



SAFETY DATA SHEET THERMOCAL C SOLUTION (>25%)

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

1.1. Product identifier

Product name	THERMOCAL C SOLUTION (>25%)
Product number	11105
Synonyms; trade names	THERMAL TRANSFER FLUID, INHIBITED ETHYLENE GLYCOL SOLUTION, THERMOCAL 25, THERMOCAL 35, THERMOCAL 40

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

Identified uses	Chemical
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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.	11105

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical hazards	Not Classified
Health hazards	STOT RE 2 - H373
Environmental hazards	Not Classified

2.2. Label elements

Hazard pictograms



Signal word	Warning
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Hazard statements	H373 May cause damage to organs through prolonged or repeated exposure.
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THERMOCAL C SOLUTION (>25%)

Precautionary statements P260 Do not breathe vapour/ spray.
P270 Do not eat, drink or smoke when using this product.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P501 Dispose of contents/ container in accordance with national regulations.

Contains ETHANEDIOL

2.3. Other hazards

This product does not contain any substances classified as PBT or vPvB.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

ETHANEDIOL		30-60%
CAS number: 107-21-1	EC number: 203-473-3	REACH registration number: 01-2119456816-28-XXXX
Classification Acute Tox. 4 - H302 STOT RE 2 - H373		

The full text for all hazard statements is displayed in Section 16.

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 Remove affected person from source of contamination. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention if any discomfort continues.

Ingestion Rinse mouth thoroughly with water. Never give anything by mouth to an unconscious person. Do not induce vomiting. Get medical attention.

Skin contact Remove contaminated clothing and rinse skin thoroughly with water. Wash contaminated clothing before reuse. Get medical attention if any discomfort continues.

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. Rinse with water. Get medical attention if any discomfort continues.

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

Eye contact May cause temporary eye irritation.

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

Notes for the doctor No recommendation given, but first aid may still be required in case of accidental exposure, inhalation or ingestion of this chemical. If in doubt, GET MEDICAL ATTENTION PROMPTLY!

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

THERMOCAL C SOLUTION (>25%)

Specific hazards Fire or high temperatures create: Oxides of the following substances: Carbon.

5.3. Advice for firefighters

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.

6.2. Environmental precautions

Environmental precautions Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body. Do not discharge into drains or watercourses or onto the ground.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up Absorb in vermiculite, dry sand or earth and place into containers. Flush contaminated area with plenty of water. Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

6.4. Reference to other sections

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

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions Avoid spilling. Avoid contact with skin and eyes. Provide adequate ventilation.

7.2. Conditions for safe storage, including any incompatibilities

Storage precautions Keep away from food, drink and animal feeding stuffs. Store in tightly-closed, original container in a dry, cool and well-ventilated place.

7.3. Specific end use(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.2.

SECTION 8: Exposure controls/Personal protection

8.1. Control parameters

Occupational exposure limits

ETHANEDIOL

Long-term exposure limit (8-hour TWA): WEL 10 mg/m³ particulate
Sk

Long-term exposure limit (8-hour TWA): WEL 20 ppm 52 mg/m³ vapour

Short-term exposure limit (15-minute): WEL 40 ppm 104 mg/m³ vapour

Sk

WEL = Workplace Exposure Limit.

Sk = Can be absorbed through the skin.

ETHANEDIOL (CAS: 107-21-1)

Ingredient comments

WEL = Workplace Exposure Limits

THERMOCAL C SOLUTION (>25%)

DNEL	Industry - Inhalation; Short term : 35 mg/m ³ Industry - Dermal; Long term : 106 mg/kg/day Consumer - Dermal; Long term : 53 mg/kg/day Consumer - Inhalation; Long term : 7 mg/m ³
PNEC	- Fresh water; 10 mg/l - marine water; 1 mg/l - Soil; 1.53 mg/kg - STP; 199.5 mg/l - Sediment (Freshwater); 37 mg/kg - Sediment (Marinewater); 3.7 mg/kg - Intermittent release; 10 mg/l

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate ventilation. Avoid inhalation of vapours. Observe any occupational exposure limits for the product or ingredients.

Eye/face protection

The following protection should be worn: Chemical splash goggles. Personal protective equipment for eye and face protection should comply with European Standard EN166.

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. To protect hands from chemicals, gloves should comply with European Standard EN374.

Other skin and body protection

Wear rubber apron. Wear rubber footwear.

Hygiene measures

Wash at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes contaminated.

Respiratory protection

If ventilation is inadequate, suitable respiratory protection must be worn. Wear a respirator fitted with the following cartridge: Organic vapour filter. EN 136/140/141/145/143/149

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Clear liquid.
Colour	Various colours.
Odour	Slight.
Odour threshold	No information available.
pH	pH (concentrated solution): 6-8
Melting point	< -13°C
Pour Point	No information available.
Freezing Point	No information available.
Initial boiling point and range	> 150°C
Flash point	~ 116°C Closed cup.

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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: 3.2 % Upper flammable/explosive limit: 15.3 %
Other flammability	No information available.
Vapour pressure	No information available.
Vapour density	No information available.
Relative density	1.115
Bulk density	No information available.
Solubility(ies)	Miscible with water.
Partition coefficient	log Pow: -1.36
Auto-ignition temperature	>400°C
Decomposition Temperature	No information available.
Viscosity	No information available.
Explosive properties	No information available.
Explosive under the influence of a flame	No information available.
Oxidising properties	No information available.
<u>9.2. Other information</u>	
Refractive index	No information available.
Particle size	No information available.
Molecular weight	No information available.
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.

