

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 23.11.2018

Version 2.4

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

1.1 Product identifier

Catalogue No.	100397
Product name	N,N-Dimethylformamide for peptide synthesis
REACH Registration Number	01-2119475605-32-XXXX
CAS-No.	68-12-2

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

Identified uses	Solvent
	In compliance with the conditions described in the annex to this safety data sheet.

1.3 Details of the supplier of the safety data sheet

Company	Merck KGaA * 64271 Darmstadt * Germany * Phone:+49 6151 72-0
Responsible Department	LS-QHC * e-mail: prodsafe@merckgroup.com

1.4 Emergency telephone number	Please contact the regional company representation in your country.
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SECTION 2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

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Catalogue No. 100397

Product name N,N-Dimethylformamide for peptide synthesis

Flammable liquid, Category 3, H226

Acute toxicity, Category 4, Inhalation, H332

Acute toxicity, Category 4, Dermal, H312

Eye irritation, Category 2, H319

Reproductive toxicity, Category 1B, H360D

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

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms



Signal word

Danger

Hazard statements

H360D May damage the unborn child.

H226 Flammable liquid and vapour.

H312 + H332 Harmful in contact with skin or if inhaled.

H319 Causes serious eye irritation.

Precautionary statements

Prevention

P201 Obtain special instructions before use.

P210 Keep away from heat.

Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

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

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

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Product name N,N-Dimethylformamide for peptide synthesis

Restricted to professional users.

Reduced labelling (≤125 ml)

Hazard pictograms



Signal word

Danger

Hazard statements

H360D May damage the unborn child.

Precautionary statements

P201 Obtain special instructions before use.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Index-No. 616-001-00-X

2.3 Other hazards

None known.

SECTION 3. Composition/information on ingredients

3.1 Substance

Formula	HCON(CH ₃) ₂	C ₃ H ₇ NO (Hill)
Index-No.	616-001-00-X	
EC-No.	200-679-5	
Molar mass	73,09 g/mol	

Hazardous components (REGULATION (EC) No 1272/2008)

Chemical name (Concentration)

CAS-No.	Registration number	Classification
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N,N-dimethylformamide (<= 100 %)		
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Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

68-12-2	01-2119475605-32-
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XXXX

Flammable liquid, Category 3, H226

Acute toxicity, Category 4, H332

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Catalogue No.	100397
Product name	N,N-Dimethylformamide for peptide synthesis

Acute toxicity, Category 4, H312
Eye irritation, Category 2, H319
Reproductive toxicity, Category 1B, H360D

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

3.2 Mixture

Not applicable

SECTION 4. First aid measures

4.1 Description of first aid measures

General advice

First aider needs to protect himself.

After inhalation: fresh air. Call in physician.

If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

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

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

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

4.2 Most important symptoms and effects, both acute and delayed

Gastrointestinal disturbance, Vomiting, Nausea, Headache, Dizziness, Drowsiness
irritant effects

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Foam, Carbon dioxide (CO₂), Dry powder, Water

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Unsuitable extinguishing media

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

5.2 Special hazards arising from the substance or mixture

Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapours possible in the event of fire.

Fire may cause evolution of:

nitrogen oxides

5.3 Advice for firefighters

Special protective equipment for firefighters

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

Further information

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

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

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

Advice for emergency responders:

Protective equipment see section 8.

6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

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

6.4 Reference to other sections

Indications about waste treatment see section 13.

SECTION 7. Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Observe label precautions.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorised persons.

Recommended storage temperature see product label.

7.3 Specific end use(s)

See exposure scenario in the Annex to this MSDS.

SECTION 8. Exposure controls/personal protection

8.1 Control parameters

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Product name N,N-Dimethylformamide for peptide synthesis

Derived No Effect Level (DNEL)

Worker DNEL, longterm	Systemic effects	dermal	3,31 mg/kg Body weight
Worker DNEL, longterm	Systemic effects	inhalation	15 mg/m ³

Predicted No Effect Concentration (PNEC)

PNEC Fresh water	30 mg/l
PNEC Marine water	3 mg/l
PNEC Aquatic intermittent release	30 mg/l
PNEC Fresh water sediment	25,05 mg/kg
PNEC Soil	16,24 mg/kg
PNEC Sewage treatment plant	123 mg/l

8.2 Exposure controls

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

Eye/face protection

Safety glasses

Hand protection

full contact:

Glove material:	butyl-rubber
Glove thickness:	0,70 mm

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Break through time: > 480 min

splash contact:

Glove material: Viton (R)

Glove thickness: 0,70 mm

Break through time: > 240 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 898 Butoject® (full contact), KCL 890 Vitoject® (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet<(>,<)> supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Other protective equipment

Flame retardant antistatic protective clothing.

