

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

Supersedes date 08-Apr-2021

Revision date 07-Apr-2025

Revision Number 4

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

1.1. Product identifier

Product Code(s)	1041
Safety data sheet number	1041
Product Name	DIMETHYL FORMAMIDE
Index No	616-001-00-X
EC Number	200-679-5
CAS No	68-12-2
Synonyms	DMF, Dimethylformamide, DIMETHYLFORMAMIDE TMO, DIMETHYL FORMAMIDE MIN 99%, N,N-DIMETHYLFORMAMIDE, DIMETHYLFORMAMIDE BLE
Pure substance/mixture	Substance
Contains DIMETHYL FORMAMIDE	
Molecular weight	73.09 g/mol

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

Recommended use	Solvent
	For further information, see attached Exposure Scenario

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 - Dermal	Category 4 - (H312)
Acute toxicity - Inhalation (Vapours)	Category 4 - (H332)
Serious eye damage/eye irritation	Category 2 - (H319)
Reproductive toxicity	Category 1B - (H360)

2.2. Label elements

Contains DIMETHYL FORMAMIDE



Signal word

Danger

Hazard statements

H312 - Harmful in contact with skin

H319 - Causes serious eye irritation

H332 - Harmful if inhaled

H360D - May damage the unborn child

H226 - Flammable liquid and vapour

Precautionary statements

P201 - Obtain special instructions before use

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

P261 - Avoid breathing mist/vapours/spray

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

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

P370 + P378 - In case of fire: Use dry chemical, CO₂, water spray or alcohol-resistant foam to extinguish

Additional information

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

2.3. Other hazards

No information available.

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)
DIMETHYL FORMAMIDE 68-12-2	90 - 100%	200-679-5 (616-001-00-X)	-	Flam. Liq. 3 (H226) Acute Tox. 4 (H332) Eye Irrit. 2 (H319) Repr. 1B (H360D) Acute Tox. 4 (H312)	-	-	-

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

Chemical name	CAS No	SVHC candidates
DIMETHYL FORMAMIDE	68-12-2	X

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Rinse mouth thoroughly with water. If breathing is irregular or stopped, administer artificial respiration. 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	Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting without medical advice. Call a doctor or poison control centre immediately.
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4.2. Most important symptoms and effects, both acute and delayed

Symptoms	May damage the unborn child.
Inhalation	Harmful if inhaled.
Eyes	Causes serious eye irritation.
Dermal	Harmful in contact with skin.

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, CO2, 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	Flammable liquid and vapour. When heated and in case of fire, toxic vapours/gases may be formed. The product will float on water and can be reignited on surface water.
Hazardous combustion products	Carbon oxides. Nitrogen oxides (NOx). Ammonia.

5.3. Advice for firefighters

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

Methods for containment	Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapour suppressing foam may be used to reduce vapours. Dyke far ahead of spill to collect run-off water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
Methods for cleaning up	Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Take up mechanically, placing in appropriate containers for disposal. After cleaning, flush away traces with water. Eliminate all ignition sources if safe to do so.
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.
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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. Do not swallow. Wash skin thoroughly after handling. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use non-sparking tools.

General hygiene considerations

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.

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

Chemical name	United Kingdom
DIMETHYL FORMAMIDE 68-12-2	TWA: 5 ppm TWA: 15 mg/m ³ STEL: 10 ppm STEL: 30 mg/m ³ Sk*

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
DIMETHYL FORMAMIDE 68-12-2		1.1 mg/kg bw/day [4] [6]	6 mg/m ³ [4] [6]

[4] Systemic health effects.
[6] Long term.

Derived No Effect Level (DNEL) - General Public

Chemical name	Oral	Dermal	Inhalation
DIMETHYL FORMAMIDE 68-12-2	0.16 mg/kg bw/day [4] [6]		1.1 mg/m ³ [4] [6]

[4] Systemic health effects.
[6] Long term.

Predicted No Effect Concentration (PNEC)

Chemical name	Freshwater sediment	Marine sediment	Sewage treatment	Soil	Food chain
DIMETHYL FORMAMIDE 68-12-2	111 mg/kg	11.1 mg/kg	44 mg/l		

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
	Rubber (natural, latex)		

	Wear protective Neoprene™ gloves		
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Skin and body protection Wear appropriate clothing to prevent reasonably probable skin contact. Chemical resistant apron. Antistatic footwear.

