



SAFETY DATA SHEET TETRAHYDROFURAN

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

1.1. Product identifier

Product name	TETRAHYDROFURAN
Product number	25199
Synonyms; trade names	THF, 1,4 EPOXYBUTANE, TETRAMETHYLENE OXIDE, THF PHARMA STAB, THF STAB, TETRAHYDROFURAN STAB UNI BSF, TETRAHYDROFURAN STAB, TETRAHYDROFURAN STAB PH
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EU index number	603-025-00-0
EC number	203-726-8

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

Identified uses	Chemical Intermediate Industrial application
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1.3. Details of the supplier of the safety data sheet

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
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1.4. Emergency telephone number

Emergency telephone	SGS - +32 (0)3 575 55 55 (24h)
Sds No.	25199

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards	Flam. Liq. 2 - H225
Health hazards	Acute Tox. 4 - H302 Eye Dam. 1 - H318 Carc. 2 - H351 STOT SE 3 - H335, H336
Environmental hazards	Not Classified

2.2. Label elements

EC number	203-726-8
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Hazard pictograms



Signal word

Danger

Hazard statements

H225 Highly flammable liquid and vapour.
 H302 Harmful if swallowed.
 H318 Causes serious eye damage.
 H335 May cause respiratory irritation.
 H336 May cause drowsiness or dizziness.
 H351 Suspected of causing cancer.

Precautionary statements

P202 Do not handle until all safety precautions have been read and understood.
 P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P261 Avoid breathing vapour/ spray.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P403+P235 Store in a well-ventilated place. Keep cool.
 P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.

Supplemental label information

EUH019 May form explosive peroxides.

2.3. Other hazards

This substance is not classified as PBT or vPvB according to current EU criteria.

SECTION 3: Composition/information on ingredients

3.1. Substances

Product name	TETRAHYDROFURAN
REACH registration number	01-2119444314-46-XXXX
EU index number	603-025-00-0
CAS number	109-99-9
EC number	203-726-8
Composition comments	The data shown are in accordance with the latest EC Directives.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move affected person to fresh air at once. Get medical attention.
Ingestion	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Rinse mouth thoroughly with water. Give plenty of water to drink. Get medical attention.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if any discomfort continues.

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Eye contact Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention immediately. Continue to rinse.

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

Inhalation May cause respiratory irritation. May cause drowsiness or dizziness.

Ingestion Harmful if swallowed.

Eye contact Causes serious eye damage. May cause permanent damage if eye is not immediately irrigated.

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

Notes for the doctor Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

Specific hazards The product is highly flammable. Vapours may form explosive mixtures with air. Vapours are heavier than air and may spread near ground and travel a considerable distance to a source of ignition and flash back.

Hazardous combustion products Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours. Oxides of nitrogen.

5.3. Advice for firefighters

Protective actions during firefighting Water spray should be used to cool containers.

Special protective equipment for firefighters Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Wear protective clothing as described in Section 8 of this safety data sheet. Avoid inhalation of vapours and contact with skin and eyes. Avoid heat, flames and other sources of ignition. Provide adequate ventilation.

6.2. Environmental precautions

Environmental precautions Avoid discharge into water courses or onto the ground. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Eliminate all sources of ignition. Use non sparking handtools and explosion-proof electric equipment. Absorb spillage with inert, damp, non-combustible material. Collect and place in suitable waste disposal containers and seal securely. Provide adequate ventilation.

6.4. Reference to other sections

Reference to other sections For personal protection, see Section 8. For waste disposal, see Section 13.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions	Avoid inhalation of vapours and contact with skin and eyes. Avoid heat, flames and other sources of ignition. Take precautionary measures against static discharge. Handle under inert gas. Use explosion-proof electrical equipment. Provide adequate ventilation.
Advice on general occupational hygiene	Provide eyewash station and safety shower. Remove contaminated clothing and protective equipment before entering eating areas.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions	Store in tightly-closed, original container in a dry, cool and well-ventilated place. Avoid heat, flames and other sources of ignition. Keep under Nitrogen
Storage class	Flammable liquid storage.

7.3. Specific end use(s)

Specific end use(s)	The identified uses for this product are detailed in Section 1.2.
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SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

Long-term exposure limit (8-hour TWA): WEL 50 ppm 150 mg/m³

Short-term exposure limit (15-minute): WEL 100 ppm 300 mg/m³

Sk

WEL = Workplace Exposure Limit.

Sk = Can be absorbed through the skin.

Ingredient comments	WEL = Workplace Exposure Limits
DNEL	Workers - Inhalation; Long term systemic effects: 72.4 mg/m³ Workers - Dermal; Long term systemic effects: 12.6 mg/kg Workers - Inhalation; Short term systemic effects: 96 mg/m³ Workers - Inhalation; Short term local effects: 300 mg/m³ Workers - Inhalation; Long term local effects: 150 mg/m³ Consumer - Dermal; Long term systemic effects: 1.5 mg/kg Consumer - Inhalation; Long term systemic effects: 13 mg/m³ Consumer - Inhalation; Short term systemic effects: 52 mg/m³ Consumer - Inhalation; Long term local effects: 75 mg/m³ Consumer - Oral; Long term systemic effects: 1.5 mg/kg
PNEC	- Fresh water; 4.32 mg/l - marine water; 0.432 mg/l - Intermittent release; 21.6 mg/l - Sediment (Freshwater); 23.3 mg/l - Sediment (Marinewater); 2.33 mg/l - STP; 4.6 mg/l - Soil; 2.13 mg/kg