10.2. Chemical stability

Stability Stable at normal ambient temperatures and when used as recommended.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Not determined.

10.4. Conditions to avoid

Conditions to avoid Avoid excessive heat for prolonged periods of time.

THERMOCAL C SOLUTION (>25%)

10.5. Incompatible materials

Materials to avoid Strong oxidising agents.

10.6. Hazardous decomposition products

Hazardous decomposition products Thermal decomposition or combustion products may include the following substances:
Carbon monoxide (CO). Carbon dioxide (CO₂).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity - oral

ATE oral (mg/kg) 3,200.0

Skin corrosion/irritation

Skin corrosion/irritation No information available.

Serious eye damage/irritation

Serious eye damage/irritation No information available.

Respiratory sensitisation

Respiratory sensitisation No information available.

Skin sensitisation

Skin sensitisation No information available.

Germ cell mutagenicity

Genotoxicity - in vitro No information available.

Carcinogenicity

Carcinogenicity No information available.

Reproductive toxicity

Reproductive toxicity - fertility No information available.

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

Aspiration hazard No information available.

Inhalation

May cause respiratory system irritation.

Ingestion

Harmful if swallowed. May cause stomach pain or vomiting. Prolonged or repeated exposure may cause the following adverse effects: Liver and/or kidney damage. Central and/or peripheral nervous system damage.

Skin contact

Liquid may irritate skin.

Eye contact

May cause temporary eye irritation.

Toxicological information on ingredients.

ETHANEDIOL

Acute toxicity - oral

THERMOCAL C SOLUTION (>25%)

Acute toxicity oral (LD₅₀ mg/kg) 1,600.0

Species Human

Notes (oral LD₅₀) Harmful if swallowed.
LD₅₀ 1600 mg/kg, Oral, Human

ATE oral (mg/kg) 1,600.0

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg) 3,500.0

Species Mouse

Notes (dermal LD₅₀) LD₅₀ 3500 mg/kg, Dermal, Mouse

ATE dermal (mg/kg) 3,500.0

Acute toxicity - inhalation

Acute toxicity inhalation (LC₅₀ vapours mg/l) 2.5

Notes (inhalation LC₅₀) LD₅₀ > 2.5 mg/l, Inhalation, Rat

ATE inhalation (vapours mg/l) 2.5

Skin corrosion/irritation

Animal data Not irritating.

Serious eye damage/irritation

Serious eye damage/irritation Not irritating.

Respiratory sensitisation

Respiratory sensitisation Not sensitising.

Skin sensitisation

Skin sensitisation Not sensitising.

Germ cell mutagenicity

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

Carcinogenicity

Carcinogenicity There is no evidence that the product can cause cancer.

Reproductive toxicity

Reproductive toxicity - development Symptoms following overexposure may include the following: Possible risk of adverse reproductive effects.

Specific target organ toxicity - single exposure

STOT - single exposure No information available.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure May cause damage to organs (Kidneys) through prolonged or repeated exposure if swallowed.

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Target organs	Kidneys
<u>Aspiration hazard</u>	
Aspiration hazard	No information available.
Inhalation	Vapour may irritate respiratory system/lungs.
Ingestion	Harmful if swallowed. Lethal dose to humans 100ml
Skin contact	Prolonged and frequent contact may cause redness and irritation.
Eye contact	May cause temporary eye irritation.
Acute and chronic health hazards	May cause damage to organs (Kidneys) through prolonged or repeated exposure if swallowed.
Target organs	Liver Kidneys

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.

Ecological information on ingredients.

ETHANEDIOL

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

12.1. Toxicity

Toxicity Not considered toxic to fish.

Ecological information on ingredients.

ETHANEDIOL

Toxicity Not considered toxic to fish.

Acute aquatic toxicity

Acute toxicity - fish LC50, 96 hours: 72860 mg/l, Pimephales promelas (Fat-head Minnow)

Acute toxicity - aquatic invertebrates EC₅₀, 48 hours: > 100 mg/l, Daphnia magna

Acute toxicity - aquatic plants EC₅₀, 96 hours: 6500 - 13000 mg/l,

Acute toxicity - microorganisms EC₅₀, 30 minutes: 225 mg/l, Activated sludge

12.2. Persistence and degradability

Persistence and degradability There are no data on the degradability of this product.

Ecological information on ingredients.

ETHANEDIOL

THERMOCAL C SOLUTION (>25%)

Persistence and degradability The substance is readily biodegradable.

Biodegradation - Degradation (%) 90%: > 10 days
OECD 301A

12.3. Bioaccumulative potential

Bioaccumulative potential May accumulate in soil and water systems.

Partition coefficient log Pow: -1.36

Ecological information on ingredients.

ETHANEDIOL

Bioaccumulative potential The product is not bioaccumulating.

Partition coefficient log Kow: -1.36

12.4. Mobility in soil

Mobility The product contains volatile organic compounds (VOCs) which have a photochemical ozone creation potential.

Ecological information on ingredients.

ETHANEDIOL

Mobility The product is soluble in water.

Adsorption/desorption coefficient Water - Koc: 1 @ °C

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This product does not contain any substances classified as PBT or vPvB.

Ecological information on ingredients.

ETHANEDIOL

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

Cod 1.29 gO₂/g

Other adverse effects None known.

Ecological information on ingredients.

ETHANEDIOL

Cod 1.22

Other adverse effects None known.

