SAFETY DATA SHEET

This Safety Data Sheet conforms to ANSI Z400.5, and to the format requirements and the International Chemical Safety Cards of the Global Harmonizing System.

THIS SDS COMPLIES WITH 29 CFR 1910.1200 (HAZARD COMMUNICATION STANDARD)

IMPORTANT: Read this SDS before handling & disposing of this product.
Pass this information on to employees, customers, & users of this product.

SECTION 1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER

PRODUCT IDENTITY: N,N-DIMETHYLFORMAMIDE
NEW MSDS DATE: 11/24/2010
COMPANY IDENTITY: SolvChem, Inc.
COMPANY ADDRESS: 1904 Mykawa Road
COMPANY CITY: Pearland, TX 77581-0490
COMPANY PHONE: 1-281-485-5377
EMERGENCY PHONES: CHEMTREC: 1-800-424-9300 (USA)
CANUTEC: 1-613-996-6666 (CANADA)

SECTION 2. HAZARDS IDENTIFICATION

WARNING!

EXPOSURE PREVENTION: PREVENT DISPERSION OF MISTS OR DUST!
AVOID EXPOSURE OF (PREGNANT) WOMEN!

RISK STATEMENTS:
R20/21/22 Harmful by inhalation, in contact with skin, and if swallowed.
R36/37/38 Irritating to eyes, respiratory system and skin.
R42/43 May cause sensitization by inhalation and skin contact.
R61 May cause harm to the unborn child.

SAFETY STATEMENTS:
S45 In case of accident, or if you feel unwell, seek medical advice immediately. (Show the label where possible).
S53 Avoid exposure - Obtain special instructions before use.

SEE SECTION 11 FOR OTHER TOXICOLOGICAL INFORMATION (ACUTE & CHRONIC HAZARDS)

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>CAS#</th>
<th>EINECS#</th>
<th>WT%</th>
<th>TWA (OSHA)</th>
<th>TLV (ACGIH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N-Dimethylformamide</td>
<td>68-12-2</td>
<td>200-679-5</td>
<td>95-100</td>
<td>10 ppm S</td>
<td>10 ppm S A4</td>
</tr>
</tbody>
</table>

This product contains no EPA Hazardous Air Pollutants (HAP) in amounts > 0.1%.
SECTION 4. FIRST AID MEASURES

EYE CONTACT:
For eyes, flush with plenty of water for 15 minutes & get medical attention.

SKIN CONTACT:
In case of contact with skin immediately remove contaminated clothing.
Wash thoroughly with soap & water. Wash contaminated clothing before reuse.

INHALATION:
After high vapor exposure, remove to fresh air. If breathing is difficult, give oxygen. If breathing has stopped, trained personnel should immediately begin artificial respiration. If the heart has stopped, trained personnel should immediately begin cardiopulmonary resuscitation (CPR).

SWALLOWING:
Rinse mouth. GET MEDICAL ATTENTION IMMEDIATELY. Do NOT give liquids to an unconscious or convulsing person.

SECTION 5. FIRE FIGHTING MEASURES

FIRE & EXPLOSION PREVENTIVE MEASURES
NO open flames, NO sparks, & NO smoking. NO contact with oxidants.
Above flash point, use a closed system, ventilation, explosion-proof electrical equipment, lighting.

EXTINGUISHING MEDIA
Use dry powder, alcohol-resistant foam, water spray, carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES
Water spray may be ineffective on fire but can protect fire-fighters & cool closed containers. Use fog nozzles if water is used. Do not enter confined fire-space without full bunker gear. (Helmet with face shield, bunker coats, gloves & rubber boots). Use NIOSH approved positive-pressure self-contained breathing apparatus.

UNUSUAL EXPLOSION AND FIRE PROCEDURES
COMBUSTIBLE!
Isolate from oxidizers, heat, & open flame. Closed containers may explode if exposed to extreme heat. Applying to hot surfaces requires special precautions. Empty container very hazardous! Continue all label precautions!
SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PROTECTIVE MEASURES:
Keep unprotected personnel away. Ventilate spill area. Remove all ignition sources. Use complete chemical protective suit with self-contained breathing apparatus.

ENVIRONMENTAL PRECAUTIONS:
Keep from entering storm sewers and ditches which lead to waterways.

CONTAINMENT AND CLEAN-UP MEASURES:
Stop spill at source. Dike and contain. Absorb remaining liquid in sand or inert absorbent. Remove to safe place.

SECTION 7. HANDLING AND STORAGE

HANDLING
Isolate from oxidizers, heat, & open flame. Use only with adequate ventilation. Avoid breathing of vapor or spray mist. Wear OSHA Standard goggles or face shield. Consult Safety Equipment Supplier. Wear gloves, apron & footwear impervious to this material. Wash clothing before reuse. Avoid free fall of liquid. Ground containers when transferring. Do not flame cut, braze, or weld. Empty container very hazardous! Continue all label precautions! To minimize static discharge when transferring, ensure electrical continuity by bonding and grounding all equipment. Use an inlet line diameter of at least 3.5 inches (8.9 centimeters) with a maximum flow rate of 1 meter/second.

