# Safety Data Sheet
## acc. to OSHA HCS

*Printing date 10/31/2024* *Reviewed on 10/31/2024*

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## 1 Identification

· **Product identifier**

· **Trade name: Dimethylformamide**

· **Article number:** 20270
· **CAS Number:**
68-12-2
· **EC number:**
200-679-5
· **Index number:**
616-001-00-X
· **Application of the substance / the mixture:** Laboratory chemicals

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
SERVA Electrophoresis GmbH
Carl-Benz-Str. 7
D-69115 Heidelberg
Tel.: +49 6221 13840-0
FAX: +49 6221 13840-10
msds.info@serva.de

· **Information department:** Security Department Phone: +49 6221 13840-35
· **Emergency telephone number:**
Emergency medical information in case of poisoning
Poison Information Center Mainz-Tel: +49 (0) 6131 19240
(Advice in German and English)

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## 2 Hazard(s) identification

· **Classification of the substance or mixture**


GHS02

Flammable Liquids 3 H226 Flammable liquid and vapor.


GHS08

Toxic to Reproduction 1B H360 May damage fertility or the unborn child.


GHS07

Acute Toxicity - Dermal 4 H312 Harmful in contact with skin.
Acute Toxicity - Inhalation 4 H332 Harmful if inhaled.
Eye Irritation 2A H319 Causes serious eye irritation.

· **Label elements**
· **GHS label elements**
The substance is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms:** GHS02, GHS07, GHS08
· **Signal word:** Danger
· **Hazard statements:**
Flammable liquid and vapor.
Harmful in contact with skin or if inhaled.

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*Causes serious eye irritation.*
*May damage fertility or the unborn child.*
· ***Precautionary statements***
*Keep away from heat/sparks/open flames/hot surfaces. - No smoking.*
*Avoid breathing mist/vapours/spray.*
*Wear protective gloves/protective clothing/eye protection/face protection.*
*If on skin: Wash with plenty of soap and water.*
*IF INHALED: Remove person to fresh air and keep comfortable for breathing.*
*If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
· ***Classification system:***
· ***NFPA ratings (scale 0 - 4)***


*Health = 2*
*Fire = 2*
*Reactivity = 0*

· ***HMIS-ratings (scale 0 - 4)***


*Health = *2*
*Fire = 2*
*Reactivity = 0*

· ***Other hazards***
· ***Results of PBT and vPvB assessment:***
· ***PBT:*** *PBT - Assessment not available.*
· ***vPvB:*** *vPvB - Assessment not available.*

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## 3 Composition/information on ingredients

· ***Chemical characterization: Substances***
· ***CAS No. Description:***
*68-12-2 N,N-dimethylformamide*
· ***Identification number(s):***
· ***EC number:*** *200-679-5*
· ***Index number:*** *616-001-00-X*
· ***Description:***
· ***Empirical formula:*** $C_3H_7NO$
· ***MW:*** *73.1*

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## 4 First-aid measures

· ***Description of first aid measures***
· ***After inhalation:*** *Supply fresh air; consult doctor in case of complaints.*
· ***After skin contact:***
*Wash off immediately with soap and water and rinse thoroughly. In case of complaints, consult a doctor.*
· ***After eye contact:***
*Rinse opened eye for several minutes with running water. Remove existing contact lenses, if possible, and continue rinsing. In case of complaints, consult an ophthalmologist.*
· ***After swallowing:*** *Rinse mouth immediately. Drink plenty of water and fresh air. Call a doctor immediately.*
· ***Most important symptoms and effects, both acute and delayed***
*Headache*
*Dizziness*
*Gastric or intestinal disorders*
*Nausea*

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· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

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## 5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:**
$CO_2$, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· **Special hazards arising from the substance or mixture**
Flammable substance, vapors are heavier than air and spread over the ground.
Vapors may form flammable and explosive mixtures with air.
Formation of hazardous vapors and gases possible during heating or in case of fire.
In case of fire, the following can be released:
Nitrogen oxides (NOx)
Carbon monoxide and carbon dioxide
· **Advice for firefighters**
· **Protective equipment:** Wear self-contained breathing apparatus.
· **Additional information**
Collect contaminated fire fighting water separately. It must not enter the sewage system.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

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## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Wear protective clothing.
Ensure adequate ventilation
Avoid inhalation of vapors.
Avoid contact with eyes and skin.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up**
Dispose contaminated material as waste according to section 13.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
· **Protective Action Criteria for Chemicals**
· **PAC-1:** 2 ppm
· **PAC-2:** 91 ppm
· **PAC-3:** 530 ppm
· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

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## 7 Handling and storage

· **Precautions for safe handling:** No special precautions are necessary if used correctly.
· **Information about protection against explosions and fires:**
Protect against electrostatic charges.
Keep ignition sources away - Do not smoke.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** Store only in the original receptacle.
· **Information about storage in one common storage facility:** Store away from oxidizing agents.
· **Further information about storage conditions:**
Store under lock and key and with access restricted to technical experts or their assistants only.
This product is hygroscopic.
Store container tightly closed and dry.