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.

THERMOCAL C SOLUTION (>25%)

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 The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

14.1. UN number

Not applicable.

14.2. UN proper shipping name

Not applicable.

14.3. Transport hazard class(es)

No transport warning sign required.

14.4. Packing group

Not applicable.

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

No.

14.6. Special precautions for user

Not applicable.

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

Transport in bulk according to Not applicable.

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.

15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: Other information

THERMOCAL C SOLUTION (>25%)

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

22/09/2020

Version number

1.001

Supersedes date

29/05/2015

SDS number

11105

THERMOCAL C SOLUTION (>25%)

SDS status

Approved.

Hazard statements in full

H302 Harmful if swallowed.

H373 May cause damage to organs (Kidneys) through prolonged or repeated exposure.

H373 May cause damage to organs through prolonged or repeated exposure.

Signature

Jitendra Panchal



Exposure scenario Use as Intermediate

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as Intermediate
Main sector	SU3 Industrial uses

Environment

Environmental release category	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 PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Use as Intermediate

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

Amounts used

Maximum daily site tonnage: 50000 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.00002
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.01
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Typical onsite wastewater treatment technology provides removal efficiency of 87%.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm ² . 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 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) Palm of both hands. Covers skin contact area up to 480 cm ² .
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Other given operational conditions affecting workers exposure

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

Use as Intermediate

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

Risk management measures

PROC5 Mixing or blending in batch processes
Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 90

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Use as Process chemical

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as Process chemical
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 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) PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Use as Process chemical

Product characteristics

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

Amounts used

Maximum daily site tonnage: 50000 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.02
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.00001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Typical onsite wastewater treatment technology provides removal efficiency of 87%.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm ² . 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 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) PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation Palm of both hands. Covers skin contact area up to 480 cm ² .
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Other given operational conditions affecting workers exposure

Setting	Indoor.
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Use as Process chemical

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

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

Risk management measures

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

PROC13 Treatment of articles by dipping and pouring.

Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.

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

Without local exhaust ventilation

Wear a respirator providing a minimum efficiency of (%): 90

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Distribution of substance

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Distribution of substance
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC1 Manufacture of the substance
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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) PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
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Distribution of substance

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Amounts used

Maximum daily site tonnage: 6667 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (initial release prior to RMM): 0.000001

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.00001

Emission factor - soil Release fraction to soil from wide dispersive use (regional only): 0.00001

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water Typical onsite wastewater treatment technology provides removal efficiency of 87%.

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

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts PROC1 Chemical production or refinery in closed process without likelihood of 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 PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm². 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 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) Palm of both hands. Covers skin contact area up to 480 cm².

Other given operational conditions affecting workers exposure

Setting Indoor.

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

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

Distribution of substance

Risk management measures

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

Without local exhaust ventilation

Wear a respirator providing a minimum efficiency of (%): 90

3. Exposure estimation (Environment 1)

Environmental release	Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.
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3. Exposure estimation (Health 1)

Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
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Exposure	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.
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4. Guidance to check compliance with the exposure scenario (Health 1)

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Formulation & (re)packing of substances and mixtures

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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

Environment

Environmental release category	ERC2 Formulation into mixture
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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 PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Formulation & (re)packing of substances and mixtures

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

Amounts used

Maximum daily site tonnage: 100000 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.005
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.005
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.0001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Typical onsite wastewater treatment technology provides removal efficiency of 87%.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm ² . 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 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 Tableting, compression, extrusion, pelletisation, granulation Palm of both hands. Covers skin contact area up to 480 cm ² .
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Other given operational conditions affecting workers exposure

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

Formulation & (re)packing of substances and mixtures

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

Risk management measures

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 90
PROC5 Mixing or blending in batch processes
Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.
Efficiency of at least 90%

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Production of polymers

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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	Production of polymers
Main sector	SU3 Industrial uses

Environment

Environmental release category	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 PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC6 Calendering operations. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Production of polymers

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

Amounts used

Maximum daily site tonnage: 50000 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.002
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.01
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.0001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Typical onsite wastewater treatment technology provides removal efficiency of 87%.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm ² . 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 PROC5 Mixing or blending in batch processes PROC6 Calendering operations. 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) Palm of both hands. Covers skin contact area up to 480 cm ² .
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Other given operational conditions affecting workers exposure

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

Production of polymers

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

Risk management measures

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

Without local exhaust ventilation

Wear a respirator providing a minimum efficiency of (%): 90

PROC5 Mixing or blending in batch processes

PROC6 Calendering operations.

Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.

Efficiency of at least 90%

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Use in Paints/Coatings (industrial)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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 Paints/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 PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Use in Paints/Coatings (industrial)

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

Amounts used

Maximum daily site tonnage: 39945 kg

Frequency and duration of use

Emission days: 220 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.98
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.02
Emission factor - soil	Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Wet scrubber for elimination of volatile components from waste gases.
Water	Typical onsite wastewater treatment technology provides removal efficiency of 87%.