STORAGE
Keep separated from strong oxidants, halogens. Do not store above 49 C/120 F. Keep container tightly closed & upright when not in use to prevent leakage.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY EXPOSURE CONTROLS
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 workplace conditions warrant a respirator's use.

VENTILATION
LOCAL EXHAUST: Necessary MECHANICAL (GENERAL): Acceptable SPECIAL: None OTHER: None

PERSONAL PROTECTIONS:
Wear OSHA Standard goggles or face shield. Consult Safety Equipment Supplier. Wear gloves, apron & footwear impervious to this material. Wash clothing before reuse.
SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION (CONTINUED)

WORK & HYGIENIC PRACTICES:
Provide readily accessible eye wash stations & safety showers. Wash at end of each workshift & before eating, smoking or using the toilet. Promptly remove clothing that becomes contaminated. Destroy contaminated leather articles. Launder or discard contaminated clothing.

SECTION 9. PHYSICAL & CHEMICAL PROPERTIES

APPEARANCE: Liquid, Water-White
ODOR: Amine
ODOR THRESHOLD: Not Available
pH (Neutrality): 6.7
MELTING POINT/FREEZING POINT: Not Available
BOILING RANGE (IBP,50%,Dry Point): 151 153 154 C / 304 308 310 F
FLASH POINT (TEST METHOD): 57 C / 136 F (TCC)
EVAPORATION RATE (n-BUTYL ACETATE=1): 0.251
FLAMMABILITY CLASSIFICATION: Class II
LOWER FLAMMABLE LIMIT IN AIR (% by vol): 2.2
VAPOR PRESSURE (mm of Hg)@20 C 2.7
VAPOR DENSITY (air=1): 2.5
GRAVITY @ 68/68 F / 20/20 C: 7.905
SPECIFIC GRAVITY (Water=1): 0.949
WATER SOLUBILITY: Complete
PARTITION COEFFICIENT (n-Octane/Water): Not Available
AUTO IGNITION TEMPERATURE: 482 C / 900 F
DECOMPOSITION TEMPERATURE: Not Available
REFRACTIVE INDEX: 1.428
VOC'S (>0.44 Lbs/Sq In): 0.0 Vol% / 0.0 g/L / 0.000 Lbs/Gal
TOTAL VOC'S (TVOC)*: 100.0 Vol% / 944.0 g/L / 7.8 Lbs/Gal
NONEXEMPT VOC'S (CVOC)*: 100.0 Vol% / 944.0 g/L / 7.8 Lbs/Gal
HAZARDOUS AIR POLLUTANTS (HAPS): 0.0 Wt% / 0.0 g/L / 0.000 Lbs/Gal
NONEXEMPT VOC PARTIAL PRESSURE (mm of Hg @ 20 C) 2.7
* Using California South Coast Air Quality Management District (SCAQMD) Rule 443.1.

SECTION 10. STABILITY & REACTIVITY

STABILITY
Stable under normal conditions.

CONDITIONS TO AVOID
Isolate from oxidizers, heat, & open flame.

MATERIALS TO AVOID
Bromine, carbon tetrachloride, chromic anhydride, 2,5-dimethylpyrrole, phosphorus oxychloride, hexachlorobenzene, magnesium nitrate, methylene diisocyanate, phosphorus trioxide, triethyl aluminum, organic nitrates, alkaline materials, and other halogenated compounds. Contact with iron or strong oxidizers may cause fires and explosions; may react violently with alkyl aluminums. Methylene Diisocyanate can polymerize violently on contact with N,N-Dimethylformamide.

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon Monoxide, Carbon Dioxide, Nitrogen Oxide vapors from burning.

HAZARDOUS POLYMERIZATION
Will not occur.
SECTION 11. TOXICOLOGICAL INFORMATION

ACUTE HAZARDS

EYE & SKIN CONTACT:
Primary irritation to skin, defatting, dermatitis.
Absorption thru skin increases exposure.
Primary irritation to eyes, redness, tearing, blurred vision.

INHALATION:
Anesthetic. Irritates respiratory tract. Acute overexposure can cause serious nervous system depression.

SWALLOWING:
Swallowing can cause abdominal irritation, nausea, vomiting & diarrhea.
Toxic to the liver. Affects the kidneys, cardiovascular system and central nervous system. Causes alcohol intolerance and skin problems. Increases blood pressure, anxiety and palpitations.

SUBCHRONIC HAZARDS/CONDITIONS AGGRAVATED

CONDITIONS AGGRAVATED
Persons with severe skin, liver or kidney problems should avoid use.

