

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

Supersedes date 29-Sep-2017

Revision date 28-Jan-2025

Revision Number 5

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

1.1. Product identifier

Product Code(s)	905
Safety data sheet number	905
Product Name	DI-n-BUTYLAMINE
Index No	612-049-00-0
EC Number	203-921-8
CAS No	111-92-2
Synonyms	DI-n-BUTYLAMINE MIN 99%
Pure substance/mixture	Substance
Contains DI-n-BUTYLAMINE	
Molecular weight	129.25 g/mol

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

Recommended use	Chemicals used in the synthesis and / or formulation of industrial products Industrial use
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1.3. Details of the supplier of the safety data sheet

Supplier

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

For further information, please contact

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

1.4. Emergency telephone number

Emergency Telephone	SGS - +32 (0)3 575 55 55 (24h)
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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Flammable liquids	Category 3 - (H226)
Acute toxicity - Oral	Category 3 - (H301)
Acute toxicity - Dermal	Category 3 - (H311)
Acute toxicity - Inhalation (Vapours)	Category 2 - (H330)
Skin corrosion/irritation	Category 1 Sub-category B - (H314)
Serious eye damage/eye irritation	Category 1 - (H318)

2.2. Label elements

Contains DI-n-BUTYLAMINE



Signal word

Danger

Hazard statements

H301 - Toxic if swallowed

H311 - Toxic in contact with skin

H314 - Causes severe skin burns and eye damage

H330 - Fatal if inhaled

H226 - Flammable liquid and vapour

Precautionary statements

P271 - Use only outdoors or in a well-ventilated area

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor/physician

P233 - Keep container tightly closed

P501 - Dispose of contents/ container to an approved waste disposal plant

Additional information

This product requires child resistant fastenings if supplied to the general public. This product requires tactile warnings if supplied to the general public.

2.3. Other hazards

In the presence of nitrosating agents, it is possible that this substance forms nitrosamines.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Weight-%	EC No (EU Index No)	UK REACH registration number	Classification according to GB CLP (SI 2020/1567 as amended)	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
DI-n-BUTYLAMINE 111-92-2	>= 99.5 % - <= 99.94 %	203-921-8	-	Flam. Liq. 3 (H226) Skin Corr. 1B (H314) Acute Tox. 3 (H311) Acute Tox. 2 (H330) Acute Tox. 3 (H301) Eye Dam. 1 (H318)	-	-	-

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

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

SECTION 4: First aid measures**4.1. Description of first aid measures**

General advice	First aid personnel should wear appropriate protective equipment during any rescue. Place unconscious person on the side in the recovery position and ensure breathing can take place. Take off immediately all contaminated clothing and wash it before reuse.
Inhalation	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Rinse mouth thoroughly with water. Get medical attention if symptoms occur.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if symptoms occur.
Skin contact	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical attention if symptoms occur.
Ingestion	Rinse mouth thoroughly with water. Do NOT induce vomiting. Drink 200-300 ml of water. Get medical attention.

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

Inhalation	Fatal if inhaled.
Eyes	Causes serious eye damage. May cause permanent damage if eye is not immediately irrigated. Causes eye burns.
Dermal	Toxic in contact with skin. Causes severe burns.
Ingestion	Toxic if swallowed.

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

Note to doctors	Treat symptomatically.
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SECTION 5: Firefighting measures**5.1. Extinguishing media**

Suitable Extinguishing Media	Dry chemical, CO ₂ , alcohol-resistant foam or water spray.
Large Fire	CAUTION: Use of water spray when fighting fire may be inefficient.
Unsuitable extinguishing media	Do not scatter spilled material with high pressure water streams.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical	When heated and in case of fire, toxic vapours/gases may be formed. Flammable liquid and vapour. Vapours may form explosive mixtures with air.
Hazardous combustion products	Carbon oxides. Nitrogen oxides (NO _x). amine derivatives.

