

N,N-dimethylformamide

Safety Data Sheet

according to Regulation (EU) 2015/830

Date of issue: 01/06/2022

Doc No: SDS-914.042/2



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

1.1. Product identifier

Product form : Substance
Substance name : N,N-dimethylformamide
EC Index-No. : 616-001-00-X
EC-No. : 200-679-5
CAS-No. : 68-12-2
Type of product : Pure substance
Formula : C₃H₇NO
Chemical structure :



Synonyms : dimethyl formamide / DMF / DMFA / formamide, N,N-dimethyl- / formdimethylamide / formic acid dimethylamide / formyldimethylamine / N,N-dimethylmethanamide / N-formyldimethylamine / NSC 5356 / U-4224

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

1.2.1. Relevant identified uses

Use of the substance/mixture : Reagent
Catalyst
Solvent
Chemical substance for research
Rodenticide
Pharmaceutical intermediate
Laboratory chemical

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

ISOLAB Laborgeräte GmbH
Am Dillhof 2 - 63863 Eschau / GERMANY
Tel: +49 93 74 / 978 55-0
Fax: +49 93 74 / 978 55-29
prodsafe@isolab.de

1.4. Emergency telephone number

Country	Organisation/Company	Address	Emergency number	Comment
Germany	Giftnotruf der Charité CBF, Haus VIII (Wirtschaftsgebäude), UG	Hindenburgdamm 30 12203 Berlin	+49 30 19240	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liq. 3 H226
Repr. 1B H360D
Acute Tox. 4 (Inhalation) H332
Acute Tox. 4 (Dermal) H312
Eye Irrit. 2 H319

Full text of hazard classes and H-statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

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2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazard statements (CLP) :

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

Precautionary statements (CLP) :

P201 Obtain special instructions before use.
P210 Keep away from heat.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	%
N,N-dimethylformamide substance listed as REACH Candidate	(CAS-No.) 68-12-2 (EC-No.) 200-679-5 (EC Index-No.) 616-001-00-X	100

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Never give alcohol to drink.
First-aid measures after inhalation	: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.
First-aid measures after skin contact	: Wash immediately with lots of water. Soap may be used. Take victim to a doctor if irritation persists.
First-aid measures after eye contact	: Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.
First-aid measures after ingestion	: Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not give milk/oil to drink. Do not induce vomiting. Give activated charcoal. Call Poison Information Centre (www.big.be/antigif.htm). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital.

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

Symptoms/effects after inhalation	: EXPOSURE TO HIGH CONCENTRATIONS: Coughing. Nausea. Vomiting. Abdominal pain. Dizziness. Excited/restless. High arterial pressure. Feeling of weakness. Enlargement/affection of the liver.
Symptoms/effects after skin contact	: Slight irritation. Dry skin. Symptoms similar to those listed under inhalation.
Symptoms/effects after eye contact	: Irritation of the eye tissue. Conjunctivitis. Inflammation/damage of the eye tissue.
Symptoms/effects after ingestion	: No data available.

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Chronic symptoms : ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Tingling/irritation of the skin. Skin rash/inflammation. Headache. Gastrointestinal complaints. Loss of appetite. Risk of testicular tumors. Possible premature birth. Cardiac and blood circulation effects. Promotes the clotting of blood.

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

No additional information available

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media : Preferably: alcohol resistant foam. Water spray. Polyvalent foam. BC powder. Carbon dioxide.
Unsuitable extinguishing media : Solid water jet ineffective as extinguishing medium.

5.2. Special hazards arising from the substance or mixture

Fire hazard : DIRECT FIRE HAZARD. Flammable. Gas/vapour flammable with air within explosion limits. INDIRECT FIRE HAZARD. May be ignited by sparks. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard : DIRECT EXPLOSION HAZARD. Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. may be ignited by sparks. Reactions with explosion hazards: see "Reactivity Hazard".

