SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 9.5
Revision Date 10.05.2023
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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name	:	Acetonitrile for DNA synthesis (<= 30 ppm H2O)
Product Number	:	1.13212
Catalogue No.	:	113212
Brand	:	Millipore
Index-No.	:	608-001-00-3
REACH No.	:	01-2119471307-38-XXXX
CAS-No.	:	75-05-8

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

Identified uses	:	Reagent for analysis, Chemical production

1.3 Details of the supplier of the safety data sheet

Company	:	Merck Life Science UK Limited New Road The Old Brickyard GILLINGHAM Dorset SP8 4XT UNITED KINGDOM
Telephone	:	+44 (0)1747 833-000
Fax	:	+44 (0)1747 833-313
E-mail address	:	TechnicalService@merckgroup.com

1.4 Emergency telephone

Emergency Phone #	:	+44 (0)870 8200418 (CHEMTREC)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567

Flammable liquids (Category 2), H225
Acute toxicity, Oral (Category 4), H302
Acute toxicity, Inhalation (Category 4), H332
Acute toxicity, Dermal (Category 4), H312
Eye irritation (Category 2), H319

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For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567

Pictogram

Signal Word	Danger
Hazard statement(s)	
H225	Highly flammable liquid and vapor.
H302 + H312 + H332	Harmful if swallowed, in contact with skin or if inhaled.
H319	Causes serious eye irritation.
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P312	IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard Statements	none

Reduced Labeling (<= 125 ml)

Pictogram

Signal Word	Danger
Hazard statement(s)	none
Precautionary statement(s)	none
Supplemental Hazard Statements	none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

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Formula	:	C2H3N
Molecular weight	:	41.05 g/mol
CAS-No.	:	75-05-8
EC-No.	:	200-835-2
Index-No.	:	608-001-00-3

Component		Classification	Concentration
Acetonitrile			
CAS-No. EC-No. Index-No.	75-05-8 200-835-2 608-001-00-3	Flam. Liq. 2; Acute Tox. 4; Eye Irrit. 2; H225, H302, H332, H312, H319	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. If breathing stops: mouth-to-mouth breathing or artificial respiration. Oxygen if necessary. Immediately call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

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5.2 Special hazards arising from the substance or mixture

Carbon oxides
Nitrogen oxides (NOx)
Combustible.
Fire may cause evolution of:
nitrogen oxides, Hydrogen cyanide (hydrocyanic acid)
Pay attention to flashback.
Vapors are heavier than air and may spread along floors.
Development of hazardous combustion gases or vapours possible in the event of fire.
Forms explosive mixtures with air at ambient temperatures.

5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.
Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®).
Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

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7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Recommended storage temperature see product label.

Storage class
Storage class (TRGS 510): 3: Flammable liquids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Control parameters	Value	Basis
Acetonitrile	75-05-8	TWA	40 ppm 70 mg/m3	Europe. Indicative occupational exposure limit values
	Remarks	Indicative Identifies the possibility of significant uptake through the skin		
		TWA	40 ppm 68 mg/m3	UK. EH40 WEL - Workplace Exposure Limits
		STEL	60 ppm 102 mg/m3	UK. EH40 WEL - Workplace Exposure Limits

Derived No Effect Level (DNEL)

Application Area	Routes of exposure	Health effect	Value
Worker DNEL, acute	inhalation	Systemic effects	68 mg/m3
Worker DNEL, acute	inhalation	Local effects	68 mg/m3
Worker DNEL, longterm	dermal	Systemic effects	
Worker DNEL, longterm	inhalation	Systemic effects	68 mg/m3
Worker DNEL, longterm	inhalation	Local effects	68 mg/m3

Predicted No Effect Concentration (PNEC)

Compartment	Value
Fresh water	10 mg/l
Sea water	1 mg/l
Aquatic intermittent release	10 mg/l

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Sewage treatment plant	32 mg/l
Soil	3.02 mg/kg
Fresh water sediment	45 mg/kg
Sea sediment	4.5 mg/kg

8.2 Exposure controls

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: butyl-rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Butoject® (KCL 898)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Chloroprene
Minimum layer thickness: 0.65 mm
Break through time: 10 min
Material tested:KCL 720 Camapren®

Body Protection
Flame retardant antistatic protective clothing.

