

SAFETY DATA SHEET

spectrum®



Revision date 24-November-2023

Revision Number 2

1. Identification

Product identifier

Product Name N,N-DIMETHYLFORMAMIDE, EXCEEDS A.C.S. SPECIFICATIONS, HPLC GRADE

Other means of identification

Product Code(s) HP572

UN/ID no UN2265

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended use No information available

Restrictions on use No information available

Details of the supplier of the safety data sheet

Supplier Address

Spectrum Chemical Mfg. Corp.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Emergency telephone number

Emergency Telephone Chemtrec 1-800-424-9300

2. Hazard(s) identification

Classification

| | |
|--|-------------|
| Acute toxicity - Oral | Category 4 |
| Acute toxicity - Inhalation (Gases) | Category 3 |
| Acute toxicity - Inhalation (Vapors) | Category 4 |
| Acute toxicity - Inhalation (Dusts/Mists) | Category 4 |
| Serious eye damage/eye irritation | Category 2A |
| Reproductive toxicity | Category 1B |
| Specific target organ toxicity (repeated exposure) | Category 1 |
| Flammable liquids | Category 3 |

Hazards not otherwise classified (HNOC)

Not applicable

Label elements

Danger

Hazard statements

Harmful if swallowed
Toxic if inhaled
Causes serious eye irritation
May damage fertility or the unborn child
Causes damage to organs through prolonged or repeated exposure
Flammable liquid and vapor

**Physical state** Liquid**Odor** No information available**Precautionary Statements - Prevention**

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Wear protective gloves/protective clothing/eye protection/face protection
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. 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
Keep cool

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention
Specific treatment (see .? on this label)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Call a POISON CENTER or doctor
IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
Rinse mouth
In case of fire: Use CO2, dry chemical, or foam to extinguish

Precautionary Statements - Storage

Store locked up.
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Unknown acute toxicity**Other information**

May be harmful in contact with skin.

3. Composition/information on ingredients**Substance**

| Chemical name | CAS No | Weight-% |
|-----------------------|---------|----------|
| N,N-Dimethylformamide | 68-12-2 | 100 |

4. First-aid measures

Description of first aid measures

| | |
|---|---|
| General advice | Show this safety data sheet to the doctor in attendance. Immediate medical attention is required. |
| Inhalation | Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not breathe dust. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. |
| Eye contact | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. |
| Skin contact | Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. |
| Ingestion | Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. |
| Self-protection of the first aider | Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Do not breathe dust. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

Most important symptoms and effects, both acute and delayed

| | |
|-----------------|---|
| Symptoms | May cause redness and tearing of the eyes. Burning sensation. Coughing and/ or wheezing. Difficulty in breathing. |
|-----------------|---|

Indication of any immediate medical attention and special treatment needed

| | |
|---------------------------|------------------------|
| Note to physicians | Treat symptomatically. |
|---------------------------|------------------------|

5. Fire-fighting measures

| | |
|--|---|
| Suitable Extinguishing Media Large Fire | Dry chemical. Carbon dioxide (CO ₂). water spray. Alcohol resistant foam. CAUTION: Use of water spray when fighting fire may be inefficient. |
| Unsuitable extinguishing media | Do not scatter spilled material with high pressure water streams. |
| Specific hazards arising from the chemical | risk of ignition. Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Hazardous combustion products | Carbon Monoxide, Carbon Dioxide. Nitrogen oxides (NO _x). Dimethylamine. |
| Explosion data | |
| Sensitivity to mechanical impact | none. |
| Sensitivity to static discharge | yes. |
| Special protective equipment for fire-fighters | Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment. |

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Avoid generation of dust. Do not breathe dust.

Other information Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapor suppressing foam may be used to reduce vapors. Dike far ahead of spill to collect runoff water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Methods for cleaning up Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

7. Handling and storage

Precautions for safe handling

Advice on safe handling Use personal protection equipment. Avoid breathing vapors or mists. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Use according to package label instructions. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Do not eat, drink or smoke when using this product. Remove contaminated clothing and shoes. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Take off contaminated clothing and wash before reuse.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Store in accordance with the particular national regulations. Store in accordance with local regulations. Keep out of the reach of children. Store locked up.

