

Creation Date 03-Sep-2009

Revision Date 19-Oct-2023

Revision Number 15

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

1.1. Product identifier

Product Description:	Dimethylformamide
Cat No. :	D/3848/25, D/3848/PB17, D/3848/17, D/3848/4L
Synonyms	DMF
Index No	616-001-00-X
CAS No	68-12-2
EC No	200-679-5
Molecular Formula	C ₃ H ₇ N O
REACH registration number	01-2119475605-32

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

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

1.3. Details of the supplier of the safety data sheet

Company

EU entity/business name

Thermo Fisher Scientific
Janssen Pharmaceuticaaan 3a
2440 Geel, Belgium

UK entity/business name

Fisher Scientific UK
Bishop Meadow Road, Loughborough,
Leicestershire LE11 5RG, United Kingdom

Swiss distributor - Fisher Scientific AG

Neuhofstrasse 11, CH 4153 Reinach
Tel: +41 (0) 56 618 41 11
e-mail - infoch@thermofisher.com

E-mail address

begel.sdsdesk@thermofisher.com

1.4. Emergency telephone number

Tel: 01509 231166
Chemtrec US: (800) 424-9300
Chemtrec EU: 001-703-527-3887

For customers in Switzerland:

Tox Info Suisse Emergency Number: **145 (24hr)**

Tox Info Suisse: +41-44 251 51 51 (Emergency number from abroad)

Chemtrec (24h) Toll-Free: 0800 564 402

Chemtrec Local: +41-43 508 20 11 (Zurich)

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SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

CLP Classification - Regulation (EC) No 1272/2008

Physical hazards

Flammable liquids

Category 3 (H226)

Health hazards

Acute dermal toxicity

Category 4 (H312)

Acute Inhalation Toxicity - Vapors

Category 4 (H332)

Serious Eye Damage/Eye Irritation

Category 2 (H319)

Reproductive Toxicity

Category 1B (H360D)

Environmental hazards

Based on available data, the classification criteria are not met

Full text of Hazard Statements: see section 16

2.2. Label elements



Signal Word

Danger

Hazard Statements

H226 - Flammable liquid and vapor

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

H319 - Causes serious eye irritation

H360D - May damage the unborn child

Precautionary Statements

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

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

P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

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

P312 - Call a POISON CENTER or doctor if you feel unwell

Additional EU labelling

Restricted to professional users

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2.3. Other hazards

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

Toxic to terrestrial vertebrates

This product does not contain any known or suspected endocrine disruptors

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS No	EC No	Weight %	CLP Classification - Regulation (EC) No 1272/2008
N,N-Dimethylformamide	68-12-2	200-679-5	>95	Flam. Liq. 3 (H226) Acute Tox. 4 (H312) Acute Tox. 4 (H332) Eye Irrit. 2 (H319) Repr. 1B (H360D)

REACH registration number	01-2119475605-32
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Full text of Hazard Statements: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
Ingestion	Do NOT induce vomiting. Get medical attention.
Inhalation	Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention.
Self-Protection of the First Aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

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

Irritating to eyes. Difficulty in breathing. May be harmful if absorbed through skin:
Gastrointestinal discomfort: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

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

Notes to Physician	Treat symptomatically. Symptoms may be delayed.
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SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

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Suitable Extinguishing Media

Water spray, carbon dioxide (CO₂), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.

Extinguishing media which must not be used for safety reasons

Do not use water jetstream.

5.2. Special hazards arising from the substance or mixture

Flammable. Risk of ignition. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Thermal decomposition can lead to release of irritating gases and vapors.

Hazardous Combustion Products

Carbon monoxide (CO), Carbon dioxide (CO₂), Nitrogen oxides (NO_x).

5.3. Advice for firefighters

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

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

Should not be released into the environment. See Section 12 for additional Ecological Information.

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Use only under a chemical fume hood. Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Do not breathe mist/vapors/spray. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Use spark-proof tools and explosion-proof equipment. Take precautionary measures against static discharges.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame.