Respiratory protection
Recommended Filter type: Filter A (acc. to DIN 3181) for vapours of organic compounds

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure
Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Physical state liquid

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b)	Color	colorless
c)	Odor	ether-like
d)	Melting point/freezing point	Melting point/range: -45.7 °C at 1,013 hPa
e)	Initial boiling point and boiling range	81.0 - 82.0 °C at 1,013.25 hPa
f)	Flammability (solid, gas)	No data available
g)	Upper/lower flammability or explosive limits	Upper explosion limit: 16 %(V) Lower explosion limit: 4.4 %(V)
h)	Flash point	2.0 °C - closed cup
i)	Autoignition temperature	524.0 °C
j)	Decomposition temperature	No data available
k)	pH	No data available
l)	Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: 0.350 Pas at 20.00 °C
m)	Water solubility	1,000 g/l at 25 °C completely soluble
n)	Partition coefficient: n-octanol/water	log Pow: -0.54 at 25 °C - Bioaccumulation is not expected.
o)	Vapor pressure	98.64 hPa at 20 °C
p)	Density	0.78 g/cm3 at 20 °C
	Relative density	No data available
q)	Relative vapor density	No data available
r)	Particle characteristics	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information

Surface tension	29.0 mN/m at 20.0 °C
Relative vapor density	1.42 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity

Vapors may form explosive mixture with air.

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10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Strong bases
strong reducing agents
Risk of explosion with:
nitrates
perchlorates
perchloric acid
conc. sulfuric acid
with
Heat.
Risk of ignition or formation of inflammable gases or vapours with:
Oxidizing agents
Nitric acid
nitrogen dioxide
with
Catalyst
Generates dangerous gases or fumes in contact with:
Acids

10.4 Conditions to avoid
Warming.

10.5 Incompatible materials
rubber, various plastics, Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Mouse - male and female - 617 mg/kg
(OECD Test Guideline 401)
Acute toxicity estimate Oral - 617 mg/kg
(Calculation method)
LC50 Inhalation - Mouse - male and female - 4 h - 6.022 mg/l - vapor

(OECD Test Guideline 403)
Acute toxicity estimate Dermal - 1,500 mg/kg
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 4 h

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(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Causes serious eye irritation.
(OECD Test Guideline 405)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Respiratory or skin sensitization
Buehler Test - Guinea pig
Result: negative
(OECD Test Guideline 406)

Germ cell mutagenicity
Test Type: Ames test
Test system: S. typhimurium
Metabolic activation: with and without metabolic activation
Result: negative
Remarks: (ECHA)
Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: US-EPA
Result: negative
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Result: Positive results were obtained in some in vitro tests.
Remarks: (National Toxicology Program)
Test Type: sister chromatid exchange assay
Test system: Chinese hamster ovary cells
Metabolic activation: Metabolic activation
Result: negative
Remarks: Sister chromatid exchange
Test system: Saccharomyces cerevisiae
Metabolic activation: without metabolic activation
Result: positive
Remarks: Cytogenetic analysis
(ECHA)
Test Type: In vitro mammalian cell gene mutation test
Test system: Mouse lymphoma test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test Type: Micronucleus test
Species: Mouse

Application Route: Intraperitoneal
Method: OECD Test Guideline 474
Result: negative

Carcinogenicity
No evidence of carcinogenicity in animal studies.

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Reproductive toxicity
Animal testing did not show any effects on fertility.

Specific target organ toxicity - single exposure
The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ toxicity - repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard
No aspiration toxicity classification

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Treat as cyanide poisoning., Always have on hand a cyanide first-aid kit, together with proper instructions., The onset of symptoms is generally delayed pending conversion to cyanide., Nausea, Vomiting, Diarrhea, Headache, Dizziness, Rash, Cyanosis, excitement, depression, Drowsiness, impaired judgment, Lack of coordination, stupor, death
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	flow-through test LC50 - Pimephales promelas (fathead minnow) - 1,640 mg/l - 96 h Remarks: (ECHA)
Toxicity to algae	static test NOEC - Phaeodactylum tricornutum - 400 mg/l - 72 h (ISO 10253)
	static test ErC50 - Phaeodactylum tricornutum - 9,696 mg/l - 72 h (ISO 10253)
Toxicity to bacteria	
Toxicity to fish(Chronic toxicity)	flow-through test NOEC - Oryzias latipes - 102 mg/l - 21 d (OECD Test Guideline 204)

12.2 Persistence and degradability

Biodegradability	Result: 70 % - Readily biodegradable. (OECD Test Guideline 310)

12.3 Bioaccumulative potential

No bioaccumulation is to be expected (log Pow <= 4).