CHRONIC HAZARDS

CANCER, REPRODUCTIVE & OTHER CHRONIC HAZARDS:
This product has no carcinogens listed by IARC, NTP, NIOSH, OSHA or ACGIH, as of this date, greater or equal to 0.1%. Studies show Dimethylformamide causes birth defects, weight loss, liver, kidney, cardiovascular & bone marrow damage in laboratory animals. Absorption thru skin may be harmful. Studies with laboratory animals indicate this product can cause damage to fetus & reproductive system.

MAMMALIAN TOXICITY INFORMATION

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>CAS#</th>
<th>EINECS#</th>
<th>LOWEST KNOWN LETHAL DOSE DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N-Dimethylformamide</td>
<td>68-12-2</td>
<td>200-679-5</td>
<td>LOWEST KNOWN LD50 (ORAL) 2800.0 mg/kg (Rats)</td>
</tr>
<tr>
<td>N,N-Dimethylformamide</td>
<td>68-12-2</td>
<td>200-679-5</td>
<td>LOWEST KNOWN LD50 (SKIN) 4720 mg/kg (Rabbits)</td>
</tr>
</tbody>
</table>
SECTION 12. ECOLOGICAL INFORMATION

AQUATIC ANIMAL INFORMATION:
The most sensitive known aquatic group to any component of this product is:
Lebistus Reticulus 1300 ppm or mg/L (0 hour exposure).
Keep out of sewers and natural water supplies.

MOBILITY IN SOIL
This material is a mobile liquid.

DEGRADABILITY
This product is partially biodegradable.

ACCUMULATION
This product does not accumulate or biomagnify in the environment.

SECTION 13. DISPOSAL CONSIDERATIONS

Processing, use or contamination may change the waste management options.
Recycle / dispose of observing national, regional, state, provincial and local health, safety & pollution laws. If in doubt, contact appropriate agencies.

SECTION 14. TRANSPORT INFORMATION

DOT SHIPPING NAME: UN2265, RQ, N,N-dimethylformamide, Combustible liquid, PG-III
Combustible liquid. Not DOT regulated on trucks in containers of < 119 gallons.
DRUM LABEL: None (Combustible Liquid)
IATA / ICAO: UN2265, N,N-dimethylformamide, 3, PG-III
IMO / IMDG: UN2265, N,N-dimethylformamide, 3, PG-III
EMERGENCY RESPONSE GUIDEBOOK NUMBER: 128

SECTION 15. REGULATORY INFORMATION

EPA REGULATION:
SARA SECTION 311/312 HAZARDS: Acute Health, Fire

All components of this product are on the TSCA list.
This material contains no known products restricted under SARA Title III, Section 313 in amounts greater or equal to 1%.

SARA TITLE III INGREDIENTS CAS# EINECS# WT% (REG.SECTION) RQ(LBS)
Dimethyl Formamide 68-12-2 200-679-5 95-100 (311,312,RCRA) 100
SECTION 15. REGULATORY INFORMATION (CONTINUED)

> 100 LB / 45 KG OF THIS PRODUCT IN 1 CONTAINER EXCEEDS THE "RQ" OF DIMETHYL FORMAMIDE. Any release equal to or exceeding the RQ must be reported to the National Response Center (800-424-8802) and appropriate state and local regulatory agencies as described in 40 CFR 302.6 and 40 CFR 355.40 respectively. Failure to report may result in substantial civil and criminal penalties.

STATE REGULATIONS:
CALIFORNIA PROPOSITION 65: This product contains no chemicals known to the State of California to cause cancer & reproductive toxicity.

INTERNATIONAL REGULATIONS
The components of this product are listed on the chemical inventories of the following countries:
Australia (AICS), Canada (DSL, NDSL), China (IECSC), Europe (EINECS, ELINCS), Japan (METI/CSCL, MHLW/ISHL), South Korea (KECI), New Zealand (NZIoC), Philippines (PICCS), Switzerland (SWISS), Taiwan (NECSI), USA (TSCA).

CANADA: WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)
B3: Combustible Liquid.
D2B: Irritating to skin / eyes.

SECTION 16. OTHER INFORMATION

HAZARD RATINGS:
HEALTH (NFPA): 2, HEALTH (HMIS): 2, FLAMMABILITY: 2, REACTIVITY: 0
(Personal Protection Rating to be supplied by user based on use conditions.)
This information is intended solely for the use of individuals trained in the NFPA & HMIS hazard rating systems.

EMPLOYEE TRAINING
See Section 2 for Risk & Safety Statements. Employees should be made aware of all hazards of this material (as stated in this SDS) before handling it.

NOTICE
The supplier disclaims all expressed or implied warranties of merchantability or fitness for a specific use, with respect to the product or the information provided herein, except for conformation to contracted specifications. All information appearing herein is based upon data obtained from manufacturers and/or recognized technical sources. While the information is believed to be accurate, we make no representations as to its accuracy or sufficiency.
Conditions of use are beyond our control, and therefore users are responsible for verifying the data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their handling, and disposal of the product. Users also assume all risks in regards to the publication or use of, or reliance upon information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or process.

Unless updated, the Safety Data Sheet is valid until 11/24/2013.