

G.J. CHEMICAL COMPANY, INC. SAFETY DATA SHEET

1. PRODUCT IDENTIFIER

1.1 PRODUCT NAME----->**DIMETHYLFORMAMIDE (All Grades)**

PRODUCT NUMBER(S)----> 139200, 139210, 139215

TRADE NAMES/SYNONYMS---> N,N-Dimethylformamide, DMF

CAS-No: 68-12-2

CHEMICAL FAMILY: AMIDE

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

RECOMMENDED USE: Industrial: Use as a solvent, Manufacture of perfumes and fragrances, Use in production of polymers, Use for production of textiles, leather and fur, Production of pharmaceuticals, Laboratory chemicals.

USES ADVISED AGAINST: No information available

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Company: **G.J. CHEMICAL CO., INC.**

Address: **40 VERONICA AVENUE
SOMERSET, NJ 08873**

Telephone: **1-973-589-1450**

Fax: **1-973-589-3072**

1.4 Emergency Telephone Number

Emergency Phone: **1-800-424-9300 (CHEMTREC)**

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29CFR 1910

Flammable liquids (Category 3), H226

Acute toxicity, Inhalation (Category 4), H332

Acute toxicity, Dermal (Category 4), H312

Eye irritation (Category 2A), H319

Reproductive toxicity (Category 1B), H360

2.2 GHS Label elements, including precautionary statements



Pictogram

GHS02

GHS08

GHS07

Signal word: **DANGER**

Hazard statement(s)

H226 Flammable liquid and vapor.

H312 + H332 Harmful in contact with skin or if inhaled.

H319 Causes serious eye irritation.

H360 May damage fertility or the unborn child.

Precautionary statement(s)

Prevention:

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ eye protection/ face protection.

Response:

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

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.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P363 Wash contaminated clothing before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS
Rapidly absorbed through skin.

3. INGREDIENTS

3.1 SUBSTANCE:

| Ingredient | CAS No. | % by WT. Range | CLASSIFICATION |
|-------------------|---|-------------------|---|
| Dimethylformamide | 68-12-2 EC-No.200-679-5 Index-No.616-001-00-X Reg.-No.1-2119475605-32-XXXX | 99.9 | Flammable liquids (Category 3), H226 Acute toxicity, Inhalation (Category 4), H332 Acute toxicity, Dermal (Category 4), H312 Eye irritation (Category 2A), H319 Reproductive toxicity (Category 1B), H360 |

N,N-Dimethylformamide Included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)

3.2 MIXTURE: Not applicable

4. FIRST-AID MEASURES

4.1 DESCRIPTION OF FIRST AID MEASURES:

Inhalation: Dimethylformamide

Remove from exposure, restore breathing. Keep warm and quiet. Immediately notify physician.

Eyes (Splash): Dimethylformamide

Flush eyes with water for 15 minutes while lifting upper and lower lids to thoroughly flush. Remove contact lenses, if worn, after initial flush. Take to a physician.

Skin (Splash): Dimethylformamide

Wash affected area with soap and water until there are not traces of chemical. Remove contaminated clothing. Consult a physician if irritation persists.

Ingestion: Dimethylformamide

Do NOT induce vomiting. conscious give water to dilute and induce vomiting. Never give anything to a person who is unconscious or convulsing. Immediately get a physician or contact poison control center, treat symptomatically.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED:

Eye: May cause irritation redness and pain and conjunctivitis;

Skin: This chemical is absorbed through the skin in toxic amounts, Chemicals dissolved in DMF may be absorbed through the skin; Causes irritation redness, itching and pain.

Inhalation: Irritation of the respiratory tract or acute nervous system depression characterized by headache, dizziness, staggering gait, confusion, unconsciousness or coma.

Ingestion: Causes irritation to the gastrointestinal tract. Symptoms parallel inhalation. Fatal dose estimated at 10 grams.

Chronic: Typical symptoms are cardiovascular disorders, sweetish taste in the mouth, nausea, vomiting, loss of appetite, strong thirst, burning of eyes and bleeding from the nose. Damage may occur to the kidney or liver.

Medical Conditions Aggravated by Exposure: Skin contact may aggravate an existing dermatitis. Overexposure may cause sleep disorders, liver, kidney and blood damage. Individuals with alcoholism and chronic respiratory, skin, gastric, kidney and liver diseases may be at increased risk from exposure. Warning: intolerance for alcohol can occur up to 4 days after dimethylformamide exposure

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED:

Specific details on antidote: No recommendation given.