8.2. Exposure controls

Protective equipment



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Appropriate engineering controls	Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of vapours. Provide eyewash station and safety shower.
Eye/face protection	Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Wear chemical splash goggles.
Hand protection	The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. Laminate of polyethylene and ethylene vinyl alcohol (PE/EVOH). (~0.1mm coating thickness) To protect hands from chemicals, gloves should comply with European Standard EN374.
Other skin and body protection	Wear suitable protective clothing as protection against splashing or contamination.
Hygiene measures	Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Take off immediately all contaminated clothing and wash it before reuse.
Respiratory protection	If ventilation is inadequate, suitable respiratory protection must be worn. Gas filter, type A EN 136/140/141/145/143/149

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Liquid.
Colour	Colourless.
Odour	Acetone.
Odour threshold	No information available.
pH	pH (concentrated solution): 7.0
Melting point	-108.5°C
Initial boiling point and range	65.5 - 66.5°C
Flash point	-22°C
Evaporation rate	No information available.
Evaporation factor	No information available.
Flammability (solid, gas)	No information available.
Upper/lower flammability or explosive limits	Lower flammable/explosive limit: 2.3 %
Other flammability	No information available.
Vapour pressure	173 mbar @ 20°C
Vapour density	No information available.
Relative density	0.887 @ 20°C
Bulk density	No information available.
Solubility(ies)	Soluble in water.
Partition coefficient	log Pow: 0.45 OECD 107
Auto-ignition temperature	230°C

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Decomposition Temperature	110°C
Viscosity	0.456 mPa s @ 25°C
Explosive properties	Not considered to be explosive.
Explosive under the influence of a flame	No information available.
Oxidising properties	No information available.
<u>9.2. Other information</u>	
Other information	No information required.
Refractive index	No information available.
Particle size	No information available.
Molecular weight	72.11
Volatility	No information available.
Saturation concentration	No information available.
Critical temperature	No information available.
Volatile organic compound	No information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Stable at normal ambient temperatures and when used as recommended.
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10.2. Chemical stability

Stability	Stable under the prescribed storage conditions.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	The product is highly flammable. May form explosive peroxides. Vapours may form explosive mixtures with air.
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10.4. Conditions to avoid

Conditions to avoid	Avoid heat, flames and other sources of ignition. Static electricity and formation of sparks must be prevented.
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10.5. Incompatible materials

Materials to avoid	Strong oxidising agents.
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10.6. Hazardous decomposition products

Hazardous decomposition products	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours. Oxides of nitrogen.
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg)	1,650.0
Species	Rat
ATE oral (mg/kg)	1,650.0

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Acute toxicity - dermal

Notes (dermal LD₅₀) LD₅₀ >2000 mg/kg, Dermal, Rat OECD 402

Acute toxicity - inhalation

Notes (inhalation LC₅₀) LD₅₀ >14.7 mg/l, Inhalation, Rat

Skin corrosion/irritation

Animal data Not irritating. Rabbit Draize test

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye damage. Rabbit Draize test

Respiratory sensitisation

Respiratory sensitisation No information available.

Skin sensitisation

Skin sensitisation Not sensitising.

Germ cell mutagenicity

Genotoxicity - in vitro This substance has no evidence of mutagenic properties.

Carcinogenicity

Carcinogenicity Suspected of causing cancer.

Reproductive toxicity

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

Specific target organ toxicity - single exposure

STOT - single exposure May cause respiratory irritation. Vapours may cause drowsiness and dizziness.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure Not classified as a specific target organ toxicant after repeated exposure.

Aspiration hazard

Aspiration hazard Not applicable.

Inhalation

May cause respiratory system irritation. May cause drowsiness or dizziness.

Ingestion

Harmful if swallowed.

Skin contact

Prolonged skin contact may cause temporary irritation.

Eye contact

Causes serious eye damage.

SECTION 12: Ecological information

Ecotoxicity

The product components are not classified as environmentally hazardous. However, large or frequent spills may have hazardous effects on the environment.

12.1. Toxicity

Toxicity

Not considered toxic to fish.

Acute aquatic toxicity

Acute toxicity - fish

LC₅₀, 96 hours: 2160 mg/l, Pimephales promelas (Fat-head Minnow)

Acute toxicity - aquatic invertebrates

EC₅₀, 48 hours: 3485 mg/l, Daphnia magna

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Acute toxicity - microorganisms EC20, 30 minutes: 800 mg/l, Activated sludge

Chronic aquatic toxicity

Chronic toxicity - fish early life stage NOEC, 33 days: 216 mg/l, Pimephales promelas (Fat-head Minnow)

12.2. Persistence and degradability

Persistence and degradability The product is not readily biodegradable.

Biodegradation - 39.5%: 28 days
OECD 301D

12.3. Bioaccumulative potential

Bioaccumulative potential The product does not contain any substances expected to be bioaccumulating.

Partition coefficient log Pow: 0.45 OECD 107

12.4. Mobility in soil

Mobility The product is soluble in water.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

Other adverse effects Not determined.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Waste is classified as hazardous waste. Do not puncture or incinerate, even when empty.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14: Transport information

General Wear protective clothing as described in Section 8 of this safety data sheet.