5.3. Advice for firefighters

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

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation. Use personal protection recommended in Section 8. Avoid contact with skin, eyes and inhalation of vapours. Keep unnecessary and unprotected personnel from entering. Keep people away from and upwind of spill/leak. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Other information Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Should not be released into the environment. Do not allow to enter into soil/subsoil.

6.3. Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Flush area with flooding quantities of water. Take up mechanically, placing in appropriate containers for disposal.

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

6.4. Reference to other sections

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

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling Ensure adequate ventilation. Use personal protection recommended in Section 8. Avoid contact with skin, eyes and inhalation of vapours. Handle in accordance with good industrial hygiene and safety practice. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Wash skin thoroughly after handling. Take precautionary measures against static discharge. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

General hygiene considerations Do not eat, drink or smoke when using the product. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place. Store away from the following materials. Acids. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep at a temperature not exceeding 30 °C.

7.3. Specific end use(s)

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

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

SECTION 8: Exposure controls/personal protection**8.1. Control parameters**

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

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

Derived No Effect Level (DNEL) - Workers

Chemical name	Oral	Dermal	Inhalation
DI-n-BUTYLAMINE 111-92-2			5.025 mg/m ³ [5] [6]

[5] Local health effects.

[6] Long term.

Derived No Effect Level (DNEL) - General Public No information available.

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater	Freshwater (intermittent release)	Marine water	Marine water (intermittent release)	Air
DI-n-BUTYLAMINE 111-92-2	0.1 mg/l	0.509 mg/l	0.01 mg/l		

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
DI-n-BUTYLAMINE 111-92-2	13.6 mg/kg	1.36 mg/kg	149.5 mg/l	2.66 mg/kg	

8.2. Exposure controls

Engineering controls No information available.

Personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles). Use eye protection according to EN 166.

Hand protection Wear suitable gloves. Gloves must conform to standard EN 374.

Gloves			
Duration of contact	PPE - Glove material	Glove thickness	Break through time
Performance level 6	Fluoroelastomer	0.7 mm	> 480 minutes
Performance level 6	Wear protective nitrile rubber gloves	0.4 mm	> 480 minutes
Performance level 3	Chloroprene rubber (CR)	0.5 mm	> 60 minutes
Performance level 2	Wear protective butyl rubber gloves	0.7 mm	> 30 minutes

Skin and body protection Wear appropriate clothing to prevent reasonably probable skin contact. Antistatic footwear.

Respiratory protection Use appropriate respiratory protection.

Organic gases and vapours filter conforming to EN 14387. Type A.

General hygiene considerations Do not eat, drink or smoke when using the product. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Clear liquid
Colour	Colourless
Odour	Ammonia.
Odour threshold	Not determined

Property	Values	Remarks • Method
Melting point / freezing point	-62 °C	@ 1013 hPa.
Initial boiling point and boiling range	160 °C	@ 1013 hPa.
Flammability		Flammable liquid and vapour.
Flammability Limit in Air		No information available.
Upper flammability or explosive limits		
Lower flammability or explosive limits		
Flash point	40.5 °C	CC (closed cup). DIN 51755.
Autoignition temperature		No information available.
Decomposition temperature	175 °C	DIN 51007.
pH	11.1	1 g/l. Read-across.
pH (as aqueous solution)		No information available.
Kinematic viscosity		No information available.
Dynamic viscosity	0.85 mPa s	@ 20 °C.
Water solubility	3.8 g/l @ 20 °C	OECD 105.
Solubility(ies)		No information available.
Partition coefficient	(log Kow): 2.1	OECD 107.
Vapour pressure	2.26 hPa	@ 20.3 °C. DIN 51757.
Relative density	0.7594	@ 20 °C.
Bulk density		No information available
Liquid Density	0.7601 g/cm3	@ 20.0 °C DIN 51757
Relative vapour density	> 1	@ 20 °C. Estimated value.
Particle characteristics		No information available.
Particle Size	No information available	
Particle Size Distribution	No information available	
Explosive properties	Not considered to be explosive.	
Oxidising properties	Does not meet the criteria for classification as oxidising	

9.2. Other information

Molecular weight	129.25 g/mol
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	Vapours can form explosive mixtures with air.
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10.2. Chemical stability

Stability	Stable under normal conditions.
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Explosion data

Sensitivity to mechanical impact	None.
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Sensitivity to static discharge	Yes.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Exothermic reaction with acids.