5. FIRE FIGHTING MEASURES

FLASH POIN: 58°C (136°F) - closed cup

LEL %:2.2 (V)

AUTO-IGNITION TEMP: 445°C (833°F)

UEL %:15.2 (V)

UNIFORM FIRE CODE: Combustible Liquid Class II

5.1 SUITABLE EXTINGUISHING MEDIA: Foam--> x CO2--> x Dry Chemical-->
x Water-fog--> x Other-->

Unsuitable extinguishing media: Do not use waterjet and halogenated extinguishers.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR

MIXTURE: FIRE AND EXPLOSION HAZARD: DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME. VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK. VAPOR-AIR MIXTURES ARE EXPLOSIVE. Keep containers tightly closed. Flammable Liquid and Vapor; isolate from all sources of ignition. Closed containers may explode when exposed to extreme heat. Above the flash point explosive vapor-air mixtures may be formed.

CONDITIONS OF FLAMMABILITY: Flammable in the presence of a source of ignition when the temperature is above the flash point.

HAZARDOUS COMBUSTION PRODUCTS: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, carbon oxides and other unidentified organic compounds evolve when this material undergoes combustion. Nitrogen Oxides

5.3 ADVICE FOR FIREFIGHTERS: Shut off source. Keep unnecessary people away; isolate hazard area and deny entry. Avoid breathing vapors, stay upwind Do not spray pool fires directly. A solid stream of water or foam directed into hot burning liquid can cause frothing. Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. For massive fire in cargo area, use unmanned hose holder or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tank due to fire. Water fog may be used to cool closed containers to prevent pressure build up and possible auto ignition or explosion when exposed to extreme heat. Cool containers with water-fog from as far a distance as possible. Wear NIOSH/MSHA approved self-contained breathing apparatus (SCBA) for confined spaces. Use full fire-fighting protective clothing. If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES: Combustible Liquid: Eliminate ignition sources in the vicinity of the spill or released vapor. Immediately evacuate all nonessential people. Verify that responders are properly trained and wearing appropriate respiratory equipment and fire resistant protective clothing during cleanup operations. For large spills evacuate downwind areas as conditions warrant to prevent exposure and to allow vapors or fumes to dissipate.

6.2 ENVIRONMENTAL PRECAUTIONS:

Keep out of water sources, drains and sewers. Do not flush into surface water or sanitary sewer system

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP:

Methods for cleanup and containment:

Use explosion proof equipment. Shut off valves, contain spill, keep-out of water sources and sewers, for smaller spills add non-flammable absorbent in spill area. For large spills use foam on spill to minimize vapors clean up by vacuuming then using non-flammable absorbent.

Methods for disposal:

Place all saturated absorbent, using non-sparking tools, in an approved container for disposal. Minimize breathing vapors and skin contact, ventilate confined areas, open all windows and doors, assure conformity with applicable government regulations.

REPORTABLE QUANTITY (RQ): 100lbs.

The Superfund Amendments and Reauthorization Act (SARA) Section 304 requires that a release equal to or greater than the reportable quantity for this substance be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40). If the release of this substance is reportable under CERCLA Section 103, the national response center must be notified immediately at (800) 424-8882 or (202) 426-2675 in the metropolitan Washington, D. C. area (40 CFR 302.6).

6.4 REFERENCE TO OTHER SECTIONS: See Sections 8 and 13.

7. HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING: This material presents a fire hazard. Liquid quickly evaporates and forms vapor (fumes), which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources, such as pilot lights, welding equipment, and electrical motors and switches. Vapor is heavier than air and can travel considerable distance to a source of ignition and flash back. Avoid breathing vapors in top of shipping container. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Avoid work practices that may release volatile components in the atmosphere. Avoid contaminating soil or releasing material into sewage and drainage systems. Use non-sparking tools to open or close containers.

Advice on general occupational hygiene:

Wash hands before breaks and after work. Keep away from food, drink and animal feeding stuffs. When using do not smoke.