Technical Rules for Hazardous Substances (TRGS) 510
Storage Class (LGK) (Germany)

Class 3

FSUD3848

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Switzerland - Storage of hazardous substances

Storage class - SC 3

<https://www.kvu.ch/de/themen/stoffe-und-produkte>
<https://www.kvu.ch/fr/themes/substances-et-produits>
<https://www.kvu.ch/it/temi/sostanze-e-prodotti>

7.3. Specific end use(s)

Use in laboratories

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure limits

List source(s): **EU** - Commission Directive (EU) 2019/1831 of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC **UK** - EH40/2005 Work Exposure Limits, Forth edition. Published 2020. **IRE** - 2010 Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001. Published by the Health and Safety Authority. **CH** - The Government of Switzerland has set a directive on limit values for working materials (Grenzwerte am Arbeitsplatz) which is based on the Swiss Federal Regulation "Verordnung über die Verhütung von Unfällen und Berufskrankheiten". This directive is administered, periodically revised and enforced by SUVA (Swiss National Accident Insurance Fund).

Component	European Union	The United Kingdom	France	Belgium	Spain
N,N-Dimethylformamide	TWA: 15 mg/m ³ (8h) TWA: 5 ppm (8h) Skin STEL: 10 ppm (15min) STEL: 30 mg/m ³ (15min) STEL: 30 mg/m ³ (8h) STEL: 10 ppm (8h)	STEL: 10 ppm 15 min STEL: 30 mg/m ³ 15 min TWA: 5 ppm 8 hr TWA: 15 mg/m ³ 8 hr Skin	TWA / VME: 5 ppm (8 heures). restrictive limit TWA / VME: 15 mg/m ³ (8 heures). restrictive limit STEL / VLCT: 30 mg/m ³ . restrictive limit STEL / VLCT: 10 ppm. restrictive limit Peau	TWA: 5 ppm 8 uren TWA: 15 mg/m ³ 8 uren STEL: 10 ppm 15 minuten STEL: 30 mg/m ³ 15 minuten Huid	STEL / VLA-EC: 10 ppm (15 minutos). STEL / VLA-EC: 30 mg/m ³ (15 minutos). TWA / VLA-ED: 5 ppm (8 horas) TWA / VLA-ED: 15 mg/m ³ (8 horas) Piel

Component	Italy	Germany	Portugal	The Netherlands	Finland
N,N-Dimethylformamide	TWA: 5 ppm 8 ore. Time Weighted Average TWA: 15 mg/m ³ 8 ore. Time Weighted Average STEL: 10 ppm 15 minuti. Short-term STEL: 30 mg/m ³ 15 minuti. Short-term Pelle	TWA: 5 ppm (8 Stunden). AGW - exposure factor 2 TWA: 15 mg/m ³ (8 Stunden). AGW - exposure factor 2 TWA: 5 ppm (8 Stunden). MAK TWA: 15 mg/m ³ (8 Stunden). MAK Höhepunkt: 10 ppm Höhepunkt: 30 mg/m ³ Haut	STEL: 10 ppm 15 minutos STEL: 30 mg/m ³ 15 minutos TWA: 10 ppm 8 horas TWA: 30 mg/m ³ 8 horas Pele	huid STEL: 30 mg/m ³ 15 minuten TWA: 15 mg/m ³ 8 uren	TWA: 5 ppm 8 tunteina TWA: 15 mg/m ³ 8 tunteina STEL: 10 ppm 15 minuutteina STEL: 30 mg/m ³ 15 minuutteina Iho

Component	Austria	Denmark	Switzerland	Poland	Norway
N,N-Dimethylformamide	Haut MAK-KZGW: 10 ppm 15 Minuten MAK-KZGW: 30 mg/m ³ 15 Minuten MAK-TMW: 5 ppm 8 Stunden MAK-TMW: 15 mg/m ³ 8 Stunden	TWA: 5 ppm 8 timer TWA: 15 mg/m ³ 8 timer STEL: 30 mg/m ³ 15 minutter STEL: 10 ppm 15 minutter Hud	Haut/Peau STEL: 10 ppm 15 Minuten STEL: 30 mg/m ³ 15 Minuten TWA: 5 ppm 8 Stunden TWA: 15 mg/m ³ 8 Stunden	STEL: 30 mg/m ³ 15 minutach TWA: 15 mg/m ³ 8 godzinach	TWA: 5 ppm 8 timer TWA: 15 mg/m ³ 8 timer STEL: 10 ppm 15 minutter. value from the regulation STEL: 30 mg/m ³ 15 minutter. value from the regulation Hud