8. Exposure controls/personal protection

Control parameters

Exposure Limits

| Chemical name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|----------------------------------|-------------------|--|------------|
| N,N-Dimethylformamide 68-12-2 | No data available | 10 ppm TWA 30 mg/m ³ TWA | - |

Appropriate engineering controls

| | |
|---|---|
| Engineering controls | Showers Eyewash stations Ventilation systems. |
| <u>Individual protection measures, such as personal protective equipment</u> | |
| Eye/face protection | Tight sealing safety goggles. |
| Hand protection | Wear suitable gloves. Impervious gloves. |
| Skin and body protection | Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron. Antistatic boots. |
| Respiratory protection | No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. |
| General hygiene considerations | Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not breathe dust. Take off contaminated clothing and wash before reuse. |

9. Physical and chemical properties

Information on basic physical and chemical properties

| | |
|-----------------------|--------------------------|
| Physical state | Liquid |
| Appearance | No information available |
| Color | Colorless light yellow |
| Odor | No information available |
| Odor threshold | No information available |

| <u>Property</u> | <u>Values</u> | <u>Remarks • Method</u> |
|---|-------------------------------|-------------------------|
| pH | no data available | None known |
| Melting point / freezing point | -61 °C / -77.8 °F | None known |
| Boiling point / boiling range | 153 °C / 307.4 °F | None known |
| Flash point | 58 - 67 °C / 136.4 - 152.6 °F | None known |
| Evaporation rate | no data available | None known |
| Flammability (solid, gas) | no data available | None known |
| Flammability Limit in Air | | None known |
| Upper flammability or explosive limits | No data available | |
| Lower flammability or explosive limits | No data available | |
| Vapor pressure | 0.3466 | None known |
| Vapor density | 2.51 | None known |
| Relative density | 0.949 | None known |
| Water solubility | No data available | None known |
| Solubility(ies) | Miscible (Water) | None known |
| Partition coefficient | No data available | None known |
| Autoignition temperature | no data available | None known |
| Decomposition temperature | | None known |
| Kinematic viscosity | no data available | None known |
| Dynamic viscosity | No data available | None known |

Other information

| | |
|-----------------------------|--------------------------|
| Explosive properties | No information available |
| Oxidizing properties | No information available |
| Softening point | No information available |
| Molecular weight | 73.09 |
| VOC Content (%) | No information available |
| Liquid Density | No information available |
| Bulk density | No information available |

10. Stability and reactivity

| | |
|------------------------------------|---|
| Reactivity | No information available. |
| Chemical stability | Stable under normal conditions. |
| Possibility of hazardous reactions | None under normal processing. |
| Conditions to avoid | Heat, flames and sparks. Excessive heat. |
| Incompatible materials | None known based on information supplied. |
| Hazardous decomposition products | None known based on information supplied. |

11. Toxicological information

Information on likely routes of exposure

Product Information

| | |
|--------------|--|
| Inhalation | Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract. Toxic by inhalation. (based on components). |
| Eye contact | Specific test data for the substance or mixture is not available. Causes serious eye irritation. (based on components). May cause redness, itching, and pain. |
| Skin contact | Specific test data for the substance or mixture is not available. May cause irritation. Prolonged contact may cause redness and irritation. May be harmful in contact with skin. |
| Ingestion | Specific test data for the substance or mixture is not available. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed. (based on components). |

Symptoms related to the physical, chemical and toxicological characteristics

| | |
|----------|--|
| Symptoms | May cause redness and tearing of the eyes. Coughing and/ or wheezing. Difficulty in breathing. |
|----------|--|

Acute toxicity

Numerical measures of toxicity

Unknown acute toxicity

| | 2000 mg/kg 4720 | | |
|----------------------------------|--|--|-----------------|
| Chemical name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
| N,N-Dimethylformamide 68-12-2 | = 2000 mg/kg (Rat) = 2800 mg/kg (Rat) | = 1100 mg/kg (Rat) > 3.2 g/kg (Rat) | - |

