

Creation Date 16-Jun-2009

Revision Date 11-Feb-2019

Revision Number 8

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identification

Product Description: Acetonitrile
Cat No. : A955-212, A955-500, A955-1
Synonyms AN; Methyl cyanide; Ethanenitrile
CAS-No 75-05-8
EC-No. 200-835-2
Molecular Formula C2 H3 N
Reach Registration Number 01-2119471307-38-0053

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

Recommended Use Laboratory chemicals. See Annex for full list.
Sector of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
Product category PC21 - Laboratory chemicals
Process categories PROC15 - Use as a laboratory reagent
Environmental release category ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
Uses advised against No Information available

1.3. Details of the supplier of the safety data sheet

Company **UK entity/business name**
 Fisher Scientific UK
 Bishop Meadow Road, Loughborough,
 Leicestershire LE11 5RG, United Kingdom

EU entity/business name
 Acros Organics BVBA
 Janssen Pharmaceuticaaan 3a
 2440 Geel, Belgium

E-mail address begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

Tel: 01509 231166
 Chemtrec US: (800) 424-9300
 Chemtrec EU: 001 (202) 483-7616

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

Flammable liquids

Category 2 (H225)

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Health hazards

Acute oral toxicity
Acute dermal toxicity
Acute Inhalation Toxicity - Vapors
Serious Eye Damage/Eye Irritation

Category 4 (H302)
Category 4 (H312)
Category 4 (H332)
Category 2 (H319)

Environmental hazards

Based on available data, the classification criteria are not met

2.2. Label elements



Signal Word

Danger

Hazard Statements

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

Precautionary Statements

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell
P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
P304 + P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS-No	EC-No.	Weight %	CLP Classification - Regulation (EC) No 1272/2008
Acetonitrile	75-05-8	200-835-2	>95	Flam. Liq. 2 (H225) Acute Tox. 4 (H302) Acute Tox. 4 (H312)

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				Eye Irrit. 2 (H319) Acute Tox. 4 (H332)
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Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

General Advice	Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Ingestion	Do not induce vomiting. Call a physician or Poison Control Center immediately.
Inhalation	Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Self-Protection of the First Aider	Remove all sources of ignition. Use personal protective equipment. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

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

Breathing difficulties. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Metabolism may release cyanide, which may result in headache, dizziness, weakness, collapse, unconsciousness, and possible death: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

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

Notes to Physician	Treat symptomatically. The effects may be delayed therefore medical observation is essential. Effects may be delayed 7 to 10 hours. May be metabolized to cyanide which in turn acts by inhibiting cytochrome oxidase impairing cellular respiration.
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SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media

Water spray. CO₂, dry chemical, dry sand, alcohol-resistant foam. Cool closed containers exposed to fire with water spray.

Extinguishing media which must not be used for safety reasons

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Flammable. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may

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explode when heated. Vapors may form explosive mixtures with air.

Hazardous Combustion Products

Hydrogen cyanide (hydrocyanic acid), Nitrogen oxides (NO_x), Carbon monoxide (CO), Carbon dioxide (CO₂).

5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition. Take precautionary measures against static discharges. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Use personal protective equipment.

6.2. Environmental precautions

Should not be released into the environment. See Section 12 for additional ecological information.

6.3. Methods and material for containment and cleaning up

Remove all sources of ignition. Take precautionary measures against static discharges. Provide adequate ventilation. Use spark-proof tools and explosion-proof equipment. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Prevent product from entering drains.

6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Wear personal protective equipment. Ensure adequate ventilation. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Use spark-proof tools and explosion-proof equipment. Use only non-sparking tools. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded.

Hygiene Measures

When using, do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

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Exposure limits

List source(s): **EU** - Commission Directive 2006/15/EC of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC on the protection of the health and safety of workers from the risks related to chemical agents at work. **UK** - EH40/2005 Containing the workplace exposure limits (WELs) for use with the Control of Substances Hazardous to Health Regulations (COSHH) 2002 (as amended). Updated by September 2006 official press release and October 2007 Supplement. **IRE** - 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority.

Component	The United Kingdom	European Union	Ireland
Acetonitrile	STEL: 60 ppm 15 min STEL: 102 mg/m ³ 15 min STEL: 15 mg/m ³ 15 min TWA: 40 ppm 8 hr TWA: 68 mg/m ³ 8 hr TWA: 5 mg/m ³ 8 hr Skin	TWA: 40 ppm 8 hr TWA: 70 mg/m ³ 8 hr Skin	TWA: 40 ppm 8 hr. TWA: 70 mg/m ³ 8 hr. STEL: 120 ppm 15 min STEL: 310 mg/m ³ 15 min Skin

Biological limit values

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

Monitoring methods

BS EN 14042:2003 Title Identifier: Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.

MDHS70 General methods for sampling airborne gases and vapours

MDHS 88 Volatile organic compounds in air. Laboratory method using diffusive samplers, solvent desorption and gas chromatography

MDHS 96 Volatile organic compounds in air - Laboratory method using pumped solid sorbent tubes, solvent desorption and gas chromatography

Derived No Effect Level (DNEL) See table for values

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				32.2 mg/kg bw/day
Dermal				40.6 ppm
Inhalation	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)

Predicted No Effect Concentration (PNEC) See values below.

Fresh water	10 mg/l
Fresh water sediment	7.54 mg/kg dw
Marine water	1 mg/l
Water Intermittent	10 mg/l
Microorganisms in sewage treatment	32 mg/l
Soil (Agriculture)	2.41 mg/kg dw

8.2. Exposure controls

Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

Personal protective equipment

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Eye Protection Goggles (European standard - EN 166)

Hand Protection Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Butyl rubber	> 480 minutes	0.35 mm	EN 374 Level 6	As tested under EN374-3 Determination of Resistance to Permeation by Chemicals
Neoprene gloves	< 60 minutes	0.45 mm		

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

Respiratory Protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

Large scale/emergency use Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Recommended Filter type: low boiling organic solvent Type AX Brown conforming to EN371

Small scale/Laboratory use Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141

Environmental exposure controls No information available.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Colorless	
Physical State	Liquid	
Odor	aromatic	
Odor Threshold	170 ppm	
pH	No information available	
Melting Point/Range	-46 °C / -50.8 °F	
Softening Point	No data available	
Boiling Point/Range	81 - 82 °C / 177.8 - 179.6 °F	@ 760 mmHg
Flash Point	12.8 °C / 55 °F	Method - No information available
Evaporation Rate	5.79	(Butyl Acetate = 1.0)
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	Lower 3 vol % Upper 16 vol %	
Vapor Pressure	97 mbar @ 20 °C	
Vapor Density	1.42	(Air = 1.0)
Specific Gravity / Density	0.781	
Bulk Density	Not applicable	Liquid
Water Solubility	Miscible	
Solubility in other solvents	No information available	

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Partition Coefficient (n-octanol/water)

Component	log Pow
Acetonitrile	-0.34
Autoignition Temperature	525 °C / 977 °F
Decomposition Temperature	No data available
Viscosity	0.36 cP at 20 °C
Explosive Properties	Not explosive
Oxidizing Properties	Not oxidising

Vapors may form explosive mixtures with air

9.2. Other information

Molecular Formula	C2 H3 N
Molecular Weight	41.05

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	No information available.

