

**N,N-Dimethylformamide****BDH 1117**

Version 1.5

Revision Date 03/23/2015

Print Date 05/08/2015

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : N,N-Dimethylformamide

MSDS Number : 000000011697

Product Use Description : Solvent

Manufactured for : VWR International LLC
Radnor Corporate Center
Building One
Suite 200
100 Matsonford Road
Radnor PA 19087

For more information call : (Monday-Friday, 8:00am-5:00pm)
1-800-932-5000

In case of emergency call : (24 hours/day, 7 days/week)
1-800-424-9300 (USA Only)
For Transportation Emergencies:
1-800-424-9300 (CHEMTREC - Domestic)
1-613-996-6666 (CANUTEC - Canada)

SECTION 2. HAZARDS IDENTIFICATION**Emergency Overview**

Form : liquid

Color : colourless

Odor : mild amine-like

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Classification of the substance or mixture

Classification of the substance or mixture : Flammable liquids, Category 3
Eye irritation, Category 2A
Reproductive toxicity, Category 1B
Specific target organ toxicity - repeated exposure, Category 1, Liver

GHS Label elements, including precautionary statements

Symbol(s)



Signal word

: Danger

Hazard statements

: Flammable liquid and vapour.
Causes serious eye irritation.
May damage fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure.

Precautionary statements

: **Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear eye/face protection.**Response:**

IF ON SKIN (or hair): Remove/ Take off immediately all

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contaminated clothing. Rinse skin with water/ shower.
IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:

Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal:

Dispose of contents/container in accordance with local, state & federal regulations.

Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : C₃H₇NO

Chemical nature : Substance

Chemical Name	CAS-No.	Concentration
N,N-Dimethylformamide	68-12-2	100.00 %

SECTION 4. FIRST AID MEASURES

Inhalation : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Use oxygen as required, provided a qualified operator is present. Call a physician.

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- Skin contact : Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Call a physician.
- Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician.
- Ingestion : Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Call a physician.

Notes to physician

- Treatment : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Dry chemical
Carbon dioxide (CO₂)
Alcohol-resistant foam
Cool closed containers exposed to fire with water spray.
- Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.
- Specific hazards during firefighting : Flammable.
Vapours may form explosive mixtures with air.
Vapours are heavier than air and may spread along floors.
Vapors may travel to areas away from work site before igniting/flashing back to vapor source.
In case of fire hazardous decomposition products may be produced such as:
Carbon monoxide
Carbon dioxide (CO₂)
nitrogen oxides (NO_x)
Dimethylamine
- Special protective equipment for firefighters : Wear self-contained breathing apparatus and protective suit.

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SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions : Wear personal protective equipment.
Immediately evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Ensure adequate ventilation.
Remove all sources of ignition.
Do not swallow.
Avoid breathing vapours, mist or gas.
Avoid contact with skin, eyes and clothing.
- Environmental precautions : Prevent further leakage or spillage if safe to do so.
Prevent product from entering drains.
Discharge into the environment must be avoided.
Do not flush into surface water or sanitary sewer system.
Do not allow run-off from fire fighting to enter drains or water courses.
- Methods for cleaning up : Ventilate the area.
No sparking tools should be used.
Use explosion-proof equipment.
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

SECTION 7. HANDLING AND STORAGE**Handling**

- Handling : Wear personal protective equipment.
Use only in well-ventilated areas.
Keep container tightly closed.
Do not smoke.
Do not swallow.
Avoid breathing vapours, mist or gas.
Avoid contact with skin, eyes and clothing.

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Advice on protection against fire and explosion : Keep away from fire, sparks and heated surfaces.
Take precautionary measures against static discharges.
Ensure all equipment is electrically grounded before beginning transfer operations.
Use explosion-proof equipment.
Keep product and empty container away from heat and sources of ignition.
No sparking tools should be used.
No smoking.

Storage

Requirements for storage areas and containers : Store in area designed for storage of flammable liquids. Protect from physical damage.
Keep containers tightly closed in a dry, cool and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep away from heat and sources of ignition.
Keep away from direct sunlight.
Store away from incompatible substances.
Container hazardous when empty.
Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective measures : Ensure that eyewash stations and safety showers are close to the workstation location.