Component	Bulgaria	Croatia	Ireland	Cyprus	Czech Republic
N,N-Dimethylformamide	TWA: 5 ppm TWA: 15 mg/m ³ STEL: 10 ppm	kože TWA-GVI: 5 ppm 8 satima.	TWA: 5 ppm 8 hr. TWA: 15 mg/m ³ 8 hr. STEL: 10 ppm 15 min	Skin-potential for cutaneous absorption STEL: 30 mg/m ³	TWA: 15 mg/m ³ 8 hodinách. Potential for cutaneous

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	STEL : 30 mg/m ³ Skin notation	TWA-GVI: 15 mg/m ³ 8 satima. STEL-KGVI: 10 ppm 15 minutama. STEL-KGVI: 30 mg/m ³ 15 minutama.	STEL: 30 mg/m ³ 15 min Skin	STEL: 10 ppm TWA: 15 mg/m ³ TWA: 5 ppm	absorption Ceiling: 30 mg/m ³ toxic for reproduction
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Component	Estonia	Gibraltar	Greece	Hungary	Iceland
N,N-Dimethylformamide	Nahk TWA: 5 ppm 8 tundides. TWA: 15 mg/m ³ 8 tundides. STEL: 10 ppm 15 minutites. STEL: 30 mg/m ³ 15 minutites.	Skin notation TWA: 15 mg/m ³ 8 hr TWA: 5 ppm 8 hr STEL: 30 mg/m ³ 15 min STEL: 10 ppm 15 min	skin - potential for cutaneous absorption STEL: 10 ppm STEL: 30 mg/m ³ TWA: 5 ppm TWA: 15 mg/m ³	STEL: 30 mg/m ³ 15 percekben. CK TWA: 15 mg/m ³ 8 órában. AK lehetséges borón keresztül felszívódás	STEL: 30 mg/m ³ absorption into the body through the skin may cause life-threatening harm STEL: 10 ppm absorption into the body through the skin may cause life-threatening harm TWA: 5 ppm 8 klukkustundum. TWA: 15 mg/m ³ 8 klukkustundum. Skin notation

Component	Latvia	Lithuania	Luxembourg	Malta	Romania
N,N-Dimethylformamide	skin - potential for cutaneous exposure STEL: 10 ppm STEL: 30 mg/m ³ TWA: 5 ppm TWA: 15 mg/m ³	TWA: 5 ppm IPRD TWA: 15 mg/m ³ IPRD Oda STEL: 10 ppm STEL: 30 mg/m ³	Possibility of significant uptake through the skin TWA: 15 mg/m ³ 8 Stunden TWA: 5 ppm 8 Stunden STEL: 30 mg/m ³ 15 Minuten STEL: 10 ppm 15 Minuten	possibility of significant uptake through the skin TWA: 15 mg/m ³ TWA: 5 ppm STEL: 30 mg/m ³ 15 minuti STEL: 10 ppm 15 minuti	Skin notation TWA: 5 ppm 8 ore TWA: 15 mg/m ³ 8 ore STEL: 10 ppm 15 minute STEL: 30 mg/m ³ 15 minute

Component	Russia	Slovak Republic	Slovenia	Sweden	Turkey
N,N-Dimethylformamide	Skin notation MAC: 10 mg/m ³	Ceiling: 30 mg/m ³ Potential for cutaneous absorption TWA: 5 ppm TWA: 15 mg/m ³	TWA: 5 ppm 8 urah TWA: 15 mg/m ³ 8 urah Koža STEL: 10 ppm 15 minutah STEL: 30 mg/m ³ 15 minutah	Binding STEL: 10 ppm 15 minuter Binding STEL: 30 mg/m ³ 15 minuter TLV: 5 ppm 8 timmar. NGV TLV: 15 mg/m ³ 8 timmar. NGV Hud	Deri TWA: 5 ppm 8 saat TWA: 15 mg/m ³ 8 saat STEL: 10 ppm 15 dakika STEL: 30 mg/m ³ 15 dakika

Biological limit values

List source(s):

Component	European Union	United Kingdom	France	Spain	Germany
N,N-Dimethylformamide			Total N-Methylformamide: 40 mg/g creatinine urine end of shift	N-Acetyl-S-(N-methylcarbamoyl) cysteine: 40 mg/L urine start of last shift of workweek N-Methylformamide: 15 mg/L urine end of shift	N,N-Methylformamide plus N-Hydroxymethyl-N-methylformamide: 20 mg/L urine (end of shift) N-Acetyl-S-(methylcarbamoyl)-L-cystein: 25 mg/g Creatinine urine (end of shift) N-Acetyl-S-(methylcarbamoyl)-L-cystein: 25 mg/g Creatinine urine (for long-term exposures: at the end of the shift after several shifts)

