Revision date: 12/5/2014 *Version: 1*

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

1.1. Product identifier

Trade name/designation:	N,N-Dimethylformamide
Product No.:	BDH83634
Other means of identification: DMF; Dimethylformamide; Formyldimethylamine; Formamide, N,N-Dimethyl-	

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

Relevant identified uses: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

1.3. Details of the supplier of the safety data sheet

Company VWR International, LLC
Radnor Corporate Center
100 Matsonford Road
Radnor, PA 19087-8660
Telephone 610.386.1700

1.4. Emergency Telephone number

CHEMTREC 800.424.9300
CANUTEC 613.996.6666

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

For the full text of the H-Statement(s) and R-phrase(s) mentioned in this Section, see Section 16.

Hazard classes and hazard categories	Hazard statements
Flammable Liquids: GHS Category 3	H226
Acute Toxicity, Inhalation: GHS Category	H332
Acute Toxicity, Dermal: GHS Category 4	H312
Eye Irritation: GHS Category 2A	H319
Reproductive Toxicity: GHS Category 1B	H360

2.2. GHS Label elements, including precautionary statements

Pictograms 

Signal word DANGER!

Hazard statements	
H226	Flammable Liquid and vapor.
H312	Harmful in contact with skin.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H360	May damage fertility or the unborn child.

Precautionary statements	
P210	Keep away from heat/sparks/open flames/hot surfaces – No smoking.
P243	Take precautionary measures against static
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353	If on skin or hair: Remove/take off immediately all contaminated clothing. Rinse skin with
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

2.3. WHIMS Classification

Flammable liquid, toxic material

2.4. Hazards not otherwise classified (HNOC) or not covered by GHS or WHIMS

Rapidly absorbed through skin.

SECTION 3: Composition / information on ingredients

3.1. Hazard components

Chemical name	Formula	Molecular weight	CAS#	Weight%
Dimethylformamide	$HCON(CH_3)_2$	73.09	68-12-2	99%

SECTION 4: First aid measures

4.1. General information

In case of inhalation
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. *Do not* use mouth-to-mouth resuscitation. If breathing has stopped, apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

In case of skin contact
Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention.

In case of eye contact
Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention.

In case of ingestion
Call a poison control center. Do not induce vomiting unless directed by medical personnel. If vomiting occurs naturally, have victim lean forward. Never give anything by mouth to an unconscious person. Get medical aid.

4.2. Most important symptoms and effects, both acute and delayed
Harmful if swallowed, inhaled, or absorbed through the skin. May cause harm to the unborn child. Causes irritation to the skin, eyes, and respiratory tract. May cause liver damage.

4.3. Indication of any immediate medical attention and special treatment needed
No information available.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Water may be ineffective. *Do not* use straight streams of water. For small fires, use dry chemical, carbon dioxide, water spray, or alcohol-resistant foam. For larger fires, use water spray, fog, or alcohol-resistant foam.

5.2. Special hazards arising from the substance or mixture
None listed.

5.3. Special protective equipment for firefighters

As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear.

5.4. Hazardous combustion products
May decompose into irritating and highly toxic gases under fire conditions (oxides of nitrogen, carbon monoxide, carbon dioxide).

5.5. Advice for firefighters
Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

5.6. Additional information
Vapors may form explosive mixtures with air. Use water spray to keep fire exposed containers cool.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Always use proper personal protective equipment as described in section 8.

6.2. Environmental precautions
Prevent further release if safe to do so. Keep product from entering drains.

6.3. Methods and material for containment and cleaning up
Use water spray to reduce vapors. Water spray may reduce vapors but still not prevent ignition in closed spaces. Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Use spark-proof tools. Provide ventilation to the affected area and remove all ignition sources. Approach the spill from upwind and pick up absorbed material and place it in a suitable container.

6.4. Additional information
For disposal see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor or mist.

7.2. Conditions for safe storage, including any incompatibilities

Keep in a flammables area away from direct sunlight and all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

7.3. Specific end use(s)

Apart from those mentioned in Section 1.2, no other uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Chemical Name	Limit value type & Country of Origin	Exposure Limit value	Source
Dimethylformamide	TWA - USA	100 ppm	ACGIH
	Skin - Potential significant contribution to overall exposure by the cutaneous route.		
	TWA – USA	10 ppm / 30 mg/m^3	NIOSH
	IDLH – USA	500 ppm	NIOSH
	TWA – USA	10 ppm / 30 mg/m^3	OSHA PEL

8.2. Exposure controls

Appropriate engineering controls

Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal protection equipment

Eye/face protection

Wear protective chemical goggles or other appropriate eye protection.

Skin protection

Use butyl rubber gloves and protective clothing to prevent skin exposure.