14.1. UN number

UN No. (ADR/RID) 2056

UN No. (IMDG) 2056

UN No. (ICAO) 2056

UN No. (ADN) 2056

14.2. UN proper shipping name

Proper shipping name (ADR/RID) TETRAHYDROFURAN

Proper shipping name (IMDG) TETRAHYDROFURAN

Proper shipping name (ICAO) TETRAHYDROFURAN

Proper shipping name (ADN) TETRAHYDROFURAN

14.3. Transport hazard class(es)

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ADR/RID class	3
ADR/RID classification code	F1
ADR/RID label	3
IMDG class	3
ICAO class/division	3
ADN class	3

Transport labels



14.4. Packing group

ADR/RID packing group	II
IMDG packing group	II
ICAO packing group	II
ADN packing group	II

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant
No.

14.6. Special precautions for user

EmS	F-E, S-D
ADR transport category	2
Emergency Action Code	•2YE
Hazard Identification Number (ADR/RID)	33
Tunnel restriction code	(D/E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

Transport in bulk according to Ship type: 3 Pollution category: Cat Z
Annex II of MARPOL 73/78
and the IBC Code

SECTION 15: Regulatory information

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

EU legislation	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended). Commission Regulation (EU) No 2015/830 of 28 May 2015. This product may impact SEVESO storage regulations.
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**Restrictions (Annex XVII
Regulation 1907/2006)**

CAUTION - Chemical may be subject to REACH RESTRICTIONS - see Annex XVII. Entry number: 3 Entry number: 40

**Seveso Directive - Control of
major accident hazards** P5c

15.2. Chemical safety assessment

A chemical safety assessment has been carried out.

Inventories**EU - EINECS/ELINCS**

All the ingredients are listed or exempt.

SECTION 16: Other information

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Abbreviations and acronyms used in the safety data sheet

ATE: Acute Toxicity Estimate.
 ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
 ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.
 CAS: Chemical Abstracts Service.
 DNEL: Derived No Effect Level.
 IATA: International Air Transport Association.
 IMDG: International Maritime Dangerous Goods.
 Kow: Octanol-water partition coefficient.
 LC₅₀: Lethal Concentration to 50 % of a test population.
 LD₅₀: Lethal Dose to 50% of a test population (Median Lethal Dose).
 PBT: Persistent, Bioaccumulative and Toxic substance.
 PNEC: Predicted No Effect Concentration.
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006.
 RID: European Agreement concerning the International Carriage of Dangerous Goods by Rail.
 vPvB: Very Persistent and Very Bioaccumulative.
 IARC: International Agency for Research on Cancer.
 MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978.
 cATpE: Converted Acute Toxicity Point Estimate.
 BCF: Bioconcentration Factor.
 BOD: Biochemical Oxygen Demand.
 EC₅₀: 50% of maximal Effective Concentration.
 LOAEC: Lowest Observed Adverse Effect Concentration.
 LOAEL: Lowest Observed Adverse Effect Level.
 NOAEC: No Observed Adverse Effect Concentration.
 NOAEL: No Observed Adverse Effect Level.
 NOEC: No Observed Effect Concentration.
 LOEC: Lowest Observed Effect Concentration.
 DMEL: Derived Minimal Effect Level.
 EL50: Exposure Limit 50
 hPa: Hectopascal
 LL50: Lethal Loading fifty
 OECD: Organisation for Economic Co-operation and Development
 POW: Octanol-water partition coefficient
 SCBA: self-contained breathing apparatus
 STP: Sewage Treatment Plant
 VOC: Volatile Organic Compounds

Classification abbreviations and acronyms

Acute Tox. = Acute toxicity
 Aquatic Acute = Hazardous to the aquatic environment (acute)
 Aquatic Chronic = Hazardous to the aquatic environment (chronic)

Key literature references and sources for data

Supplier's information.

Revision comments

NOTE: Lines within the margin indicate significant changes from the previous revision.

Revision date

29/03/2023

Version number

4.002

Supersedes date

26/07/2021

SDS number

25199

TETRAHYDROFURAN

SDS status	Approved.
Hazard statements in full	H225 Highly flammable liquid and vapour. H302 Harmful if swallowed. H318 Causes serious eye damage. H335 May cause respiratory irritation. H336 May cause drowsiness or dizziness. H351 Suspected of causing cancer.
Signature	Jitendra Panchal

This 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. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.



Exposure scenario Use in chemical synthesis

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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 chemical synthesis
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	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC6a Use of intermediate
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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.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

Use in chemical synthesis

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
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 use at not more than 20°C above ambient temperature, unless stated differently.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Ensure containment of the emission source. Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 90 Clear transfer lines prior to de-coupling. Ensure material transfers are under containment or extract ventilation. , or: Ensure operation is undertaken outdoors.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Avoid manual contact with wet work pieces.
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Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Outdoor.
Wear a respirator conforming to EN140 with Type A filter or better.
Efficiency of at least 90%

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
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Use in chemical synthesis

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 0.01 ppm, DNEL 50 ppm, RCR 0.0002

Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.14 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.006

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 - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

PROC4 Chemical production where opportunity for exposure arises

Worker - inhalation, long-term - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 17.5 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 13.71 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.5

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 4.5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC15 Use as laboratory reagent.