Respiratory protection In case of inadequate ventilation wear respiratory protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Liquid
Colour	Colourless
Odour	Characteristic.
Odour threshold	Not determined

Property	Values	Remarks • Method
Melting point / freezing point	-61 °C	
Initial boiling point and boiling range	152 - 153 °C	
Flammability		No information available.
Flammability Limit in Air		
Upper flammability or explosive limits	16 %(V)	
Lower flammability or explosive limits	2.2 %(V)	
Flash point	57.5 °C	Closed cup.
Autoignition temperature	445 °C	
Decomposition temperature		Not determined.
pH	6.5 - 8.5	200 g/l.
pH (as aqueous solution)		No information available.
Kinematic viscosity		Not determined.
Dynamic viscosity	0.802 mPa s	@ 25 °C.
Water solubility	200 g/l @ 20 °C	
Solubility(ies)		No information available.
Partition coefficient	log Pow: -0.85	
Vapour pressure	3.77 hPa	@ 20 °C.
	4.8 hPa	. @ 25 °C.
Relative density	0.949	@ 20 °C.
Bulk density		No information available
Liquid Density	No information available	No information available
Relative vapour density		2.52 (air = 1).
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	73.09 g/mol
Evaporation rate	Not determined

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact	None.
Sensitivity to static discharge	Yes.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions Heating can release hazardous gases.

Hazardous polymerisation Hazardous polymerisation does not occur.

10.4. Conditions to avoid

Conditions to avoid Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges. Heat, flames and sparks.

10.5. Incompatible materials

Incompatible materials Strong oxidising agents. Strong acids. Halogenated compounds.

10.6. Hazardous decomposition products

Hazardous decomposition products Carbon oxides. Nitrogen oxides (NO_x). Ammonia.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on likely routes of exposure

Product Information

Inhalation Harmful if inhaled.

Eye contact Causes serious eye irritation.

Skin contact Harmful in contact with skin.

Ingestion May cause discomfort if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms May damage the unborn child.

Acute toxicity

Numerical measures of toxicity

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
DIMETHYL FORMAMIDE	= 3010 mg/kg (Rat)	= 1100 mg/kg (Rat)	> 5.85 mg/L (Rat) 4 h

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

Skin corrosion/irritation Based on available data the classification criteria are not met.

DIMETHYL FORMAMIDE (68-12-2)

Method	Species	Exposure route	Effective dose	Exposure time	Results
	Rabbit				non-irritant

Serious eye damage/eye irritation Causes serious eye irritation.

DIMETHYL FORMAMIDE (68-12-2)

Method	Species	Exposure route	Effective dose	Exposure time	Results
	Rabbit				Causes serious eye irritation

Respiratory or skin sensitisation Based on available data the classification criteria are not met.

DIMETHYL FORMAMIDE (68-12-2)

Method	Species	Exposure route	Results
			Did not cause sensitisation on laboratory animals

Germ cell mutagenicity Based on available data the classification criteria are not met.

Component Information

DIMETHYL FORMAMIDE (68-12-2)

Method	Species	Results
		Did not show mutagenic effects in animal experiments

Carcinogenicity

Based on available data the classification criteria are not met.

Reproductive toxicity

May damage the unborn child.

The table below indicates ingredients above the cut-off threshold considered as relevant which are listed as reproductive toxins.

Chemical name	United Kingdom
DIMETHYL FORMAMIDE	Repr. 1B

STOT - single exposure

Based on available data the classification criteria are not met.

STOT - repeated exposure

Based on available data the classification criteria are not met.

Component Information

DIMETHYL FORMAMIDE (68-12-2)

Method	Species	Exposure route	Effective dose	Exposure time	Results
NOAEL	Rat	Oral	238 mg/kg	28 days	

Aspiration hazard

Based on available data the classification criteria are not met.

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.

DIMETHYL FORMAMIDE (68-12-2)

Method	Species	Endpoint type	Effective dose	Exposure time	Results
	Fish	LC50	7100 mg/L	96 hours	
	Daphnia magna	EC50	13100 mg/L	48 hours	
	Algae Chlorella pyrenoidosa	EC50	> 1000 mg/L	72 hours	
	Toxicity to microorganisms	EC50	12300 mg/L	5	

12.2. Persistence and degradability**Persistence and degradability**

Readily biodegradable.

DIMETHYL FORMAMIDE (68-12-2)

Method	Exposure time	Value	Results
			Readily biodegradable

12.3. Bioaccumulative potential**Bioaccumulation****Bioconcentration factor (BCF)**

0.3 - 1.2

Component Information

Chemical name	Partition coefficient
DIMETHYL FORMAMIDE	-1.028

12.4. Mobility in soil**Mobility in soil**

Koc: 2.4, log Koc: 0.38.