Engineering measures : Use with local exhaust ventilation.
Prevent vapour buildup by providing adequate ventilation during and after use.

Eye protection : Do not wear contact lenses.
Wear as appropriate:
Safety glasses with side-shields
If splashes are likely to occur, wear:

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- Goggles or face shield, giving complete protection to eyes
- Hand protection : Solvent-resistant gloves
Gloves must be inspected prior to use.
Replace when worn.
- Skin and body protection : Wear as appropriate:
Solvent-resistant apron
Flame retardant antistatic protective clothing.
If splashes are likely to occur, wear:
Protective suit
- Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.
For rescue and maintenance work in storage tanks use self-contained breathing apparatus.
Use NIOSH approved respiratory protection.
- Hygiene measures : When using, do not eat, drink or smoke.
Wash hands before breaks and immediately after handling the product.
Keep working clothes separately.
Remove and wash contaminated clothing before re-use.
Do not swallow.
Avoid breathing vapours, mist or gas.
Avoid contact with skin, eyes and clothing.
This material has an established AIHA ERPG exposure limit.
The current list of ERPG exposure limits can be found at http://www.aiha.org/insideaiha/GuidelineDevelopment/ERPG/Documents/2011erpgweelhandbook_table-only.pdf.

Exposure Guidelines

Components	CAS-No.	Value	Control parameters	Update	Basis
N,N-Dimethylformamide	68-12-2	TWA : time weighted average	(10 ppm)	2008	ACGIH:US. ACGIH Threshold Limit Values

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N,N-Dimethylformamide	68-12-2	SKIN_DES : Skin designation:	Can be absorbed through the skin.	2008	ACGIH:US. ACGIH Threshold Limit Values
N,N-Dimethylformamide	68-12-2	REL : Recommended exposure limit (REL):	30 mg/m3 (10 ppm)	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
N,N-Dimethylformamide	68-12-2	SKIN_DES : Skin designation:	Can be absorbed through the skin.	2005	NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards
N,N-Dimethylformamide	68-12-2	SKIN_DES : Skin designation:	Can be absorbed through the skin.	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
N,N-Dimethylformamide	68-12-2	PEL : Permissible exposure limit	30 mg/m3 (10 ppm)	02 2006	OSHA_TRANS:US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
N,N-Dimethylformamide	68-12-2	TWA : time weighted average	30 mg/m3 (10 ppm)	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)

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N,N-Dimethylformamide	68-12-2	SKIN_FINAL : Skin designation (Final Rule Limit applies):	Can be absorbed through the skin.	1989	Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)
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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Color	: colourless
Odor	: mild amine-like
pH	: Note: neutral
Melting point/freezing point	: -60.4 °C
Boiling point/boiling range	: 153 °C
Flash point	: 136 °F (58 °C) Method: closed cup
Evaporation rate	: 0.2 Method: Compared to Butyl acetate.
Lower explosion limit	: 2 %(V)
Upper explosion limit	: 15.2 %(V)
Vapor pressure	: 3.6 hPa

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Vapor density	: 2.5 Note: (Air = 1.0)
Density	: 0.949 g/cm ³ at 20 °C
Water solubility	: Note: completely soluble
Ignition temperature	: 445 °C
Molecular weight	: 73.1 g/mol

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	: Stable under recommended storage conditions.
Possibility of hazardous reactions	: Hazardous polymerisation does not occur.
Conditions to avoid	: Heat, flames and sparks. Keep away from direct sunlight.
Incompatible materials to avoid	: Strong oxidizing agents Halogenated compounds Iron Carbon tetrachloride Alkyl aluminums Inorganic nitrates
Hazardous decomposition products	: In case of fire hazardous decomposition products may be produced such as: Carbon monoxide

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Carbon dioxide (CO₂)
nitrogen oxides (NO_x)
Toxic gases/vapours
Dimethylamine