STATIC HAZARD: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not be sufficient. For more information refer to OSHA Standard 29CFR 1910.106 “Flammable and Combustible Liquids” and National Fire Protection Association (NFPA 77) “Recommended Practice on Static Electricity”.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES:

Follow maximum allowed pile heights specified in the BOCA codes or the NFPA manual. Local fire authorities should be notified for storage of this material in any quantity. Local permits are required for storage in warehouse quantities.

Recommended storage temperature: 15 - 25°C. Store large quantities only in cool, dry areas in buildings designed to comply with OSHA 1910.106. Keep containers tight and upright to prevent leakage. Do not contact with oxidizing materials. Keep containers closed when not in use. Do not take internally.

CONTAINER WARNINGS: Containers should be Bonded and Grounded when pouring. Avoid free fall of liquid in excess of a few inches. Empty containers release residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, or expose such containers to heat, sparks, static electricity or other sources of ignition. Do not attempt to clean. "Empty" drums should be completely drained, properly bunged and promptly returned to a drum re-conditioner.

7.3 SPECIFIC END USES: Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROL (PERSONAL PROTECTION)

8.1 CONTROL PARAMETERS:

| Ingredient | CAS No. | % by WT. Range | Exposure Limits |
|-------------------|--|---------------------------|---|
| Dimethylformamide | 68-12-2 EC-No.200-679-5 Index-No.616-001-00-X Reg.-No1-2119475605-32-XXXX | 99.9 | 10ppm TWA (OSHA) 10ppm TWA (NIOSH) 10ppm TWA (ACGIH) 500ppm IDLH |

Key: (PEL) = Permissible Exposure Limit OSHA
 (TLV) = Threshold Limit Value OSHA & ACGIH
 (STEL) = Short Term Exposure Limit ACGIH
 (WEEL) = USA. Workplace Environmental Exposure Levels
 (TWA) = Time Weighted Average
 CAS = Chemical Abstracts Registry Number
 IDLH = Immediate Danger to Life and Health
 N.E. =None Established

8.2 EXPOSURE CONTROLS

EXPOSURE GUIDELINES: Consider the potential hazards of this material (Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended.

ENGINEERING CONTROLS: Provide general dilution or local exhaust ventilation in volume and pattern to keep concentrations within permitted exposure limits.

All areas should be ventilated in accordance with OSHA Regulation 29 CFR Part 1910. Explosion proof motors should be used in mechanical ventilation.

RESPIRATORY PROTECTION: The specific respirator selected must be based on contamination levels found in the work place, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA):

For vapor concentrations 1 to 10 times ACGIH TWA an air supplied NIOSH/MSHA Approved respirator with full face-piece and organic vapor cartridges. For concentrations over 10 times ACGIH TWA and in confined areas use a NIOSH/MSHA approved positive pressure full face-piece supplied air respirator (SCBA).

BODY CLOTHING: Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged contact with this substance. Use chemical resistant apron or other impervious clothing. Remove and wash contaminated clothing before reuse.

SKIN PROTECTION: Employee must wear appropriate protective gloves to prevent contact with this substance.

Full contact

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: 480 min

Splash contact

Material: Nature latex/chloroprene

layer thickness: 0.6 mm

Break through time: 65 min

HYGIENE: Use good personal hygiene practices, wash hands before eating, drinking, smoking or using toilet facilities.

EYE/FACE PROTECTION: Use safety eyewear with splash-guards or face shield. Contact lenses should not be worn.

Emergency shower and eyewash should be easily accessible to the work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES:

Dimethylformamide 68-12-2

Appearance-----> Viscous liquid

Color-----> Colorless

Odor-----> Amine like “fishy” odor

Odor Threshold-----> 100ppm

pH-----> 6.7

Molecular Weight-----> 73.09amu

Melting/Freezing Point-----> -61°C (-78°F)

Boiling Range -----> 153°C (307°F)

Specific Gravity----- > 0.948 @20°C
Vapor Pressure----- > 2.7 mmHg@20°C (68°F)
3.87 mmHg@ 25°C (77°F)
Vapor Density (air=1)----- > 2.52
Water Solubility----- > Soluble
Partition Coefficient n-Octanol/Water-> log Pow: -1.01
Evaporation Rate (Butyl Acetate=1)----> 0.17
Flash Point-----> 58°C (136°F) - closed cup
Upper Flammability Limit-----> 15.2% (V)
Lower Flammability Limit-----> 2.2% (V)
Auto-Ignition Temperature-----> 445°C (833°F)
Decomposition Temperature-----> No data available
Viscosity-----> No data available