Component	Italy	Finland	Denmark	Bulgaria	Romania
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N,N-Dimethylformamide					Methyl-formamide: 15 mg/L urine end of shift
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Component	Gibraltar	Latvia	Slovak Republic	Luxembourg	Turkey
N,N-Dimethylformamide			N-Methylformamide: 35 mg/L urine end of exposure or work shift		

Monitoring methods

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

MDHS70 General methods for sampling airborne gases and vapours

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

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

Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

Component	Acute effects local (Dermal)	Acute effects systemic (Dermal)	Chronic effects local (Dermal)	Chronic effects systemic (Dermal)
N,N-Dimethylformamide 68-12-2 (>95)	DNEL = 5900µg/cm2	DNEL = 26.3mg/kg/day	DNEL = 446µg/cm2	DNEL = 1.1mg/kg/day

Component	Acute effects local (Inhalation)	Acute effects systemic (Inhalation)	Chronic effects local (Inhalation)	Chronic effects systemic (Inhalation)
N,N-Dimethylformamide 68-12-2 (>95)	DNEL = 30mg/m ³	DNEL = 30mg/m ³	DNEL = 15mg/m ³	DNEL = 6mg/m ³

Predicted No Effect Concentration (PNEC)

See values below.

Component	Fresh water	Fresh water sediment	Water Intermittent	Microorganisms in sewage treatment	Soil (Agriculture)
N,N-Dimethylformamide 68-12-2 (>95)	PNEC = 30mg/L	PNEC = 115.18mg/kg sediment dw	PNEC = 30mg/L	PNEC = 123mg/L	PNEC = 56.97mg/kg soil dw

Component	Marine water	Marine water sediment	Marine water Intermittent	Food chain	Air
N,N-Dimethylformamide 68-12-2 (>95)	PNEC = 3mg/L	PNEC = 11.52mg/kg sediment dw			

8.2. Exposure controls

Engineering Measures

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

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

Personal protective equipment

Eye Protection

Goggles (European standard - EN 166)

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Hand Protection

Protective gloves

Glove material	Breakthrough time	Glove thickness	EU standard	Glove comments
Butyl rubber	> 480 minutes	0.5 mm	EN 374	As tested under EN374-3 Determination of
Neoprene	< 100 minutes	0.45 mm		Resistance to Permeation by Chemicals

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

Respiratory Protection

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

Large scale/emergency use

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced
Recommended Filter type: Type A Organic gases and vapours filter Brown conforming to EN14387

Small scale/Laboratory use

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended half mask:- Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141
When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls

Prevent product from entering drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical State	Liquid	
Appearance	Colorless	
Odor	Rotten-egg like	
Odor Threshold	No data available	
Melting Point/Range	-61 °C / -77.8 °F	
Softening Point	No data available	
Boiling Point/Range	153 °C / 307.4 °F	
Flammability (liquid)	Flammable	On basis of test data
Flammability (solid,gas)	Not applicable	Liquid
Explosion Limits	Lower 2.2 vol% Upper 16 vol%	
Flash Point	58 °C / 136.4 °F	Method - Abel-Pensky (DIN 51755)
Autoignition Temperature	445 °C / 833 °F	
Decomposition Temperature	> 350°C	
pH	6-8 @ 20°C	20% aq.sol
Viscosity	0.8 mPa.s at 20 °C	
Water Solubility	Soluble	
Solubility in other solvents	No information available	
Partition Coefficient (n-octanol/water)		
Component	log Pow	
N,N-Dimethylformamide	-1.028	
Vapor Pressure	4.9 mbar @ 20 °C	
Density / Specific Gravity	0.945	@ 20 °C
Bulk Density	Not applicable	Liquid

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Vapor Density 2.5 (Air = 1.0)
Particle characteristics Not applicable (liquid)

9.2. Other information

Molecular Formula C₃ H₇ N O
Molecular Weight 73.09
Explosive Properties Not explosive explosive air/vapour mixtures possible
Evaporation Rate 0.17 - (Butyl Acetate = 1.0)
Surface tension 36.42 mN/m (25 °C)

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

None known, based on information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Hazardous Polymerization Hazardous polymerization does not occur.
Hazardous Reactions None under normal processing.