SECTION 11. TOXICOLOGICAL INFORMATION

- Acute oral toxicity : LD50: 2,800 mg/kg
Species: Rat
- Acute inhalation toxicity : LC50: > 5.9 mg/l , vapour
Exposure time: 4 h
Species: Rat
- Acute dermal toxicity : LD50: 4,720 mg/kg
Species: Rabbit
- Skin irritation : Species: Rabbit
Result: slight irritation
- Eye irritation : Species: Rabbit
Result: Irritating to eyes.
- Repeated dose toxicity : Species: Rat
Application Route: Inhalation
Note: Liver toxicity (100 or 400 ppm for 6h/day, 5 days/week for 2 yr.)
- : Species: Mouse
Application Route: Inhalation
Note: Liver toxicity (100 or 400 ppm, males and 400 ppm, females for 6h/day, 5days/week for 18 mos.)

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SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity effects**

Toxicity to fish : LC50: > 500 mg/l
Exposure time: 48 h
Species: Leuciscus idus (Golden orfe)

Toxicity to daphnia and other aquatic invertebrates : LC50: 12.4 g/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)

Toxicity to algae : LC50: > 1,000 mg/l
Exposure time: 96 h
Species: Scenedesmus capricornutum (fresh water algae)

Further information on ecology**SECTION 13. DISPOSAL CONSIDERATIONS**

Disposal methods : Dispose of contents/ container in accordance with local, state, and federal regulations.

Contaminated packaging : Empty remaining contents. Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT INFORMATION

DOT UN/ID No. : UN 2265
Proper shipping name : N,N-DIMETHYLFORMAMIDE

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Class	3
Packing group	III
Hazard Labels	3

IATA

UN/ID No.	: UN 2265
Description of the goods	: N,N-DIMETHYLFORMAMIDE
Class	: 3
Packaging group	: III
Hazard Labels	: 3
Packing instruction (cargo aircraft)	: 366
Packing instruction (passenger aircraft)	: 355
Packing instruction (passenger aircraft)	: Y344

IMDG

UN/ID No.	: UN 2265
Description of the goods	: N,N-DIMETHYLFORMAMIDE
Class	: 3
Packaging group	: III
Hazard Labels	: 3
EmS Number	: F-E, S-D
Marine pollutant	: no

SECTION 15. REGULATORY INFORMATION

Inventories

US. Toxic Substances Control Act : On TSCA Inventory

Australia. Industrial Chemical (Notification and Assessment) Act : On the inventory, or in compliance with the inventory

Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL) : All components of this product are on the Canadian DSL.



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Japan. Kashin-Hou Law List : On the inventory, or in compliance with the inventory

Korea. Toxic Chemical Control Law (TCCL) List : On the inventory, or in compliance with the inventory

Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act : On the inventory, or in compliance with the inventory

China. Inventory of Existing Chemical Substances : On the inventory, or in compliance with the inventory

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand : On the inventory, or in compliance with the inventory

National regulatory information

US. EPA CERCLA Hazardous Substances (40 CFR 302) : The following component(s) of this product is/are subject to release reporting under 40 CFR 302 when release exceeds the Reportable Quantity (RQ):

Reportable quantity: 100 lbs
: N,N-Dimethylformamide 68-12-2

SARA 302 Components : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components : The following components are subject to reporting levels established by SARA Title III, Section 313:
: N,N-Dimethylformamide 68-12-2

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

CERCLA Reportable Quantity : 100 lbs

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California Prop. 65 : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Massachusetts RTK : N,N-Dimethylformamide 68-12-2

New Jersey RTK : N,N-Dimethylformamide 68-12-2

Pennsylvania RTK : N,N-Dimethylformamide 68-12-2

WHMIS Classification : B3: Combustible Liquid
D2B: Toxic Material Causing Other Toxic Effects
This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

SECTION 16. OTHER INFORMATION

	HMIS III	NFPA
Health hazard	: 2*	2
Flammability	: 2	2
Physical Hazard	: 0	
Instability	:	0

* - Chronic health hazard

Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

Further information

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Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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