

According to Regulation (EC) No 1907/2006

# N,N-Dimethylformamide

Version number: 3.0  
Issued: 2024-03-25



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

### 1.1. Product identifier

**Trade name**

N,N-Dimethylformamide

**CAS number**

68-12-2

**EC number**

200-679-5

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

**Relevant identified uses**

Research and development. Laboratory Chemicals.

**Not suitable for use in**

Not suitable for human consumption or veterinary purposes.

### 1.3. Details of the supplier of the safety data sheet

**Supplier**

Molekula Group

Address

Molekula Ltd, Lingfield Way, Darlington,  
DL1 4XX Darlington  
United Kingdom

Telephone

+44 (0) 3302 000 333

Email

info@molekula.com

Web site

www.molekula.com

**Contact person**

Kevin Banks

**Email**

+44 (0) 7769276927

### 1.4. Emergency telephone number

**Poison center/Additional emergency number**

0344 892 0111 - National Poisons Information Service (Newcastle Centre)

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## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

#### Classification

Flammable liquids, hazard category 3  
Acute toxicity, oral, hazard category 5  
Acute toxicity, dermal, hazard category 4  
Acute toxicity, inhalation, hazard category 4  
Eye irritation, hazard category 2  
Carcinogenicity, hazard category 2  
Reproductive toxicity, hazard category 1B

#### Hazard statements

H226, H303, H312 + H332, H319, H351, H360D

### 2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

#### Hazard pictograms



#### Signal word

Danger

#### Hazard statements

H226 Flammable liquid and vapour.  
H303 May be harmful if swallowed.  
H312 + H332 Harmful in contact with skin or if inhaled.  
H319 Causes serious eye irritation.  
H351 Suspected of causing cancer.  
H360D May damage the unborn child.

#### Precautionary statements

P201 Obtain special instructions before use.  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P260 Do not breathe Vapour.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P301 + P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/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.  
P308 + P313 IF exposed or concerned: Get medical advice/attention.

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## 2.3. Other hazards

No data available

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Chemical name	CAS No. EC No. REACH No. Index No.	Concentration	Classification	H-phrases M factor acute M factor chronic	Note
N,N-dimethylformamide; dimethyl formamide	68-12-2 200-679-5 01-2119475605-32 616-001-00-X	100%	Flam. Liq. 3, Acute Tox. 5 - oral, Acute Tox. 4 - dermal, Acute Tox. 4 - inhala- tion, Eye Irrit. 2, Carc. 2, Repr. 1B	H226, H303, H312 + H332, H319, H351, H360D - -	-

#### Molecular weight

73.09

#### Substance additional information

For the complete text of H- / EUH-statements mentioned in this section, see section 16.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

Get medical attention if any discomfort continues. Show this Safety Data Sheet (SDS) to medical personnel.

#### Inhalation

IF INHALED: Remove person to fresh air and keep comfortable for breathing. In case of persistent throat irritation or coughing: Seek medical attention and bring these instructions.

#### Skin contact

IF ON SKIN: Wash with plenty of soap and water. Continue to rinse for at least 15 minutes. Get medical advice/attention if you feel unwell.

#### Eye contact

Remove contact lenses if present. Rinse eyes with water. Continue to rinse for at least 15 minutes and seek medical attention.

#### Ingestion

Rinse mouth. Do NOT induce vomiting. Get medical advice/attention if you feel unwell.

#### Information for doctors

No data available.

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

The severity of the symptoms described will vary dependant of the concentration and the length of exposure.

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

Treat symptomatically. No special treatment requirement.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.

#### Unsuitable extinguishing media

No specific fire fighting procedure given.

### 5.2. Special hazards arising from the substance or mixture

Specific hazards: FLAMMABLE.

Vapours may form explosive mixture with air at room temperature. Vapours are heavier than air and may travel along the floor and in the bottom of containers.

Containers can burst violently when heated, due to excess pressure build-up.

Forms explosive mixtures with air on intense heating.

### 5.3. Advice for firefighters

#### Special protective equipment for fire-fighters

Evacuate area. Avoid breathing gas, fume, vapours or spray. Prevent skin contact by maintaining a safe distance and by wearing suitable protective equipment/ clothing. Cool containers exposed to heat with water spray and remove container, if no risk is involved.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Avoid inhalation of vapours and spray mist and contact with skin and eyes. For personal protection, see section 8. Provide adequate ventilation. Remove sources of ignition. Beware of the explosion danger. Take action to prevent static discharges.

### 6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground. Risk of explosion.

### 6.3. Methods and material for containment and cleaning up

Collect with absorbent, non-combustible material into suitable containers. Remove sources of ignition. Beware of the explosion danger. Use spark-proof tools and explosion-proof equipment.

### 6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

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## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

#### Preventive handling precautions

For precautions see section 2.2.

### 7.2. Conditions for safe storage, including any incompatibilities

Store at room temperature. Store in a dry place. Store in a closed container.