Worker - inhalation, long-term - local and systemic: Exposure 5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

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	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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
<u>Environment</u>	
Environmental release category	ERC2 Formulation into mixture
<u>Worker</u>	
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)

Control of environmental exposure

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
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 use at not more than 20°C above ambient temperature, unless stated differently.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Ensure containment of the emission source. Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 90 Clear transfer lines prior to de-coupling. Ensure material transfers are under containment or extract ventilation. , or: Ensure operation is undertaken outdoors.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Avoid manual contact with wet work pieces.
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Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Outdoor.
Wear a respirator conforming to EN140 with Type A filter or better.
Efficiency of at least 90%

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
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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 - inhalation, long-term - local and systemic: Exposure 0.01 ppm, DNEL 50 ppm, RCR 0.0002

Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.14 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.006

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 - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

PROC4 Chemical production where opportunity for exposure arises

Worker - inhalation, long-term - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC5 Mixing or blending in batch processes

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 0.07 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.003

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 17.5 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 13.71 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.5

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 4.5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Worker - inhalation, long-term - local and systemic: Exposure 20 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC14 Tabletting, compression, extrusion, pelletisation, granulation

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Formulation & (re)packing of substances and mixtures

Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC15 Use as laboratory reagent.

Worker - inhalation, long-term - local and systemic: Exposure 5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

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

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



Exposure scenario

Polymer production

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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	Polymer production
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging

Environment

Environmental release category	ERC3 Formulation into solid matrix ERC6c Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)
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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 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

Polymer production

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
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 use at not more than 20°C above ambient temperature, unless stated differently.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Ensure containment of the emission source. Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 90 Clear transfer lines prior to de-coupling. Ensure material transfers are under containment or extract ventilation.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Avoid manual contact with wet work pieces.
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Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.

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
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Polymer production

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 0.01 ppm, DNEL 50 ppm, RCR 0.0002

Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.14 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.006

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 - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

PROC5 Mixing or blending in batch processes

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 0.07 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.003

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 4.5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Worker - inhalation, long-term - local and systemic: Exposure 20 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

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 - Industrial

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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)
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Worker

Process category	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 PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

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

Use in Cleaning Agents - Industrial

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
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 use at not more than 20°C above ambient temperature, unless stated differently.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	PROC4 Chemical production where opportunity for exposure arises PROC13 Treatment of articles by dipping and pouring. Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 90 PROC7 Industrial spraying PROC10 Roller application or brushing Provide a good standard of controlled ventilation (10 to 15 air changes per hour). PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Ensure material transfers are under containment or extract ventilation. , or: Ensure operation is undertaken outdoors.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Avoid manual contact with wet work pieces. PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Avoid carrying out activities involving exposure for more than 4 hours. , or: Wear a respirator conforming to EN140 with Type A filter or better. PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC7 Industrial spraying PROC10 Roller application or brushing Avoid carrying out activities involving exposure for more than 1 hour. , or: Wear a respirator conforming to EN140 with Type A filter or better.
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Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Outdoor.

Wear a respirator conforming to EN140 with Type A filter or better.

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
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Use in Cleaning Agents - Industrial

Exposure

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR 0.6

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

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 - local and systemic: Exposure 20 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC4 Chemical production where opportunity for exposure arises

Worker - inhalation, long-term - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC7 Industrial spraying

Worker - inhalation, long-term - local and systemic: Exposure 18 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 5.14 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.2

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 17.5 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 13.71 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.5

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 0.14 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.006

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 4.5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC10 Roller application or brushing

Worker - inhalation, long-term - local and systemic: Exposure 15 ppm, DNEL 50 ppm, RCR 0.3

Worker - dermal, long-term - systemic: Exposure 5.49 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.2

PROC13 Treatment of articles by dipping and pouring.

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

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

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



Exposure scenario Use in Coatings - Industrial

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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 - 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)
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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. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent.
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Use in Coatings - Industrial

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

Control of environmental exposure

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
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 use at not more than 20°C above ambient temperature, unless stated differently.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	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 Ensure containment of the emission source. Provide extract ventilation to points where emissions occur. Efficiency of at least 90% PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation Provide extract ventilation to points where emissions occur. Efficiency of at least 90% PROC7 Industrial spraying Carry out in a vented booth provided with laminar airflow. Efficiency of at least 99% PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Ensure operation is undertaken outdoors. , or: Provide extract ventilation to points where emissions occur. Efficiency of at least 90% PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Provide extract ventilation to points where emissions occur. Efficiency of at least 97% PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 Use as laboratory reagent. Ensure material transfers are under containment or extract ventilation. Efficiency of at least 90% PROC10 Roller application or brushing Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Efficiency of at least 90%
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Avoid manual contact with wet work pieces. Avoid splashing.
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Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Outdoor.

Wear a respirator conforming to EN140 with Type A filter or better.

3. Exposure estimation (Environment 1)

Use in Coatings - Industrial

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
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Use in Coatings - Industrial

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 0.01 ppm, DNEL 50 ppm, RCR 0.0002

Worker - inhalation: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

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 - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

PROC4 Chemical production where opportunity for exposure arises

Worker - inhalation, long-term - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC5 Mixing or blending in batch processes

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 0.07 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.003

PROC7 Industrial spraying

Worker - inhalation, long-term - local and systemic: Exposure 5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.21 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.008

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 17.5 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 13.71 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.5

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 4.5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Worker - inhalation, long-term - local and systemic: Exposure 20 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

Use in Coatings - Industrial

PROC10 Roller application or brushing

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

PROC13 Treatment of articles by dipping and pouring.

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC14 Tableting, compression, extrusion, pelletisation, granulation

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC15 Use as laboratory reagent.