Respiratory protection

required when vapours/aerosols are generated.

Recommended Filter type: Filter A-(P2)

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

Environmental exposure controls

Do not let product enter drains.

Risk of explosion.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form liquid

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Catalogue No.	100397
Product name	N,N-Dimethylformamide for peptide synthesis

Colour	colourless
Odour	amine-like
Odour Threshold	0,329 ppm
pH	7 at 200 g/l 20 °C
Melting point	-61 °C (External MSDS)
Boiling point/boiling range	153 °C at 1.013 hPa Method: DIN 53171
Flash point	57,5 °C at 1.013 hPa Method: DIN 51755 Part 2
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	2,2 %(V)
Upper explosion limit	16 %(V)
Vapour pressure	3,77 hPa at 20 °C
Relative vapour density	2,51

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Product name	N,N-Dimethylformamide for peptide synthesis

Density	0,94 g/cm ³ at 20 °C
Relative density	No information available.
Water solubility	1.000 g/l at 20 °C
Partition coefficient: n-octanol/water	log Pow: -0,85 (25 °C) OECD Test Guideline 107 Bioaccumulation is not expected.
Auto-ignition temperature	435 °C at 1.013 hPa Method: DIN 51794
Decomposition temperature	> 350 °C
Viscosity, dynamic	0,86 mPa.s at 20 °C
Explosive properties	Not classified as explosive.
Oxidizing properties	none

9.2 Other data

Ignition temperature	410 °C Method: DIN 51794
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SECTION 10. Stability and reactivity

10.1 Reactivity

Vapour/air-mixtures are explosive at intense warming.

10.2 Chemical stability

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Product name N,N-Dimethylformamide for peptide synthesis

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

10.3 Possibility of hazardous reactions

Violent reactions possible with:

Alkali metals, halogens, halides, Reducing agents, triethylaluminium, nitrates, metallic oxides, nonmetallic oxides, Halogenated hydrocarbon, Isocyanates, sodium, Sodium borohydride, hydrides, Oxidizing agents, Oxides of phosphorus

A risk of explosion and/or of toxic gas formation exists with the following substances:

azides, Bromine, Chlorine, chromium(VI) oxide, potassium permanganate, triethylaluminium, chlorates

Halogenated hydrocarbon, with, Iron

10.4 Conditions to avoid

Heating.

10.5 Incompatible materials

various plastics, Copper, Copper alloys, Tin

10.6 Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

LD50 Rat: 3.010 mg/kg

OECD Test Guideline 401

Symptoms: Gastrointestinal disturbance, Nausea, Vomiting

Acute inhalation toxicity

Symptoms: Possible damages:, mucosal irritations

Acute dermal toxicity

LD50 Rabbit: 1.500 mg/kg

(IUCLID)

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Product name N,N-Dimethylformamide for peptide synthesis

Skin irritation

Rabbit

Result: No irritation

(IUCLID)

Eye irritation

Rabbit

Result: Eye irritation

(IUCLID)

Causes serious eye irritation.

Sensitisation

Sensitisation test: Guinea pig

Result: negative

(Lit.)

Sensitisation test: Mouse

Result: negative

Method: OECD Test Guideline 406

Germ cell mutagenicity

Genotoxicity in vivo

Micronucleus test

Mouse

male

Intraperitoneal injection

Bone marrow

Result: negative

(ECHA)

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Catalogue No. 100397

Product name N,N-Dimethylformamide for peptide synthesis

Genotoxicity in vitro

Ames test

Salmonella typhimurium

Result: negative

(ECHA)

Carcinogenicity

Did not show carcinogenic effects in animal experiments. (Lit.)

Reproductive toxicity

This information is not available.

Teratogenicity

This information is not available.

CMR effects

Teratogenicity:

May damage the unborn child.

Specific target organ toxicity - single exposure

This information is not available.

Specific target organ toxicity - repeated exposure

This information is not available.

Repeated dose toxicity

Rat

male and female

Oral

28 d

daily

NOAEL: 238 mg/kg

LOAEL: 475 mg/kg

OECD Test Guideline 407

Subacute toxicity

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Aspiration hazard

This information is not available.