5.3. Advice for firefighters

Precautionary measures fire : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: seal off low-lying areas. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions : Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water.
Protection during firefighting : Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : Gloves. Face-shield. Protective clothing. See "Material-Handling" to select protective clothing.
Emergency procedures : Mark the danger area. Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Large spills/in confined spaces: consider evacuation. In case of hazardous reactions: keep upwind. In case of reactivity hazard: consider evacuation. Avoid ingress of water in the containers. Wash contaminated clothes.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

For containment : Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Contact with water: measure explosive gas-air mixture concentration. Hazardous reaction: measure explosive gas-air mixture. Reaction: dilute combustible gas/vapour with water curtain. Provide equipment/receptacles with earthing. Do not use compressed air for pumping over spills. Heating: dilute combustible gas/vapour with water curtain.
Methods for cleaning up : Take up liquid spill into inert absorbent material, e.g.: dry sand/earth/vermiculite. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

No additional information available

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Keep the substance free from contamination. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Use earthed equipment. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Use spark-/explosionproof appliances and lighting system. Avoid contact of substance with water. Observe strict hygiene. Keep container tightly closed. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

7.2. Conditions for safe storage, including any incompatibilities

Heat and ignition sources : KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
Information on mixed storage : KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. metals. halogens. water/moisture.
Storage area : Store at ambient temperature. Store in a dry area. Ventilation at floor level. Fireproof storeroom. Provide for a tub to collect spills. Keep locked up. Unauthorized persons are not admitted. Detached building. Keep only in the original container. May be stored under inert gas. Meet the legal requirements.
Special rules on packaging : SPECIAL REQUIREMENTS: hermetical. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials : SUITABLE MATERIAL: No data available. MATERIAL TO AVOID: No data available.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

N,N-dimethylformamide (68-12-2)		
EU	Local name	N,N Dimethylformamide
EU	IOELV TWA (mg/m ³)	15 mg/m ³ (N,N Dimethylformamide; EU; Time-weighted average exposure limit 8 h; Indicative occupational exposure limit value)
EU	IOELV TWA (ppm)	5 ppm (N,N Dimethylformamide; EU; Time-weighted average exposure limit 8 h; Indicative occupational exposure limit value)
EU	IOELV STEL (mg/m ³)	30 mg/m ³ (N,N Dimethylformamide; EU; Short time value; Indicative occupational exposure limit value)
EU	IOELV STEL (ppm)	10 ppm (N,N Dimethylformamide; EU; Short time value; Indicative occupational exposure limit value)
EU	Notes	skin
Austria	Local name	Dimethylformamid
Austria	MAK (mg/m ³)	15 mg/m ³
Austria	MAK (ppm)	5 ppm
Austria	MAK Short time value (mg/m ³)	30 mg/m ³
Austria	MAK Short time value (ppm)	10 ppm
Austria	Remark (AT)	H
Belgium	Local name	N,N-Diméthylformamide # N,N-Dimethylformamide
Belgium	Limit value (mg/m ³)	15 mg/m ³ (N,N-Diméthylformamide; Belgium; Time-weighted average exposure limit 8 h)
Belgium	Limit value (ppm)	5 ppm (N,N-Diméthylformamide; Belgium; Time-weighted average exposure limit 8 h)
Belgium	Short time value (mg/m ³)	30 mg/m ³ (N,N-Diméthylformamide; Belgium; Short time value)
Belgium	Short time value (ppm)	10 ppm (N,N-Diméthylformamide; Belgium; Short time value)