Explosive Properties-----> No data available
Oxidizing Properties-----> No data available

9.2 Other Information-----> No data Available

10. STABILITY AND REACTIVITY INFORMATION

10.1 REACTIVITY: No data available.

10.2 CHEMICAL STABILITY: Unstable () Stable (X)

10.3 POSSIBILITY OF HAZARDOUS REACTIONS: Vapors may form explosive mixtures with air.

HAZARDOUS POLYMERIZATION: May occur () Will not occur (X)

10.4 CONDITIONS TO AVOID: Heat, Sparks, Pilot Lights, Static Electricity, and Open Flame.

10.5 INCOMPATIBLE MATERIALS: Strong oxidants such as liquid chlorine, oxygen, sodium hypochlorite, inorganic acids e.g. nitric acid, perchloric acid and hydrogen peroxide. In addition carbon tetrachloride and other halogenated compounds, alkyl aluminums.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS: Fumes, Smoke, Carbon Monoxide, Aldehydes and other decomposition products where combustion is not complete.

11. TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS:

Routes of Entry: Inhalation--> x Skin--> x Ingestion--> x

ACUTE HEALTH EFFECTS:

Effects of overexposure:

Eye> May cause irritation redness and pain and conjunctivitis;

Skin> This chemical is absorbed through the skin in toxic amounts, Chemicals dissolved in DMF may be absorbed through the skin; Causes irritation redness, itching and pain.

Inhalation> Irritation of the respiratory tract or acute nervous system depression characterized by headache, dizziness, staggering gait, confusion, unconsciousness or coma.

Ingestion> Causes irritation to the gastrointestinal tract. Symptoms parallel inhalation. Fatal dose estimated at 10 grams.

Chronic: Typical symptoms are cardiovascular disorders, sweetish taste in the mouth, nausea, vomiting, loss of appetite, strong thirst, burning of eyes and bleeding from the nose. Damage may occur to the kidney or liver.

Medical Conditions Aggravated by Exposure> Skin contact may aggravate an existing dermatitis. Overexposure may cause sleep disorders, liver, kidney and blood damage. Individuals with alcoholism and chronic respiratory, skin, gastric, kidney and liver diseases may be at increased risk from exposure. **Warning:** intolerance for alcohol can occur up to 4 days after dimethylformamide exposure

ACUTE TOXICITY;

The effects of overexposure shown under Acute Health Effects are based on acute toxicity profiles. Typical values are:

| Ingredient | Oral LD50 (Rat) | Skin LD50 (Rabbit) | Inhalation LC50 (Rat) |
|-------------------|-------------------------|----------------------------|--------------------------------|
| Dimethylformamide | 2800mg/kg | 1500mg/kg | 9-15mg/l/4hr |

SKIN CORROSION/IRRITATION: Skin - Human Result: Mild skin irritation - 24 h

SERIOUS EYE DAMAGE/EYE IRRITATION: Eyes - Rabbit Result: Moderate eye irritation

RESPIRATORY OR SKIN SENSITIZATION: No data available

MUTAGENIC EFFECTS: Dimethylformamide is mutagenic in some test systems.

CARCINOGEN STATUS:

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible, or confirmed human carcinogen by IARC.

NTP: 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.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

REPRODUCTIVE TOXICITY: Dimethylformamide has been found to cause adverse reproductive effects and teratogenic effects in some animal studies. May cause congenital malformation in the fetus.

Specific target organ toxicity (STOT-SE) - single exposure (Globally Harmonized System): no data available

Specific target organ toxicity (STOT-RE) - repeated exposure (Globally Harmonized System): no data available

ASPIRATION HAZARD: No data available

11.2 ADDITIONAL INFORMATION: Warning: intolerance for alcohol can occur up to 4 days after dimethylformamide exposure. N,N-dimethylformamide is considered to be a potent liver toxin., Vomiting, Diarrhea, Abdominal pain
RTECS: LQ2100000

12. ECOLOGICAL INFORMATION

12.1 AQUATIC TOXICITY (Acute):

Toxicity to fish:

