC31_1 Polishes, wax/cream (floor, furniture, shoes)
Covers daily exposure up to 24minutes

Other given operational conditions affecting Non-industrial exposure

Setting	Indoor.
Temperature	Assumes activities are at ambient temperature (unless stated differently).
Room size	Covers use in room size of 20 m³. Unless otherwise stated. PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Covers use in room size of 53 m³. PC31_1 Polishes, wax/cream (floor, furniture, shoes) PC31_2 Polishes, spray (furniture, shoes) Covers use in room size of 58 m³. PC4_1 Washing car window PC4_2 Pouring into radiator Covers use in room size of 34 m³. PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover) Covers use in room size of 30 m³.
Ventilation rate	Covers use under typical household ventilation. Unless otherwise stated. PC4_1 Washing car window Covers use in a one car garage (34 m³) under typical ventilation. PC1_1 Glues, hobby use PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) PC1_3 Glue from spray PC1_4 Sealants PC4_2 Pouring into radiator Open windows during application to ensure natural ventilation.

Other given operational conditions affecting Non-industrial exposure

Consumer information	Avoid direct eye contact with product, also via contamination on hands.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method	ConsExpo v4.1 Unless otherwise stated. PC1_1 Glues, hobby use PC4_1 Washing car window PC4_3 Lock de-icer PC9c Finger paints PC18 Ink and toners. ESIG GES consumer tool

Use in Coatings, Use in Printing inks, Use in Adhesives - Consumer

Exposure

PC1_1 Glues, hobby use
Consumer - inhalation, long-term - systemic: Exposure 51.15 mg/m³, DNEL 55 mg/m³, RCR 0.93
PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)
Consumer - inhalation, long-term - systemic: Exposure 48.80 mg/m³, DNEL 55 mg/m³, RCR 0.89
PC1_3 Glue from spray
Consumer - inhalation, long-term - systemic: Exposure 0.09 mg/m³, DNEL 55 mg/m³, RCR 0.002
PC1_4 Sealants
Consumer - inhalation, long-term - systemic: Exposure 48.70 mg/m³, DNEL 55 mg/m³, RCR 0.89
PC4_1 Washing car window
Consumer - inhalation, long-term - systemic: Exposure 0.15 mg/m³, DNEL 55 mg/m³, RCR 0.03
PC4_2 Pouring into radiator
Consumer - inhalation, long-term - systemic: Exposure 0.001 mg/m³, DNEL 55 mg/m³, RCR 0.00002
PC4_3 Lock de-icer
Consumer - inhalation, long-term - systemic: Exposure 49.05 mg/m³, DNEL 55 mg/m³, RCR 0.89
PC31_2 Polishes, spray (furniture, shoes)
Consumer - inhalation, long-term - systemic: Exposure 0.38 mg/m³, DNEL 55 mg/m³, RCR 0.01
PC9a_1 Water-borne latex wall paint
Consumer - inhalation, long-term - systemic: Exposure 42.90 mg/m³, DNEL 55 mg/m³, RCR 0.78
PC9a_2 Solvent-rich, high-solid, water-borne paint
Consumer - inhalation, long-term - systemic: Exposure 52.5 mg/m³, DNEL 55 mg/m³, RCR 0.95
PC31_1 Polishes, wax/cream (floor, furniture, shoes)
Consumer - inhalation, long-term - systemic: Exposure 52.10 mg/m³, DNEL 55 mg/m³, RCR 0.95
PC9a_3 Aerosol spray can
Consumer - inhalation, long-term - systemic: Exposure 1.30 mg/m³, DNEL 55 mg/m³, RCR 0.02
PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover)
Consumer - inhalation, long-term - systemic: Exposure 48.40 mg/m³, DNEL 55 mg/m³, RCR 0.88
PC9c Finger paints
Consumer - inhalation, long-term - systemic: Exposure 1.35 mg/m³, DNEL 55 mg/m³, RCR 0.43
PC18 Ink and toners.
Consumer - inhalation, long-term - systemic: Exposure 44.42 mg/m³, DNEL 55 mg/m³, RCR 0.81

Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see http://www.esig.org/en/regulatory-information/reach/ges-library/consumer-gess http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp

Exposure scenario
Use in Cleaning Agents - Consumer

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Cleaning Agents - Consumer
Product category	PC4 Anti-freeze and de-icing products. PC9a Coatings and paints, thinners, paint removers. PC9c Finger paints. PC24 Lubricants, greases and release products. PC35 Washing and cleaning products PC38 Welding and soldering products, flux products
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure 0.5 - 10 kPa at STP.