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N,N-dimethylformamide (68-12-2)		
Belgium	Remark (BE)	D: La mention D signifie que la résorption de l'agent, via la peau, les muqueuses ou les yeux, constitue une partie importante de l'exposition totale. Cette résorption peut se faire tant par contact direct que par présence de l'agent dans l'air. # De vermelding D betekent dat de opname van het agens via de huid, de slijmvliezen of de ogen een belangrijk deel van de totale blootstelling vormt. Deze opname kan het gevolg zijn van zowel direct contact als zijn aanwezigheid in de lucht.
Bulgaria	Local name	Диметилформамид
Bulgaria	OEL TWA (mg/m ³)	15 mg/m ³
Bulgaria	OEL TWA (ppm)	5 ppm
Bulgaria	OEL STEL (mg/m ³)	30 mg/m ³
Bulgaria	OEL STEL (ppm)	10 ppm
Bulgaria	Notes	Кожа (възможна е значителна резорбция чрез кожата); • (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)
Croatia	Local name	Dimetilformamid; (N,N-dimetilformamid)
Croatia	GVI (granična vrijednost izloženosti) (mg/m ³)	15 mg/m ³
Croatia	GVI (granična vrijednost izloženosti) (ppm)	5 ppm
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (mg/m ³)	30 mg/m ³
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (ppm)	10 ppm
Croatia	Naznake (HR)	Skin; EU*** (naznaka da se radi o tvarima za koje su utvrđene indikativne granične vrijednosti izloženosti prema Direktivi 2009/161/ EU (treća lista)); T (otrovno); Repr. kat. 2 (tvari koje vjerojatno smanjuju plodnost kod ljudi i/ili – tvari koje vjerojatno uzrokuju razvojnu otrovnost kod ljudi)
Czech Republic	Local name	Dimethylformamid
Czech Republic	Expoziční limity (PEL) (mg/m ³)	30 mg/m ³
Czech Republic	Expoziční limity (PEL) (ppm)	10.1 ppm
Czech Republic	Expoziční limity (NPK-P) (mg/m ³)	60 mg/m ³
Czech Republic	Expoziční limity (NPK-P) (ppm)	20 ppm
Czech Republic	Remark (CZ)	D, P
Denmark	Local name	N,N-Dimethylformamid
Denmark	Grænseværdie (langvarig) (mg/m ³)	15 mg/m ³
Denmark	Grænseværdie (langvarig) (ppm)	5 ppm
Denmark	Anmærkninger (DK)	H (betyder, at stoffet kan optages gennem huden)
Estonia	Local name	Dimetüülformamiid
Estonia	OEL TWA (mg/m ³)	15 mg/m ³
Estonia	OEL TWA (ppm)	5 ppm
Estonia	OEL STEL (mg/m ³)	30 mg/m ³
Estonia	OEL STEL (ppm)	10 ppm
Finland	Local name	Dimetyyliformamidi
Finland	HTP-arvo (8h) (mg/m ³)	15 mg/m ³
Finland	HTP-arvo (8h) (ppm)	5 ppm
Finland	HTP-arvo (15 min)	30 mg/m ³
Finland	HTP-arvo (15 min) (ppm)	10 ppm
Finland	Huomautus (FI)	iho
France	Local name	N,N-Diméthylformamide