LC50 - Oncorhynchus mykiss (rainbow trout) - 9,000 - 13,000 mg/l - 96 h

LC50 - Lepomis macrochirus (Bluegill) - 6,700 - 7,500 mg/l - 96 h

LC50 - Pimephales promelas (fathead minnow) - 10,400 - 10,800 mg/l - 96 h

LC50 - Oncorhynchus mykiss (rainbow trout) - 9,800 mg/l - 96 h

LC50 - Lepomis macrochirus (Bluegill) - 6,300 mg/l - 96 h

LC50 - Pimephales promelas (fathead minnow) - 10,600 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates:

EC50 - Daphnia magna (Water flea) - 9,600 - 13,100 mg/l - 48 h

EC50 - Daphnia magna (Water flea) - 15,700 mg/l - 48 h

Toxicity to algae:

LC50 - Desmodesmus subspicatus (green algae) - > 500 mg/l - 96 h

12.2 PERSISTENCE AND DEGRADABILITY: Biodegradability Result: > 90 % - Readily biodegradable. When released into the soil, this material is expected to readily biodegrade. When released into water, this material is expected to readily biodegrade. This material is not expected to significantly bio-accumulate. When released into the air, this material is expected to be readily degraded by reaction with photo-chemically produced hydroxyl radicals.

Biological Oxygen Demand (BOD): No data available

**12.3 BIOACCUMULATIVE POTENTIAL Octanol/Water Partition Coefficient:
log Pow: -1.01**

Bio-concentration Factor (BCF): No data available

12.4 MOBILITY IN SOIL: No data available

12.5 RESULTS OF PBT AND vPvB:

PBT assessment results: This substance is not classified as PBT or vPvB.

12.6 OTHER ADVERSE EFFECTS: No data available

13. DISPOSAL CONSIDERATIONS

13.1 WASTE TREATMENT METHODS: Hazard characteristic and regulatory waste stream classification can change with product use. Accordingly it is the responsibility of the user to determine the proper storage, transportation, treatment and or disposal methodologies for spent materials and residues at time of disposition. Dispose in accordance with all applicable disposal regulations. Incinerate under controlled conditions in a permitted facility.

CONTAMINATED PACKAGING: Dispose of as unused product

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

RCRA: The unused product is a RCRA hazardous waste if discarded. The RCRA ID number is: D001.

If the waste is a spent solvent, the appropriate spent solvent code should be used.

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 48 CFR 262

14. TRANSPORT INFORMATION

Land Transport (DOT)

- 14.1 USDOT ID Number-----> UN2265
- 14.2 USDOT Shipping Name-----> N,N-Dimethylformamide
- 14.3 USDOT Hazard Classification-----> 3 (Flammable Liquid)
USDOT Label Codes-----> 3
- 14.4 USDOT Package Code-----> III
- 14.5 Environmental hazard-----> None
- 14.6 Special precautions for user-----> Yes
Emergency Response Guide-----> 129
Reportable Quantity-----> 100lbs.

Sea Transport (IMDG)

- 14.1 ID Number-----> UN2265
- 14.2 Proper shipping name-----> N,N-DIMETHYLFORMAMIDE
- 14.3 Hazard Classification-----> 3 (Flammable Liquid)
Label Codes-----> 3
- 14.4 Package Code-----> III
- 14.5 Marine Pollutant-----> No
- 14.6 Special precautions for user-----> Yes
EMS-Number-----> F-E, S-D

Air Transport (IATA)

- 14.1 ID Number-----> UN2265
- 14.2 Proper shipping name-----> N,N-Dimethylformamide
- 14.3 Hazard Classification-----> 3 (Flammable Liquid)
Label Codes-----> 3
- 14.4 Package Code-----> III
- 14.5 Environmental hazard-----> None
- 14.6 Special precautions for user-----> Yes

15. REGULATORY INFORMATION

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE:

SARA TITLE III (Superfund Amendment and Reauthorization Act)

SECTION 302 AND 304: Extremely Hazardous Substance List (40 CFR 355) - Not Listed

**SECTION 313: Toxic Chemicals Listing (40 CFR 372.65) - Listed
N,N-Dimethylformamide CAS-No.68-12-2**

SECTION 311/312: Hazard Categorization (40 CFR 370) - Acute Health Hazard, Chronic Health Hazard, and Fire Hazard

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act)

SECTION 102(A) Hazardous Substances (40 CFR 302.4) - Listed

N,N-Dimethylformamide CAS-No.68-12-2 Reportable Quantity - 100 pounds.