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· **Specific end use(s):** No further relevant information available.

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## 8 Exposure controls/personal protection

· **Control parameters**

| · **Components with limit values that require monitoring at the workplace:** | |
|---|---|
| **68-12-2 N,N-dimethylformamide (80-100%)** | |
| PEL | Long-term value: 30 mg/m³, 10 ppm<br>Skin |
| REL | Long-term value: 30 mg/m³, 10 ppm<br>Skin |
| TLV | Long-term value: 5 ppm<br>Skin; BEI, A3 |

| · **Ingredients with biological limit values:** | |
|---|---|
| **68-12-2 N,N-dimethylformamide (80-100%)** | |
| BEI | 30 mg/L<br>Medium: urine<br>Time: end of shift<br>Parameter: Total N-Methylformamide (sum of N-Methylformamide and N-(Hydroxymethyl)-N-Methylformamide<br><br>30 mg/L<br>Medium: urine<br>Time: end of shift at end of workweek<br>Parameter: N-Acetyl-S-(N-methylcarbamoyl) cysteine |

· **Additional information:**
resorbable by skin contact
The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Additional information about design of technical systems:** No further data; see section 7.
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Store protective clothing separately.
Immediately remove all soiled and contaminated clothing.
Avoid inhalation of vapors.
Avoid contact with the eyes and skin.
Wash hands before breaks and at the end of work.
· **Breathing equipment:**
Short term filter device:
Filter A/P2
· **Protection of hands:**
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
· **Material of gloves:**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material:**
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

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· **For the permanent contact of a maximum of 15 minutes gloves made of the following materials are suitable:**
Butyl rubber, BR
· **Eye protection:** Tightly sealed goggles
· **Body protection:** Protective work clothing

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## 9 Physical and chemical properties

| | |
|---|---|
| · **Information on basic physical and chemical properties** | |
| · **General Information:** | |
| · **Color:** | colorless to yellowish |
| · **Odor:** | Amine-like |
| · **Odor threshold:** | not determined. |
| · **Melting point/Melting range:** | -61 °C (-77.8 °F) |
| · **Boiling point/Boiling range:** | 153 °C (307.4 °F) |
| · **Flammability (solid, gaseous):** | Not applicable. |
| · **Explosion limits:** | |
| · **Lower:** | 2.2 Vol % |
| · **Upper:** | 16 Vol % |
| · **Flash point:** | 58 °C (136.4 °F) |
| · **Decomposition temperature:** | No information available |
| · **pH-value:** | 7 |
| · **Viscosity:** | |
| · **Kinematic viscosity:** | No information available |
| · **Dynamic viscosity at 20 °C (68 °F):** | 0.85 mPas |
| · **Solubility in / Miscibility with:** | |
| · **Water:** | Fully miscible. |
| · **Partition coefficient (n-octanol/water):** | No information available |
| · **Vapor pressure at 20 °C (68 °F):** | 3.77 hPa (2.8 mm Hg) |
| · **Vapor pressure:** | |
| · **Density at 20 °C (68 °F):** | 0.95 g/cm³ (7.92775 lbs/gal) |
| · **Relative density:** | No information available |

| | |
|---|---|
| · **Other information** | |
| · **Appearance:** | |
| · **Form:** | Liquid |
| · **Important information on protection of health and environment, and on safety:** | |
| · **Danger of explosion:** | Not determined. |
| · **Molecular weight** | 73.1 g/mol |

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## 10 Stability and reactivity

· **Reactivity:** No further relevant information available.
· **Chemical stability:**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions:** Reacts with strong oxidizing agents.
· **Conditions to avoid:** Avoid high temperatures, flames and sparks
· **Incompatible materials:**
Avoid contact with strong oxidizing agents.
tin
Copper, copper alloys
· **Hazardous decomposition products:** In case of fire: see section 5



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## 11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:** Harmful in contact with skin or if inhaled.

| · **LD/LC50 values that are relevant for classification:** | | |
|---|---|---|
| Oral | LD50 | 3,010 mg/kg (rat) |
| Dermal | LD50 | 1,500 mg/kg (rat) |
| Inhalative | LC50/4h | 11.1 mg/l (rat) |

· **on the eye:** Causes serious eye irritation.
· **Reproductive toxicity:** May damage fertility or the unborn child.
· **Other information (about experimental toxicology)**
The classification of N,N-dimethylformamide (DMF) as toxic to reproduction (Repr. 1B); H360D "May damage the unborn child"
according to Regulation (EC) No 1272/2008 (CLP Regulation) and the inclusion in Annex VI, part 3 (index number 616-001-00-X),
Table 3.1 (list of harmonised classification and labelling of hazardous substances) shows:
N,N-dimethylformamide meets the criterion for classification as toxic for reproduction in accordance with Article 57(c) of REACH.
(ECHA SVHC Support Document - DMF; 6)
· **Additional toxicological information:**

· **Carcinogenic categories**
· **IARC (International Agency for Research on Cancer)** 2A
· **NTP (National Toxicology Program)** Substance is not listed.
· **OSHA-Ca (Occupational Safety & Health Administration)** Substance is not listed.