Delayed and immediate effects as well as chronic effects from short and long-term exposure

| | |
|-----------------------------------|--|
| Skin corrosion/irritation | May cause skin irritation. |
| Serious eye damage/eye irritation | Classification based on data available for ingredients. Causes serious eye irritation. |
| Respiratory or skin sensitization | No information available. |
| Germ cell mutagenicity | No information available. |
| Carcinogenicity | No information available. |

The table below indicates whether each agency has listed any ingredient as a carcinogen.

| Chemical name | ACGIH | IARC | NTP | OSHA |
|----------------------------------|-------|---|-----|------|
| N,N-Dimethylformamide 68-12-2 | - | Group 2A- Probably carcinogenic to humans - Monograph 115 [2018] was on Group 3 | - | - |

Legend

IARC (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

Group 2A - Probably Carcinogenic to Humans

Group 3 - Not Classifiable as to Carcinogenicity in Humans

| | |
|---------------------------------|---|
| Reproductive toxicity | Contains a known or suspected reproductive toxin. Classification based on data available for ingredients. May damage fertility or the unborn child. |
| STOT - single exposure | No information available. |
| STOT - repeated exposure | Causes damage to organs through prolonged or repeated exposure. |
| Target organ effects | liver, kidney, respiratory system, Eyes, Skin, Central Vascular System (CVS). |
| Aspiration hazard | No information available. |
| Other adverse effects | No information available. |
| Interactive effects | No information available. |

12. Ecological information

Ecotoxicity

| Chemical name | Algae/aquatic plants | Fish | Toxicity to microorganisms | Crustacea |
|----------------------------------|---|---|----------------------------|--|
| N,N-Dimethylformamide 68-12-2 | EC50: >500mg/L (96h, Desmodesmus subspicatus) | LC50: =10410mg/L (96h, Pimephales promelas) LC50: =6300mg/L (96h, Lepomis macrochirus) LC50: =9800mg/L (96h, Oncorhynchus mykiss) | - | EC50: 6800 - 13900mg/L (48h, Daphnia magna) EC50: =7500mg/L (48h, Daphnia magna) EC50: =8485mg/L (48h, Daphnia magna) |

Persistence and degradability No information available.

Bioaccumulation Inherently biodegradable.

Component Information

| Chemical name | Partition coefficient |
|----------------------------------|-----------------------|
| N,N-Dimethylformamide 68-12-2 | -1.028 |

Other adverse effects No information available.

13. Disposal considerations

Waste treatment methods

Waste from residues/unused products Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

14. Transport information

DOT

| | |
|---------------------------------|---------------------------------------|
| UN/ID no | UN2265 |
| Proper shipping name | N,N-Dimethylformamide |
| Hazard class | 3 |
| Special Provisions | III |
| Special Provisions | B1, IB3, T2, TP2 |
| Marine Pollutant | Severe Marine Pollutant |
| Description | UN2265, N,N-Dimethylformamide, 3, III |
| Emergency Response Guide Number | 129 |

TDG

| | |
|----------------------|---------------------------------------|
| UN/ID no. | UN2265 |
| Proper shipping name | N,N-Dimethylformamide |
| Hazard class | 3 |
| Packing Group | III |
| Description | UN2265, N,N-Dimethylformamide, 3, III |

MEX

| | |
|----------------------|---------------------------------------|
| UN-No | UN2265 |
| Proper Shipping Name | N,N-Dimethylformamide |
| Hazard class | 3 |
| Packing Group | III |
| Description | UN2265, N,N-Dimethylformamide, 3, III |

ICAO (air)

| | |
|----------------------|---------------------------------------|
| UN/ID no. | UN2265 |
| Proper shipping name | N,N-Dimethylformamide |
| Hazard class | 3 |
| Packing Group | III |
| Description | UN2265, N,N-Dimethylformamide, 3, III |

IATA

| | |
|----------------------|---------------------------------------|
| UN number | UN2265 |
| Proper shipping name | N,N-Dimethylformamide |
| Hazard Class | 3 |
| Packing group | III |
| Description | UN2265, N,N-Dimethylformamide, 3, III |