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France	VME (mg/m ³)	15 mg/m ³ (N,N-Diméthylformamide; France; Time-weighted average exposure limit 8 h; VRC: Valeur réglementaire contraignante)
France	VME (ppm)	5 ppm (N,N-Diméthylformamide; France; Time-weighted average exposure limit 8 h; VRC: Valeur réglementaire contraignante)
France	VLE (mg/m ³)	30 mg/m ³ (N,N-Diméthylformamide; France; Short time value; VRC: Valeur réglementaire contraignante)
France	VLE (ppm)	10 ppm (N,N-Diméthylformamide; France; Short time value; VRC: Valeur réglementaire contraignante)
France	Note (FR)	Valeurs réglementaires contraignantes; substance classée toxique pour la reproduction de catégorie 1b
Germany	Local name	N,N-Dimethylformamid
Germany	TRGS 900 Occupational exposure limit value (mg/m ³)	15 mg/m ³
Germany	TRGS 900 Occupational exposure limit value (ppm)	5 ppm
Germany	Remark (TRGS 900)	EU,DFG,AGS,H, Z
Greece	OEL TWA (mg/m ³)	30 mg/m ³
Greece	OEL TWA (ppm)	10 ppm
Greece	OEL STEL (mg/m ³)	60 mg/m ³
Greece	OEL STEL (ppm)	20 ppm
Hungary	Local name	N,N-DIMETILFORMAMID
Hungary	AK-érték	15 mg/m ³
Hungary	CK-érték	30 mg/m ³
Hungary	Megjegyzések (HU)	b, i; II.1.
Ireland	Local name	Dimethylformamide
Ireland	OEL (8 hours ref) (mg/m ³)	15 mg/m ³
Ireland	OEL (8 hours ref) (ppm)	5 ppm
Ireland	OEL (15 min ref) (mg/m ³)	30 mg/m ³
Ireland	OEL (15 min ref) (ppm)	10 ppm
Ireland	Notes (IE)	Sk, Repr.1B, IOELV
Italy	Local name	N,N Dimetilformamide
Italy	OEL TWA (mg/m ³)	15 mg/m ³
Italy	OEL TWA (ppm)	5 ppm
Italy	OEL STEL (mg/m ³)	30 mg/m ³
Italy	OEL STEL (ppm)	10 ppm
Latvia	Local name	N,N-dimetilformamīds
Latvia	OEL TWA (mg/m ³)	15 mg/m ³
Latvia	OEL TWA (ppm)	5 ppm
Latvia	OEL STEL (mg/m ³)	30 mg/m ³
Latvia	OEL STEL (ppm)	10 ppm
Lithuania	Local name	N,N-dimetilformamidas
Lithuania	IPRV (mg/m ³)	15 mg/m ³
Lithuania	IPRV (ppm)	5 ppm
Lithuania	TPRV (mg/m ³)	30 mg/m ³
Lithuania	TPRV (ppm)	10 ppm
Lithuania	Remark (LT)	R (reprodukcijai toksiškas poveikis); O (medžiaga į organizmą gali prasiskverbti pro nepažeistą odą); Šios medžiagos skystos formos skvarba per odą yra tokia didelė, kad gali sukelti pavojų gyvybei.
Netherlands	Local name	N,N-Dimethylformamide
Netherlands	Grenswaarde TGG 8H (mg/m ³)	15 mg/m ³ (N,N-Dimethylformamide; Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value)

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Netherlands	Grenswaarde TGG 8H (ppm)	4.9 ppm (N,N-Dimethylformamide; Netherlands; Time-weighted average exposure limit 8 h; Public occupational exposure limit value)
Netherlands	Grenswaarde TGG 15MIN (mg/m ³)	30 mg/m ³ (N,N-Dimethylformamide; Netherlands; Short time value; Public occupational exposure limit value)
Netherlands	Grenswaarde TGG 15MIN (ppm)	9.9 ppm (N,N-Dimethylformamide; Netherlands; Short time value; Public occupational exposure limit value)
Netherlands	Remark (MAC)	H (Huidopname) Stoffen die relatief gemakkelijk door de huid kunnen worden opgenomen, hetgeen een substantiële bijdrage kan betekenen aan de totale inwendige blootstelling, hebben in de lijst een Haanduiding. Bij deze stoffen moeten naast maatregelen tegen inademing ook adequate maatregelen ter voorkoming van huidcontact worden genomen.
Poland	Local name	N,N-dimetyloformamid
Poland	NDS (mg/m ³)	15 mg/m ³
Poland	NDSch (mg/m ³)	30 mg/m ³
Portugal	Local name	Dimetilformamida
Portugal	OEL TWA (ppm)	10 ppm
Romania	Local name	Dimetil-formamida
Romania	OEL TWA (mg/m ³)	10 mg/m ³
Romania	OEL TWA (ppm)	3.3 ppm
Romania	OEL STEL (mg/m ³)	30 mg/m ³
Romania	OEL STEL (ppm)	10 ppm
Slovakia	Local name	N,N-Dimetylformamid
Slovakia	NPHV (priemerná) (mg/m ³)	15 mg/m ³
Slovakia	NPHV (priemerná) (ppm)	5 ppm
Slovakia	OEL STEL (mg/m ³)	30 mg/m ³
Slovakia	OEL STEL (ppm)	10 ppm
Slovakia	Upozornenie (SK)	K - znamená, že faktor môže byť ľahko absorbovaný kožou
Slovenia	Local name	N,N-dimetilformamid
Slovenia	OEL TWA (mg/m ³)	15 mg/m ³
Slovenia	OEL TWA (ppm)	5 ppm
Slovenia	OEL STEL (mg/m ³)	30 mg/m ³
Slovenia	OEL STEL (ppm)	10 ppm
Spain	Local name	N,N-Dimetilformamida
Spain	VLA-ED (mg/m ³)	15 mg/m ³
Spain	VLA-ED (ppm)	5 ppm
Spain	VLA-EC (mg/m ³)	30 mg/m ³
Spain	VLA-EC (ppm)	10 ppm