Handle and store contents under inert gas.

### 7.3. Specific end use(s)

No specific usage precautions noted.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### National occupational exposure limits

Ingredient	CAS No. EC No.	Exposure limit ppm / mg/m <sup>3</sup>	Short-term exposure limit ppm / mg/m <sup>3</sup>	Source	Remark	Year
N,N-dimethylformamide; dimethyl formamide	68-12-2 200-679-5	-	10	-	EH40 WEL	-
		-	30			

#### DNEL/DMEL

Product/Substance name (CAS No./EC No.)	Type	Exposure	Value	Population	Effects
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	DNEL	Chronic (long term) Inhalation	6 mg/m <sup>3</sup>	Workers	Systemic
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	DNEL	Chronic (long term) Dermal	1.1 mg/kg bw/day	Workers	Systemic
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	DNEL	Acute (short term) Inhalation	30 mg/m <sup>3</sup>	Workers	Systemic
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	DNEL	Acute (short term) Dermal	26.3 mg/kg bw/day	Workers	Systemic
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	DNEL	Chronic (long term) Inhalation	15 mg/m <sup>3</sup>	Workers	Local
N,N-dimethylformamide; dimethyl formamide	DNEL	Chronic (long term) Dermal	446 µg/cm <sup>2</sup>	Workers	Local

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Product/Substance name (CAS No./EC No.)	Type	Exposure	Value	Population	Effects
(68-12-2/200-679-5)					
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	DNEL	Acute (short term) Inhalation	30 mg/m <sup>3</sup>	Workers	Local
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	DNEL	Acute (short term) Dermal	5900 µg/cm <sup>2</sup>	Workers	Local

## PNEC/PEC

Product/Substance name (CAS No./EC No.)	Type	Environmental compartment	Value
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	PNEC	Freshwater	30 mg/l
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	PNEC	Sediment (freshwater)	115.18 mg/kg dwt
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	PNEC	Marine water	3 mg/l
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	PNEC	Sediment (marine water)	11.52 mg/kg dwt
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	PNEC	Intermittent releases	30 mg/l
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	PNEC	Sewage Treatment Plant	123 mg/l
N,N-dimethylformamide; dimethyl formamide (68-12-2/200-679-5)	PNEC	Soil	56.97 mg/kg dwt

## 8.2. Exposure controls

### Personal Protective Equipment Symbols



### Eye / face protection

Wear eye protection.

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## **Hand protection**

Wear protective gloves. Recommended gloves: Butyl rubber.

Glove Thickness: 0.7mm

Breakthrough time: 8 hours

Wear protective gloves. Recommended gloves: Viton rubber (fluor rubber).

Glove Thickness: 0.7mm

Breakthrough time: 4 hours

Always inspect gloves before use. If signs of wear and tear are noticed then the gloves should be replaced.

No specific hygiene procedures noted, but good personal hygiene practices are always advisable, especially when working with chemicals. Wash contaminated skin thoroughly after handling.

## **Other skin protection**

Wash skin thoroughly after handling.

## **Respiratory protection**

Provide adequate ventilation. If ventilation is insufficient, suitable respiratory protection must be provided.

## **Environmental exposure controls**

Avoid discharge into drains.

## **SECTION 9: Physical and chemical properties**

### **9.1. Information on basic physical and chemical properties**

#### **Physical state**

Liquid

#### **Colour**

Colourless.

#### **Odour**

Amines.

#### **Melting point / freezing point**

-61°C

#### **Boiling point or initial boiling point and boiling range**

153°C

#### **Flammability**

No data available

#### **Lower and upper explosion limit**

Upper explosion limit: 16 %(V) Lower explosion limit: 2.2 %(V)

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## Flash point

57.5 °C

## **Method**

CC (Closed cup).

## Auto-ignition temperature

No data available

## Decomposition temperature

No data available

## pH

7.0

## **Method**

200g/l, (20°C)

## Kinematic viscosity

No data available

## Viscosity, dynamic

0.86 mPa.s at 20 °C/68°F

## Solubility

No data available

## Partition coefficient n-octanol/water

Low Pow: -0.85 25°C/77°F

## Vapour pressure

3.77 hPa 20°C/68°F

## Density and/or relative density

0.944 g/cm<sup>3</sup>

## Relative vapour density

No data available

## Particle characteristics

No data available

## 9.2. Other information

No data available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

There are no known reactivity hazards associated with this product.

### 10.2. Chemical stability

Stable under normal temperature conditions. Stable under the prescribed storage conditions.



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## 10.3. Possibility of hazardous reactions

Violent reactions possible with:

Alkali metals. halogens Inorganic halides. Reducing Agents. Inorganic nitrates. Other non-metallic. halogenated hydrocarbons Isocyanates. Sodium. oxidising agents Oxides of phosphorus Metals. Rubber or plastic. Risk of explosion with: Bromine. Chlorine. Chromium. potassium permanganate halogenated hydrocarbons

## 10.4. Conditions to avoid

Heat, sparks, flames.