Use in Cleaning Agents - Consumer

Concentration details

Covers concentrations up to 50 %. Unless otherwise stated. PC9a_1 Water-borne latex wall paint Covers concentrations up to 1.5 %. PC1_4 Sealants Covers concentrations up to 12 %. PC4_1 Washing car window Covers concentrations up to 1 %. PC4_2 Pouring into radiator PC38 Welding and soldering products, flux products Covers concentrations up to 10 %. PC9a_2 Solvent-rich, high-solid, water-borne paint PC35 Washing and cleaning products Detergent liquids Covers concentrations up to 5 %. PC31_1 Polishes, wax/cream (floor, furniture, shoes) PC35 Washing and cleaning products Spray cleaners Covers concentrations up to 20 %. PC9a_3 Aerosol spray can Covers concentrations up to 25 %. PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover) Covers concentrations up to 4 %. PC9c Finger paints Covers concentrations up to 15 %. PC35 Washing and cleaning products Liquid cleaners Covers concentrations up to 8 %.

Amounts used

Amount per use: 2000 g
Unless otherwise stated.
PC4_1 Washing car window
Amount per use: 0.5 g
PC4_3 Lock de-icer
Amount per use: 4 g
PC9a_1 Water-borne latex wall paint
Amount per use: 3750 g
PC9a_2 Solvent-rich, high-solid, water-borne paint
Amount per use: 1300 g
PC9c Finger paints
Amount per use: 1.35 g
PC35 Washing and cleaning products
Detergent liquids
Amount per use: 15 g
PC35 Washing and cleaning products
Liquid cleaners
Amount per use: 880 g
PC35 Washing and cleaning products
Spray cleaners
Amount per use: 30 g
PC38 Welding and soldering products, flux products
Amount per use: 12 g

Frequency and duration of use

Covers daily exposure up to 240minutes
Unless otherwise stated.
PC4_2 Pouring into radiator
Covers daily exposure up to 10minutes
PC4_3 Lock de-icer
Covers daily exposure up to 15minutes
PC9a_1 Water-borne latex wall paint
PC9a_2 Solvent-rich, high-solid, water-borne paint
Covers daily exposure up to 150minutes
PC9a_3 Aerosol spray can.
Covers daily exposure up to 20minutes
PC35 Washing and cleaning products
Detergent liquids
Covers daily exposure up to 30minutes
PC35 Washing and cleaning products
Spray cleaners
Covers daily exposure up to 25minutes
PC38 Welding and soldering products, flux products
Covers daily exposure up to 60minutes

Other given operational conditions affecting Non-industrial exposure

Setting	Indoor.
Temperature	Assumes activities are at ambient temperature (unless stated differently).
Room size	Covers use in room size of 20 m³. Unless otherwise stated. PC4_1 Washing car window PC4_3 Lock de-icer Covers use in room size of 34 m³. PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover) Covers use in room size of 30 m³. PC35 Washing and cleaning products Spray cleaners Covers use in room size of 10 m³.
Ventilation rate	Covers use under typical household ventilation. Unless otherwise stated. PC4_1 Washing car window Covers use in a one car garage (34 m³) under typical ventilation. PC4_2 Pouring into radiator Open windows during application to ensure natural ventilation.