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

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm². 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 PROC5 Mixing or blending in batch processes PROC6 Calendering operations. 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 PROC13 Treatment of articles by dipping and pouring. Palm of both hands. Covers skin contact area up to 480 cm². PROC7 Industrial spraying Whole body.
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Other given operational conditions affecting workers exposure

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

Use in Paints/Coatings (industrial)

Technical protective measures Provide extract ventilation to points where emissions occur. PROC7 Industrial spraying
Ensure that the direction of airflow is clearly away from the worker. Local exhaust ventilation - efficiency of at least [%]: 50 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 90

Risk management measures

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 90
PROC5 Mixing or blending in batch processes
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.
Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.
Efficiency of at least 90%
PROC7 Industrial spraying
Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.
Efficiency of at least 90%
Wear suitable coveralls to prevent exposure to the skin.
Efficiency of at least 80%

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in Paints/Coatings/Adhesives/Sealants/Foams/Polymers/Filled Polymers (professional)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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 Paints/Coatings/Adhesives/Sealants/Foams/Polymers/Filled Polymers (professional)
Main sector	SU22 Professional uses
<u>Environment</u>	
Environmental release category	ERC8d Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)
<u>Worker</u>	

Use in Paints/Coatings/Adhesives/Sealants/Foams/Polymers/Filled Polymers (professional)

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation PROC15 Use as laboratory reagent. PROC19 Manual activities involving hand contact
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm². 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 PROC5 Mixing or blending in batch processes 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) PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC10 Roller application or brushing Both hands. Covers skin contact area up to 960 cm². PROC19 Manual activities involving hand contact Both hands and main part of the arms. Covers skin contact area up to 1980 cm².
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Other given operational conditions affecting workers exposure

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

Use in Paints/Coatings/Adhesives/Sealants/Foams/Polymers/Filled Polymers (professional)

Technical protective measures PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC10 Roller application or brushing Local exhaust ventilation - efficiency of at least [%]: 80

Risk management measures

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC10 Roller application or brushing
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 80
PROC4 Chemical production where opportunity for exposure arises
PROC5 Mixing or blending in batch processes
PROC13 Treatment of articles by dipping and pouring.
PROC19 Manual activities involving hand contact
Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.
Efficiency of at least 90%
PROC11 Non industrial spraying
Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.
Efficiency of at least 80%
Wear suitable coveralls to prevent exposure to the skin.
Efficiency of at least 80%

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

Product characteristics

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

Amounts used

Maximum daily site tonnage: 5479 kg

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (initial release prior to RMM): 0.98
Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.02
Emission factor - soil Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Risk management measures

Technical measures Wet scrubbing with discharge to biological treatment Filtration. Provide onsite wastewater removal efficiency of 87%.

3. Exposure estimation (Environment 1)

Use in Paints/Coatings/Adhesives/Sealants/Foams/Polymers/Filled Polymers (professional)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Use in Cleaning Agents (industrial)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC7 Industrial spraying PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities 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)

Product characteristics

Physical state	Liquid
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Use in Cleaning Agents (industrial)

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Amounts used

Maximum daily site tonnage: 50 kg

Frequency and duration of use

Emission days: 220 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (initial release prior to RMM): 0

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 1

Emission factor - soil Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water Typical onsite wastewater treatment technology provides removal efficiency of 87%.

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

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts PROC1 Chemical production or refinery in closed process without likelihood of 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 Palm of one hand. Covers skin contact area up to 240 cm². 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 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 PROC13 Treatment of articles by dipping and pouring. Palm of both hands. Covers skin contact area up to 480 cm². PROC7 Industrial spraying Whole body.

Other given operational conditions affecting workers exposure

Setting Indoor.

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

Use in Cleaning Agents (industrial)

Technical protective measures Provide extract ventilation to points where emissions occur. PROC7 Industrial spraying
Ensure that the direction of airflow is clearly away from the worker. Local exhaust ventilation - efficiency of at least [%]: 50 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 90

Risk management measures

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 90
PROC5 Mixing or blending in batch processes
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.
Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.
Efficiency of at least 90%
PROC7 Industrial spraying
Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.
Efficiency of at least 90%
Wear suitable coveralls to prevent exposure to the skin.
Efficiency of at least 80%

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in Cleaning agents (professional)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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)
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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 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 (Workers - Health 1)

Product characteristics

Physical state	Liquid
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Use in Cleaning agents (professional)

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

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

Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts PROC1 Chemical production or refinery in closed process without likelihood of 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 Palm of one hand. Covers skin contact area up to 240 cm². 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 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. Palm of both hands. Covers skin contact area up to 480 cm². PROC11 Non industrial spraying Whole body.

Other given operational conditions affecting workers exposure

Setting Indoor.

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

Technical protective measures PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 90

Risk management measures

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

Without local exhaust ventilation

Wear a respirator providing a minimum efficiency of (%): 80

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring.

Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.

Efficiency of at least 90%

PROC11 Non industrial spraying

Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.

Efficiency of at least 80%

Wear suitable coveralls to prevent exposure to the skin.

Efficiency of at least 80%

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

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Amounts used

Maximum daily site tonnage: 1580 kg

Use in Cleaning agents (professional)

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 1
Emission factor - soil	Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Risk management measures

Technical measures	Provide onsite wastewater removal efficiency of 87%.
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3. Exposure estimation (Environment 1)

Environmental release	Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.
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3. Exposure estimation (Health 1)

Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Exposure	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario Use in lubricants (industrial)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in lubricants (industrial)
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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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. PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions
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Use in lubricants (industrial)

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

Product characteristics

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

Amounts used

Maximum daily site tonnage: 5000 kg

Frequency and duration of use

Emission days: 20 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.0003
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.001
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Typical onsite wastewater treatment technology provides removal efficiency of 87%.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 Palm of one hand. Covers skin contact area up to 240 cm². 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 PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions Palm of both hands. Covers skin contact area up to 480 cm². PROC7 Industrial spraying Whole body.
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Use in lubricants (industrial)

Other given operational conditions affecting workers exposure

Setting Indoor.