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## 12 Ecological information

· **Toxicity:**

| · **Aquatic toxicity:** | |
|---|---|
| EC50/48h | 13,100 mg/l (Daphnia magna) |

· **Persistence and degradability:** No further relevant information available.
· **Other information:** The product is readily biodegradable.
· **Bioaccumulative potential:**
Bioconcentrationfactor: 0,3-1,2 (56 d), Cyprinus carpio (OECD 305 C)
Non significant accumulation in organisms
· **Mobility in soil:** No further relevant information available.
· **Results of PBT and vPvB assessment:**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects:**
· **Remark:**
Acute toxicity to algae: EC50 (72 h, Desmodesmus subspicatus,) > 1000 mg/l
Acute toxicity to fish, LC50 (96h, Lepomis macrochirus): 7100 mg/l
EC50 / 96 h (Scenedesmus subspicatus): > 500 mg / l
· **Additional ecological information:**
· **General notes:**
Do not allow product to reach ground water, water course or sewage system.
Water hazard class 2 (Assessment by list): hazardous for water



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## 13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Dispose of in accordance with official regulations.
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:**
Uncleaned packaging must be disposed of in the same way as the product in accordance with official regulations.
· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

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## 14 Transport information

| | |
|---|---|
| · **UN-Number** | |
| · **DOT, ADR, IMDG, IATA** | UN2265 |
| · **UN proper shipping name** | |
| · **DOT** | N,N-Dimethylformamide |
| · **ADR** | 2265 N,N-DIMETHYLFORMAMIDE |
| · **IMDG, IATA** | N,N-DIMETHYLFORMAMIDE |
| · **Transport hazard class(es)** | |
| · **DOT** | |


| | |
|---|---|
| · **Class** | 3 Flammable liquids |
| · **Label** | 3 |
| · **ADR, IMDG, IATA** | |


| | |
|---|---|
| · **Class:** | 3 Flammable liquids |
| · **Label:** | 3 |
| · **Packing group** | |
| · **DOT, ADR, IMDG, IATA** | III |
| · **Environmental hazards** | |
| · **Marine pollutant:** | No |
| · **Special precautions for user** | Warning: Flammable liquids |
| · **Hazard identification number (Kemler code):** | 30 |
| · **EMS Number:** | F-E,S-D |
| · **Stowage Category** | A |
| · **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** | Not applicable. |

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· **Transport/Additional information:**

· **ADR**
· **Excepted quantities (EQ)** Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

· **IMDG**
· **Limited quantities (LQ)** 5L
· **Excepted quantities (EQ)** Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

· **UN "Model Regulation":** UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III

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## 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Section 355 (extremely hazardous substances):** Substance is not listed.
· **Section 313 (Specific toxic chemical listings):** Substance is listed.
· **TSCA (Toxic Substances Control Act):** ACTIVE
· **Hazardous Air Pollutants** Substance is listed.
· **Proposition 65** Substance is not listed.
· **Chemicals known to cause cancer:** Substance is listed.
· **Chemicals known to cause reproductive toxicity for females:** Substance is not listed.
· **Chemicals known to cause reproductive toxicity for males:** Substance is not listed.
· **Chemicals known to cause developmental toxicity:** Substance is not listed.

· **Cancerogenity categories**
· **EPA (Environmental Protection Agency)** Substance is not listed.
· **TLV (Threshold Limit Value)** A4
· **NIOSH-Ca (National Institute for Occupational Safety and Health)** Substance is not listed.
· **GHS label elements**
The substance is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms** GHS02, GHS07, GHS08
· **Signal word** Danger
· **Hazard statements**
Flammable liquid and vapor.
Harmful in contact with skin or if inhaled.
Causes serious eye irritation.
May damage fertility or the unborn child.
· **Precautionary statements**
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Avoid breathing mist/vapours/spray.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin: Wash with plenty of soap and water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.

· **National regulations:**

· **Information about limitation of use:**
Employment restrictions concerning pregnant and lactating women must be observed.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.



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## 16 Other information

*This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.*

· **Department issuing SDS:** Product Safety Department
· **Contact:** +49 6221 13840-35
· **Date of preparation / last revision** 10/31/2024 / -
· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
PBT: persistent, bioaccumulative, toxic substance (REACH)
vPvB: very persistent, very bioaccumulative substance (REACH)
REACH: Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
CLP: Regulation on classification, labelling and packaging of substances and mixtures
bw: body weight
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Flammable Liquids 3: Flammable liquids – Category 3
Acute Toxicity - Dermal 4: Acute toxicity – Category 4
Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A
Toxic to Reproduction 1B: Reproductive toxicity – Category 1B