10.4. Conditions to avoid

Incompatible products. Keep away from open flames, hot surfaces and sources of ignition. Exposure to moisture.

10.5. Incompatible materials

Strong oxidizing agents. Strong acids. Reducing agents. Bases.

10.6. Hazardous decomposition products

Hydrogen cyanide (hydrocyanic acid). Nitrogen oxides (NOx). Carbon monoxide (CO). Carbon dioxide (CO₂).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Product Information

(a) acute toxicity;

Oral	Category 4
Dermal	Category 4
Inhalation	Category 4

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Acetonitrile	ATE = 617 mg/kg 450-787 mg/kg (Rat) 2460 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	ATE = 3587 ppm 7551 ppm (Rat) 8 h

(b) skin corrosion/irritation;

Based on available data, the classification criteria are not met

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- (c) serious eye damage/irritation; Category 2
- (d) respiratory or skin sensitization;
Respiratory Based on available data, the classification criteria are not met
Skin Based on available data, the classification criteria are not met
- (e) germ cell mutagenicity; Based on available data, the classification criteria are not met
- (f) carcinogenicity; Based on available data, the classification criteria are not met
 There are no known carcinogenic chemicals in this product
- (g) reproductive toxicity; Based on available data, the classification criteria are not met
- (h) STOT-single exposure; Based on available data, the classification criteria are not met
- (i) STOT-repeated exposure; Based on available data, the classification criteria are not met
Target Organs None known.
- (j) aspiration hazard; Based on available data, the classification criteria are not met

Symptoms / effects, both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Metabolism may release cyanide, which may result in headache, dizziness, weakness, collapse, unconsciousness, and possible death: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity Ecotoxicity effects

Component	Freshwater Fish	Water Flea	Freshwater Algae	Microtox
Acetonitrile	LC50: = 1650 mg/L, 96h static (Poecilia reticulata) LC50: 1600 - 1690 mg/L, 96h flow-through (Pimephales promelas) LC50: = 1000 mg/L, 96h static (Pimephales promelas) LC50: = 1850 mg/L, 96h static (Lepomis macrochirus)	EC50: = 5838 mg/L, 18h (Daphnia pulex)		EC50 = 28000 mg/L 48 h EC50 = 73 mg/L 24 h EC50 = 7500 mg/L 15 h

12.2. Persistence and degradability

Persistence Persistence is unlikely, based on information available.

12.3. Bioaccumulative potential

Does not bioaccumulate

Component	log Pow	Bioconcentration factor (BCF)
Acetonitrile	-0.34	No data available

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12.4. Mobility in soil

The product contains volatile organic compounds (VOC) which will evaporate easily from all surfaces. Will likely be mobile in the environment due to its volatility. Disperses rapidly in air.

12.5. Results of PBT and vPvB assessment

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).

12.6. Other adverse effects

Endocrine Disruptor Information
Persistent Organic Pollutant
Ozone Depletion Potential

This product does not contain any known or suspected endocrine disruptors
This product does not contain any known or suspected substance
This product does not contain any known or suspected substance

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues / Unused Products

Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

Contaminated Packaging

Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.

European Waste Catalogue (EWC)

According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.

Other Information

Waste codes should be assigned by the user based on the application for which the product was used. Do not dispose of waste into sewer. Can be incinerated, when in compliance with local regulations.

SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

14.1. UN number UN1648
14.2. UN proper shipping name ACETONITRILE
14.3. Transport hazard class(es) 3
14.4. Packing group II

ADR

14.1. UN number UN1648
14.2. UN proper shipping name ACETONITRILE
14.3. Transport hazard class(es) 3
14.4. Packing group II

IATA

14.1. UN number UN1648
14.2. UN proper shipping name ACETONITRILE
14.3. Transport hazard class(es) 3
14.4. Packing group II

14.5. Environmental hazards No hazards identified

14.6. Special precautions for user No special precautions required

14.7. Transport in bulk according to Not applicable, packaged goods

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Annex II of MARPOL73/78 and the IBC Code

SECTION 15: REGULATORY INFORMATION

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

International Inventories

X = listed, Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), China (IECSC), Japan (ENCS), Australia (AICS), Korea (ECL).

Component	EINECS	ELINCS	NLP	TSCA	DSL	NDSL	PICCS	ENCS	IECSC	AICS	KECL
Acetonitrile	200-835-2	-		X	X	-	X	X	X	X	KE-0006 7

National Regulations

Component	Germany - Water Classification (VwVwS)	Germany - TA-Luft Class
Acetonitrile	WGK 2	

Component	France - INRS (Tables of occupational diseases)
Acetonitrile	Tableaux des maladies professionnelles (TMP) - RG 84

Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment.

15.2. Chemical safety assessment

A Chemical Safety Assessment/Report (CSA/CSR) has been conducted by the manufacturer/importer

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

H312 - Harmful in contact with skin

H319 - Causes serious eye irritation

H332 - Harmful if inhaled

Legend

CAS - Chemical Abstracts Service

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

ENCS - Japanese Existing and New Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit

ACGIH - American Conference of Governmental Industrial Hygienists

DNEL - Derived No Effect Level

RPE - Respiratory Protective Equipment

LC50 - Lethal Concentration 50%

NOEC - No Observed Effect Concentration

PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

PNEC - Predicted No Effect Concentration

LD50 - Lethal Dose 50%

EC50 - Effective Concentration 50%

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

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ADR - European Agreement Concerning the International Carriage of Dangerous Goods by Road

IMO/IMDG - International Maritime Organization/International Maritime Dangerous Goods Code

OECD - Organisation for Economic Co-operation and Development

BCF - Bioconcentration factor

ICAO/IATA - International Civil Aviation Organization/International Air Transport Association

MARPOL - International Convention for the Prevention of Pollution from Ships

ATE - Acute Toxicity Estimate

VOC - Volatile Organic Compounds

Key literature references and sources for data

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

Training Advice

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

Fire prevention and fighting, identifying hazards and risks, static electricity, explosive atmospheres posed by vapours and dusts.