10.4. Conditions to avoid

Incompatible products. Heat, flames and sparks. Keep away from open flames, hot surfaces and sources of ignition.

10.5. Incompatible materials

Strong oxidizing agents. Halogens. Halogenated compounds. Reducing Agent. . Alkali metals.

10.6. Hazardous decomposition products

Carbon monoxide (CO). Carbon dioxide (CO₂). Nitrogen oxides (NO_x).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Product Information

(a) acute toxicity;

Oral Based on available data, the classification criteria are not met
Dermal Category 4
Inhalation Category 4

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
N,N-Dimethylformamide	3040 mg/kg (Rat)	1500 mg/kg (Rabbit) 3.2 g/kg (Rat)	>5.58 mg/L/4h (Rat)

(b) skin corrosion/irritation;

Based on available data, the classification criteria are not met

(c) serious eye damage/irritation;

Test species rabbit
Observation end point Irritating to eyes

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(d) respiratory or skin sensitization;

Respiratory
Skin

Based on available data, the classification criteria are not met
Based on available data, the classification criteria are not met

Component	Test method	Test species	Study result
N,N-Dimethylformamide 68-12-2 (>95)	Guinea Pig Maximisation Test (GPMT)	guinea pig	- non-sensitising

(e) germ cell mutagenicity;

Based on available data, the classification criteria are not met

(f) carcinogenicity;

Based on available data, the classification criteria are not met

The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	EU	UK	Germany	IARC
N,N-Dimethylformamide				Group 2A

(g) reproductive toxicity;

Reproductive Effects
Developmental Effects

Category 1B

Experiments have shown reproductive toxicity effects on laboratory animals.

May cause harm to the unborn child. Developmental effects have occurred in experimental animals.

Teratogenicity

Teratogenic effects have occurred in experimental animals.

(h) STOT-single exposure;

Based on available data, the classification criteria are not met

(i) STOT-repeated exposure;

Based on available data, the classification criteria are not met

Target Organs

None known.

(j) aspiration hazard;

Based on available data, the classification criteria are not met

Symptoms / effects, both acute and delayed

May be harmful if absorbed through skin. Gastrointestinal discomfort. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

11.2. Information on other hazards

Endocrine Disrupting Properties

Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity effects

Component	Freshwater Fish	Water Flea	Freshwater Algae
N,N-Dimethylformamide	Pimephales promelas: LC50 = 10.6 g/L/96h Onchorhynchus mykiss: LC50 = 9.8 g/L/96h Lepomis macrochirus: LC50 = 6.3 g/L/96h	EC50 = 7500 mg/L/48h	EC50 = 7500 mg/L/96h

Component	Microtox	M-Factor
N,N-Dimethylformamide	EC50 = 2000 mg/L 5 min	

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	EC50 = 570 mg/L 240 h	
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12.2. Persistence and degradability Readily biodegradable
Persistence is unlikely.

Component	Degradability
N,N-Dimethylformamide 68-12-2 (>95)	100 % (OECD 301E (21d))

Degradation in sewage treatment plant Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.

12.3. Bioaccumulative potential Bioaccumulation is unlikely

Component	log Pow	Bioconcentration factor (BCF)
N,N-Dimethylformamide	-1.028	0.3 - 1.2 L/kg

12.4. Mobility in soil The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility but will likely degrade over time. Will likely be mobile in the environment due to its water solubility. Highly mobile in soils
Surface tension 36.42 mN/m (25 °C)

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

12.6. Endocrine disrupting properties

Endocrine Disruptor Information

Component	EU - Endocrine Disruptors Candidate List	EU - Endocrine Disruptors - Evaluated Substances
N,N-Dimethylformamide	Group III Chemical	

12.7. Other adverse effects
Persistent Organic Pollutant
Ozone Depletion Potential

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

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste from Residues/Unused Products Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.

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

European Waste Catalogue (EWC) According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

Other Information Waste codes should be assigned by the user based on the application for which the product was used. Do not flush to sewer. Can be landfilled or incinerated, when in compliance with local regulations.