Worker - inhalation, long-term - local and systemic: Exposure 5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

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

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



Exposure scenario Use in Functional Fluids

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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 Functional Fluids
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC7 Use of functional fluid at industrial site
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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)
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

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

Use in Functional Fluids

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
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 use at not more than 20°C above ambient temperature, unless stated differently.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises Provide enhanced general ventilation by mechanical means. Efficiency of at least 70% PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Ensure containment of the emission source. Provide extract ventilation to points where emissions occur. Efficiency of at least 90% PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Ensure operation is undertaken outdoors. Efficiency of at least 30% PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Provide extract ventilation to points where emissions occur. Efficiency of at least 97% PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Ensure material transfers are under containment or extract ventilation. Efficiency of at least 90%
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Avoid manual contact with wet work pieces. Avoid splashing.
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Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Wear a respirator conforming to EN140 with Type A filter or better.

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
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Use in Functional Fluids

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 0.01 ppm, DNEL 50 ppm, RCR 0.0002

Worker - inhalation: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 15 ppm, DNEL 50 ppm, RCR 0.3

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

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 - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

PROC4 Chemical production where opportunity for exposure arises

Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR 0.6

Worker - dermal, long-term - systemic: Exposure 6.86 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.3

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 17.5 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 13.71 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.5

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 4.5 ppm, DNEL 50 ppm, RCR 0.1

Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Worker - inhalation, long-term - local and systemic: Exposure 20 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

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

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



Exposure scenario

Use in laboratories - Industrial

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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 - 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)
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Worker

Process category	PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
Concentration details	Covers concentrations up to 100 %.

Use in laboratories - Industrial

Frequency and duration of use

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

Other given operational conditions affecting workers exposure

Temperature Assumes use at not more than 20°C above ambient temperature, unless stated differently.

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

Technical protective measures PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 Use as laboratory reagent. Ensure material transfers are under containment or extract ventilation. Efficiency of at least 90%
PROC10 Roller application or brushing Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Efficiency of at least 90%

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Avoid manual contact with wet work pieces. Avoid splashing.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.

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	PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Worker - inhalation, long-term - local and systemic: Exposure 20 ppm, DNEL 50 ppm, RCR 0.4 Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03 PROC10 Roller application or brushing Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5 Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1 PROC15 Use as laboratory reagent. Worker - inhalation, long-term - local and systemic: Exposure 5 ppm, DNEL 50 ppm, RCR 0.1 Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

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	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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)
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Worker

Process category	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 PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

Use in Cleaning Agents - Professional

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated. PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Drum/batch transfers Covers concentrations up to 25 %. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Covers concentrations up to 25 %. PROC10 Roller application or brushing Cleaning with low-pressure washers Covers concentrations up to 5 %. PROC10 Roller application or brushing Ad hoc manual application via trigger sprays, dipping, etc. Covers concentrations up to 25 %. PROC11 Non industrial spraying Covers concentrations up to 1 %.

Frequency and duration of use

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

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	PROC4 Chemical production where opportunity for exposure arises PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC10 Roller application or brushing Provide enhanced general ventilation by mechanical means. Efficiency of at least 70% PROC11 Non industrial spraying Provide enhanced general ventilation by mechanical means. Efficiency of at least 70% , or: Ensure operation is undertaken outdoors.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Avoid manual contact with wet work pieces. 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 Avoid carrying out activities involving exposure for more than 4 hours. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities , or: Wear a respirator conforming to EN140 with Type A filter or better. PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Avoid carrying out activities involving exposure for more than 1 hour. , or: Wear a respirator conforming to EN140 with Type A filter or better. PROC10 Roller application or brushing Rolling, brushing Ad hoc manual application via trigger sprays, dipping, etc. Avoid carrying out operation for more than 4 hours. , or: Wear a respirator conforming to EN140 with Type A filter or better. PROC10 Roller application or brushing Ad hoc manual application via trigger sprays, dipping, etc. Manual spraying Avoid carrying out operation for more than 1 hour. , or: Wear a respirator conforming to EN140 with Type A filter or better.
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Use in Cleaning Agents - Professional

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.

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
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Use in Cleaning Agents - Professional

Exposure

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR 0.6

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 36 ppm, DNEL 50 ppm, RCR 0.7

Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 42 ppm, DNEL 50 ppm, RCR 0.8

Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC4 Chemical production where opportunity for exposure arises

Worker - inhalation, long-term - local and systemic: Exposure 45 ppm, DNEL 50 ppm, RCR 0.9

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR 0.6

Worker - dermal, long-term - systemic: Exposure 8.23 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.3

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 15 ppm, DNEL 50 ppm, RCR 0.3

Worker - dermal, long-term - systemic: Exposure 6.86 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.3

PROC10 Roller application or brushing

Cleaning with low-pressure washers

Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR 0.6

Worker - dermal, long-term - systemic: Exposure 5.49 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.2

PROC10 Roller application or brushing

Ad hoc manual application via trigger sprays, dipping, etc.

Rolling, brushing

Worker - inhalation, long-term - local and systemic: Exposure 36 ppm, DNEL 50 ppm, RCR 0.7

Worker - dermal, long-term - systemic: Exposure 0.82 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC10 Roller application or brushing

Ad hoc manual application via trigger sprays, dipping, etc.