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

Technical protective measures Provide extract ventilation to points where emissions occur. PROC7 Industrial spraying
Ensure that the direction of airflow is clearly away from the worker. Local exhaust ventilation - efficiency of at least [%]: 50
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 90
PROC17 Lubrication at high energy conditions in metal working operations PROC18 General greasing/lubrication at high kinetic energy conditions Local exhaust ventilation - efficiency of at least [%]: 90

Risk management measures

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC17 Lubrication at high energy conditions in metal working operations
PROC18 General greasing/lubrication at high kinetic energy conditions
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 90
PROC5 Mixing or blending in batch processes
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.
Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.
Efficiency of at least 90%
PROC7 Industrial spraying
Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.
Efficiency of at least 90%
Wear suitable coveralls to prevent exposure to the skin.
Efficiency of at least 80%
PROC17 Lubrication at high energy conditions in metal working operations
PROC18 General greasing/lubrication at high kinetic energy conditions
Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Production of rigid foam (consumer use)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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	Production of rigid foam (consumer use)
Product category	PC32 Polymer preparations and compounds.
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC8f Widespread use leading to inclusion into/onto article (outdoor)
<u>Worker</u>	
Process category	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure < 0.5 kPa at STP.
Concentration details	Covers concentrations up to 5 %.

Amounts used

Maximum daily site tonnage: 5479 kg

Frequency and duration of use

Emission days: 365 days/year

Production of rigid foam (consumer use)

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.15
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.01
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.005

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Risk management measures

Technical measures	Typical onsite wastewater treatment technology provides removal efficiency of 87%.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure < 0.5 kPa at STP.
Concentration details	Covers concentrations up to 30 %. Unless otherwise stated.

Frequency and duration of use

Application duration: 30 minutes
For each use event, covers use amounts up to 0.2 litre.

Human factors not influenced by risk management

Potentially exposed body parts	Covers skin contact area up to 1900 cm ² .
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Other given operational conditions affecting Non-industrial exposure

Setting	Indoor.
Temperature	Assumes activities are at ambient temperature (unless stated differently).
Room size	Covers use in room size of 57.5 m ³ .
Ventilation rate	Covers use under typical household ventilation.

Other given operational conditions affecting Non-industrial exposure

Exposure route	Inhalation
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3. Exposure estimation (Environment 1)

Assessment method	Used EUSES model.
Environmental release	Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method	The Consexpo model has been used to estimate consumer exposures, unless otherwise indicated.
Exposure	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

Production of rigid foam (consumer use)

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in Heat Transfer and Hydraulic Fluids (consumer use)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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 Heat Transfer and Hydraulic Fluids (consumer use)
Product category	PC16 Heat transfer fluids. PC17 Hydraulic fluids.
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC9b Widespread use of functional fluid (outdoor)
<u>Worker</u>	
Process category	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure < 0.5 kPa at STP.
Concentration details	Covers concentrations up to 30 %.

Amounts used

Maximum daily site tonnage: 5479 kg

Frequency and duration of use

Use in Heat Transfer and Hydraulic Fluids (consumer use)

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.05
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.05
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.05

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Risk management measures

Technical measures	Typical onsite wastewater treatment technology provides removal efficiency of 87%.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure < 0.5 kPa at STP.
Concentration details	Covers concentrations up to 30 %. Unless otherwise stated.

Frequency and duration of use

Application duration: 15 minutes

Human factors not influenced by risk management

Potentially exposed body parts	Both hands. Covers skin contact area up to 960 cm ² .
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Other given operational conditions affecting Non-industrial exposure

Setting	Indoor.
Temperature	Assumes activities are at ambient temperature (unless stated differently).
Ventilation rate	Covers use under typical household ventilation.

Other given operational conditions affecting Non-industrial exposure

Exposure route	Inhalation
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3. Exposure estimation (Environment 1)

Assessment method	Used EUSES model.
Environmental release	Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method	The Consexpo model has been used to estimate consumer exposures, unless otherwise indicated. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities ECETOC TRA v2.0 Worker
Exposure	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

Use in Heat Transfer and Hydraulic Fluids (consumer use)

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in Paints/Coatings/Surface treatment products (consumer use)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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 Paints/Coatings/Surface treatment products (consumer use)
Product category	PC9a Coatings and paints, thinners, paint removers. PC15 Non-metal-surface treatment products. PC18 Ink and toners. PC23 Leather treatment products PC31 Polishes and wax blends. PC34 Textile dyes and impregnating products
Main sector	SU21 Consumer uses

Environment

Environmental release category	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)

Product characteristics

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

Risk management measures

Technical measures	No specific risk management measure identified beyond those operational conditions stated.
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2. Conditions of use affecting exposure (Non-industrial - Health 1)

Use in Paints/Coatings/Surface treatment products (consumer use)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure < 0.5 kPa at STP.
Concentration details	Covers concentrations up to 25 %. Unless otherwise stated.

Human factors not influenced by risk management

Potentially exposed body parts	PC9a Coatings and paints, thinners, paint removers. PC15 Non-metal-surface treatment products. PC23 Leather treatment products PC34 Textile dyes and impregnating products Hands and forearms. Covers skin contact area up to 1900 cm ² . PC18 Ink and toners. Palm of one hand. Covers skin contact area up to 215 cm ² . PC31 Polishes and wax blends. Palm of both hands. Covers skin contact area up to 430 cm ² .
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Other given operational conditions affecting Non-industrial exposure

Setting	Indoor.
Temperature	Assumes activities are at ambient temperature (unless stated differently).
Ventilation rate	Covers use under typical household ventilation.