10.4. Conditions to avoid

Conditions to avoid Keep away from open flames, hot surfaces and sources of ignition.

10.5. Incompatible materials

Incompatible materials Acids. Bases. Oxidising agent. Acids. Nitrous acid (HNO₂) and nitrosating agents. non-ferrous metals.

10.6. Hazardous decomposition products

Hazardous decomposition products Carbon oxides. Nitrogen oxides (NO_x). Nitrosamines. amine derivatives.

SECTION 11: Toxicological information**11.1. Information on toxicological effects****Information on likely routes of exposure****Product Information**

Inhalation	Fatal if inhaled.
Eye contact	Causes serious eye damage. May cause permanent damage if eye is not immediately irrigated. Causes eye burns.
Skin contact	Toxic in contact with skin. Causes severe burns.
Ingestion	Toxic if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics**Symptoms****Acute toxicity****Numerical measures of toxicity****Component Information**

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
DI-n-BUTYLAMINE	= 220 mg/kg (Rat)	= 768 mg/kg (Rabbit)	= 1.15 mg/L (Rat) 4 h

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

Skin corrosion/irritation Causes severe burns.

DI-n-BUTYLAMINE (111-92-2)

Method	Species	Exposure route	Effective dose	Exposure time	Results
OECD Test No. 404: Acute Dermal Irritation/Corrosion	Rabbit	Dermal			Corrosive

Serious eye damage/eye irritation Causes serious eye damage. May cause permanent damage if eye is not immediately irrigated. Causes eye burns.

DI-n-BUTYLAMINE (111-92-2)

Method	Species	Exposure route	Effective dose	Exposure time	Results
OECD Test No. 405: Acute Eye Irritation/Corrosion	Rabbit	eye			Corrosive - causes irreversible eye damage

Respiratory or skin sensitisation Not a skin sensitiser.

DI-n-BUTYLAMINE (111-92-2)

Method	Species	Exposure route	Results
Similar to OECD Test No. 406: Skin Sensitisation	Guinea pig	Dermal	Not a skin sensitiser

Germ cell mutagenicity Did not show mutagenic effects in animal experiments.

Component Information

DI-n-BUTYLAMINE (111-92-2)

Method	Species	Results
		Did not show mutagenic effects in animal experiments

Carcinogenicity No information available.

Reproductive toxicity This product does not contain any known or suspected reproductive hazards.

STOT - single exposure Based on available data, specific target organ toxicity is not expected after single oral, single inhalation, or single dermal exposure.

STOT - repeated exposure No information available.

Aspiration hazard Not applicable.

Other adverse effects No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity The environmental impact of this product has not been fully investigated.

DI-n-BUTYLAMINE (111-92-2)

Method	Species	Endpoint type	Effective dose	Exposure time	Results
OECD Test No. 203: Fish, Acute Toxicity Test	Oryzias latipes (Ricefish)	LC50	> 100 mg/L	96 hours	
OECD Test No. 202: Daphnia sp., Acute Immobilisation Test	Daphnia magna	EC50	58 mg/L	48 hours	
OECD Test No. 201: Freshwater Algae and Cyanobacteria, Growth Inhibition Test	Pseudokirchneriella subcapitata	EC50	50.9 mg/L	72 hours	
OECD Test No. 201: Freshwater Algae and	Pseudokirchneriella subcapitata	EC10	34.3 mg/L	72 hours	

Cyanobacteria, Growth Inhibition Test					
DIN 38412	Pseudomonas putida	EC50	196 mg/L	17 hours	
OECD Test No. 209: Activated Sludge, Respiration Inhibition Test (Carbon and Ammonium Oxidation)	activated sludge	EC20	> 1995 mg/L	30 minutes	
Chronic aquatic toxicity OECD Test No. 211: Daphnia magna Reproduction Test	Daphnia magna	NOEC	4.2 mg/L	21 days	

12.2. Persistence and degradability

Persistence and degradability Readily biodegradable.