Manual spraying

Worker - inhalation, long-term - local and systemic: Exposure 18 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 3.29 mg/kg/day, DNEL 25 mg/kg/day, RCR

Use in Cleaning Agents - Professional

0.1

PROC11 Non industrial spraying

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR

0.6

Worker - inhalation, long-term - systemic: Exposure 2.14 mg/kg/day, DNEL 25 mg/kg/day,

RCR 0.1

PROC11 Non industrial spraying

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 42 ppm, DNEL 50 ppm, RCR

0.8

Worker - dermal, long-term - systemic: Exposure 2.14 mg/kg/day, DNEL 25 mg/kg/day, RCR

0.1

PROC13 Treatment of articles by dipping and pouring.

Worker - inhalation, long-term - local and systemic: Exposure 45 ppm, DNEL 50 ppm, RCR

0.9

Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR

0.1

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

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



Exposure scenario Use in Coatings - Professional

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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 - 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)
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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 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
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Use in Coatings - Professional

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

Control of environmental exposure

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated. PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC13 Treatment of articles by dipping and pouring. Covers concentrations up to 25 %. PROC10 Roller application or brushing PROC19 Manual activities involving hand contact Covers concentrations up to 20 %.

Frequency and duration of use

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

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Ensure containment of the emission source. Provide extract ventilation to points where emissions occur. Efficiency of at least 80% PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Ensure operation is undertaken outdoors. Use drum pumps. PROC4 Chemical production where opportunity for exposure arises Ensure operation is undertaken outdoors. , or: Provide extract ventilation to points where emissions occur. Efficiency of at least 80% PROC5 Mixing or blending in batch processes PROC10 Roller application or brushing PROC19 Manual activities involving hand contact Ensure operation is undertaken outdoors. , or: Provide a good standard of controlled ventilation (10 to 15 air changes per hour). PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Provide enhanced general ventilation by mechanical means. Efficiency of at least 70% PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Provide extract ventilation to points where emissions occur. Efficiency of at least 90% PROC11 Non industrial spraying Carry out in a vented booth or extracted enclosure. , or: Ensure operation is undertaken outdoors. PROC13 Treatment of articles by dipping and pouring. PROC15 Use as laboratory reagent. Provide extract ventilation to points where emissions occur. Efficiency of at least 80%
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Organisational measures to prevent/limit releases, dispersion and exposure

Use in Coatings - Professional

Organisational measures

Avoid manual contact with wet work pieces.

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Avoid carrying out activities involving exposure for more than 4 hours. , or: Wear a respirator conforming to EN140 with Type A filter or better.

PROC4 Chemical production where opportunity for exposure arises Outdoor. Avoid carrying out operation for more than 1 hour.

PROC4 Chemical production where opportunity for exposure arises Indoor. Avoid carrying out operation for more than 4 hours. , or: Wear a respirator conforming to EN140 with Type A filter or better.

PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Avoid carrying out activities involving exposure for more than 1 hour. , or: Wear a respirator conforming to EN140 with Type A filter or better.

PROC11 Non industrial spraying Outdoor. Avoid carrying out operation for more than 4 hours.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.

PROC11 Non industrial spraying

Outdoor.

Wear a respirator conforming to EN140 with Type A filter or better.

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 in Coatings - Professional

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 0.1 ppm, DNEL 50 ppm, RCR 0.002

Worker - dermal, long-term - systemic: Exposure 0.343 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - inhalation, long-term - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 0.14 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.006

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 - local and systemic: Exposure 42 ppm, DNEL 50 ppm, RCR 0.8

Worker - dermal, long-term - systemic: Exposure 0.34 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01

PROC4 Chemical production where opportunity for exposure arises

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 4.12 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.2

PROC4 Chemical production where opportunity for exposure arises

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR 0.6

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC5 Mixing or blending in batch processes

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 18 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 8.23 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.3

PROC5 Mixing or blending in batch processes

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2

Worker - dermal, long-term - systemic: Exposure 13.71 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.5

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 18 ppm, DNEL 50 ppm, RCR 0.4

Worker - dermal, long-term - systemic: Exposure 8.23 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.3

PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5

Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03

PROC10 Roller application or brushing

Worker - inhalation, long-term - local and systemic: Exposure 40 ppm, DNEL 50 ppm, RCR

Use in Coatings - Professional

0.8

Worker - dermal, long-term - systemic: Exposure 3.29 mg/kg/day, DNEL 25 mg/kg/day, RCR

0.1

PROC11 Non industrial spraying

Indoor.

Worker - inhalation, long-term - local and systemic: Exposure 20 ppm, DNEL 50 ppm, RCR

0.4

Worker - inhalation, long-term - systemic: Exposure 2.14 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

PROC11 Non industrial spraying

Outdoor.

Worker - inhalation, long-term - local and systemic: Exposure 21 ppm, DNEL 50 ppm, RCR

0.4

Worker - dermal, long-term - systemic: Exposure 10.71 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.4

PROC13 Treatment of articles by dipping and pouring.

Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR

0.6

Worker - dermal, long-term - systemic: Exposure 0.41 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.02

PROC15 Use as laboratory reagent.

Worker - inhalation, long-term - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR

0.2

Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

PROC19 Manual activities involving hand contact

Worker - inhalation, long-term - local and systemic: Exposure 40 ppm, DNEL 50 ppm, RCR

0.8

Worker - dermal, long-term - systemic: Exposure 4.24 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.2

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

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



Exposure scenario

Use in Functional Fluids - Professional

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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 Functional Fluids - Professional
Main sector	SU22 Professional uses

Environment

Environmental release category	ERC9a Widespread use of functional fluid (indoor) ERC9b Widespread use of functional fluid (outdoor)
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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 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC20 Use of functional fluids in small devices
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

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

Use in Functional Fluids - Professional

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
Concentration details	Covers concentrations up to 100 %. Unless otherwise stated. PROC4 Chemical production where opportunity for exposure arises PROC20 Use of functional fluids in small devices Covers concentrations up to 25 %. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Indoor. Covers concentrations up to 25 %.