Other given operational conditions affecting Non-industrial exposure

Exposure route	Inhalation
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3. Exposure estimation (Environment 1)

Environmental release	Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.
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3. Exposure estimation (Health 1)

Assessment method	The Consexpo model has been used to estimate consumer exposures, unless otherwise indicated.
Exposure	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Production of Polymers/Filled Polymers/Foams/Coatings/Adhesives/Sealants

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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	Production of Polymers/Filled Polymers/Foams/Coatings/Adhesives/Sealants
Main sector	SU3 Industrial uses

Environment

Environmental release category	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 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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Production of Polymers/Filled Polymers/Foams/Coatings/Adhesives/Sealants

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

Product characteristics

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

Amounts used

Maximum daily site tonnage: 50000 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.002
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.01
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.0001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Typical onsite wastewater treatment technology provides removal efficiency of 87%.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 PROC15 Use as laboratory reagent. Palm of one hand. Covers skin contact area up to 240 cm². 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 PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC14 Tableting, compression, extrusion, pelletisation, granulation Palm of both hands. Covers skin contact area up to 480 cm². PROC7 Industrial spraying Whole body.
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Production of Polymers/Filled Polymers/Foams/Coatings/Adhesives/Sealants

Other given operational conditions affecting workers exposure

Setting Indoor.

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

Technical protective measures Provide extract ventilation to points where emissions occur. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 90 PROC7 Industrial spraying Ensure that the direction of airflow is clearly away from the worker. Local exhaust ventilation - efficiency of at least [%]: 50

Risk management measures

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

Without local exhaust ventilation

Wear a respirator providing a minimum efficiency of (%): 90

PROC5 Mixing or blending in batch processes

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring.

Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.

Efficiency of at least 90%

PROC7 Industrial spraying

Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.

Efficiency of at least 90%

Wear suitable coveralls to prevent exposure to the skin.

Efficiency of at least 90%

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in water-treatment chemicals (industrial)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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 water-treatment chemicals (industrial)
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC3 Formulation into solid matrix
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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 PROC13 Treatment of articles by dipping and pouring.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure < 0.5 kPa at STP.

Use in water-treatment chemicals (industrial)

Concentration details Covers concentrations up to 100 %.

Amounts used

Maximum daily site tonnage: 100 kg

Frequency and duration of use

Emission days: 300 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (initial release prior to RMM): 0.05

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.95

Emission factor - soil Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water Typical onsite wastewater treatment technology provides removal efficiency of 87%.

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

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

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

Other given operational conditions affecting workers exposure

Setting Indoor.

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

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

Risk management measures

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 90
PROC13 Treatment of articles by dipping and pouring.
Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

Use in water-treatment chemicals (industrial)

3. Exposure estimation (Health 1)

Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Exposure	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in laboratories (industrial and professional)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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 and professional)
Main sector	SU3 Industrial uses 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	PROC15 Use as laboratory reagent.
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Product characteristics

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

Amounts used

Maximum daily site tonnage: 5479 kg

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Use in laboratories (industrial and professional)

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.5
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.5
Emission factor - soil	Not applicable - no direct release to soil.

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Provide onsite wastewater removal efficiency of 87%.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	Palm of one hand. Covers skin contact area up to 240 cm².
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Other given operational conditions affecting workers exposure

Setting	Indoor.
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Risk management measures

Use suitable eye protection.

3. Exposure estimation (Environment 1)

Environmental release	Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.
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3. Exposure estimation (Health 1)

Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Exposure	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in/as functional fluids (professional)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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/as functional fluids (professional)
Main sector	SU22 Professional uses

Environment

Environmental release category	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 (Workers - Health 1)

Product characteristics

Physical state	Liquid
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Use in/as functional fluids (professional)

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

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

Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts PROC1 Chemical production or refinery in closed process without likelihood of 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 Palm of one hand. Covers skin contact area up to 240 cm². 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 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 Palm of both hands. Covers skin contact area up to 480 cm².

Other given operational conditions affecting workers exposure

Setting Indoor.

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

Technical protective measures PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 90

Risk management measures

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

Without local exhaust ventilation

Wear a respirator providing a minimum efficiency of (%): 90

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

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Amounts used

Maximum daily site tonnage: 5479 kg

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (initial release prior to RMM): 0.05

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.05

Emission factor - soil Release fraction to soil from wide dispersive use (regional only): 0.05

Environmental factors not influenced by risk management measures

Use in/as functional fluids (professional)

Dilution	Local freshwater dilution factor: 10
	Local marine water dilution factor: 100

Risk management measures

Technical measures	Provide onsite wastewater removal efficiency of 87%.
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3. Exposure estimation (Environment 1)

Environmental release	Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.
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3. Exposure estimation (Health 1)

Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Exposure	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in/as functional fluids (industrial)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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/as functional fluids (industrial)
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)

Product characteristics

Physical state	Liquid
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Use in/as functional fluids (industrial)

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Amounts used

Maximum daily site tonnage: 500 kg

Frequency and duration of use

Emission days: 20 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air Release fraction to air from process (initial release prior to RMM): 0.001

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.001

Emission factor - soil Release fraction to soil from wide dispersive use (regional only): 0.001

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water Typical onsite wastewater treatment technology provides removal efficiency of 87%.