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12.4 Mobility in soil
Not expected to adsorb on soil.

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects
Biological effects:
Hazard for drinking water supplies.
Discharge into the environment must be avoided.
Avoid release to the environment.

Stability in water	DT50 - > 9,999 d pH 7 at 25 °C Remarks: (calculated)Hydrolyzes slowly.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. Notice Directive on waste 2008/98/EC.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 1648 IMDG: 1648 IATA: 1648

14.2 UN proper shipping name
ADR/RID: ACETONITRILE
IMDG: ACETONITRILE
IATA: Acetonitrile

14.3 Transport hazard class(es)
ADR/RID: 3 IMDG: 3 IATA: 3

14.4 Packaging group
ADR/RID: II IMDG: II IATA: II

14.5 Environmental hazards
ADR/RID: no IMDG Marine pollutant: no IATA: no

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14.6 Special precautions for user

Tunnel restriction code : (D/E)

Further information : No data available

SECTION 15: Regulatory information

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

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Authorisations and/or restrictions on use

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	P5c	FLAMMABLE LIQUIDS

Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment

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

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H225	Highly flammable liquid and vapor.
H302	Harmful if swallowed.
H302 + H312 + H332	Harmful if swallowed, in contact with skin or if inhaled.
H312	Highly flammable liquid and vapor.
H319	Harmful if swallowed, in contact with skin or if inhaled.
H332	Causes serious eye irritation.

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Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Annex: Exposure scenario

Identified uses:

Use: Industrial use

SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
SU 3, SU9, SU 10: Industrial uses: Uses of substances as such or in preparations at industrial sites, Manufacture of fine chemicals, Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
PC19: Intermediate **PC21:** Laboratory chemicals
PROC1: Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) **PROC8a:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC15:** Use as laboratory reagent
ERC1, ERC2, ERC4, ERC6a, ERC6b: Manufacture of substances, Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids

Use: Professional use

SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
PC21: Laboratory chemicals
PROC15: Use as laboratory reagent
ERC2, ERC6a, ERC6b: Formulation of preparations, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids

1. Short title of Exposure Scenario: Industrial use

Main User Groups	: **SU 3**
Sectors of end-use	: **SU 3, SU9, SU 10**
Chemical product category	: **PC19, PC21**
Process categories	: **PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a,**

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		PROC8b, PROC9, PROC15
Environmental Release Categories	:	**ERC1, ERC2, ERC4, ERC6a, ERC6b:**

2. Exposure scenario

2.1 Contributing scenario controlling environmental exposure for: ERC1, SpERC ESVOC 1

Amount used

Annual amount per site	:	8500 t

Other given operational conditions affecting environmental exposure

Number of emission days per year	:	300
Emission or Release Factor: Air	:	0.5 %
Emission or Release Factor: Water	:	1 %
Emission or Release Factor: Soil	:	0.01 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Onsite sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Sludge Treatment	:	Sewage sludge should not be applied to natural soils.

2.1 Contributing scenario controlling environmental exposure for: ERC2

Amount used

Annual amount per site	:	5 t

Other given operational conditions affecting environmental exposure

Number of emission days per year	:	20
Emission or Release Factor: Air	:	2.5 %
Emission or Release Factor: Water	:	2 %
Emission or Release Factor: Soil	:	0.01 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2,000 m3/d
Sludge Treatment	:	Spreading as a worst case scenario

2.1 Contributing scenario controlling environmental exposure for: ERC4

Amount used

Annual amount per site	:	500 t

Other given operational conditions affecting environmental exposure

Number of emission days per	:	200

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year
Emission or Release Factor: Air : 100 %
Emission or Release Factor: Water : 100 %
Emission or Release Factor: Soil : 5 %

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2,000 m3/d
Sludge Treatment : Spreading as a worst case scenario
The concentration in the sewage treatment plant should be below the respective PNEC STP

2.1 Contributing scenario controlling environmental exposure for: ERC6a

Amount used
Annual amount per site : 1000 t

Other given operational conditions affecting environmental exposure
Number of emission days per year : 100
Emission or Release Factor: Air : 5 %
Emission or Release Factor: Water : 2 %
Emission or Release Factor: Soil : 0.10 %