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Spain	Notes	VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país), Vía dérmica (Indica que, en las exposiciones a esta sustancia, la aportación por la vía cutánea puede resultar significativa para el contenido corporal total si no se adoptan medidas para prevenir la absorción. En estas situaciones, es aconsejable la utilización del control biológico para poder cuantificar la cantidad global absorbida del contaminante. Para más información véase el Apartado 5 de este documento), TR1B (Cuando las pruebas utilizadas para la clasificación procedan principalmente de datos en animales), VLB® (Agente químico que tiene Valor Límite Biológico específico en este documento).
Sweden	Local name	N,N-Dimetylformamid
Sweden	nivågränsvärde (NVG) (mg/m ³)	15 mg/m ³
Sweden	nivågränsvärde (NVG) (ppm)	5 ppm
Sweden	kortidsvärde (KTV) (mg/m ³)	30 mg/m ³
Sweden	kortidsvärde (KTV) (ppm)	10 ppm
Sweden	Anmärkning (SE)	H (Ämnet kan lätt upptas genom huden Det föreskrivna gränsvärdet bedöms ge tillräckligt skydd endast under förutsättning att huden är skyddad mot exponering för ämnet ifråga); R (Ämnet är reproduktionsstörande Med reproduktionsstörande ämnen avses ämnen som kan medföra skadliga effekter på fortplantningsförmågan eller avkommans utveckling. Se även föreskrifterna om kemiska arbetsmiljörisiker och om gravida och ammande arbetstagare); 23 (Upptaget av ämnet i vätskeform genom huden är så stort att det kan ge livshotande skador)
United Kingdom	Local name	N,N-Dimethylformamide
United Kingdom	WEL TWA (mg/m ³)	15 mg/m ³ N,N-Dimethylformamide; United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
United Kingdom	WEL TWA (ppm)	5 ppm N,N-Dimethylformamide; United Kingdom; Time-weighted average exposure limit 8 h; Workplace exposure limit (EH40/2005)
United Kingdom	WEL STEL (mg/m ³)	30 mg/m ³ N,N-Dimethylformamide; United Kingdom; Short time value; Workplace exposure limit (EH40/2005)
United Kingdom	WEL STEL (ppm)	10 ppm N,N-Dimethylformamide; United Kingdom; Short time value; Workplace exposure limit (EH40/2005)
United Kingdom	Remark (WEL)	Sk (Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity)
Iceland	Local name	N,N- Dimetylformamið
Iceland	OEL (8 hours ref) (mg/m ³)	30 mg/m ³
Iceland	OEL (8 hours ref) (ppm)	10 ppm
Iceland	Notes (IS)	H
Russian Federation	Local name	N,N-Диметилформамид+
Russian Federation	OEL Ceiling (mg/m ³)	10 mg/m ³