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

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure < 0.5 kPa at STP.

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

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

Human factors not influenced by risk management

Potentially exposed body parts PROC1 Chemical production or refinery in closed process without likelihood of 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 Palm of one hand. Covers skin contact area up to 240 cm². 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 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) Palm of both hands. Covers skin contact area up to 480 cm².

Other given operational conditions affecting workers exposure

Setting Indoor.

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

Technical protective measures Provide extract ventilation to points where emissions occur. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 80 PROC17 Lubrication at high energy conditions in metal working operations Local exhaust ventilation - efficiency of at least [%]: 90

Use in/as functional fluids (industrial)

Risk management measures

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

Without local exhaust ventilation

Wear a respirator providing a minimum efficiency of (%): 90

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in metal-working fluids (professional)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in metal-working fluids (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	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) PROC10 Roller application or brushing PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations
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2. Conditions of use affecting exposure (Workers - Health 1)

Use in metal-working fluids (professional)

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 Palm of one hand. Covers skin contact area up to 240 cm². PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations Palm of both hands. Covers skin contact area up to 480 cm². PROC11 Non industrial spraying Whole body.
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Other given operational conditions affecting workers exposure

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

Technical protective measures	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC17 Lubrication at high energy conditions in metal working operations Local exhaust ventilation - efficiency of at least [%]: 80
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Risk management measures

Use in metal-working fluids (professional)

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

PROC17 Lubrication at high energy conditions in metal working operations

Without local exhaust ventilation

Wear a respirator providing a minimum efficiency of (%): 80

PROC5 Mixing or blending in batch processes

PROC10 Roller application or brushing

PROC13 Treatment of articles by dipping and pouring.

Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.

Efficiency of at least 90%

PROC11 Non industrial spraying

Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.

Efficiency of at least 80%

Wear suitable coveralls to prevent exposure to the skin.

Efficiency of at least 80%

PROC17 Lubrication at high energy conditions in metal working operations

Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.

Efficiency of at least 90%

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

Product characteristics

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

Amounts used

Maximum daily site tonnage: 1370 kg

Frequency and duration of use

Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.015
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.05
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.05

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Risk management measures

Technical measures	Provide onsite wastewater removal efficiency of 87%.
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3. Exposure estimation (Environment 1)

Environmental release	Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.
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Use in metal-working fluids (professional)

3. Exposure estimation (Health 1)

Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated
Exposure	Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in metal-working fluids (industrial)

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use in metal-working fluids (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. PROC17 Lubrication at high energy conditions in metal working operations
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Use in metal-working fluids (industrial)

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

Product characteristics

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

Amounts used

Maximum daily site tonnage: 5000 kg

Frequency and duration of use

Emission days: 20 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Release fraction to air from process (initial release prior to RMM): 0.0003
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.001
Emission factor - soil	Release fraction to soil from wide dispersive use (regional only): 0.001

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 Local marine water dilution factor: 100
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Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Water	Typical onsite wastewater treatment technology provides removal efficiency of 87%.
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2. Conditions of use affecting exposure (Workers - Health 1)

Product characteristics

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

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 Palm of one hand. Covers skin contact area up to 240 cm². 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 PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10 Roller application or brushing PROC13 Treatment of articles by dipping and pouring. PROC17 Lubrication at high energy conditions in metal working operations Palm of both hands. Covers skin contact area up to 480 cm². PROC7 Industrial spraying Whole body.
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Other given operational conditions affecting workers exposure

Use in metal-working fluids (industrial)

Setting Indoor.

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

Technical protective measures Provide extract ventilation to points where emissions occur. PROC7 Industrial spraying
Ensure that the direction of airflow is clearly away from the worker. Local exhaust ventilation - efficiency of at least [%]: 50
PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Local exhaust ventilation - efficiency of at least [%]: 80
PROC17 Lubrication at high energy conditions in metal working operations Local exhaust ventilation - efficiency of at least [%]: 90

Risk management measures

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
PROC17 Lubrication at high energy conditions in metal working operations
Without local exhaust ventilation
Wear a respirator providing a minimum efficiency of (%): 90
PROC5 Mixing or blending in batch processes
PROC10 Roller application or brushing
PROC13 Treatment of articles by dipping and pouring.
Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.
Efficiency of at least 90%
PROC7 Industrial spraying
Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.
Efficiency of at least 90%
Wear suitable coveralls to prevent exposure to the skin.
Efficiency of at least 80%
PROC17 Lubrication at high energy conditions in metal working operations
Wear chemically-resistant gloves (tested to EN374) in combination with 'basic' employee training.

3. Exposure estimation (Environment 1)

Environmental release Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented.

3. Exposure estimation (Health 1)

Assessment method The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Exposure Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.



Exposure scenario

Use in Agrochemicals - Professional

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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 Agrochemicals - Professional
Process scope	Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging, including equipment clean-downs and disposal.
Main sector	SU22 Professional 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)
<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 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) PROC11 Non industrial spraying PROC13 Treatment of articles by dipping and pouring.

Use in Agrochemicals - Professional

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

Product characteristics

Physical state	Liquid
Vapour pressure	0.123 hPa @ 25°C
Concentration details	Covers concentrations up to 100 %.