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
DIMETHYL FORMAMIDE	The substance is not PBT / vPvB

12.6. Other adverse effects

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	UN2265
14.2 UN proper shipping name	N,N-DIMETHYL-FORMAMIDE
14.3 Transport hazard class(es)	3
14.4 Packing group	III
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	None
ERG Code	3L

IMDG

14.1 UN number or ID number	UN2265
UN proper shipping name	N,N-DIMETHYL-FORMAMIDE
14.3 Transport hazard class(es)	3
14.4 Packing group	III
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	None
EmS-No	F-E, S-D
14.7 Maritime transport in bulk according to IMO instruments	No information available

RID

14.1 UN number or ID number	UN2265
14.2 UN proper shipping name	N,N-DIMETHYLFORMAMIDE
14.3 Transport hazard class(es)	3
14.4 Packing group	III
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	None
Classification code	F1

ADR

14.1 UN number or ID number	UN2265
14.2 UN proper shipping name	N,N-DIMETHYL-FORMAMIDE
14.3 Transport hazard class(es)	3
14.4 Packing group	III
14.5 Environmental hazards	No
14.6 Special precautions for user	
Special Provisions	None
Classification code	F1
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 contains one or more substances subject to restriction (UK REACH - Annex XVII).

Product restricted per REACH Annex XVII: 3

Chemical name	Restricted substance per REACH Annex XVII	Substance subject to authorisation per REACH Annex XIV
DIMETHYL FORMAMIDE - 68-12-2	Use restricted. See item 30. Use restricted. See item 72. Restricted Reproductive Toxin 1B	-

Persistent Organic Pollutants

Not applicable

Export Notification requirements

Not applicable

Dangerous substance category per COMAH Regulations 2015 (as amended)

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/NDSL	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/NDSL** - 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**

A Chemical Safety Assessment has been carried out for this substance

SECTION 16: Other information**Key or legend to abbreviations and acronyms used in the safety data sheet****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
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 08-Apr-2021

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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

Exposure scenario

Formulation & (re)packing of substances and mixtures

Identification

Product name	Dimethylformamide
REACH registration number	01-2119475605-32-XXXX
CAS number	68-12-2
EC number	200-679-5
EU index number	616-001-00-X
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Formulation & (re)packing of substances and mixtures
Process scope	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.
Main sector	SU3 Industrial uses
Sector of use <u>Environment</u>	SU10 Formulation [mixing] of preparations and/or re-packaging
Environmental release category	ERC2 Formulation into mixture
<u>Worker</u>	
Process category	PROC5 Mixing or blending in batch processes PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities

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

Control of environmental exposure

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

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

Formulation & (re)packing of substances and mixtures

Product characteristics

Physical state	Liquid
Vapour pressure	3.77 hPa @ 20°C
Concentration details	Covers concentrations up to 100 %.
<u>Frequency and duration of use</u>	Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Potentially exposed body parts	PROC5 Mixing or blending in batch processes PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Palm of both hands. Covers skin contact area up to 480 cm ² . PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Both hands. Covers skin contact area up to 960 cm ² .
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Other given operational conditions affecting workers exposure

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

Technical protective measures	Local exhaust ventilation - efficiency of at least [%]: 90
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Clean equipment and the work area every day. Avoid contact with contaminated tools and objects. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
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Risk management measures

	Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training. Efficiency of at least 95% Wear suitable face shield. Wear suitable working clothes. Use suitable eye protection. PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Wear a respirator providing a minimum efficiency of (%): 90
Additional advice	Avoid splashing. Risk Management Measures are based on qualitative risk characterisation.

3. Exposure estimation (Environment 1)

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

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA modified version: use of gloves has been considered additionally. ECETOC TRA modified version: reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
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Formulation & (re)packing of substances and mixtures

Exposure

PROC5 Mixing or blending in batch processes

Worker - dermal, long-term - systemic: Exposure 0.6857 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.2078

Worker - inhalation, long-term - systemic: Exposure 1.7731 mg/m³, DNEL 15 mg/m³, RCR 0.1182

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

Worker - dermal, long-term - systemic: Exposure 0.6857 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.2078

Worker - inhalation, long-term - systemic: Exposure 0.3546 mg/m³, DNEL 15 mg/m³, RCR 0.0236

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

Worker - dermal, long-term - systemic: Exposure 0.3429 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.1039

Worker - inhalation, long-term - systemic: Exposure 0.5319 mg/m³, DNEL 15 mg/m³, RCR 0.0355