11.2 Further information

After absorption:

Headache, Dizziness, Drowsiness

Damage to:

Kidney, Liver

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

SECTION 12. Ecological information

12.1 Toxicity

Toxicity to fish

flow-through test LC50 *Lepomis macrochirus* (Bluegill sunfish): 7.100 mg/l; 96 h

Analytical monitoring: yes

US-EPA

Toxicity to daphnia and other aquatic invertebrates

static test EC50 *Daphnia magna* (Water flea): 13.100 mg/l; 48 h

OECD Test Guideline 202

Toxicity to algae

static test EC50 *Desmodesmus subspicatus* (green algae): > 1.000 mg/l; 72 h

DIN 38412

Toxicity to bacteria

static test EC50 *Vibrio fischeri*: 12.300 - 17.500 mg/l; 5 min

(External MSDS)

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

semi-static test NOEC *Daphnia magna* (Water flea): 1.500 mg/l; 21 d

(External MSDS)

12.2 Persistence and degradability

Biodegradability

100 %; 21 d; aerobic

OECD Test Guideline 301E

Readily biodegradable

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Biochemical Oxygen Demand (BOD)

900 mg/g (5 d)

(Lit.)

Theoretical oxygen demand (ThOD)

1.863 mg/g

(Lit.)

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: -0,85 (25 °C)

OECD Test Guideline 107

Bioaccumulation is not expected.

Bioaccumulation

Bioconcentration factor (BCF): 0,3 - 1,2

Cyprinus carpio (Carp); 56 d

OECD Test Guideline 305C

Does not significantly accumulate in organisms.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No

1907/2006, Annex XIII.

12.6 Other adverse effects

Stability in water

ca.50 d

reaction with hydroxyl radicals (calculated) (Lit.)

Discharge into the environment must be avoided.

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SECTION 13. Disposal considerations

Waste treatment methods

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14. Transport information

Land transport (ADR/RID)

14.1 UN number	UN 2265
14.2 Proper shipping name	N,N-DIMETHYLFORMAMIDE
14.3 Class	3
14.4 Packing group	III
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
Tunnel restriction code	D/E

Inland waterway transport (ADN)

Not relevant

Air transport (IATA)

14.1 UN number	UN 2265
14.2 Proper shipping name	N,N-DIMETHYLFORMAMIDE
14.3 Class	3
14.4 Packing group	III
14.5 Environmentally hazardous	--
14.6 Special precautions for user	no

Sea transport (IMDG)

SAFETY DATA SHEET

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Catalogue No.	100397
Product name	N,N-Dimethylformamide for peptide synthesis

14.1 UN number	UN 2265
14.2 Proper shipping name	N,N-DIMETHYLFORMAMIDE
14.3 Class	3
14.4 Packing group	III
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
EmS	F-E S-D

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not relevant

SECTION 15. Regulatory information

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

EU regulations

Major Accident Hazard	SEVESO III
Legislation	FLAMMABLE LIQUIDS
	P5c
	Quantity 1: 5.000 t
	Quantity 2: 50.000 t

Occupational restrictions	Take note of Dir 94/33/EC on the protection of young people at work. Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.
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Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	not regulated
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Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC	not regulated
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Product name N,N-Dimethylformamide for peptide synthesis

Substances of very high concern (SVHC)

This product does contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 59 above the respective regulatory concentration limit of > 0.1 % (w/w).

Contains: N,N-dimethylformamide

National legislation

Storage class 3

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16. Other information

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

H226	Flammable liquid and vapour.
H312	Harmful in contact with skin.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H360D	May damage the unborn child.

Training advice

Provide adequate information, instruction and training for operators.

Labelling

Hazard pictograms



Signal word

Danger

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Product name N,N-Dimethylformamide for peptide synthesis

Hazard statements

H226 Flammable liquid and vapour.

H312 + H332 Harmful in contact with skin or if inhaled.

H319 Causes serious eye irritation.

H360 May damage fertility or the unborn child.

Precautionary statements

Prevention

P201 Obtain special instructions before use.

P210 Keep away from heat.

Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

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

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Further information

Restricted to professional users.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Regional representation

This information is given on the authorised Safety Data Sheet for your country.

The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.

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Catalogue No. 100397

Product name N,N-Dimethylformamide for peptide synthesis

EXPOSURE SCENARIO 1 (Industrial use)

1. Industrial use Solvent)

Sectors of end-use

- SU 3* Industrial uses: Uses of substances as such or in preparations at industrial sites
- SU9* Manufacture of fine chemicals
- SU 10* Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)

Chemical product category

- PC19* Intermediate
- PC21* Laboratory chemicals

Process categories

- PROC1* Use in closed process, no likelihood of exposure
- PROC2* Use in closed, continuous process with occasional controlled exposure
- PROC3* Use in closed batch process (synthesis or formulation)
- PROC4* Use in batch and other process (synthesis) where opportunity for exposure arises
- PROC5* Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
- PROC8a* Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
- PROC8b* Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
- PROC9* Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
- PROC15* Use as laboratory reagent