Switzerland - Waste Ordinance Disposal should be in accordance with applicable regional, national and local laws and regulations. Ordinance on the Avoidance and the Disposal of Waste (Waste Ordinance, ADWO) SR 814.600
<https://www.fedlex.admin.ch/eli/cc/2015/891/en>

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SECTION 14: TRANSPORT INFORMATION

IMDG/IMO

14.1. UN number UN2265
14.2. UN proper shipping name N,N-DIMETHYLFORMAMIDE
14.3. Transport hazard class(es) 3
14.4. Packing group III

ADR

14.1. UN number UN2265
14.2. UN proper shipping name N,N-DIMETHYLFORMAMIDE
14.3. Transport hazard class(es) 3
14.4. Packing group III

IATA

14.1. UN 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 hazards identified
14.6. Special precautions for user No special precautions required.
14.7. Maritime transport in bulk according to IMO instruments Not applicable, packaged goods

SECTION 15: REGULATORY INFORMATION

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

International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

Component	CAS No	EINECS	ELINCS	NLP	IECSC	TCSI	KECL	ENCS	ISHL
N,N-Dimethylformamide	68-12-2	200-679-5	-	-	X	X	KE-11411	X	X

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	DSL	NDSL	AICS	NZIoC	PICCS
N,N-Dimethylformamide	68-12-2	X	ACTIVE	X	-	X	X	X

Legend: X - Listed '-' - Not Listed

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
N,N-Dimethylformamide	68-12-2	-	Use restricted. See item	SVHC Candidate list -

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			<p>72. (see link for restriction details) Use restricted. See item 30.</p> <p>(see link for restriction details) Use restricted. See item 75.</p> <p>(see link for restriction details) Use restricted. See item 76.</p> <p>(see link for restriction details)</p>	(Toxic to Reproduction, Article 57c)
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After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

REACH links

<https://echa.europa.eu/substances-restricted-under-reach>

<https://echa.europa.eu/candidate-list-table>

Seveso III Directive (2012/18/EC)

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements
N,N-Dimethylformamide	68-12-2	Not applicable	Not applicable

Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals

Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?

Not applicable

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 .

Take note of Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values

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

Take note of Dir 92/85/EC on the protection of pregnant and breastfeeding women at work

National Regulations

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

WGK Classification

See table for values

Component	Germany - Water Classification (AwSV)	Germany - TA-Luft Class
N,N-Dimethylformamide	WGK 2	

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

Swiss Regulations

Article 4 para. 4 of the Ordinance on the protection of young people in the workplace (SR 822.115) and Article 1 lit. f of the EAER regulation on hazardous work and young people (SR 822.115.2).

Take note on Article 13 Maternity Ordinance (SR 822.111.52) with regards expectant and nursing mothers.

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15.2. Chemical safety assessment

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

SECTION 16: OTHER INFORMATION

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

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

Legend

CAS - Chemical Abstracts Service

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

PICCS - Philippines Inventory of Chemicals and Chemical Substances

IECSC - Chinese Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

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

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

ENCS - Japanese Existing and New Chemical Substances

AICS - Australian Inventory of Chemical Substances

NZIoC - New Zealand Inventory of Chemicals

WEL - Workplace Exposure Limit

ACGIH - American Conference of Governmental Industrial Hygienists

DNEL - Derived No Effect Level

RPE - Respiratory Protective Equipment

LC50 - Lethal Concentration 50%

NOEC - No Observed Effect Concentration

PBT - Persistent, Bioaccumulative, Toxic

TWA - Time Weighted Average

IARC - International Agency for Research on Cancer
Predicted No Effect Concentration (PNEC)

LD50 - Lethal Dose 50%

EC50 - Effective Concentration 50%

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

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

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

OECD - Organisation for Economic Co-operation and Development

BCF - Bioconcentration factor

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

MARPOL - International Convention for the Prevention of Pollution from Ships

ATE - Acute Toxicity Estimate

VOC - (volatile organic compound)

Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>

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

Training Advice

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

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

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

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

Chemical incident response training.

Creation Date

03-Sep-2009

Revision Date

19-Oct-2023

Revision Summary

Not applicable.

**This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.
COMMISSION REGULATION (EU) 2020/878 amending Annex II to Regulation (EC) No
1907/2006 .**

For Switzerland - Compiled in accordance with the technical provisions referred to in Annex 2,

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Number 3, ChemO (SR 813.11 - Ordinance on Protection against Dangerous Substances and Preparations).

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