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

For scaling see <http://www.ecetoc.org/tra>

Exposure scenario Use as an intermediate

Identification

Product name	Dimethylformamide
REACH registration number	01-2119475605-32-XXXX
CAS number	68-12-2
EC number	200-679-5
EU index number	616-001-00-X
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as an intermediate
Process scope	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).
Product category	PC19 Intermediate.
Main sector	SU3 Industrial uses
Sector of use	SU9 Manufacture of fine chemicals
<u>Environment</u>	
Environmental release category	ERC6a Use of intermediate
<u>Worker</u>	

Use as an intermediate

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing)
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	3.77 hPa @ 20°C
Concentration details	Covers concentrations up to 100 %.
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).

Human factors not influenced by risk management

Potentially exposed body parts	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Palm of one hand. Covers skin contact area up to 240 cm ² . PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Palm of both hands. PROC9 Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Covers skin contact area up to 480 cm ² . PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Both hands. Covers skin contact area up to 960 cm ² .
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Other given operational conditions affecting workers exposure

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

Technical protective measures Local exhaust ventilation - efficiency of at least [%]: 90

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Clean equipment and the work area every day. Avoid contact with contaminated tools and objects. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.
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Risk management measures

Use as an intermediate

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

Efficiency of at least 95%

Wear suitable face shield.

Wear suitable working clothes.

Use suitable eye protection.

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

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

Additional advice

Avoid splashing.

Risk Management Measures are based on qualitative risk characterisation.

3. Exposure estimation (Environment 1)

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

3. Exposure estimation (Health 1)

Assessment method

ECETOC TRA modified version: use of gloves has been considered additionally. ECETOC TRA modified version: reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.

Use as an intermediate

Exposure

PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Worker - dermal, long-term - systemic: Exposure 0.0172 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.0052

Worker - inhalation, long-term - systemic: Exposure 0.0355 mg/m³, DNEL 15 mg/m³, RCR 0.0024

PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Worker - dermal, long-term - systemic: Exposure 0.0689 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.0208

Worker - inhalation, long-term - systemic: Exposure 0.3546 mg/m³, DNEL 15 mg/m³, RCR 0.0236

PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

Worker - dermal, long-term - systemic: Exposure 0.0172 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.0052

Worker - inhalation, long-term - systemic: Exposure 1.0639 mg/m³, DNEL 15 mg/m³, RCR 0.0709

PROC4 Chemical production where opportunity for exposure arises

Worker - dermal, long-term - systemic: Exposure 0.3429 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.1039

Worker - inhalation, long-term - systemic: Exposure 1.7731 mg/m³, DNEL 15 mg/m³, RCR 0.1182

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

Worker - dermal, long-term - systemic: Exposure 0.6857 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.2078

Worker - inhalation, long-term - systemic: Exposure 0.3546 mg/m³, DNEL 15 mg/m³, RCR 0.0236

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

Worker - dermal, long-term - systemic: Exposure 0.3429 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.1039

Worker - inhalation, long-term - systemic: Exposure 0.5319 mg/m³, DNEL 15 mg/m³, RCR 0.0355

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

Worker - dermal, long-term - systemic: Exposure 0.3429 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.1039

Worker - inhalation, long-term - systemic: Exposure 1.7731 mg/m³, DNEL 15 mg/m³, RCR 0.1182

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

For scaling see <http://www.ecetoc.org/tra>

Exposure scenario Use as a laboratory agent

Identification

Product name	Dimethylformamide
REACH registration number	01-2119475605-32-XXXX
CAS number	68-12-2
EC number	200-679-5
EU index number	616-001-00-X
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as a laboratory agent
Process scope	Use of the substance within laboratory settings, including material transfers and equipment cleaning.
Main sector <u>Environment</u>	SU3 Industrial uses
Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article) ERC6a Use of intermediate
<u>Worker</u>	
Process category	PROC15 Use as laboratory reagent.

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

Control of environmental exposure

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

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

Product characteristics

Physical state	Liquid
Vapour pressure	3.77 hPa @ 20°C
Concentration details	Covers concentrations up to 100 %.

Use as a laboratory agent

Frequency and duration of use

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

Human factors not influenced by risk management

Potentially exposed body parts Palm of one hand. Covers skin contact area up to 240 cm².

Other given operational conditions affecting workers exposure

Setting Indoor.