DI-n-BUTYLAMINE (111-92-2)

Method	Exposure time	Value	Results
			Readily biodegradable

12.3. Bioaccumulative potential

Bioaccumulation Not likely to bioaccumulate.

Component Information

Chemical name	Partition coefficient
DI-n-BUTYLAMINE	2.1

12.4. Mobility in soil

Mobility in soil No information available.

12.5. Results of PBT and vPvB assessment

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

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

12.6. Other adverse effects

No information available.

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

Waste from residues/unused products Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

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

SECTION 14: Transport information**IATA**

14.1 UN number or ID number UN2248
14.2 UN proper shipping name DI-N-BUTYLAMINE

14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing group	II
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	None
ERG Code	8F

IMDG

14.1 UN number or ID number	UN2248
UN proper shipping name	DI-N-BUTYLAMINE
14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing group	II
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	None
EmS-No	F-E, S-C
14.7 Maritime transport in bulk according to IMO instruments	No information available

RID

14.1 UN number or ID number	UN2248
14.2 UN proper shipping name	DI-N-BUTYLAMINE
14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing group	II
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	None
Classification code	CF1

ADR

14.1 UN number or ID number	UN2248
14.2 UN proper shipping name	DI-N-BUTYLAMINE
14.3 Transport hazard class(es)	8
Subsidiary hazard class	3
14.4 Packing group	II
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	None
Classification code	CF1
Tunnel restriction code	(D/E)

SECTION 15: Regulatory information**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture****National regulations****Authorisations and/or restrictions on use:**

This product does not contain substances subject to authorisation (UK REACH - Annex XIV).

This product does not contain substances subject to restriction (UK REACH - Annex XVII).

Persistent Organic Pollutants

Not applicable

Export Notification requirements

Not applicable

Dangerous substance category per COMAH Regulations 2015 (as amended)

H2 - ACUTE TOXIC

P5c - FLAMMABLE LIQUIDS

Named dangerous substances per COMAH Regulations 2015 (as amended)

Not applicable

The Ozone-Depleting Substances Regulations 2015

Not applicable

The Biocidal Products Regulations 2001 (as amended)

Not applicable

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)

Not applicable

Poisons Act 1972 (Explosive Precursors) Regulations (as Amended)

Not applicable

International Inventories

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

Legend:

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

15.2. Chemical safety assessment

Chemical Safety Report No information available

SECTION 16: Other information**Key or legend to abbreviations and acronyms used in the safety data sheet****Full text of H-Statements referred to under section 3**

H226 - Flammable liquid and vapour
H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H332 - Harmful if inhaled

Legend

SVHC: Substances of Very High Concern for Authorisation:

Legend Section 8: Exposure controls/personal protection

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

Revision Note **SDS sections updated 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16****Classification procedure**

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Method Used

Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapour	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitisation	Calculation method
Skin sensitisation	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS

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

Prepared By Lisa Bland

Supersedes date 29-Sep-2017

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

Disclaimer

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

End of Safety Data Sheet

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

Chemical name DI-N-BUTYLAMINE
REACH registration number 01-2119475606-30-XXXX
CAS No 111-92-2
EC No (EU Index No) 203-921-8
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Formulation
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC2 - Formulation of preparations (mixtures)
Process category(ies) 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
 (multi-stage and/or significant contact)
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
 SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