Use of personal protective equipment, covering appropriate selection, compatibility, breakthrough thresholds, care, maintenance, fit and standards.

First aid for chemical exposure, including the use of eye wash and safety showers.

Chemical incident response training.

Creation Date 16-Jun-2009

Revision Date 11-Feb-2019

Revision Summary Not applicable.

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

Disclaimer

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

End of Safety Data Sheet

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Acetonitrile - Exposure Scenarios

CAS-No 75-05-8	Reach Registration Number 01-2119471307-38-xxxx	EC-No. 203-726-8
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Exposure Scenarios Overview				
Title	Sector of use	Process category(ies)	Environmental release category	ES Identifier
Manufacture of acetonitrile	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 8a, 8b, 9	ERC1 - Manufacture of substances	ES1-M1 ACETONITRILE
Industrial use of acetonitrile	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 8a, 8b, 9	ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b - Industrial use of reactive processing aids ERC7 - Industrial use of substances in closed systems	ES2-M2 ACETONITRILE
Pharmaceutical, fine chemical and active substance manufacture uses of acetonitrile	SU9 - Manufacture of fine chemicals	1, 2, 3, 4, 8a, 8b, 15	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)	ES3-M3 ACETONITRILE
Formulation of preparations and/or re-packaging	SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)	3, 5, 9	ERC2 - Formulation of preparations	ES4-F1 ACETONITRILE
Laboratory use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites	3, 15	ERC8a - Wide dispersive indoor use of processing aids in open systems	ES5-L1 ACETONITRILE

Exposure scenario

ES1 Manufacture of Acetonitrile - ES1-M1 ACETONITRILE

Section 1 - Identification of the use

Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Type	Worker
Processes, tasks, activities covered	Manufacture or use as an intermediate or process chemical or extraction agent. Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including

	drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals
Process category(ies)	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 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)
Environmental release category(ies)	ERC1 - Manufacture of substances

Section 2 - Operational Conditions and Risk Management Measures

Product characteristics

Physical State	Liquid
pH	No information available
Water Solubility	Miscible
Vapor Pressure	97 mbar @ 20 °C
Volatility	High

Covers concentrations up to 100 %

Section 2.1 - Control of environmental exposure

Environmental release category(ies)

ERC1 - Manufacture of substances

Specific Environmental Release Category

ESVOC SpERC 1.1.v1

Control of environmental exposure

Readily biodegradable
Annual amount used in the EU 8500 t/a
Annual amount per site 1000 t/a (Worst case)

Environmental factors not influenced by risk management

Emission days	300
Receiving water dilution (fresh or marine)	2000 m3/d

Other operational conditions of use affecting environmental exposure

Emission days	300 (from ESVOC SPERC 1.1.v1)
Release fraction to wastewater from process (initial release prior to RMM)	1% (Specified by ESVOC 1.1.v1)
Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements)	0.5% (Specified by ESVOC 1.1.v1)

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

Technical onsite conditions and measures to reduce or limit discharges, air emissions
Negligible air emissions as process operates in a contained system.
Additional good practice advice beyond the REACH Chemical Safety Report
Bund storage facilities to prevent soil and water pollution in the event of spillage. Ensure all waste water is collected and treated via a WWTP.

Conditions and measures related to municipal sewage treatment plant

Remarks Manufacturing plants will have on-site waste water treatment facilities and emission to the municipal STP will not occur.

Waste management

Air	142 kg/day Based on ESVOC SPERC 1.1.v1 release factors
Water	283 kg/d Based on ESVOC SPERC 1.1.v1 release factors
Soil	0.01% ERC release factor

Conditions and measures related to external treatment of waste for disposal

Disposal	Waste resulting from on-site RMM to be disposed as chemical waste
Waste treatment methods	Municipal waste incineration

Section 2.2 - Control of worker exposure

General information on risk management related to physicochemical hazard

Remove all sources of ignition. Take precautionary measures against static charges. Use only non-sparking tools. Keep equipment under negative pressure. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

General information on exposure estimation

Manufactured and processed at industrial sites in closed continuous processes with either no likelihood of exposure or with only occasional opportunity for exposure in controlled conditions e.g. during maintenance, sampling or discharge of the material. Transfer of the substance is conducted at dedicated facilities using a closed-system with vapour return. Respiratory protection is not required except for certain critical activities where respiratory protective equipment is used, for example, cleaning tanks or reactors. Measured dermal exposure data are not available.

Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	100%
Amounts used	>1000 t/y
Exposure duration	Avoid carrying out operation for more than 8h
Use frequency	220 days per year
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substance within a closed system Use of closed transfers of liquids from storage to production equipment (e.g. metered piped or pumped additions) Sample via a closed loop or other system to avoid exposure
Technical conditions and measures to control dispersion from source towards the worker	Undertake operation under enclosed conditions
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	100%
Exposure duration	Avoid carrying out operation for more than 8h
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Wear a respirator providing a minimum efficiency of 90% (APF 10) Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Exposure duration	< 1 hour(s)
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training

health evaluation	Wear a respirator providing a minimum efficiency of 90% (APF 10)
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	100%
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear a respirator providing a minimum efficiency of 90% (APF 10) Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	100%
Exposure duration	< 1 hour(s)
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid carrying out operation for more than 1 hour Ensure operation is undertaken outdoors
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear a respirator providing a minimum efficiency of 95% (APF 20) Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Assumes a good basic standard of occupational hygiene is implemented -----
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Assumes a good basic standard of occupational hygiene is implemented -----
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	100%
Exposure duration	Avoid carrying out operation for more than 8h
Indoor/Outdoor use	Indoor use
Assumes process temperature up to	<=40°C
Minimum room ventilation rate for handling/application (air changes per hour)	1-3
Organisational measures to prevent /limit releases, dispersion and exposure	Fill containers/cans at dedicated fill points supplied with local extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90% -----