SECTION 101(14) Reportable Quantity: 100 lbs

Massachusetts Right to Know Components

N,N-Dimethylformamide CAS-No.68-12-2

Pennsylvania Right to Know Components

N,N-Dimethylformamide CAS-No.68-12-2

New Jersey Right to Know Components

N,N-Dimethylformamide CAS-No.68-12-2

California Prop. 65 Components

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

TSCA (Toxic Substance Control Act)

N,N-Dimethylformamide CAS-No.68-12-2 is listed on the TSCA Inventory.

International Inventories:

| <u>Country or Region</u> | <u>Inventory Name</u> | <u>On inventory yes/no</u> |
|---|--|-----------------------------------|
| <u>Australia</u> | Australian Inventory of Chemical Substances (AICS) | Yes |
| <u>Canada</u> | Domestic Substances List (DSL) | Yes |
| <u>Canada</u> | Non-Domestic Substances List (NDSL) | No |
| <u>China</u> | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| <u>Europe</u> | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes |
| <u>Europe</u> | European List of Notified Chemical Substances (ELINCS) | No |
| <u>Japan</u> | Inventory of Existing and New Chemical Substances (ENCS) | Yes |
| <u>Japan</u> | Industrial Safety & Health Law Inventory (ISHL) | Yes |
| <u>Korea</u> | Existing Chemicals List (ECL) | Yes |
| <u>Mexico</u> | National Inventory of Chemical Substances (INSQ) | Yes |
| <u>New Zealand</u> | New Zealand Inventory | Yes |
| <u>Philippines</u> | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |
| <u>Switzerland</u> | Inventory of Notified New Substances (CHINV) | Yes |
| <u>Taiwan</u> | National Existing Chemical Inventory (NECI) | Yes |
| <u>United States & Puerto Rico</u> | Toxic Substances Control Act Inventory | Yes |

15.2 CHEMICAL SAFETY ASSESSMENT: A chemical safety assessment has been carried out for this substance.

16. OTHER INFORMATION:

HMIS (Hazardous Materials Identification System)

Hazard Rating:

4-Extreme

3-High

2-Moderate

1-Slight

0-Insignificant

NFPA RATINGS (SCALE 0-4): Health=2 Fire=2 Reactivity=0
HMIS Ratings (SCALE 0-4): Health=2 Fire=2 Reactivity=0 PPE: X

Hazard statement(s) from Section 2 and 3:

H226 Flammable liquid and vapor.

H312 + H332 Harmful in contact with skin or if inhaled.

H319 Causes serious eye irritation.

H360 May damage fertility or the unborn child.

Date of preparation-----> March 1, 2005

Revision Number-----> 1.8

Revision Content-----> Updated sections: 1, 4, 5, 7, 10, 11, 12, and 16.

Revision Date-----> January 18, 2019

Prepared by-----> T.G. Fenstermaker, Jr.

Acronyms:

ACGIH - American Conference of Governmental Industrial Hygienists
AIHA - American Industrial Hygiene Association
ANSI - American National Standards Institute
API - American Petroleum Institute
CERCLA - Comprehensive Emergency Response, Compensation, and Liability Act
DOT - U.S. Department of Transportation
EPA - U.S. Environmental Protection Agency
HMIS - Hazardous Materials Information System
IARC - International Agency For Research On Cancer
MSHA - Mine Safety and Health Administration
NFPA - National Fire Protection Association
NIOSH - National Institute of Occupational Safety and Health
NOIC - Notice of Intended Change (Proposed change to ACGIH TLV)
NTP - National Toxicology Program
OPA - Oil Pollution Act of 1990
OSHA - U.S. Occupational Safety & Health Administration
PEL - Permissible Exposure Limit (OSHA)
RCRA - Resource Conservation and Recovery Act
REL - Recommended Exposure Limit (NIOSH)
SARA - Superfund Amendments and Reauthorization Act of 1986 Title III
SCBA - Self-Contained Breathing Apparatus
STEL - Short-Term Exposure Limit (generally 15 minutes)
TLV - Threshold Limit Value
TSCA - Toxic Substances Control Act

TWA - Time Weighted Average (8hr.)
WHMIS - Canadian Workplace Hazardous Materials Information System

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