Frequency and duration of use

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

Other given operational conditions affecting workers exposure

Temperature	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
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Technical conditions and measures at process level (source) to prevent release

Technical protective measures	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions Provide extract ventilation to points where emissions occur. Efficiency of at least 80% PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC20 Use of functional fluids in small devices Provide enhanced general ventilation by mechanical means. Efficiency of at least 70% PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Ensure material transfers are under containment or extract ventilation. Efficiency of at least 80% PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Provide enhanced general ventilation by mechanical means. , or: Ensure operation is undertaken outdoors. PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Provide extract ventilation to material transfer points and other openings. Efficiency of at least 80%
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Avoid manual contact with wet work pieces. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Indoor. Avoid carrying out activities involving exposure for more than 4 hours. , or: Wear a respirator conforming to EN140 with Type A filter or better. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Outdoor. Avoid carrying out operation for more than 1 hour. PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Avoid carrying out operation for more than 4 hours. , or: Wear a respirator conforming to EN140 with Type A filter or better.
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Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.

3. Exposure estimation (Environment 1)

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

Use in Functional Fluids - Professional

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA v2.0 Worker
Exposure	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions Worker - inhalation, long-term - local and systemic: Exposure 0.02 ppm, DNEL 50 ppm, RCR 0.0004 Worker - dermal, long-term - systemic: Exposure 0.343 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01 PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Worker - inhalation, long-term - local and systemic: Exposure 15 ppm, DNEL 50 ppm, RCR 0.3 Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1 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 - local and systemic: Exposure 20 ppm, DNEL 50 ppm, RCR 0.4 Worker - dermal, long-term - systemic: Exposure 0.343 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.01 PROC4 Chemical production where opportunity for exposure arises Worker - inhalation, long-term - local and systemic: Exposure 45 ppm, DNEL 50 ppm, RCR 0.9 Worker - dermal, long-term - systemic: Exposure 0.82 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Indoor. Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR 0.6 Worker - dermal, long-term - systemic: Exposure 8.23 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.3 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Outdoor. Worker - inhalation, long-term - local and systemic: Exposure 7 ppm, DNEL 50 ppm, RCR 0.1 Worker - dermal, long-term - systemic: Exposure 13.71 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.5 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR 0.1 Worker - dermal, long-term - systemic: Exposure 13.71 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.5 PROC20 Use of functional fluids in small devices Worker - inhalation, long-term - local and systemic: Exposure 30 ppm, DNEL 50 ppm, RCR 0.6 Worker - inhalation, long-term - systemic: Exposure 1.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.004

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

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



Exposure scenario

Use in laboratories - Professional

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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)
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Worker

Process category	PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C
Concentration details	Covers concentrations up to 100 %.

Use in laboratories - Professional

Frequency and duration of use

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

Other given operational conditions affecting workers exposure

Temperature Assumes use at not more than 20°C above ambient temperature, unless stated differently.

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

Technical protective measures PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of > 20. Efficiency of at least 80%
 PROC10 Roller application or brushing Carry out in a vented booth or extracted enclosure. Efficiency of at least 95%
 PROC15 Use as laboratory reagent. Provide extract ventilation to points where emissions occur. Efficiency of at least 80%

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Avoid manual contact with wet work pieces. Avoid splashing.
 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Avoid carrying out operation for more than 1 hour. , or: Wear a full-face respirator conforming to EN136 with Type A filter or better.

Risk management measures

Wear gloves to EN374 resistant to the solvent(s) in use.

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 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
 Worker - inhalation, long-term - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2
 Worker - dermal, long-term - systemic: Exposure 0.69 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.03
 PROC10 Roller application or brushing
 Worker - inhalation, long-term - local and systemic: Exposure 25 ppm, DNEL 50 ppm, RCR 0.5
 Worker - dermal, long-term - systemic: Exposure 1.37 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1
 PROC15 Use as laboratory reagent.
 Worker - inhalation, long-term - local and systemic: Exposure 10 ppm, DNEL 50 ppm, RCR 0.2
 Worker - dermal, long-term - systemic: Exposure 0.03 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.001

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 - Consumer

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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	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)
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2. Conditions of use affecting exposure (Non-industrial - Environment 1)

Control of environmental exposure (Non-industrial)

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C

Use in Cleaning Agents - Consumer

Concentration details

PC35 Washing and cleaning products PC8_1 Laundry and dish-washing products

Concentration of substance in product: 0 - 1%

PC35 Washing and cleaning products PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) Concentration of substance in product: 0 - 1.2%

PC35 Washing and cleaning products PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) Concentration of substance in product: 0 - 15%

Amounts used

PC35 Washing and cleaning products

PC8_1 Laundry and dish-washing products

Amount per use: 50 g

PC35 Washing and cleaning products

PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Amount per use: 60 g

PC35 Washing and cleaning products

PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Amount per use: 30 g

Frequency and duration of use

PC35 Washing and cleaning products

PC8_1 Laundry and dish-washing products

Covers frequency up to 2 times per day, , .

Application duration: 30 minutes

PC35 Washing and cleaning products

PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)

Covers frequency up to 1 time per day, , .