Control of consumer exposure Not intended for consumer use

Section 3 - Exposure estimation

Environment**Environmental release category(ies)**

ERC1 - Manufacture of substances

Specific Environmental Release Category - ESVOC SpERC 1.1.v1**Predicted No Effect Concentration (PNEC)** - See values below

Fresh water	10 mg/l	Marine water	1 mg/l
Fresh water sediment	45 mg/kg dw	Marine water sediment	4.5 mg/kg dw
Water Intermittent	10 mg/l	Soil (Agriculture)	2.41 mg/kg dw
Microorganisms in sewage treatment	32 mg/l		

<u>Environment</u>	<u>Predicted exposure level</u>	<u>Risk characterization ratio (RCR)</u>
Freshwater	2.22 x 10 ⁻⁴ mg/l	<0.01
Marine water	2.06 x 10 ⁻⁵ mg/l	<0.01
Freshwater sediment	8.5 x 10 ⁻⁴ mg/kg dw	<0.01
Marine sediment	8.02 x 10 ⁻⁵ mg/kg dw	<0.01
Soil	4.62 x 10 ⁻⁶ mg/kg dw	<0.01
Air	2.27 x 10 ⁻⁶ mg/m ³	

Calculation method - EUSES 2.1**Remarks**

No significant PEC values are indicated for the regional scale even under the conservative assumptions of the Tier 2 EUSES assessment. All derived PECs are below the relevant PNEC and so no further assessment or refinements are required.

Health**Derived No Effect Level (DNEL)** - See table for values

<u>Route of exposure</u>	<u>Acute effects (local)</u>	<u>Acute effects (systemic)</u>	<u>Chronic effects (local)</u>	<u>Chronic effects (systemic)</u>
Oral				
Dermal				
Inhalation	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	32.2 mg/kg bw/day 40.6 ppm (68 mg/m ³)

<u>Process category(ies)</u>	<u>Exposure route</u>	<u>Predicted exposure level</u>	<u>Risk characterization ratio (RCR)</u>
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative	0.012 mg/m ³	<0.01
	Worker - dermal	0.343 mg/kg bw/day	0.011
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative	12.0 mg/m ³	0.179
	Worker - dermal	1.37 mg/kg bw/day	0.043
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative	29.9 mg/m ³	0.447
	Worker - dermal	0.343 mg/kg bw/day	0.011
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative	24.0 mg/m ³	0.357
	Worker - dermal	6.86 mg/kg bw/day	0.214
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative	60.0 mg/m ³	0.894
	Worker - dermal	12.0 mg/kg bw/day	0.429

PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative	60.0 mg/m ³	0.894
	Worker - dermal	6.86 mg/kg bw/day	0.214
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative	0.855 mg/m ³	0.013
	Worker - dermal	6.86 mg/kg bw/day	0.021

Calculation method - Used ECETOC TRA model

Remarks

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented

Section 4 - Guidance to check compliance with the exposure scenario

Used EUSES model

Used ECETOC TRA model

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>)

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
ECHA guidance for downstream users

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Acetonitrile - Exposure Scenarios

CAS-No 75-05-8	Reach Registration Number 01-2119471307-38-xxxx	EC-No. 203-726-8
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Exposure scenario

ES2 Industrial use of Acetonitrile - ES2-M2 ACETONITRILE

Section 1 - Identification of the use

Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Type	Worker
Processes, tasks, activities covered	Manufacture or use as an intermediate or process chemical or extraction agent. Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals
Process category(ies)	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 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)
Environmental release category(ies)	ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b - Industrial use of reactive processing aids ERC7 - Industrial use of substances in closed systems

Section 2 - Operational Conditions and Risk Management Measures

Product characteristics

Physical State	Liquid
pH	No information available
Water Solubility	Miscible
Vapor Pressure	97 mbar @ 20 °C
Volatility	High
Covers concentrations up to 100 %	

Section 2.1 - Control of environmental exposure

Environmental release category(ies)

ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b - Industrial use of reactive processing aids

ERC7 - Industrial use of substances in closed systems

Specific Environmental Release Category

ESVOC SpERC 1.1.v1

Control of environmental exposure

Readily biodegradable

Regional use tonnage 1000 t/a

Annual site tonnage 1000 t/a

Fraction of EU tonnage used in region 1%

Fraction of regional tonnage used locally 1%

Other operational conditions of use affecting environmental exposure

Emission days

100

Release fraction to air from process (initial release prior to RMM)

ERC6a = 5%

ERC6b = 0.1%

ERC7 = 5%

Release fraction to wastewater from process (initial release prior to RMM)

ERC6a = 2%

ERC6b = 5%

ERC7 = 5%

Release fraction to soil from process (initial release prior to RMM)

ERC6a = 0.1%

ERC6b = 0.025%

ERC7 = 5%

Remarks

ERC defaults

Conditions and measures related to municipal sewage treatment plant

Assumed on-site sewage treatment plant flow

2000m³/d

Sludge treatment

Controlled application to agricultural soil.

Waste management

Air

ERC6a = 500 kg/day

ERC6b = 10 kg/day

ERC7 = 500 kg/day

ERC release factor

Water

ERC6a = 200 kg/day

ERC6b = 500 kg/day

ERC7 = 500 kg/day

ERC release factor

Soil

ERC6a = 0.1%

ERC6b = 0.025%

ERC7 = 5%

ERC release factor

Regional exposure levels and environmental concentrations

Regional exposure for the use has been modelled using EUSES 2.1. No significant PEC values are indicated for the regional scale even under the conservative assumptions of the Tier 2 EUSES assessment.

Section 2.2 - Control of worker exposure

General information on risk management related to physicochemical hazard

Remove all sources of ignition. Take precautionary measures against static charges. Use only non-sparking tools. Keep equipment under negative pressure. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

General information on exposure estimation

Used in manufacturing processes which are either closed, continuous processes, or closed batch processes and in batch synthesis where some opportunity for exposure may arise. Respiratory protection is not required except for certain critical activities where respiratory protective equipment is used, for example, cleaning tanks or reactors. Local exhaust ventilation (LEV) usually required for indoor industrial use. Measured dermal exposure data are not available.

Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	100%
Amounts used	>1000 t/y
Exposure duration	Avoid carrying out operation for more than 8h
Use frequency	220 days per year
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substance within a closed system Use of closed transfers of liquids from storage to production equipment (e.g. metered piped or pumped additions) Sample via a closed loop or other system to avoid exposure
Technical conditions and measures to control dispersion from source towards the worker	Undertake operation under enclosed conditions
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	100%
Exposure duration	Avoid carrying out operation for more than 8h
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Wear a respirator providing a minimum efficiency of 90% (APF 10) Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Exposure duration	< 1 hour(s)
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90% (APF 10)
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	100%
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear a respirator providing a minimum efficiency of 90% (APF 10) Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	100%
Exposure duration	< 1 hour(s)
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C

Organisational measures to prevent /limit releases, dispersion and exposure	Avoid carrying out operation for more than 1 hour Ensure operation is undertaken outdoors
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear a respirator providing a minimum efficiency of 95% (APF 20) Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Assumes a good basic standard of occupational hygiene is implemented -----
Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Assumes a good basic standard of occupational hygiene is implemented -----
Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	100%
Exposure duration	Avoid carrying out operation for more than 8h
Indoor/Outdoor use	Indoor use
Assumes process temperature up to	<=40°C
Minimum room ventilation rate for handling/application (air changes per hour)	1-3
Organisational measures to prevent /limit releases, dispersion and exposure	Fill containers/cans at dedicated fill points supplied with local extract ventilation
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90% -----
Control of consumer exposure	Not intended for consumer use

Section 3 - Exposure estimation

Environment

Environmental release category(ies)

- ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
- ERC6b - Industrial use of reactive processing aids
- ERC7 - Industrial use of substances in closed systems

Specific Environmental Release Category - ESVOC SpERC 1.1.v1

Predicted No Effect Concentration (PNEC) - See values below

Fresh water	10 mg/l	Marine water	1 mg/l
Fresh water sediment	45 mg/kg dw	Marine water sediment	4.5 mg/kg dw
Water Intermittent	10 mg/l	Soil (Agriculture)	3.02 mg/kg dw
Microorganisms in sewage treatment	32 mg/l		

Environment	Predicted exposure level	Risk characterization ratio (RCR)
Freshwater	ERC6a = 1.24 mg/l ERC6b = 3.11 mg/l	0.122 0.304

	ERC7 = 3.11 mg/l	0.304
Marine water	ERC6a = 0.124 mg/l ERC6b = 0.311 mg/l ERC7 = 0.311 mg/l	0.122 0.304 0.304
Freshwater sediment	ERC6a = 5.48 mg/kg dw ERC6b = 13.7 mg/kg dw ERC7 = 13.7 mg/kg dw	0.122 0.304 0.304
Marine sediment	ERC6a = 0.548 mg/kg dw ERC6b = 1.37 mg/kg dw ERC7 = 1.37 mg/kg dw	0.122 0.304 0.304
Soil	ERC6a = 0.199 mg/kg dw ERC6b = 0.485 mg/kg dw ERC7 = 0.49 mg/kg dw	0.657 0.16 0.162
Municipal STP	ERC6a = 12.4 mg/l ERC6b = 31.1 mg/l ERC7 = 31.1 mg/l	0.388 0.976 0.97

Calculation method - EUSES 2.1

Remarks

All RCRs are less than 1, it is considered that safe use has been demonstrated. Atmospheric contamination is minimal, and as there is no indicated effects on plants or animals from the atmosphere, no PNEC/ RCR is derived.

Health

Derived No Effect Level (DNEL) - See table for values

<u>Route of exposure</u>	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				32.2 mg/kg bw/day
Dermal				40.6 ppm
Inhalation	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)

Process category(ies)	Exposure route	Predicted exposure level	Risk characterization ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative	0.012 mg/m ³	<0.01
	Worker - dermal	0.343 mg/kg bw/day	0.011
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative	12.0 mg/m ³	0.179
	Worker - dermal	1.37 mg/kg bw/day	0.043
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative	29.9 mg/m ³	0.447
	Worker - dermal	0.343 mg/kg bw/day	0.011
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative	24.0 mg/m ³	0.357
	Worker - dermal	6.86 mg/kg bw/day	0.214
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative	60.0 mg/m ³	0.894
	Worker - dermal	12.0 mg/kg bw/day	0.429
PROC8b - Transfer of substance or preparation (charging/discharging) from/to	Worker - inhalative	60.0 mg/m ³	0.894

vessels/large containers at dedicated facilities	Worker - dermal	6.86 mg/kg bw/day	0.214
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative	0.855 mg/m ³	0.013
	Worker - dermal	6.86 mg/kg bw/day	0.021

Calculation method - Used ECETOC TRA model

Remarks

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented

Section 4 - Guidance to check compliance with the exposure scenario

Used EUSES model

Used ECETOC TRA model

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>)

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
ECHA guidance for downstream users

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Acetonitrile - Exposure Scenarios

CAS-No 75-05-8	Reach Registration Number 01-2119471307-38-xxxx	EC-No. 203-726-8
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Exposure scenario

**ES3 Pharmaceutical, fine chemical and active substance manufacture uses of acetonitrile
 - ES3-M3 ACETONITRILE**

Section 1 - Identification of the use

Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Type	Worker
Processes, tasks, activities covered	Manufacture or use as an intermediate or process chemical or extraction agent. Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities
Sector(s) of use	SU9 - Manufacture of fine chemicals
Process category(ies)	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 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 PROC15 - Use as laboratory reagent
Environmental release category(ies)	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Section 2 - Operational Conditions and Risk Management Measures

Product characteristics

Physical State	Liquid
pH	No information available
Water Solubility	Miscible
Vapor Pressure	97 mbar @ 20 °C
Volatility	High
Covers concentrations up to 100 %	

Section 2.1 - Control of environmental exposure

Environmental release category(ies)	ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
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Specific Environmental Release Category

ESVOC SpERC 1.1.v1

Control of environmental exposure

Readily biodegradable
 Regional use tonnage 1000 t/a
 Annual site tonnage 500 t/a
 Fraction of EU tonnage used in region 1%
 Fraction of regional tonnage used locally 0.1%

Other operational conditions of use affecting environmental exposure

Emission days 200
 Release fraction to air from process (initial release prior to RMM) **ERC4 = 100%**
ERC6a = 5%

Release fraction to wastewater from process (initial release prior to RMM) **ERC4 = 100%**
ERC6a = 2%

Release fraction to soil from process (initial release prior to RMM) **ERC4 = 5%**
ERC6a = 0.1%

Remarks ERC defaults

Conditions and measures related to municipal sewage treatment plant

Assumed on-site sewage treatment plant flow 2000m3/d
 Sludge treatment Controlled application to agricultural soil.