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Russian Federation	Remark (RU)	2 класс опасности - высокоопасное; п (пары и/или газы); + (соединения, при работе с которыми требуется специальная защита кожи и глаз; символ проставлен вслед за наименованием вещества)
Norway	Local name	N,N-dimetylformamid (N,N-dimetylmetanamid)
Norway	Grenseverdier (AN) (mg/m ³)	15 mg/m ³
Norway	Grenseverdier (AN) (ppm)	5 ppm
Norway	Grenseverdier (Korttidsverdi) (mg/m ³)	30 mg/m ³
Norway	Grenseverdier (Korttidsverdi) (ppm)	10 ppm
Norway	Merknader (NO)	H (Kjemikalier som kan tas opp gjennom huden); R (Kjemikalier som skal betraktes som reproduksjonstoksiske); E (EU har en veiledende grenseverdi for stoffet); S (Korttidsverdi er en verdi for gjennomsnittskonsentrasjonen av et kjemisk stoff i pustesonen til en arbeidstaker som ikke skal overskrides i en fastsatt referanseperiode. Referanseperioden er 15 minutter hvis ikke annet er oppgitt)
Switzerland	Local name	Dimethylformamid (DMF)
Switzerland	VME (mg/m ³)	15 mg/m ³
Switzerland	VME (ppm)	5 ppm
Switzerland	VLE (mg/m ³)	30 mg/m ³
Switzerland	VLE (ppm)	10 ppm
Switzerland	Remark (CH)	H B R1 _{BD} SS _B - Leber ^{KT AN} - DFG, INRS, NIOSH
Turkey	Local name	N,N Dimetilformamid
Turkey	OEL TWA (mg/m ³)	15 mg/m ³
Turkey	OEL TWA (ppm)	5 ppm
Turkey	OEL STEL (mg/m ³)	30 mg/m ³
Turkey	OEL STEL (ppm)	10 ppm
Turkey	Comments	Deri
Australia	Local name	Dimethylformamide
Australia	TWA (mg/m ³)	30 mg/m ³
Australia	TWA (ppm)	10 ppm
Australia	Remark (AU)	Sk - Absorption through the skin may be a significant source of exposure.
USA - ACGIH	Local name	Dimethylformamide
USA - ACGIH	ACGIH TWA (ppm)	10 ppm (Dimethylformamide; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
USA - ACGIH	Remark (ACGIH)	Liver dam
USA - OSHA	Local name	Dimethylformamide
USA - OSHA	OSHA PEL (TWA) (mg/m ³)	30 mg/m ³
USA - OSHA	OSHA PEL (TWA) (ppm)	10 ppm

8.2. Exposure controls

Materials for protective clothing:

GIVE EXCELLENT RESISTANCE: butyl rubber, tetrafluoroethylene. GIVE GOOD RESISTANCE: No data available. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: natural rubber, neoprene, nitrile rubber, polyethylene, PVA, PVC, viton, nitrile rubber/PVC

Hand protection:

Gloves

Eye protection:

Face shield

Skin and body protection:

Protective clothing

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Respiratory protection:

Wear gas mask with filter type A if conc. in air > exposure limit

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Liquid.
Molecular mass	: 73.09 g/mol
Colour	: Colourless to light yellow.
Odour	: Unpleasant odour. Smell of fish. Amine-like odour.
Odour threshold	: 0.046 ppm 0.14 mg/m ³
pH	: 7 (200 g/l, H ₂ O, 20 °C)
pH solution	: 20 %
Relative evaporation rate (butylacetate=1)	: 0.17
Relative evaporation rate (ether=1)	: 60
Melting point	: -61 °C
Freezing point	: No data available
Boiling point	: 153 °C
Flash point	: 58 °C
Critical temperature	: 370 °C
Auto-ignition temperature	: 440 °C
Decomposition temperature	: 350 °C
Flammability (solid, gas)	: No data available
Vapour pressure	: 3.77 hPa (20 °C)
Vapour pressure at 50 °C	: 25 hPa (50 °C)
Critical pressure	: 44066 hPa
Relative vapour density at 20 °C	: 2.5
Relative density	: 0.95
Relative density of saturated gas/air mixture	: 1
Density	: 940 kg/m ³ (20 °C)
Solubility	: Soluble in water. Soluble in ethanol. Soluble in ether. Soluble in acetone. Soluble in aromatic hydrocarbons. Soluble in chloroform. Soluble in tetrachloromethane. Soluble in dimethyl sulfoxide. Water: 100 g/100ml (20 °C) Ethanol: Complete Ether: Complete Acetone: Complete
Log Pow	: -1.01 (Experimental value)
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: 2.2 - 16 vol % 70 - 500 g/m ³

9.2. Other information

Specific conductivity	: 6 µS/m
Saturation concentration	: 12 g/m ³
VOC content	: 100 %
Other properties	: Gas/vapour heavier than air at 20°C. Clear. Hygroscopic. Slightly volatile.