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

Amounts used

Type	Annual amount per site
Value	250
Units	t(ons)/year

Other operational conditions of use affecting environmental exposure

Emission days	300
Release fraction to air from process (initial release prior to RMM)	0%
Release fraction to wastewater from process (initial release prior to RMM)	0.36%
Release fraction to soil from process (initial release prior to RMM)	0%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000
Sludge treatment	Do not apply industrial sludge to natural soils

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment
Soil	not applicable - no direct release to soil

Conditions and measures related to external recovery of waste

Method	External recovery and recycling of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Process category(ies)	PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Section 3 - Exposure estimation**Environmental release category(ies) - ERC2 - Formulation of preparations (mixtures)****Predicted No Effect Concentration (PNEC)**

Freshwater	0.1 mg/l
Freshwater sediment	13.6 mg/kg
Marine water	0.01 mg/l
Marine sediment	1.36 mg/kg

Soil 2.66 mg/kg
 Impact on Sewage Treatment 149.5 mg/l
 Intermittent release 0.509 mg/l

Calculation method Used ECETOC TRA model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	7984.9 kg/d	0.104363

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - local

5.025 mg/m³

Calculation method Used ECETOC TRA model

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.6156 mg/m ³	0.321517
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises	Worker - inhalative, long-term - systemic	2.6927 mg/m ³	0.535862
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	2.6927 mg/m ³	0.535862

Section 4 - Guidance to check compliance with the exposure scenario

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC report #107 and the chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these source, then they are indicated. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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

Chemical name DI-N-BUTYLAMINE
REACH registration number 01-2119475606-30-XXXX
CAS No 111-92-2
EC No (EU Index No) 203-921-8
Supplier Univar Solutions UK Ltd
 Aquarius House
 6 Mid Point Business Park
 Bradford
 GBR

Non-Emergency Telephone Number +44 1274 267300 / +44 1274 267306

E-mail address SDS.EMEA@univarsolutions.com

Section 1 - Title

Title Formulation & (re)packing of substances and mixtures
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC2 - Formulation of preparations (mixtures)
Process category(ies) 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)

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
 SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

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

Amounts used

Type	Annual amount per site
Value	5000
Units	t(ons)/year

Other operational conditions of use affecting environmental exposure

Emission days	300
Release fraction to air from process (initial release prior to RMM)	0%
Release fraction to wastewater from process (initial release prior to RMM)	0%
Release fraction to soil from process (initial release prior to RMM)	0%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000
Sludge treatment	Do not apply industrial sludge to natural soils

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
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Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Exhaust air scrubber. Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment If discharging to domestic sewage treatment plant, no onsite wastewater treatment required
Soil	not applicable - no direct release to soil

Conditions and measures related to external recovery of waste

Method	External recovery and recycling of waste should comply with applicable local and/or national regulations
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Control of worker exposure

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%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90% Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Efficiency of at least 30%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Process category(ies)	PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 95%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Process category(ies)	PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Section 3 - Exposure estimation

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

Predicted No Effect Concentration (PNEC)

Freshwater	0.1 mg/l
Freshwater sediment	13.6 mg/kg
Marine water	0.01 mg/l
Marine sediment	1.36 mg/kg
Soil	2.66 mg/kg
Impact on Sewage Treatment	149.5 mg/l
Intermittent release	0.509 mg/l

Calculation method Used ECETOC TRA model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	29580.2 t/d	0.000563

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - local 5.025 mg/m³

Calculation method Used ECETOC TRA model

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities	Worker - inhalative, long-term - systemic	3.7698 mg/m ³	0.750207
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities	Worker - inhalative, long-term - systemic	1.3464 mg/m ³	0.267931
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	Worker - inhalative, long-term - systemic	2.6927 mg/m ³	0.535862

Section 4 - Guidance to check compliance with the exposure scenario

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC report #107 and the chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these source, then they are indicated. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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Section 1 - Title