Waste management

Air **ERC4 = 2,500 kg/day**
ERC6a = 125kg/day
 ERC release factor
 Water **ERC4 = 2,500 kg/day**
ERC6a = 50 kg/day
 ERC release factor
 Soil **ERC4 = 5%**
ERC6a = 0.1%
 ERC release factor

Regional exposure levels and environmental concentrations

Regional exposure for the use has been modelled using EUSES 2.1. No significant PEC values are indicated for the regional scale even under the conservative assumptions of the Tier 2 EUSES assessment.

Section 2.2 - Control of worker exposure

General information on risk management related to physicochemical hazard

Remove all sources of ignition. Take precautionary measures against static charges. Use only non-sparking tools. Keep equipment under negative pressure. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

General information on exposure estimation

Used in manufacturing processes which are either closed, continuous processes, or closed batch processes and in batch synthesis where some opportunity for exposure may arise. Respiratory protection is not required except for certain critical activities where respiratory protective equipment is used, for example, cleaning tanks or reactors. Local exhaust ventilation (LEV) usually required for indoor industrial use. Measured dermal exposure data are not available.

Control of worker exposure

Process category(ies) PROC1 - Use in closed process, no likelihood of exposure
 Covers concentrations up to 100%
 Amounts used >1000 t/y
 Exposure duration Avoid carrying out operation for more than 8h

Use frequency	220 days per year
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Handle substance within a closed system Use of closed transfers of liquids from storage to production equipment (e.g. metered piped or pumped additions) Sample via a closed loop or other system to avoid exposure
Technical conditions and measures to control dispersion from source towards the worker	Undertake operation under enclosed conditions
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	100%
Exposure duration	Avoid carrying out operation for more than 8h
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Wear a respirator providing a minimum efficiency of 90% (APF 10) Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Exposure duration	< 1 hour(s)
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90% (APF 10)
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	100%
Exposure duration	Avoid carrying out activities involving exposure for more than 1 hour
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear a respirator providing a minimum efficiency of 90% (APF 10) Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices -----
Process category(ies)	PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
Covers concentrations up to	100%
Exposure duration	< 1 hour(s)
Indoor/Outdoor use	Outdoor
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Avoid carrying out operation for more than 1 hour Ensure operation is undertaken outdoors
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear a respirator providing a minimum efficiency of 95% (APF 20) Wear chemically resistant gloves (tested to EN374) in combination with specific activity

training
Additional good practice advice beyond Assumes a good basic standard of occupational hygiene is implemented
the REACH Chemical Safety Report

Process category(ies) PROC8b - Transfer of substance or preparation (charging/discharging) from/to
vessels/large containers at dedicated facilities
Covers concentrations up to 100%
Exposure duration Avoid carrying out activities involving exposure for more than 1 hour
Indoor/Outdoor use Outdoor
Assumes process temperature up to <=40°C
Conditions and measures related to Use eye protection according to EN 166, designed to protect against liquid splashes Wear
personal protection, hygiene and health evaluation chemically resistant gloves (tested to EN374) in combination with specific activity training
Additional good practice advice beyond Assumes a good basic standard of occupational hygiene is implemented
the REACH Chemical Safety Report

Process category(ies) PROC15 - Use as laboratory reagent
Covers concentrations up to 100%
Exposure duration Avoid carrying out operation for more than 8h
Indoor/Outdoor use Indoor use
Assumes process temperature up to <=40°C
Conditions and measures related to Use eye protection according to EN 166, designed to protect against liquid splashes Wear
personal protection, hygiene and health evaluation chemically resistant gloves (tested to EN374) in combination with specific activity training
Wear a respirator providing a minimum efficiency of 90%
Additional good practice advice beyond Workers involved in production, handling, sampling and transfer of materials are
the REACH Chemical Safety Report well-trained in these procedures as well as good industrial hygiene practices

Control of consumer exposure Not intended for consumer use

Section 3 - Exposure estimation

Environment

Environmental release category(ies)

ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Specific Environmental Release Category - ESVOC SpERC 1.1.v1

Predicted No Effect Concentration (PNEC) - See values below

Fresh water	10 mg/l	Marine water	1 mg/l
Fresh water sediment	45 mg/kg dw	Marine water sediment	4.5 mg/kg dw
Water Intermittent	10 mg/l	Soil (Agriculture)	3.02 mg/kg dw
Microorganisms in sewage treatment	32 mg/l		

<u>Environment</u>	<u>Predicted exposure level</u>	<u>Risk characterization ratio (RCR)</u>
Freshwater	ERC4a = 3.21 mg/l ERC6a = 0.311 mg/l	0.315 0.0305
Marine water	ERC4 = 0.321 mg/l ERC6a = 0.0311 mg/l	0.315 0.0305
Freshwater sediment	ERC4 = 14.2 mg/kg dw ERC6a = 1.37 mg/kg dw	0.315 0.0305
Marine sediment	ERC4 = 1.42 mg/kg dw ERC6a = 0.137 mg/kg dw	0.315 0.0305

Soil	ERC4 = 2.47 mg/kg dw ERC6a = 0.0509 mg/kg dw	0.818 0.0168
Municipal STP	ERC4 = 32 mg/l ERC6a = 3.11 mg/l	1 0.097
Air	ERC4 = 0.381 mg/m ³ ERC6a = 0.0191 mg/m ³	

Calculation method - EUSES 2.1

Remarks

All RCRs are less than 1, it is considered that safe use has been demonstrated. Atmospheric contamination is minimal, and as there is no indicated effects on plants or animals from the atmosphere, no PNEC/ RCR is derived.