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

Technical protective measures Local exhaust ventilation - efficiency of at least [%]: 90

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Clean equipment and the work area every day. Avoid contact with contaminated tools and objects. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Risk management measures

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

Efficiency of at least 95%

Wear suitable face shield.

Wear suitable working clothes.

Use suitable eye protection.

Additional advice Avoid splashing.

Risk Management Measures are based on qualitative risk characterisation.

3. Exposure estimation (Environment 1)

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

3. Exposure estimation (Health 1)

Assessment method ECETOC TRA modified version: use of gloves has been considered additionally. ECETOC TRA modified version: reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.

Exposure Worker - dermal, long-term - systemic: Exposure 0.0171 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.0052
Worker - inhalation, long-term - systemic: Exposure 1.7731 mg/m³, DNEL 15 mg/m³, RCR 0.1182

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

For scaling see <http://www.ecetoc.org/tra>

Exposure scenario Use as a solvent

Identification

Product name	Dimethylformamide
REACH registration number	01-2119475605-32-XXXX
CAS number	68-12-2
EC number	200-679-5
EU index number	616-001-00-X
Supplier	Univar Solutions UK Ltd Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 +44 1274 267306 SDS.EMEA@univarsolutions.com

1. Title of exposure scenario

Main title	Use as a solvent
Process scope	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.
Product category	PC0 Other products.
Main sector	SU3 Industrial uses

Environment

Environmental release category	ERC4 Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
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Worker

Process category	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4 Chemical production where opportunity for exposure arises PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities
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2. Conditions of use affecting exposure (Industrial - Environment 1)

Use as a solvent

Control of environmental exposure

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

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

Product characteristics

Physical state Liquid

Vapour pressure 3.77 hPa @ 20°C

Concentration details Covers concentrations up to 100 %.

Frequency and duration of use

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

Human factors not influenced by risk management

Potentially exposed body parts PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Palm of one hand. Covers skin contact area up to 240 cm². PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions PROC4 Chemical production where opportunity for exposure arises PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Palm of both hands. Covers skin contact area up to 480 cm². PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Both hands. Covers skin contact area up to 960 cm².

Other given operational conditions affecting workers exposure

Setting Indoor.

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

Technical protective measures Local exhaust ventilation - efficiency of at least [%]: 90

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Clean equipment and the work area every day. Avoid contact with contaminated tools and objects. Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Risk management measures

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

Efficiency of at least 95%

Wear suitable face shield.

Wear suitable working clothes.

Use suitable eye protection.

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

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

Additional advice

Avoid splashing.

Risk Management Measures are based on qualitative risk characterisation.

3. Exposure estimation (Environment 1)

Use as a solvent

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

3. Exposure estimation (Health 1)

Assessment method	ECETOC TRA modified version: use of gloves has been considered additionally. ECETOC TRA modified version: reduction factor for local exhaust ventilation (LEV) has not been used for the calculation of dermal exposure estimates.
Exposure	PROC1 Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions Worker - dermal, long-term - systemic: Exposure 0.0172 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.0052 Worker - inhalation, long-term - systemic: Exposure 0.0355 mg/m³, DNEL 15 mg/m³, RCR 0.0024 PROC2 Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions Worker - dermal, long-term - systemic: Exposure 0.0689 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.0208 Worker - inhalation, long-term - systemic: Exposure 0.3546 mg/m³, DNEL 15 mg/m³, RCR 0.0236 PROC3 Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition Worker - dermal, long-term - systemic: Exposure 0.0172 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.0052 Worker - inhalation, long-term - systemic: Exposure 1.0639 mg/m³, DNEL 15 mg/m³, RCR 0.0709 PROC4 Chemical production where opportunity for exposure arises Worker - dermal, long-term - systemic: Exposure 0.3429 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.1039 Worker - inhalation, long-term - systemic: Exposure 1.7731 mg/m³, DNEL 15 mg/m³, RCR 0.1182 PROC8a Transfer of substance or mixture (charging and discharging) at non-dedicated facilities Worker - dermal, long-term - systemic: Exposure 0.6857 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.2078 Worker - inhalation, long-term - systemic: Exposure 0.3546 mg/m³, DNEL 15 mg/m³, RCR 0.0236 PROC8b Transfer of substance or mixture (charging and discharging) at dedicated facilities Worker - dermal, long-term - systemic: Exposure 0.3429 mg/kg/day, DNEL 3.31 mg/kg/day, RCR 0.1039 Worker - inhalation, long-term - systemic: Exposure 0.5319 mg/m³, DNEL 15 mg/m³, RCR 0.0355

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

For scaling see <http://www.ecetoc.org/tra>