Respiratory protection

A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Hygiene measures

Use good hygiene and safety practices when using this product. Wash hands before breaks and at the end of the work day.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

a) Appearance
Physical state: Liquid
Color: Colorless
b) Odor: Faint amine odor
c) Odor Threshold: 100 ppm
d) pH: 6-8 @ 20% aqueous solution
e) Melting point/freezing point: -61° C
f) Initial boiling point: 153° C
and boiling range
g) Flash point: 58° C (134° F)
h) Evaporation rate: 0.17
i) Flammability (solid, gas): No information available
j) Upper/lower flammability: Lower Limit – 2.2 vol %, Upper Limit – 15.2 vol %
or explosive limits
k) Vapor pressure: 4.9 mbar @ 20° C
l) Vapor density: 2.5
m) Relative density: 0.94 g/cm^3
n) Solubility: Completely miscible
o) Partition coefficient (n-Octanol/Water): Low Pow: -1.01
p) Auto-ignition temperature: 445° C (833° F)
q) Decomposition temperature: No information available
r) Viscosity: 0.8 mPas 20° C
s) Explosive properties: No information available
t) Oxidizing properties: No information available

9.2. Other information

Conductive; Conductivity = 6x10^6 pS/m; Dielectric Constant = 36.71; Relaxation Time Constant = 5.4x10^{-5} seconds

SECTION 10: Stability and reactivity

10.1. Reactivity

No information available.

10.2. Chemical stability

Stable at room temperature in closed containers under normal storage and handling conditions.

10.3. Possibility of hazardous reactions
No information available.

10.4. Conditions to avoid
Ignition sources, excess heat.

10.5. Incompatible materials
Strong oxidizing agents.

10.6. Hazardous decomposition products
Irritating and toxic fumes and gases, oxides of nitrogen, carbon monoxide, carbon dioxide.

SECTION 11: Toxicology

11.1. Information on toxicological effects

Acute toxicity

Oral LD_{50}: Rat, 9-15 mg/l, 4 hr.
Inhalation LC_{50}: Rat – 2800 mg/kg
Dermal LD_{50}: Rabbit – 1500 mg/kg

Other information on acute toxicity: No information available

Skin corrosion/irritation
Skin – human; Result – mild skin irritation, 24 hr.
Serious eye damage/eye irritation
Eyes – rabbit; Result – moderate eye irritation
Respiratory or skin sensitization
No information available.
Germ cell mutagenicity
Mutation in mammalian somatic cells observed.
Carcinogenicity
IARC Group 3, not classifiable as to its carcinogenicity in humans.
Reproductive toxicity
May cause congenital malformation in the fetus.
Specific target organ toxicity-single exposure
No information available.
Specific target organ toxicity-repeated exposure
No information available.
Aspiration hazard
No information available.
Additional information
No information available.

SECTION 12: Ecological information

12.1. Ecotoxicity

Fish: Fathead minnow: LC50 = 10400-10800 mg/L/96H;
Fish: Rainbow trout: LC50 = 9800 mg/L/96H;
Fish: Bluegill: LC50 = 6300-7500 mg/L/96H;
Invertebrate: Water flea: EC50 = 8600-13100 mg/L/48H;
Freshwater algae: Green algae: EC50 = >500 mg/L/96H;

12.2. Persistence and degradability

Readily biodegradable (90%).

12.3. Bioaccumulative potential

No information available.

12.4. Mobility in soil

No information available.

12.5. Results of PBT and vPvB assessment

No information available.

12.6. Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, use or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3.

Contaminated packaging

Dispose of as unused product.

SECTION 14: Transport information

Land Transport DOT (U.S.)

UN Number: UN2265
Proper Shipping name: N,N-Dimethylformamide
Transport Hazard Classes
Class: 3
Hazard Label(s): 3
Packing Group: III
Environmental hazard(s): none

Special precautions for user: none

Sea Transport IMDG

UN Number: UN2265
Proper Shipping name: N,N-Dimethylformamide
Transport Hazard Classes
Class: 3
Hazard Label(s): 3
EMS- No.: F-E, S-D
Packing Group: III
Environmental hazard(s): None
Segregation Group: None
Special precautions for user: None

Air Transport IATA

UN Number: UN2265
Proper Shipping name: N,N-Dimethylformamide
Transport Hazard Classes
Class: 3
Hazard Label(s): 3
Packing Group: III
Environmental hazard(s): none
Special precautions for user: None

SECTION 15: Regulatory information

OSHA Hazards
Not considered highly hazardous by OSHA.
SARA 302 Extremely Hazardous Substances
Does not have a TPQ
SARA 313 (TRI reporting)
N,N-Dimethylformamide (CAS 68-12-2) is subject to SARA Title III Section 313 and 40 CFR 373 reporting requirement
SARA 311/312 Hazardous Chemicals
Acute health, fire
Massachusetts Right-To-Know Substance List
N,N-Dimethylformamide, CAS# 68-12-2, Revision Date – 7/1/2007
Pennsylvania Right-To-Know Hazardous Substances

N,N-Dimethylformamide, CAS# 68-12-2, Revision Date – 7/1/2007
New Jersey Worker and Community Right-To-Know Components
N,N-Dimethylformamide, CAS# 68-12-2, Revision Date – 7/1/2007
California Proposition 65
This product contains no chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

Inventory status:
Canada DSL/NDSL Inventory List: Yes
US TSCA Inventory List: Yes
EINECS, ELINCS or NLP: 200-679-5

SECTION 16: Other information

Full text of H-Statement(s) and R-phrase(s)
See Section 2
Canadian Carcinogenicity hazard class: See section 11
PHNOC hazard class: B2
HHNOC hazard class: D2B
Biohazardous Infectious Materials hazard class: Not available

NFPA Rating:
Health: 2
Flammability: 2
Reactivity: 0
Special Hazard:

DISCLAIMER
The above information is believed to be correct but does not purport to be all-inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. VWR International and its Affiliates shall not be held liable for any damage resulting from handling.