Other given operational conditions affecting Non-industrial exposure

Consumer information	Avoid direct eye contact with product, also via contamination on hands.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method	ConsExpo v4.1 Unless otherwise stated. PC4_1 Washing car window PC4_3 Lock de-icer PC9c Finger paints PC35 Washing and cleaning products Detergent liquids PC38 Welding and soldering products, flux products ESIG GES consumer tool

Use in Cleaning Agents - Consumer

Exposure

PC4_1 Washing car window
Consumer - inhalation, long-term - systemic: Exposure 0.15 mg/m³, DNEL 55 mg/m³, RCR 0.03
PC4_2 Pouring into radiator
Consumer - inhalation, long-term - systemic: Exposure 0.001 mg/m³, DNEL 55 mg/m³, RCR 0.00002
PC4_3 Lock de-icer
Consumer - inhalation, long-term - systemic: Exposure 49.05 mg/m³, DNEL 55 mg/m³, RCR 0.89
PC9a_1 Water-borne latex wall paint
Consumer - inhalation, long-term - systemic: Exposure 42.90 mg/m³, DNEL 55 mg/m³, RCR 0.78
PC9a_2 Solvent-rich, high-solid, water-borne paint
Consumer - inhalation, long-term - systemic: Exposure 52.5 mg/m³, DNEL 55 mg/m³, RCR 0.95
PC9a_3 Aerosol spray can
Consumer - inhalation, long-term - systemic: Exposure 1.30 mg/m³, DNEL 55 mg/m³, RCR 0.02
PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover)
Consumer - inhalation, long-term - systemic: Exposure 48.40 mg/m³, DNEL 55 mg/m³, RCR 0.88
PC9c Finger paints
Consumer - inhalation, long-term - systemic: Exposure 1.35 mg/m³, DNEL 55 mg/m³, RCR 0.43
PC35 Washing and cleaning products
Detergent liquids
Consumer - inhalation, long-term - systemic: Exposure 32.40 mg/m³, DNEL 55 mg/m³, RCR 0.59
PC35 Washing and cleaning products
Liquid cleaners
Consumer - inhalation, long-term - systemic: Exposure 46.50 mg/m³, DNEL 55 mg/m³, RCR 0.85
PC35 Washing and cleaning products
Spray cleaners
Consumer - inhalation, long-term - systemic: Exposure 6.37 mg/m³, DNEL 55 mg/m³, RCR 0.12
PC38 Welding and soldering products, flux products
Consumer - inhalation, long-term - systemic: Exposure 45.12 mg/m³, DNEL 55 mg/m³, RCR 0.82

Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

For scaling see http://www.esig.org/en/regulatory-information/reach/ges-library/consumer-gess http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp

Exposure scenario
Use in Lubricants - Consumer

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in Lubricants - Consumer
Product category	PC1 Adhesives, sealants. PC24 Lubricants, greases and release products. PC31 Polishes and wax blends. PC35 Washing and cleaning products
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) ERC9a Widespread use of functional fluid (indoor) ERC9b Widespread use of functional fluid (outdoor)

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure 0.5 - 10 kPa at STP.

Use in Lubricants - Consumer

Concentration details Covers concentrations up to 50 %. Unless otherwise stated. PC1_1 Glues, hobby use PC1_3 Glue from spray Covers concentrations up to 30 %. PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Covers concentrations up to 2 %. PC1_4 Sealants Covers concentrations up to 12 %. PC31_1 Polishes, wax/cream (floor, furniture, shoes) PC35 Washing and cleaning products Spray cleaners Covers concentrations up to 20 %. PC35 Washing and cleaning products Detergent liquids Covers concentrations up to 5 %. PC35 Washing and cleaning products Liquid cleaners Covers concentrations up to 8 %.

Amounts used

Amount per use: 2000 g
Unless otherwise stated.
PC1_1 Glues, hobby use
Amount per use: 9 g
PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)
Amount per use: 9000 g
PC1_4 Sealants
Amount per use: 390 g
PC31_2 Polishes, spray (furniture, shoes)
Amount per use: 56 g
PC31_1 Polishes, wax/cream (floor, furniture, shoes)
Amount per use: 550 g
PC35 Washing and cleaning products
Detergent liquids
Amount per use: 15 g
PC35 Washing and cleaning products
Liquid cleaners
Amount per use: 880 g
PC35 Washing and cleaning products
Spray cleaners
Amount per use: 30 g

Frequency and duration of use

Covers daily exposure up to 240minutes
Unless otherwise stated.
PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)
Covers daily exposure up to 360minutes
PC4_2 Pouring into radiator
Covers daily exposure up to 10minutes
PC4_3 Lock de-icer
Covers daily exposure up to 15minutes
PC9a_2 Solvent-rich, high-solid, water-borne paint
PC18 Ink and toners.
Covers daily exposure up to 150minutes
PC9a_3 Aerosol spray can.
Covers daily exposure up to 20minutes
PC31_1 Polishes, wax/cream (floor, furniture, shoes)
Covers daily exposure up to 24minutes

Other given operational conditions affecting Non-industrial exposure

Setting Indoor.