Health

Derived No Effect Level (DNEL) - See table for values

<u>Route of exposure</u>	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				32.2 mg/kg bw/day
Dermal				40.6 ppm
Inhalation	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)

Process category(ies)	Exposure route	Predicted exposure level	Risk characterization ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative	0.012 mg/m ³	<0.01
	Worker - dermal	0.343 mg/kg bw/day	0.011
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative	12.0 mg/m ³	0.179
	Worker - dermal	1.37 mg/kg bw/day	0.043
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative	29.9 mg/m ³	0.447
	Worker - dermal	0.343 mg/kg bw/day	0.011
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative	24.0 mg/m ³	0.357
	Worker - dermal	6.86 mg/kg bw/day	0.214
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative	60.0 mg/m ³	0.894
	Worker - dermal	12.0 mg/kg bw/day	0.429
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative	60.0 mg/m ³	0.894
	Worker - dermal	6.86 mg/kg bw/day	0.214
PROC15 - Use as laboratory reagent	Worker - inhalative	1.71 mg/m ³	0.026
	Worker - dermal	0.0343 mg/kg bw/day	0.001

Calculation method - Used ECETOC TRA model

Remarks

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented

Section 4 - Guidance to check compliance with the exposure scenario

Used EUSES model

Used ECETOC TRA model

Further details on scaling and control technologies are provided in SpERC factsheet
(<http://cefic.org/en/reach-for-industries-libraries.html>)

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

ECHA guidance for downstream users

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Acetonitrile - Exposure Scenarios

CAS-No 75-05-8	Reach Registration Number 01-2119471307-38-xxxx	EC-No. 203-726-8
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Exposure scenario

ES4 Repackaging of Acetonitrile - ES4-F1 ACETONITRILE

Section 1 - Identification of the use

Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Type	Worker
Processes, tasks, activities covered	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.
Sector(s) of use	SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation) PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental release category(ies)	ERC2 - Formulation of preparations (mixtures)

Section 2 - Operational Conditions and Risk Management Measures

Product characteristics

Physical State	Liquid
pH	No information available
Water Solubility	Miscible
Vapor Pressure	97 mbar @ 20 °C
Volatility	High

Covers concentrations up to 100 %

Section 2.1 - Control of environmental exposure

Environmental release category(ies)
ERC2 - Formulation of preparations (mixtures)

Specific Environmental Release Category
ESVOC SpERC 1.1.v1

Control of environmental exposure
Readily biodegradable
Annual site tonnage 5 t/a
Fraction of EU tonnage used in region 1%
Fraction of regional tonnage used locally 1%

Other operational conditions of use affecting environmental exposure

Emission days	20
Release fraction to air from process (initial release prior to RMM)	2.5%
Release fraction to wastewater from process (initial release prior to RMM)	2%
Release fraction to soil from process (initial release prior to RMM)	0.01%
Remarks	ERC defaults

Conditions and measures related to municipal sewage treatment plant

Assumed on-site sewage treatment plant flow	2000m3/d
Sludge treatment	Controlled application to agricultural soil.

Waste management

Air	6.25 kg/d ERC release factor
Water	5 kg/d ERC release factor

Regional exposure levels and environmental concentrations

Regional exposure for the use has been modelled using EUSES 2.1. No significant PEC values are indicated for the regional scale even under the conservative assumptions of the Tier 2 EUSES assessment.

Section 2.2 - Control of worker exposure

General information on risk management related to physicochemical hazard

Remove all sources of ignition. Take precautionary measures against static charges. Use only non-sparking tools. Keep equipment under negative pressure. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

General information on exposure estimation

Local exhaust ventilation (LEV) usually required for indoor industrial use. Measured dermal exposure data are not available.

Control of worker exposure

Covers concentrations up to	100%
Exposure duration	< 8 hour(s)
Indoor/Outdoor use	Indoor/Outdoor use
Assumes process temperature up to	<=40°C
Organisational measures to prevent /limit releases, dispersion and exposure	Use engineering controls to keep exposures below the OEL or DNEL
Conditions and measures related to personal protection, hygiene and health evaluation	Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90% (APF 10)
Additional good practice advice beyond the REACH Chemical Safety Report	Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices

Control of consumer exposure Not intended for consumer use

Section 3 - Exposure estimation

Environment

Environmental release category(ies)

ERC2 - Formulation of preparations (mixtures)

Specific Environmental Release Category - ESVOC SpERC 1.1.v1

Predicted No Effect Concentration (PNEC) - See values below

Fresh water	10 mg/l	Marine water	1 mg/l
Fresh water sediment	45 mg/kg dw	Marine water sediment	4.5 mg/kg dw
Water Intermittent	10 mg/l	Soil (Agriculture)	3.02 mg/kg dw
Microorganisms in sewage treatment	32 mg/l		

<u>Environment</u>	<u>Predicted exposure level</u>	<u>Risk characterization ratio (RCR)</u>
Freshwater	0.0311 mg/l	3.04 x 10 ⁻³
Marine water	3.11 x 10 ⁻³ mg/l	3.04 x 10 ⁻³
Freshwater sediment	0.137 mg/l	3.04 x 10 ⁻³
Marine sediment	0.0137 mg/l	3.04 x 10 ⁻³
Soil	4.86 x 10 ⁻³ mg/kg dw	1.61 x 10 ⁻³
Municipal STP	0.31 mg/l	9.7 x 10 ⁻³
Calculation method - EUSES 2.1		

Remarks

All RCRs are less than 1, it is considered that safe use has been demonstrated. Atmospheric contamination is minimal, and as there is no indicated effects on plants or animals from the atmosphere, no PNEC/ RCR is derived.

Health

Derived No Effect Level (DNEL) - See table for values

<u>Route of exposure</u>	<u>Acute effects (local)</u>	<u>Acute effects (systemic)</u>	<u>Chronic effects (local)</u>	<u>Chronic effects (systemic)</u>
Oral				
Dermal				32.2 mg/kg bw/day
Inhalation	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)

<u>Process category(ies)</u>	<u>Exposure route</u>	<u>Predicted exposure level</u>	<u>Risk characterization ratio (RCR)</u>
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative Without LEV	42.8 mg/m ³	0.638
	Worker - inhalative Without LEV/with RPE	4.28 mg/m ³	0.064
	Worker - inhalative With LEV	8.55 mg/m ³	0.128
	Worker - dermal	0.343 mg/kg bw/day	0.011
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	Worker - inhalative Without LEV	171 mg/m ³	2.55
	Worker - inhalative Without LEV/with RPE	17.1 mg/m ³	0.255
	Worker - inhalative With LEV	34.2 mg/m ³	0.511
	Worker - dermal	13.7 mg/kg bw/day	0.429
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative Without LEV	171 mg/m ³	2.55
	Worker - inhalative Without LEV/with RPE	17.1 mg/m ³	0.255
	Worker - inhalative With LEV	34.2 mg/m ³	0.511
	Worker - dermal	6.86 mg/kg bw/day	0.214

Calculation method - Used ECETOC TRA model

PROC 5 and 9 were found to exceed the DNEL for acute and long-term systemic effects and for acute and long-term local effects when performing tasks indoors without LEV and without respiratory protection