SECTION 10: Stability and reactivity

10.1. Reactivity

Decomposes slowly on exposure to water (moisture): release of highly flammable gases/vapours (dimethylamine) and release of corrosive products (formic acid). On heating: release of highly flammable gases/vapours (dimethylamine). On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Violent to explosive reaction with many compounds e.g.: with (strong) oxidizers and with (some) halogens.

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10.2. Chemical stability

Hygroscopic.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Inhalation: Harmful if inhaled. Dermal: Harmful in contact with skin.

N,N-dimethylformamide (68-12-2)	
LD50 oral rat	3010 mg/kg (Rat, Experimental value)
LD50 dermal rat	1100 mg/kg (Rat; Experimental value; OECD 402: Acute Dermal Toxicity; >3160 mg/kg bodyweight; Rat)
LC50 inhalation rat (mg/l)	> 5.9 mg/l/4h (Rat)
LC50 inhalation rat (ppm)	1948 ppm/4h (Rat)

Skin corrosion/irritation	: Not classified pH: 6.7 (4.0 %)
Serious eye damage/irritation	: Causes serious eye irritation. pH: 6.7 (4.0 %)
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: May damage the unborn child.
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified
IARC group	: 3

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: Not classified as dangerous for the environment according to the criteria of Directive 67/548/EEC. Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.
Ecology - air	: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.7.1.3.
Ecology - water	: Affects the self-cleaning capacity of surface water. Ground water pollutant. Not harmful to fishes (LC50(96h) >1000 mg/l). Not harmful to invertebrates (Daphnia) (EC50 (48h) > 1000 mg/l). Not harmful to algae (EC50 (72h) >1000 mg/l). Not harmful to bacteria (EC50 >1000 mg/l). Not harmful to activated sludge.

N,N-dimethylformamide (68-12-2)	
LC50 fish 1	9800 mg/l (LC50; 96 h; Salmo gairdneri)

12.2. Persistence and degradability

N,N-dimethylformamide (68-12-2)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil. No (test)data on mobility of the substance available. Photodegradation in the air.
Biochemical oxygen demand (BOD)	0.9 g O ₂ /g substance
Chemical oxygen demand (COD)	0.3645 g O ₂ /g substance

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N,N-dimethylformamide (68-12-2)	
ThOD	1.863 g O ₂ /g substance
BOD (% of ThOD)	0.49

12.3. Bioaccumulative potential

N,N-dimethylformamide (68-12-2)	
BCF fish 1	0.3-1.2,BCF
Log Pow	-1.01 (Experimental value)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

N,N-dimethylformamide (68-12-2)	
Surface tension	0.036 N/m (25 °C)

12.5. Results of PBT and vPvB assessment

N,N-dimethylformamide (68-12-2)	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle by distillation. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery. Do not discharge into surface water. Do not discharge unmonitored into the environment.

Additional information : LWCA (the Netherlands): KGA category 03. Hazardous waste according to Directive 2008/98/EC.

European List of Waste (LoW) code : 07 01 04* - other organic solvents, washing liquids and mother liquors
16 05 06* - laboratory chemicals consisting of or containing dangerous substances including mixtures of laboratory chemicals
16 08 06* - spent liquids used as catalysts

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
2265	2265	2265	2265	2265
14.2. UN proper shipping name				
N,N-DIMETHYLFORMAMIDE	N,N-DIMETHYLFORMAMIDE	n,n-Dimethylformamide	N,N-DIMETHYLFORMAMIDE	N,N-DIMETHYLFORMAMIDE
Transport document description				
UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III, (D/E)	UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III (58°C c.c.)	UN 2265 n,n-Dimethylformamide, 3, III	UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III	UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III
14.3. Transport hazard class(es)				
3	3	3	3	3
14.4. Packing group				
III	III	III	III	III
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No

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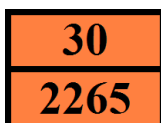


ADR	IMDG	IATA	ADN	RID
	Marine pollutant : No			
No supplementary information available				