IMDG

| | |
|----------------------|--|
| UN number | UN2265 |
| Proper shipping name | N,N-Dimethylformamide |
| Hazard Class | 3 |
| Packing group | III |
| EmS-No | F-E, S-D |
| Marine Pollutant | NP1 |
| Description | UN2265, N,N-Dimethylformamide, 3, III, (58°C c.c.) |

RID

| | |
|----------------------|---------------------------------------|
| UN number | UN2265 |
| Proper shipping name | N,N-Dimethylformamide |
| Hazard Class | 3 |
| Packing group | III |
| Classification code | F1 |
| Description | UN2265, N,N-Dimethylformamide, 3, III |
| Labels | 3 |

ADR

| | |
|----------------------|------------------------|
| UN number | 2265 |
| Proper shipping name | N,N-Dimethyl-formamide |
| Hazard Class | 3 |
| Packing group | III |

| | |
|--------------------------------|---|
| Classification code | F1 |
| Tunnel restriction code | (D/E) |
| Description | 2265, N,N-Dimethyl-formamide, 3, III, (D/E) |
| Labels | 3 |

ADN

| | |
|-------------------------------|---------------------------------------|
| UN/ID No | UN2265 |
| Proper shipping name | N,N-Dimethylformamide |
| Hazard Class | 3 |
| Packing Group | III |
| Classification code | F1 |
| Description | UN2265, N,N-Dimethylformamide, 3, III |
| Hazard label(s) | 3 |
| Limited quantity (LQ) | 5 L |
| ventilation | VE01 |
| Equipment Requirements | PP, EX, A |

15. Regulatory information

International Inventories

TSCA Complies

Note *Contact supplier for details. One or more substances in this product are either not listed on the US TSCA inventory, listed on the confidential US TSCA inventory or are otherwise exempted from inventory listing requirements

| | |
|----------------------|---|
| DSL/NDSL | Complies |
| EINECS/ELINCS | Complies |
| ENCS | This product complies with ENCS: |
| IECSC | This product complies with China: |
| KECL | Complies |
| PICCS | Complies |
| AICS | All the constituents of this material are listed on the Australian Inventory of Chemical Substances (AICS). |

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

| Chemical name | SARA 313 - Threshold Values % |
|---------------------------------|-------------------------------|
| N,N-Dimethylformamide - 68-12-2 | 1.0 |

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

| Chemical name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|----------------------------------|-------------------------------------|------------------------------------|
| N,N-Dimethylformamide 68-12-2 | 100 lb final RQ 45.4 kg final RQ | - |

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated under applicable state right-to-know regulations

| Chemical name | New Jersey | Massachusetts | Pennsylvania |
|----------------------------------|------------|---------------|--------------|
| N,N-Dimethylformamide 68-12-2 | 0759 | Present | Present |

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA

Health hazards 3

Flammability 2

Instability 0

Physical and chemical properties -

HMIS

Health hazards 3 *

Flammability 2

Physical hazards 0

Personal protection X

Chronic Hazard Star Legend

** = Chronic Health Hazard*

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA TWA (time-weighted average)

STEL

STEL (Short Term Exposure Limit)

Ceiling Maximum limit value

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)

U.S. Environmental Protection Agency ChemView Database

European Food Safety Authority (EFSA)

EPA (Environmental Protection Agency)

Acute Exposure Guideline Level(s) (AEGL(s))

U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act

U.S. Environmental Protection Agency High Production Volume Chemicals

Food Research Journal

Hazardous Substance Database

International Uniform Chemical Information Database (IUCLID)

Japan GHS Classification

Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)

NIOSH (National Institute for Occupational Safety and Health)

National Library of Medicine's ChemID Plus (NLM CIP)

National Library of Medicine's PubMed database (NLM PUBMED)

National Toxicology Program (NTP)

New Zealand's Chemical Classification and Information Database (CCID)

Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set
World Health Organization

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Revision Note No information available.

Disclaimer

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.

End of Safety Data Sheet