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2,000 m3/d
Sludge Treatment : Spreading as a worst case scenario

2.1 Contributing scenario controlling environmental exposure for: ERC6b

Amount used
Annual amount per site : 1000 t

Other given operational conditions affecting environmental exposure
Number of emission days per year : 100
Emission or Release Factor: Air : 0.10 %
Emission or Release Factor: Water : 5 %
Emission or Release Factor: Soil : 0.025 %

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2,000 m3/d
Sludge Treatment : Spreading as a worst case scenario

2.6 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8b, PROC15

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Medium volatile liquid

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Process Temperature : < 20 °C

Frequency and duration of use
Frequency of use : 8 hours/day

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor without local exhaust ventilation (LEV)

Technical conditions and measures
Provide a good standard of general ventilation.

Organizational measures to prevent /limit releases, dispersion and exposure
Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

2.7 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC9

Product characteristics
Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Medium volatile liquid
Process Temperature : < 20 °C

Frequency and duration of use
Frequency of use : 8 hours/day

Other operational conditions affecting workers exposure
Outdoor / Indoor : Indoor with local exhaust ventilation (LEV)
Reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.

Technical conditions and measures
Provide a good standard of general ventilation.

Organizational measures to prevent /limit releases, dispersion and exposure
Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

Additional good practice advice beyond the REACH Chemical Safety Assessment
Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR*
ERC1	EUSES		Fresh water			0.175

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ERC1	EUSES		Fresh water sediment			0.175
ERC1	EUSES		Sea water			0.175
ERC1	EUSES		Sea sediment			0.175
ERC1	EUSES		Soil			< 0.01
ERC1	EUSES		Sewage treatment plant			< 0.01
ERC2	EUSES		Fresh water			< 0.01
ERC2	EUSES		Fresh water sediment			< 0.01
ERC2	EUSES		Sea water			< 0.01
ERC2	EUSES		Sea sediment			< 0.01
ERC2	EUSES		Soil			< 0.01
ERC2	EUSES		Sewage treatment plant			< 0.01
ERC4	EUSES		Fresh water			0.32
ERC4	EUSES		Fresh water sediment			0.32
ERC4	EUSES		Sea water			0.32
ERC4	EUSES		Sea sediment			0.32
ERC4	EUSES		Soil			0.82
ERC4	EUSES		Sewage treatment plant			1
ERC6a	EUSES		Fresh water			0.12
ERC6a	EUSES		Fresh water sediment			0.12
ERC6a	EUSES		Sea water			0.12
ERC6a	EUSES		Sea sediment			0.12
ERC6a	EUSES		Soil			0.66
ERC6a	EUSES		Sewage treatment plant			0.39
ERC6b	EUSES		Fresh water			0.30
ERC6b	EUSES		Fresh water sediment			0.30
ERC6b	EUSES		Sea water			0.30
ERC6b	EUSES		Sea sediment			0.30
ERC6b	EUSES		Soil			0.16
ERC6b	EUSES		Sewage treatment plant			0.97

Workers

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Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR*
PROC1	ECETOC TRA 3	longterm, inhalative, systemic			< 0.01
PROC1	ECETOC TRA 3	longterm, dermal, systemic			< 0.01
PROC1		longterm, combined, systemic			< 0.01
PROC2	ECETOC TRA 3	longterm, inhalative, systemic			0.13
PROC2	ECETOC TRA 3	longterm, dermal, systemic			< 0.01
PROC2		longterm, combined, systemic			0.13
PROC3	ECETOC TRA 3	longterm, inhalative, systemic			0.25
PROC3	ECETOC TRA 3	longterm, dermal, systemic			< 0.01
PROC3		longterm, combined, systemic			0.25
PROC4	ECETOC TRA 3	longterm, inhalative, systemic			0.50
PROC4	ECETOC TRA 3	longterm, dermal, systemic			0.04
PROC4		longterm, combined, systemic			0.55
PROC8b	ECETOC TRA 3	longterm, inhalative, systemic			0.63
PROC8b	ECETOC TRA 3	longterm, dermal, systemic			0.09
PROC8b		longterm, combined, systemic			0.71
PROC15	ECETOC TRA 3	longterm, inhalative, systemic			0.25