Environmental Release Categories

- ERC1* Manufacture of substances
- ERC2* Formulation of preparations
- 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)
- ERC6b* Industrial use of reactive processing aids

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2. Contributing scenarios: Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 %.
Physical Form (at time of use)	Medium volatile liquid
Process Temperature	< 84 °C

Frequency and duration of use

Frequency of use	8 hours/day
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Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor without local exhaust ventilation (LEV)
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Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
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2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC4, PROC8b, PROC15

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 %.
Physical Form (at time of use)	Medium volatile liquid
Process Temperature	< 84 °C

Frequency and duration of use

Frequency of use	8 hours/day
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Other operational conditions affecting workers exposure

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Product name	N,N-Dimethylformamide for peptide synthesis

Outdoor / Indoor	Indoor with local exhaust ventilation (LEV)
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Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
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2.3 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC9

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 %.
Physical Form (at time of use)	Medium volatile liquid
Process Temperature	< 84 °C

Frequency and duration of use

Frequency of use	8 hours/day
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Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor with LEV and good general ventilation
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Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

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

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

3. Exposure estimation and reference to its source

Environment

A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard Assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

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Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.1	PROC1	longterm, inhalative, systemic	< 0,01	ECETOC TRA 3
		longterm, dermal, systemic	0,01	ECETOC TRA 3
		longterm, combined, systemic	0,01	
2.2	PROC2	longterm, inhalative, systemic	0,10	ECETOC TRA 3
		longterm, dermal, systemic	0,04	ECETOC TRA 3
		longterm, combined, systemic	0,14	
2.2	PROC3	longterm, inhalative, systemic	0,20	ECETOC TRA 3
		longterm, dermal, systemic	0,02	ECETOC TRA 3
		longterm, combined, systemic	0,22	
2.2	PROC4	longterm, inhalative, systemic	0,41	ECETOC TRA 3
		longterm, dermal, systemic	0,21	ECETOC TRA 3
		longterm, combined, systemic	0,61	
2.2	PROC8b	longterm, inhalative, systemic	0,25	ECETOC TRA 3
		longterm, dermal, systemic	0,21	ECETOC TRA 3
		longterm, combined, systemic	0,46	
2.2	PROC15	longterm, inhalative, systemic	0,20	ECETOC TRA 3
		longterm, dermal, systemic	0,01	ECETOC TRA 3
		longterm, combined, systemic	0,21	
2.3	PROC5	longterm, inhalative, systemic	0,71	ECETOC TRA 3
		longterm, dermal, systemic	0,04	ECETOC TRA 3
		longterm, combined, systemic	0,75	
2.3	PROC8a	longterm, inhalative, systemic	0,71	ECETOC TRA 3
		longterm, dermal, systemic	0,04	ECETOC TRA 3
		longterm, combined, systemic	0,75	
2.3	PROC9	longterm, inhalative, systemic	0,71	ECETOC TRA 3
		longterm, dermal, systemic	0,02	ECETOC TRA 3
		longterm, combined, systemic	0,73	

The default parameters and -efficiencies of the applied exposure assessment model were used for the calculation (unless stated differently).

Reduction factor for local exhaust ventilation (LEV) has been used for the calculation of dermal exposure estimates.

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

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC

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Product name N,N-Dimethylformamide for peptide synthesis

Guidance Specific Environmental Release Categories (SPERCs).

For scaling of worker exposure assessments performed with ECETOC TRA, please consult the Merck tool SciDeEx® at www.merckmillipore.com/scideex.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 100397

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EXPOSURE SCENARIO 2 (Professional use)

1. Professional use Solvent)

Sectors of end-use

SU 22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Chemical product category

PC21 Laboratory chemicals

Process categories

PROC15 Use as laboratory reagent

Environmental Release Categories

ERC2 Formulation of preparations

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

ERC6b Industrial use of reactive processing aids

2. Contributing scenarios: Operational conditions and risk management measures

2.1 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 %.
Physical Form (at time of use)	Medium volatile liquid
Process Temperature	< 84 °C

Frequency and duration of use

Frequency of use	8 hours/day
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Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor with local exhaust ventilation (LEV)
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Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

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Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

3. Exposure estimation and reference to its source

Environment

A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard Assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.1	PROC15	longterm, inhalative, systemic	0,41	ECETOC TRA 3
		longterm, dermal, systemic	0,02	ECETOC TRA 3
		longterm, combined, systemic	0,43	

The default parameters and -efficiencies of the applied exposure assessment model were used for the calculation (unless stated differently).

Reduction factor for local exhaust ventilation (LEV) has been used for the calculation of dermal exposure estimates.

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

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).

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