## 10.5. Incompatible materials

May attack some plastics, rubber and coatings. Copper. Other metals or alloys. Strong oxidising agents.

## 10.6. Hazardous decomposition products

See section 5.

## SECTION 11: Toxicological information

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

#### Acute toxicity

Product / Sub- stance name CAS / EC no.	Dose descriptor	Value / Dose	Duration of exposure	Test animals	Remarks
N,N-dimethylformamide; dimethyl formamide 68-12-2 / 200-679-5	Acute Toxicity (Oral LD50):	3040 mg/kg	-	Rat	(External MSDS)
N,N-dimethylformamide; dimethyl formamide 68-12-2 / 200-679-5	Acute Toxicity (Dermal LD50):	1,500mg/kg	-	Rabbit	(External MSDS)
N,N-dimethylformamide; dimethyl formamide 68-12-2 / 200-679-5	Acute Toxicity (Inhalation LC50):	> 5.58mg/l	4 hours	Rat	(External MSDS)

#### Aspiration hazard

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

### 11.2. Information on other hazards

No data available

## SECTION 12: Ecological information

### 12.1. Toxicity

#### Acute fish toxicity

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Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
N,N-dimethylformamide; dimethyl formamide 68-12-2 / 200-679-5	LC50	7100mg/l	96 hours	Lepomis macrochirus (Bluegill)

**Acute algae toxicity**

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
N,N-dimethylformamide; dimethyl formamide 68-12-2 / 200-679-5	static test	1,000 mg/l	72 hours	Desmodesmus sub- spicatus (green algae)

**Acute crustacean toxicity**

Product / Substance name CAS / EC no.	Measurement type	Value / Result	Duration of exposure	Species
N,N-dimethylformamide; dimethyl formamide 68-12-2 / 200-679-5	EC50	13,100 mg/l	48 hours	Daphnia magna

**Micro-/macro organism toxicity**

Product / Substance name CAS / EC no.	Value / Result	Duration of exposure	Species
N,N-dimethylformamide; dimethyl formamide 68-12-2 / 200-679-5	12,300 - 17,500 mg/l	5 mins	Vibrio fischeri

**12.2. Persistence and degradability**

**Persistence and degradability**

Product / Substance name CAS / EC no.	Type of test	Duration	Result
N,N-dimethylformamide; dimethyl formamide 68-12-2 / 200-679-5	aerobic	21 days	100% Readily biodegradable.

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## 12.3. Bioaccumulative potential

No data available

## 12.4. Mobility in soil

No data available

## 12.5. Results of PBT and vPvB assessment

No data available

## 12.6. Endocrine disrupting properties

No data available

## 12.7. Other adverse effects

No data available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### Disposal considerations

Dispose of contents/container in accordance with local regulations.

## SECTION 14: Transport information

### 14.1. UN number

2265

### 14.2. UN proper shipping name

#### ADR / RID / ADN proper shipping name

N,N-DIMETHYL-FORMAMIDE

#### IMDG proper shipping name

N,N-DIMETHYLFORMAMIDE

#### IATA proper shipping name

N,N-Dimethylformamide

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## 14.3. Transport hazard class(es)

### Label

ADR/RID/ADN



3

IMDG



3

IATA



3

### ADR / RID Class

3

### ADR / RID Classification code

F1

### ADR / RID hazard identification number

30

### IMDG Class

3

### IATA Class

3

### ADN Class

3

### ADN Class Code

F1

## 14.4. Packing group

ADR / RID / ADN: III

IMDG: III

IATA: III

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## 14.5. Environmental hazards

Not applicable

## 14.6. Special precautions for user

### Special precautions for user

Tunnel restriction code: D/E

Transport category: 3

### IMDG EmS

F-E, S-D

## 14.7. Maritime transport in bulk according to IMO instruments

IBC Instruction: IBC03

## SECTION 15: Regulatory information

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

#### EU regulations

This SDS is not mandated under REACH Regulation (EC) No 1907/2006 and is provided for information only.

#### National regulations

No data available

### 15.2. Chemical safety assessment

No chemical safety assessment has been carried out.

## SECTION 16: Other information

### Phrase meaning

Flam. Liq. 3 - Flammable liquids, hazard category 3

Acute Tox. 5 - oral - Acute toxicity, oral, hazard category 5

Acute Tox. 4 - dermal - Acute toxicity, dermal, hazard category 4

Acute Tox. 4 - inhalation - Acute toxicity, inhalation, hazard category 4

Eye Irrit. 2 - Eye irritation, hazard category 2

Carc. 2 - Carcinogenicity, hazard category 2

Repr. 1B - Reproductive toxicity, hazard category 1B

H226 Flammable liquid and vapour.

H303 May be harmful if swallowed.

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

H319 Causes serious eye irritation.

H351 Suspected of causing cancer.

H360D May damage the unborn child.