14.6. Special precautions for user

- Overland transport

Classification code (ADR)	: F1
Limited quantities (ADR)	: 5I
Excepted quantities (ADR)	: E1
Packing instructions (ADR)	: P001, IBC03, LP01, R001
Mixed packing provisions (ADR)	: MP19
Portable tank and bulk container instructions (ADR)	: T2
Portable tank and bulk container special provisions (ADR)	: TP2
Tank code (ADR)	: LGBF
Vehicle for tank carriage	: FL
Transport category (ADR)	: 3
Special provisions for carriage - Packages (ADR)	: V12
Special provisions for carriage - Operation (ADR)	: S2
Hazard identification number (Kemler No.)	: 30
Orange plates	:



Tunnel restriction code (ADR) : D/E

- Transport by sea

Transport regulations (IMDG)	: Subject
Limited quantities (IMDG)	: 5 L
Excepted quantities (IMDG)	: E1
Packing instructions (IMDG)	: P001, LP01
IBC packing instructions (IMDG)	: IBC03
Tank instructions (IMDG)	: T2
Tank special provisions (IMDG)	: TP2
EmS-No. (Fire)	: F-E
EmS-No. (Spillage)	: S-D
Stowage category (IMDG)	: A
Flash point (IMDG)	: 58°C c.c.
Properties and observations (IMDG)	: Colourless liquid. Flashpoint: 58°C c.c. Explosive limits: 2.2% to 16% Miscible with water. May react violently with oxidizing materials.
MFAG-No	: 129

- Air transport

Transport regulations (IATA)	: Subject to the provisions
PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y344
PCA limited quantity max net quantity (IATA)	: 10L
PCA packing instructions (IATA)	: 355
PCA max net quantity (IATA)	: 60L
CAO packing instructions (IATA)	: 366
CAO max net quantity (IATA)	: 220L
ERG code (IATA)	: 3L

- Inland waterway transport

Classification code (ADN) : F1

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Limited quantities (ADN)	: 5 L
Excepted quantities (ADN)	: E1
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP, EX, A
Ventilation (ADN)	: VE01
Number of blue cones/lights (ADN)	: 0

- Rail transport

Transport regulations (RID)	: Subject
Classification code (RID)	: F1
Limited quantities (RID)	: 5L
Excepted quantities (RID)	: E1
Packing instructions (RID)	: P001, IBC03, LP01, R001
Mixed packing provisions (RID)	: MP19
Portable tank and bulk container instructions (RID)	: T2
Portable tank and bulk container special provisions (RID)	: TP2
Tank codes for RID tanks (RID)	: LGBF
Transport category (RID)	: 3
Special provisions for carriage – Packages (RID)	: W12
Colis express (express parcels) (RID)	: CE4
Hazard identification number (RID)	: 30

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

N,N-dimethylformamide is on the REACH Candidate List

N,N-dimethylformamide is not on the REACH Annex XIV List

VOC content : 100 %

15.1.2. National regulations

Germany

VwVwS Annex reference : Water hazard class (WGK) 1, low hazard to waters (ID No. 83)

WGK remark : Classification water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : N,N-dimethylformamide is listed

Denmark

Class for fire hazard : Class III-1

Store unit : 50 liter

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Classification remarks	: Flammable according to the Danish Ministry of Justice; Emergency management guidelines for the storage of flammable liquids must be followed
Recommendations Danish Regulation	: Young people below the age of 18 years are not allowed to use the product Pregnant/breastfeeding women working with the product must not be in direct contact with the product The requirements from the Danish Working Environment Authorities regarding work with carcinogens must be followed during use and disposal

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
EC50	Median effective concentration
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
PBT	Persistent Bioaccumulative Toxic
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
vPvB	Very Persistent and Very Bioaccumulative

Data sources : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Full text of H- and EUH-statements:

Acute Tox. 4 (Dermal)	Acute toxicity (dermal), Category 4
Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
Repr. 1B	Reproductive toxicity, Category 1B
H226	Flammable liquid and vapour
H312	Harmful in contact with skin
H319	Causes serious eye irritation
H332	Harmful if inhaled
H360D	May damage the unborn child

SDS ISOLAB

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product