Application duration: 20 minutes

PC35 Washing and cleaning products

PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)

Covers frequency up to 1 time per day, , .

Application duration: 10 minutes

Human factors not influenced by risk management

Potentially exposed body parts

PC35 Washing and cleaning products PC8_1 Laundry and dish-washing products Both hands and main part of the arms. Covers skin contact area up to 1980 cm².

PC35 Washing and cleaning products PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) Both hands. Covers skin contact area up to 860 cm².

PC35 Washing and cleaning products PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) Palm of both hands. Covers skin contact area up to 480 cm².

Other given operational conditions affecting Non-industrial exposure

Setting

Indoor.

Room size

Covers use in room size of 20 m³.

Ventilation rate

Covers use under typical household ventilation.

3. Exposure estimation (Environment 1)

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

Use in Cleaning Agents - Consumer

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA Consumer
Exposure	PC35 Washing and cleaning products PC8_1 Laundry and dish-washing products Consumer - inhalation, long-term - systemic: Exposure 0.57 mg/m³, DNEL 62 mg/m³, RCR 0.03 Consumer - dermal, long-term - systemic: Exposure 3.47 mg/kg/day, DNEL 15 mg/kg/day, RCR 0.2 PC35 Washing and cleaning products PC8_2 Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners) Consumer - inhalation, short-term - local and systemic: Exposure 0.3 mg/kg/day, DNEL 1 mg/kg/day, RCR 0.3 Consumer - dermal, long-term - systemic: Exposure 1.72 mg/kg/day, DNEL 15 mg/kg/day, RCR 0.1 PC35 Washing and cleaning products PC8_3 Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners) Consumer - inhalation: Exposure 0.82 mg/kg/day, DNEL 20 mg/kg/day, RCR 0.04 Consumer - dermal, long-term - systemic: Exposure 12 mg/kg/day, DNEL 15 mg/kg/day, RCR 0.8

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

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



Exposure scenario Consumer applications

Identification

Product name	Tetrahydrofuran
REACH registration number	01-2119444314-46-XXXX
CAS number	109-99-9
EC number	203-726-8
EU index number	603-025-00-0
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	Consumer applications
Product category	PC1 Adhesives, sealants. PC9a Coatings and paints, thinners, paint removers.
Main sector	SU21 Consumer uses
<u>Environment</u>	
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)

Control of environmental exposure (Non-industrial)

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	170 hPa @ 20°C

Consumer applications

Concentration details	PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Glues from tubes
	Concentration of substance in product: 0 - 80%
	PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Concentration of substance in product: 0 - 30%
	PC9a Coatings and paints, thinners, paint removers. Concentration of substance in product: 0 - 20%

Amounts used

PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)
 Glues from tubes
 Amount per use: 9 g
 PC1_1 Glues, hobby use
 Amount per use: 300 g
 PC9a Coatings and paints, thinners, paint removers.
 Amount per use: 1 kg

Frequency and duration of use

PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)
 Covers frequency up to 1 times per day, , .
 Application duration: 240 minutes
 PC9a Coatings and paints, thinners, paint removers.
 Covers frequency up to 1 time per day, , .
 Application duration: 120 minutes
 PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover)
 Covers frequency up to 1 time per day, , .
 Application duration: 60 minutes

Human factors not influenced by risk management

Potentially exposed body parts	PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Glues from tubes Palm of both hands. Covers skin contact area up to 430 cm ² .
	PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Covers skin contact area up to 2 cm ² .
	PC9a Coatings and paints, thinners, paint removers. Both hands. Covers skin contact area up to 960 cm ² .
	PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover) Palm of both hands. Covers skin contact area up to 430 cm ² .

Other given operational conditions affecting Non-industrial exposure

Setting	Indoor.
Room size	Covers use in room size of 20 m ³ .
Ventilation rate	Covers use under typical household ventilation.

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	PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) Glues from tubes ConsExpo v4.1
	PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue) ECETOC TRA Consumer
	PC9a Coatings and paints, thinners, paint removers. EASE v2.0

Consumer applications

Exposure

PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)

Glues from tubes

Consumer - inhalation, long-term - systemic: Exposure 10.8 mg/kg/day, DNEL 18 mg/m³, mg/kg/day, RCR 0.6

Consumer - dermal, long-term - systemic: Exposure 0.24 mg/kg/day, DNEL 2.5 mg/kg/day, RCR 0.1

PC1_2 Glues DIY-use (carpet glue, tile glue, wood parquet glue)

Consumer - inhalation, long-term - systemic: Exposure 15.56 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.7

Consumer - dermal, long-term - systemic: Exposure 0.10 mg/kg/day, DNEL 15 mg/kg/day, RCR 0.01

PC9a Coatings and paints, thinners, paint removers.

Consumer - inhalation, long-term - systemic: Exposure 5.49 mg/kg/day, DNEL 18 mg/kg/day, RCR 0.3

Consumer - dermal, long-term - systemic: Exposure 6.43 mg/kg/day, DNEL 15 mg/kg/day, RCR 0.4

PC9a_4 Removers (paint-, glue-, wallpaper-, sealant-remover)

Consumer - inhalation, long-term - systemic: Exposure 2.74 mg/kg/day, DNEL 25 mg/kg/day, RCR 0.1

Consumer - dermal, long-term - systemic: Exposure 0.36 mg/kg/day, DNEL 3.5 mg/kg/day, RCR 0.1

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

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