Title Use as an intermediate
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
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)

Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

Section 2.1 - Control of environmental exposure

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Amounts used

Type	Annual amount per site
Value	900
Units	t(ons)/year

Other operational conditions of use affecting environmental exposure

Emission days	100
Release fraction to air from process (initial release prior to RMM)	0%
Release fraction to wastewater from process (initial release prior to RMM)	0.36%
Release fraction to soil from process (initial release prior to RMM)	0%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000
Sludge treatment	Do not apply industrial sludge to natural soils

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment
Soil	not applicable - no direct release to soil

Conditions and measures related to external recovery of waste

Method	External recovery and recycling of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC1 - Use in closed process, no likelihood of exposure
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Process category(ies)	PROC2 - Use in closed, continuous process with occasional controlled exposure
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour) Efficiency of at least 30%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Section 3 - Exposure estimation

Environmental release category(ies) - ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

Predicted No Effect Concentration (PNEC)

Freshwater	0.1 mg/l
Freshwater sediment	13.6 mg/kg
Marine water	0.01 mg/l
Marine sediment	1.36 mg/kg
Soil	2.66 mg/kg
Impact on Sewage Treatment	149.5 mg/l
Intermittent release	0.509 mg/l

Calculation method		Used ECETOC TRA model	
Environment		predicted exposure level	Risk characterisation ratio (RCR)
Freshwater		438511.7 kg/d	0.020524

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - local

5.025 mg/m³

Calculation method		Used ECETOC TRA model	
Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC1 - Use in closed process, no likelihood of exposure	Worker - inhalative, long-term - systemic	0.0539 mg/m ³	0.010717
PROC2 - Use in closed, continuous process with occasional controlled exposure	Worker - inhalative, long-term - systemic	3.7698 mg/m ³	0.750207
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.6156 mg/m ³	0.321517

Section 4 - Guidance to check compliance with the exposure scenario

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC report #107 and the chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these source, then they are indicated. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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Section 1 - Title

Title Production of Rubber
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
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 (multi-stage and/or significant contact)
 PROC7 - Industrial spraying
 PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
 PROC21 - Low energy manipulation of substances bound in materials and/or articles
 PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

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

Amounts used

Type	Annual amount per site
Value	500
Units	t(ons)/year

Other operational conditions of use affecting environmental exposure

Emission days	20
Release fraction to air from process (initial release prior to RMM)	0%
Release fraction to wastewater from process (initial release prior to RMM)	0.36%
Release fraction to soil from process (initial release prior to RMM)	0%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000
Sludge treatment	Do not apply industrial sludge to natural soils

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment
Soil	not applicable - no direct release to soil

Conditions and measures related to external recovery of waste

Method	External recovery and recycling of waste should comply with applicable local and/or national regulations
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Control of worker exposure

Process category(ies)	PROC3 - Use in closed batch process (synthesis or formulation)
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Process category(ies)	PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Process category(ies)	PROC7 - Industrial spraying
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Process category(ies)	PROC14 - Production of preparations or articles by tableting, compression, extrusion, pelettising
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%

Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Process category(ies)	PROC21 - Low energy manipulation of substances bound in materials and/or articles
Covers concentrations up to	100%
Physical form of product	Solid, high dustiness
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Provide a good standard of controlled ventilation (5 to 10 air changes per hour) Efficiency of at least 70%
Indoor/Outdoor use	Indoor

Process category(ies)	PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles
Covers concentrations up to	100%
Physical form of product	Solid, low dustiness
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Indoor/Outdoor use	Indoor

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Predicted No Effect Concentration (PNEC)

Freshwater	0.1 mg/l
Freshwater sediment	13.6 mg/kg
Marine water	0.01 mg/l
Marine sediment	1.36 mg/kg
Soil	2.66 mg/kg
Impact on Sewage Treatment	149.5 mg/l
Intermittent release	0.509 mg/l