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PROC15	ECETOC TRA 3	longterm, dermal, systemic			< 0.01
PROC15		longterm, combined, systemic			0.25

*Risk characterisation ratio

PROC5	ECETOC TRA 3	longterm, inhalative, systemic			0.13
PROC5	ECETOC TRA 3	longterm, dermal, systemic			0.09
PROC5		longterm, combined, systemic			0.21
PROC8a	ECETOC TRA 3	longterm, inhalative, systemic			0.13
PROC8a	ECETOC TRA 3	longterm, dermal, systemic			0.09
PROC8a		longterm, combined, systemic			0.21
PROC9	ECETOC TRA 3	longterm, inhalative, systemic			0.13
PROC9	ECETOC TRA 3	longterm, dermal, systemic			0.04
PROC9		longterm, combined, systemic			0.17

*Risk characterisation ratio

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

For scaling of worker exposure assessments performed with ECETOC TRA, please consult the Merck tool ScIDeEx® at www.merckmillipore.com/scideex.
Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).

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1. Short title of Exposure Scenario: Professional use

Main User Groups	: **SU 22**
Sectors of end-use	: **SU 22**
Chemical product category	: **PC21**
Process categories	: **PROC15**
Environmental Release Categories	: **ERC2, ERC6a, ERC6b:**

2. Exposure scenario

2.1 Contributing scenario controlling environmental exposure for: ERC2

Amount used

Annual amount per site	: 5 t

Other given operational conditions affecting environmental exposure

Number of emission days per year	: 20
Emission or Release Factor: Air	: 2.5 %
Emission or Release Factor: Water	: 2 %
Emission or Release Factor: Soil	: 0.01 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	: Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	: 2,000 m3/d
Sludge Treatment	: Spreading as a worst case scenario

2.1 Contributing scenario controlling environmental exposure for: ERC6a

Amount used

Annual amount per site	: 1000 t

Other given operational conditions affecting environmental exposure

Number of emission days per year	: 100
Emission or Release Factor: Air	: 5 %
Emission or Release Factor: Water	: 2 %
Emission or Release Factor: Soil	: 0.10 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	: Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	: 2,000 m3/d
Sludge Treatment	: Spreading as a worst case scenario

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2.1 Contributing scenario controlling environmental exposure for: ERC6b

Amount used

Annual amount per site : 1000 t

Other given operational conditions affecting environmental exposure

Number of emission days per year : 100
Emission or Release Factor: Air : 0.10 %
Emission or Release Factor: Water : 5 %
Emission or Release Factor: Soil : 0.025 %

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2,000 m3/d
Sludge Treatment : Spreading as a worst case scenario

2.4 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical Form (at time of use) : Medium volatile liquid
Process Temperature : < 20 °C

Frequency and duration of use

Frequency of use : 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor without local exhaust ventilation (LEV)

Technical conditions and measures

Provide a good standard of general ventilation.

Organizational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value	Level of Exposure	RCR*
ERC2	EUSES		Fresh water			< 0.01
ERC2	EUSES		Fresh water sediment			< 0.01

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ERC2	EUSES		Sea water			< 0.01
ERC2	EUSES		Sea sediment			< 0.01
ERC2	EUSES		Soil			< 0.01
ERC2	EUSES		Sewage treatment plant			< 0.01
ERC6a	EUSES		Fresh water			0.12
ERC6a	EUSES		Fresh water sediment			0.12
ERC6a	EUSES		Sea water			0.12
ERC6a	EUSES		Sea sediment			0.12
ERC6a	EUSES		Soil			0.66
ERC6a	EUSES		Sewage treatment plant			0.39
ERC6b	EUSES		Fresh water			0.30
ERC6b	EUSES		Fresh water sediment			0.30
ERC6b	EUSES		Sea water			0.30
ERC6b	EUSES		Sea sediment			0.30
ERC6b	EUSES		Soil			0.16
ERC6b	EUSES		Sewage treatment plant			0.97

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR*
PROC15	ECETOC TRA 3	longterm, inhalative, systemic			0.25
PROC15	ECETOC TRA 3	longterm, dermal, systemic			< 0.01
PROC15		longterm, combined, systemic			0.25

*Risk characterisation ratio

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

For scaling of worker exposure assessments performed with ECETOC TRA, please consult the Merck tool ScIDeEx® at www.merckmillipore.com/scideex.
Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G:

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Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).

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