

N,N-Dimethylformamide**270547-4X4L**

Version 4.0

Revision Date 10/29/2018

Print Date 10/17/2019

SECTION 1. IDENTIFICATION

Product name : N,N-Dimethylformamide

Number : 000000011357

Product Use Description : Solvent

Manufacturer or supplier's details : Honeywell International Inc.
1953 South Harvey Street
Muskegon, MI 49442

For more information call : 1-800-368-0050
+1-231-726-3171

(Monday-Friday, 9:00am-5:00pm)

In case of emergency call : **Medical: 1-800-498-5701 or +1-303-389-1414**
: **Transportation (CHEMTREC): 1-800-424-9300 or**
: **+1-703-527-3887**
:
: (24 hours/day, 7 days/week)

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
Acute toxicity, Category 4, Inhalation
Eye irritation, Category 2A
Carcinogenicity, Category 1B
Reproductive toxicity, Category 1B

GHS Label elements, including precautionary statements

Symbol(s)



Signal word

: **Danger**

Hazard statements

: Flammable liquid and vapour.
Causes serious eye irritation.
Harmful if inhaled.
May cause cancer.
May damage fertility or the unborn child.

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.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

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Response:

IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
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 to an approved waste disposal plant.

Carcinogenicity

IARC:	N,N-Dimethylformamide	68-12-2
	Group 2A: Probably carcinogenic to humans	
ACGIH:	N,N-Dimethylformamide	68-12-2
	A3: Confirmed animal carcinogen	

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula	: C ₃ H ₇ NO
Chemical nature	: Substance

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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.
- 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

- Indication of immediate medical attention and special treatment needed, if necessary : 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 : Flammable.

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firefighting

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.

SECTION 6. ACCIDENTAL RELEASE MEASURES**Personal precautions,
protective equipment and
emergency procedures**

: 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 and materials for
containment and 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).

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SECTION 7. HANDLING AND STORAGE**Handling**

Precautions for safe 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.

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

Conditions for safe storage, including any incompatibilities : 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.

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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|--------------------------|---|--|
| 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:
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 |

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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	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)

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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_FI NAL : Skin designati on (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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N,N-Dimethylformamide	68-12-2	TWA : Time weighted average	(5 ppm)	03 2018	ACGIH:US. ACGIH Threshold Limit Values
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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Color	: colourless
Odor	: mild amine-like
Odor threshold	: Note: no data available
pH	: Note: neutral
Freezing point	: -60.4 °C
Boiling point/boiling range	: 153 °C
Flash point	: 136 °F (58 °C) Method: closed cup

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Lower explosion limit	: 2.2 %(V)
Upper explosion limit	: 15.2 %(V)
Vapor pressure	: 3.6 hPa
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
Viscosity, kinematic	: Note: no data available
Molecular weight	: 73.10 g/mol

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	: Stable under recommended storage conditions.
Possibility of hazardous reactions	: Hazardous polymerisation does not occur.

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Conditions to avoid	: Heat, flames and sparks. Keep away from direct sunlight.
Incompatible materials	: 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 Carbon dioxide (CO ₂) 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

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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.)
Further information	: Note: May cause cancer. May damage fertility or the unborn child.

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

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SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods : Observe all Federal, State, and Local Environmental regulations.

SECTION 14. TRANSPORT INFORMATION

DOT

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

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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

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

Korea. Existing Chemicals Inventory (KECI) : 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

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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

California Prop. 65 :  **WARNING:** This product can expose you to chemicals, listed below, known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

N,N-Dimethylformamide 68-12-2

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

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.

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Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

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

Previous Issue Date: 02/16/2018

Prepared by Honeywell Performance Materials and Technologies Product Stewardship Group