Temperature Assumes activities are at ambient temperature (unless stated differently).

Use in Lubricants - Consumer

Room size	Covers use in room size of 20 m³. Unless otherwise stated. PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Covers use in room size of 53 m³. PC31_1 Polishes, wax/cream (floor, furniture, shoes) PC31_2 Polishes, spray (furniture, shoes) PC35 Washing and cleaning products Liquid cleaners Covers use in room size of 58 m³. PC35 Washing and cleaning products Spray cleaners Covers use in room size of 10 m³.
Ventilation rate	Covers use under typical household ventilation. Unless otherwise stated. PC1_1 Glues, hobby use PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) PC1_3 Glue from spray PC1_4 Sealants Open windows during application to ensure natural ventilation.

Other given operational conditions affecting Non-industrial exposure

Consumer information	Avoid direct eye contact with product, also via contamination on hands.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

Assessment method	ConsExpo v4.1 Unless otherwise stated. PC1_1 Glues, hobby use PC35 Washing and cleaning products Detergent liquids ESIG GES consumer tool
Exposure	PC1_1 Glues, hobby use Consumer - inhalation, long-term - systemic: Exposure 51.15 mg/m³, DNEL 55 mg/m³, RCR 0.93 PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Consumer - inhalation, long-term - systemic: Exposure 48.80 mg/m³, DNEL 55 mg/m³, RCR 0.89 PC1_3 Glue from spray Consumer - inhalation, long-term - systemic: Exposure 0.09 mg/m³, DNEL 55 mg/m³, RCR 0.002 PC1_4 Sealants Consumer - inhalation, long-term - systemic: Exposure 48.70 mg/m³, DNEL 55 mg/m³, RCR 0.89 PC31_2 Polishes, spray (furniture, shoes) Consumer - inhalation, long-term - systemic: Exposure 0.38 mg/m³, DNEL 55 mg/m³, RCR 0.01 PC31_1 Polishes, wax/cream (floor, furniture, shoes) Consumer - inhalation, long-term - systemic: Exposure 52.10 mg/m³, DNEL 55 mg/m³, RCR 0.95 PC35 Washing and cleaning products Detergent liquids Consumer - inhalation, long-term - systemic: Exposure 32.40 mg/m³, DNEL 55 mg/m³, RCR 0.59 PC35 Washing and cleaning products Liquid cleaners Consumer - inhalation, long-term - systemic: Exposure 46.50 mg/m³, DNEL 55 mg/m³, RCR 0.85 PC35 Washing and cleaning products Spray cleaners Consumer - inhalation, long-term - systemic: Exposure 6.37 mg/m³, DNEL 55 mg/m³, RCR 0.12 Worker - dermal Qualitative approach used to conclude safe use.

4. Guidance to check compliance with the exposure scenario (Health 1)

Use in Lubricants - Consumer

For scaling see http://www.esig.org/en/regulatory-information/reach/ges-library/consumer-gess http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp

Exposure scenario
Other Consumer Applications

Identification

Product name	N-Butanol
REACH registration number	01-2119484630-38-XXXX
CAS number	71-36-3
EC number	200-751-6
EU index number	603-004-00-6
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Other Consumer Applications
Product category	PC28 Perfumes, fragrances. PC39 Cosmetics, personal care.
Main sector	SU21 Consumer uses

Environment

Environmental release category	ERC8a Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Product characteristics

Not regarded as dangerous for the environment. No exposure scenario required.

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Control of Non-industrial exposure

In accordance to the Article 14 (5b) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation for human health does not need to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.

Product characteristics

Physical state	Liquid

Other Consumer Applications

Vapour pressure	Vapour pressure 0.5 - 10 kPa at STP.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed.

3. Exposure estimation (Health 1)

In accordance to the Article 14 (5b) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation for human health does not need to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.