Amounts used

PROC11 Non industrial spraying
Low application rate (0.03 - 0.3 l/minute)

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).
Covers frequency up to 240 days/year, , .
Unless otherwise stated.
PROC11 Non industrial spraying
Covers frequency up to 5 days/week, , .
Application duration: 180 minutes

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of 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 Palm of one hand. Covers skin contact area up to 240 cm². PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions 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) PROC13 Treatment of articles by dipping and pouring. Palm of both hands. Covers skin contact area up to 480 cm². PROC11 Non industrial spraying Whole body.
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Other given operational conditions affecting workers exposure

Setting	Indoor.
Room size	PROC11 Non industrial spraying Use in room with a volume of minimum [m ³]: 100

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

Technical protective measures	PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Provide extract ventilation to points where emissions occur. Local exhaust ventilation - efficiency of at least [%]: 80 PROC11 Non industrial spraying Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	PROC11 Non industrial spraying Regular cleaning of equipment. Regular cleaning of work area. Ensure that spray direction is only horizontal or downward. Ensure that the task is not carried out by more than one worker simultaneously.
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Risk management measures

Use in Agrochemicals - Professional

Use suitable eye protection.

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

Wear suitable gloves tested to EN374.

PROC11 Non industrial spraying

PROC13 Treatment of articles by dipping and pouring.

Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.

Efficiency of at least 90%

Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation (Environment 1)

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

3. Exposure estimation (Health 1)

Assessment method

ECETOC TRA v2.0 Worker Unless otherwise stated.

PROC11 Non industrial spraying RISKOFDERM v2.1 Dermal

PROC11 Non industrial spraying Inhalation Stoffenmanager v4.0

Use in Agrochemicals - 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 0.035 mg/m³, DNEL 35 mg/m³, RCR 0.001

Worker - dermal, long-term - systemic: Exposure 0.318 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.003

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 12.95 mg/m³, DNEL 35 mg/m³, RCR 0.370

Worker - dermal, long-term - systemic: Exposure 0.16 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.010

PROC4 Chemical production where opportunity for exposure arises

Worker - inhalation, long-term - local and systemic: Exposure 25.9 mg/m³, DNEL 35 mg/m³, RCR 0.740

Worker - dermal, long-term - systemic: Exposure 6.36 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.060

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

Worker - inhalation, long-term - local and systemic: Exposure 12.95 mg/m³, DNEL 35 mg/m³, RCR 0.370

Worker - dermal, long-term - systemic: Exposure 13.78 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.130

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

Worker - inhalation, long-term - local and systemic: Exposure 25.9 mg/m³, DNEL 35 mg/m³, RCR 0.740

Worker - dermal, long-term - systemic: Exposure 6.36 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.060

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

Worker - inhalation, long-term - local and systemic: Exposure 25.9 mg/m³, DNEL 35 mg/m³, RCR 0.740

Worker - dermal, long-term - systemic: Exposure 6.36 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.060

PROC11 Non industrial spraying

Worker - inhalation, long-term - local and systemic: Exposure 14 mg/m³, DNEL 35 mg/m³, RCR 0.400

Worker - dermal, long-term - systemic: Exposure 54.06 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.510

PROC13 Treatment of articles by dipping and pouring.

Worker - inhalation, long-term - local and systemic: Exposure 25.9 mg/m³, DNEL 35 mg/m³, RCR 0.740

Worker - dermal, long-term - systemic: Exposure 0.16 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.010

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures.



Exposure scenario

Use in oil and gas field drilling - Industrial

Identification

Product name	Ethanediol
REACH registration number	01-2119456816-28-XXXX
CAS number	107-21-1
EC number	203-473-3
EU index number	603-027-00-1
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 oil and gas field drilling - Industrial
Process scope	Oil field well drilling and production operations (including drilling muds and well cleaning), including material transfers, onsite formulation, well head operations, shaker room activities and related maintenance.
Main sector	SU3 Industrial uses
<u>Environment</u>	
Environmental release category	ERC7 Use of functional fluid at industrial site
<u>Worker</u>	
Process category	PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities

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

Product characteristics

Physical state	Liquid
Vapour pressure	0.123 hPa @ 25°C
Concentration details	Covers concentrations up to 100 %.

Frequency and duration of use

Use in oil and gas field drilling - Industrial

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

Covers frequency up to 240 days/year, , .

Other given operational conditions affecting workers exposure

Setting Outdoor.

Ventilation rate Covers outdoor use.

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

Technical protective measures No specific risk management measure identified beyond those operational conditions stated.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Assumes a good basic standard of occupational hygiene is implemented. No specific measures identified.

Risk management measures

Use suitable eye protection and gloves.

Use suitable respiratory protection if ventilation is inadequate.

3. Exposure estimation (Environment 1)

As no environmental hazard was identified, no environmental-related exposure assessment and risk characterisation was performed. The use is assessed to be safe.

3. Exposure estimation (Health 1)

Assessment method EASY TRA v2.0

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 1.82 mg/m³, DNEL 35 mg/m³, RCR 0.052
 Worker - dermal, long-term - systemic: Exposure 1.38 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.013

PROC5 Mixing or blending in batch processes
 Worker - inhalation, long-term - local and systemic: Exposure 9.03 mg/m³, DNEL 35 mg/m³, RCR 0.258
 Worker - dermal, long-term - systemic: Exposure 13.67 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.129

PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities
 Worker - inhalation, long-term - local and systemic: Exposure 18.1 mg/m³, DNEL 35 mg/m³, RCR 0.517
 Worker - dermal, long-term - systemic: Exposure 13.67 mg/kg/day, DNEL 106 mg/kg/day, RCR 0.129

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

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.