Remarks

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented

Section 4 - Guidance to check compliance with the exposure scenario

Used EUSES model

Used ECETOC TRA model

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>)

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

ECHA guidance for downstream users

Annex to the Safety Data Sheet according to Regulation (EC) No 1907/2006 [REACH]

Acetonitrile - Exposure Scenarios

CAS-No 75-05-8	Reach Registration Number 01-2119471307-38-xxxx	EC-No. 203-726-8
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Exposure scenario

ES5 Laboratory use of Acetonitrile - ES5-L1 ACETONITRILE

Section 1 - Identification of the use

Main user group	Industrial uses: Uses of substances as such or in preparations at industrial sites
Type	Worker
Processes, tasks, activities covered	Laboratory reagent and solvent involving transfer from larger to small containers and vice versa.
Sector(s) of use	SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites SU24 - Scientific research and development
Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation) PROC15 - Use as laboratory reagent
Environmental release category(ies)	ERC8a - Wide dispersive indoor use of processing aids in open systems

Section 2 - Operational Conditions and Risk Management Measures

Product characteristics

Physical State	Liquid
pH	No information available
Water Solubility	Miscible
Vapor Pressure	97 mbar @ 20 °C
Volatility	High
Covers concentrations up to 100 %	

Section 2.1 - Control of environmental exposure

Environmental release category(ies)
ERC8a - Wide dispersive indoor use of processing aids in open systems

Specific Environmental Release Category
ESVOC SpERC 8.17.v1

Control of environmental exposure
Readily biodegradable
Annual site tonnage 2000 t/a
Fraction of EU tonnage used in region 1%
Fraction of regional tonnage used locally 0.0005%

Other operational conditions of use affecting environmental exposure
Emission days 365
Release fraction to air from process (initial) 50%

release prior to RMM)
 Release fraction to wastewater from process (initial release prior to RMM) 50%

Conditions and measures related to municipal sewage treatment plant

Assumed on-site sewage treatment plant flow 2000m3/d
 Sludge treatment Controlled application to agricultural soil.

Waste management

Air 1.37 kg/day ERC release factor
 Water 1.37 kg/day ERC release factor
 Soil 0.00 kg/d ERC release factor

Regional exposure levels and environmental concentrations

Regional exposure for the use has been modelled using EUSES 2.1. No significant PEC values are indicated for the regional scale even under the conservative assumptions of the Tier 2 EUSES assessment.

Section 2.2 - Control of worker exposure

General information on risk management related to physicochemical hazard

Remove all sources of ignition. Take precautionary measures against static charges. Use only non-sparking tools. Keep equipment under negative pressure. Segregate work area and mark with appropriate signs in accordance with local/regional/national legislation.

General information on exposure estimation

Local exhaust ventilation (LEV) usually required for indoor industrial use. Measured dermal exposure data are not available.

Control of worker exposure

Covers concentrations up to 100%
 Exposure duration < 8 hour(s)
 Indoor/Outdoor use Indoor use
 Assumes process temperature up to <=40°C
 Technical conditions and measures to control dispersion from source towards the worker Handle in an enclosing hood with exhaust ventilation
 Conditions and measures related to personal protection, hygiene and health evaluation Use eye protection according to EN 166, designed to protect against liquid splashes Wear chemically resistant gloves (tested to EN374) in combination with specific activity training
 Additional good practice advice beyond the REACH Chemical Safety Report Workers involved in production, handling, sampling and transfer of materials are well-trained in these procedures as well as good industrial hygiene practices

Control of consumer exposure Not intended for consumer use

Section 3 - Exposure estimation

Environment

Environmental release category(ies)

ERC8a - Wide dispersive indoor use of processing aids in open systems

Specific Environmental Release Category - ESVOC SpERC 8.17.v1

Predicted No Effect Concentration (PNEC) - See values below

Fresh water	10 mg/l	Marine water	1 mg/l
Fresh water sediment	45 mg/kg dw	Marine water sediment	4.5 mg/kg dw
Water Intermittent	10 mg/l	Soil (Agriculture)	3.02 mg/kg dw
Microorganisms in sewage treatment	32 mg/l		

Environment Predicted exposure level Risk characterization ratio (RCR)

Freshwater	0.0112 mg/l	1.1 x10 ⁻³
Marine water	1.1 x10 ⁻³ mg/l	1.09 x10 ⁻³
Freshwater sediment	0.0107 mg/kg dw	1.09 x10 ⁻³
Marine sediment	1.06 x10 ⁻³ mg/kg dw	1.09 x10 ⁻³
Soil	1.35 x10 ⁻³ mg/kg dw	5.06 x10 ⁻⁴
Municipal STP Air	0.0851 mg/l 0.0381 mg/m ³	2.66 x10 ⁻³
Calculation method - EUSES 2.1		

Remarks

All RCRs are less than 1, it is considered that safe use has been demonstrated. Atmospheric contamination is minimal, and as there is no indicated effects on plants or animals from the atmosphere, no PNEC/ RCR is derived.

Health

Derived No Effect Level (DNEL) - See table for values

Route of exposure	Acute effects (local)	Acute effects (systemic)	Chronic effects (local)	Chronic effects (systemic)
Oral				32.2 mg/kg bw/day
Dermal				40.6 ppm
Inhalation	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)	40.6 ppm (68 mg/m ³)

Process category(ies)	Exposure route	Predicted exposure level	Risk characterization ratio (RCR)
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative Without LEV	42.8 mg/m ³	0.638
	Worker - inhalative With LEV	8.55 mg/m ³	0.128
	Worker - dermal	0.343 mg/kg bw/day	0.011
PROC15 - Use as laboratory reagent	Worker - inhalative Without LEV	1.71 mg/m ³	0.255
	Worker - inhalative With LEV	3.42 mg/m ³	0.051
	Worker - dermal	0.0343 mg/kg bw/day	0.011

Calculation method - Used ECETOC TRA model

Remarks

Predicted exposures are not expected to exceed the DN(M)EL when the risk management measures/operational conditions outlined in section 2 are implemented

Section 4 - Guidance to check compliance with the exposure scenario

Used EUSES model

Used ECETOC TRA model

Further details on scaling and control technologies are provided in SpERC factsheet

(<http://cefic.org/en/reach-for-industries-libraries.html>)

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

ECHA guidance for downstream users