Calculation method Used ECETOC TRA model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	1218.1 t/d	0.020524

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - local 5.025 mg/m³

Calculation method Used ECETOC TRA model

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC3 - Use in closed batch process (synthesis or formulation)	Worker - inhalative, long-term - systemic	1.6156 mg/m ³	0.321517
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multi-stage and/or significant contact)	Worker - inhalative, long-term - systemic	2.6927 mg/m ³	0.535862
PROC7 - Industrial spraying	Worker - inhalative, long-term - systemic	3.4 mg/m ³	0.676617
PROC14 - Production of preparations or articles by tableting, compression,	Worker - inhalative, long-term - systemic	2.6927 mg/m ³	0.535862

extrusion, pelettising			
PROC21 - Low energy manipulation of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	3 mg/m ³	0.597015
PROC24 - High (mechanical) energy work-up of substances bound in materials and/or articles	Worker - inhalative, long-term - systemic	1 mg/m ³	0.199005

Section 4 - Guidance to check compliance with the exposure scenario

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC report #107 and the chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these source, then they are indicated. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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Section 1 - Title

Title Laboratory activities
Type Worker
Main user group Industrial uses: Uses of substances as such or in preparations at industrial sites
Environmental release category(ies) ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies) PROC15 - Use as laboratory reagent
Sector(s) of use SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites

Section 2 - Operational conditions and risk management measures

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

Amounts used

Type	Annual amount per site
Value	2
Units	t(ons)/year

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%

Conditions and measures related to municipal sewage treatment plant

Type	Municipal STP
Assumed domestic sewage treatment plant flow	2000
Sludge treatment	Do not apply industrial sludge to natural soils

Environmental factors not influenced by risk management

Receiving water dilution (fresh or marine)	18000 m3/d
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Local freshwater dilution factor	10
Local marine water dilution factor	100

Control measures to prevent releases

Air	Exhaust air scrubber. Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber - gas removal and/or air filtration - particle removal and/or thermal oxidation and/or vapour recovery - adsorption
Water	Acclimated biological treatment
Soil	not applicable - no direct release to soil

Conditions and measures related to external recovery of waste

Method	External recovery and recycling of waste should comply with applicable local and/or national regulations
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Control of worker exposure	
Process category(ies)	PROC15 - Use as laboratory reagent
Covers concentrations up to	100%
Physical form of product	Liquid
Vapour pressure	220.000005 Pa
Use frequency	480 minutes per day Covers frequency up to 5 days per week
Technical conditions and measures to control dispersion from source towards the worker	Local exhaust ventilation - efficiency of at least 90%
Indoor/Outdoor use	Indoor
Operational conditions	Covers use at ambient temperatures

Section 3 - Exposure estimation

Environmental release category(ies) - ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Predicted No Effect Concentration (PNEC)

Freshwater	0.1 mg/l
Freshwater sediment	13.6 mg/kg
Marine water	0.01 mg/l
Marine sediment	1.36 mg/kg
Soil	2.66 mg/kg
Impact on Sewage Treatment	149.5 mg/l
Intermittent release	0.509 mg/l

Calculation method Used ECETOC TRA model

Environment	predicted exposure level	Risk characterisation ratio (RCR)
Freshwater	1433.4 kg/d	0.069763

Derived No Effect Level (DNEL):

Worker - inhalative, long-term - local 5.025 mg/m³

Calculation method Used ECETOC TRA model

Process category(ies)	Exposure route	predicted exposure level	Risk characterisation ratio (RCR)
PROC15 - Use as laboratory reagent	Worker - inhalative, long-term - systemic	2.6927 mg/m ³	0.535862

Section 4 - Guidance to check compliance with the exposure scenario

The ECETOC TRA tool has been used to estimate consumer exposures, consistent with the content of ECETOC report #107 and the chapter R15 of the IR&CSA TGD. Where exposure determinants differ to these source, then they are indicated. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.