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

1.1. Product identifier

Product form: Substance
EC Index-No.: 616-001-00-X
EC-No.: 200-679-5
CAS-No.: 68-12-2
Product code: 03398
Formula: C₃H₇NO
Synonyms: DMF, Dimethylformamide

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

1.2.1. Relevant identified uses
Industrial/Professional use spec: Industrial
For professional use only

1.2.2. Uses advised against
No additional information available

1.3. Details of the supplier of the safety data sheet

LOBA CHEMIE PVT LTD.,
107 Wode House Road, Jehangir Villa, Colaba
400005 Mumbai - INDIA
T +91 22 6663 6663 - F +91 22 6663 6699
info@lobachemie.com - www.lobachemie.com

1.4. Emergency telephone number

Emergency number: +91 22 6663 6663 (9:00am - 6:00 pm)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Reproductive toxicity, Category 1B: H360D
Flammable liquids, Category 3: H226
Acute toxicity (dermal), Category 4: H312
Acute toxicity (inhal.), Category 4: H332
Serious eye damage/eye irritation, Category 2: H319

Full text of H statements: see section 16
N,N-DIMETHYL FORMAMIDE MOLECULAR BIOLOGY GRADE
Safety Data Sheet

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]
Repr.Cat.2; R61
Xn; R20
Xn; R21
Xi; R36
R10
Full text of R-phrases: see section 16

Adverse physicochemical, human health and environmental effects
No additional information available

2.2. Label elements
Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)

Signal word (CLP)

Hazard statements (CLP)

Precautionary statements (CLP)

2.3. Other hazards
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>N,N-DIMETHYL FORMAMIDE MOLECULAR BIOLOGY GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS-No.</td>
<td>68-12-2</td>
</tr>
<tr>
<td>EC-No.</td>
<td>200-679-5</td>
</tr>
<tr>
<td>EC Index-No.</td>
<td>616-001-00-X</td>
</tr>
</tbody>
</table>

Full text of R- and H-statements: see section 16
3.2. Mixtures
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures
First-aid measures general: IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation: Assure fresh air breathing. If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
First-aid measures after skin contact: Immediately call a POISON CENTER/doctor. Wash with plenty of water/…. Wash contaminated clothing before reuse.
First-aid measures after eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.
First-aid measures after ingestion: Rinse mouth. Do not induce vomiting.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms/effects: May damage the unborn child.
Symptoms/effects after inhalation: Harmful if inhaled.
Symptoms/effects after skin contact: Harmful in contact with skin.
Symptoms/effects after eye contact: Causes serious eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Unsuitable extinguishing media: Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture
Fire hazard: Flammable liquid and vapour.
Explosion hazard: May form flammable/explosive vapour-air mixture.

5.3. Advice for firefighters
Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
General measures: Remove ignition sources. Use special care to avoid static electric charges. No open flames. No smoking.

6.1.1. For non-emergency personnel
Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders
Protective equipment: Use personal protective equipment as required.
Emergency procedures: Ventilate area.

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
Methods for cleaning up: Collect spillage. On land, sweep or shovel into suitable containers.
6.4. Reference to other sections
No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Additional hazards when processed: Handle empty containers with care because residual vapours are flammable.
Precautions for safe handling: Avoid contact with skin and eyes. Take precautionary measures against static discharge. Use only non-sparking tools. Keep away from sources of ignition - No smoking. Do not handle until all safety precautions have been read and understood. Do not breathe vapours.
Hygiene measures: Do not eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities
Technical measures: Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment.
Storage conditions: Keep container tightly closed. Keep in fireproof place.
Incompatible materials: Heat sources.

7.3. Specific end use(s)
No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
No additional information available

8.2. Exposure controls
Hand protection: Protective gloves
Eye protection: Chemical goggles or safety glasses
Skin and body protection: Wear suitable protective clothing
Respiratory protection: [In case of inadequate ventilation] wear respiratory protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
Physical state: Liquid
Molecular mass: 73.09 g/mol
Colour: Clear Colorless.
Odour: fishy pungent & amine like.
Odour threshold: No data available
pH: 6.7
Relative evaporation rate (butylacetate=1): 0.17
Melting point: -61 °C
Freezing point: No data available
Boiling point: 153 °C
Flash point: 58 °C
Auto-ignition temperature: 445 °C
Decomposition temperature: No data available
Flammability (solid, gas): Flammable
Vapour pressure: 2.7 at 20°C
Relative vapour density at 20 °C: 2.52
Density: 0.949 g/cm³
Solubility: Water: Complete
Log Pow: 1.01

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
No additional information available

10.4. Conditions to avoid
Open flame. Heat. Sparks.

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Dermal: Harmful in contact with skin. Inhalation: Harmful if inhaled.
Skin corrosion/irritation : Not classified  
  pH: 6.7
Serious eye damage/irritation : Causes serious eye irritation.  
  pH: 6.7
Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : May damage the unborn child.
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not classified

Potential adverse human health effects and symptoms : Harmful in contact with skin.

SECTION 12: Ecological information

12.1. Toxicity
No additional information available

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential

N,N-DIMETHYL FORMAMIDE MOLECULAR BIOLOGY GRADE (68-12-2)

<table>
<thead>
<tr>
<th>Log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.01</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil
No additional information available

12.5. Results of PBT and vPvB assessment

N,N-DIMETHYL FORMAMIDE MOLECULAR BIOLOGY GRADE (68-12-2)

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects
No additional information available
SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations: Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Additional information: Handle empty containers with care because residual vapours are flammable.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

| UN-No. (ADR) | 2265 |
| UN-No. (IMDG) | 2265 |
| UN-No. (IATA) | 2265 |
| UN-No. (ADN) | 2265 |
| UN-No. (RID) | 2265 |

14.2. UN proper shipping name

| Proper Shipping Name (ADR) | N,N-DIMETHYLFORMAMIDE |
| Proper Shipping Name (IMDG) | N,N-DIMETHYLFORMAMIDE |
| Proper Shipping Name (IATA) | n,n-Dimethylformamide |
| Proper Shipping Name (ADN) | N,N-DIMETHYLFORMAMIDE |
| Proper Shipping Name (RID) | N,N-DIMETHYLFORMAMIDE |

Transport document description (ADR): UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III, (D/E)

Transport document description (IMDG): UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III (58°C c.c.)

Transport document description (IATA): UN 2265 n,n-Dimethylformamide, 3, III

Transport document description (ADN): UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III

Transport document description (RID): UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR) : 3
Danger labels (ADR) : 3

IMDG

Transport hazard class(es) (IMDG) : 3
Danger labels (IMDG) : 3

IATA

Transport hazard class(es) (IATA) : 3
Hazard labels (IATA) : 3
ADN
Transport hazard class(es) (ADN) : 3
Danger labels (ADN) : 3

RID
Transport hazard class(es) (RID) : 3
Danger labels (RID) : 3

14.4. Packing group
Packing group (ADR) : III
Packing group (IMDG) : III
Packing group (IATA) : III
Packing group (ADN) : III
Packing group (RID) : III

14.5. Environmental hazards
Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user
- Overland transport
Classification code (ADR) : F1
Limited quantities (ADR) : 5l
Excepted quantities (ADR) : E1
Packing instructions (ADR) : P001, IBC03, LP01, R001
Mixed packing provisions (ADR) : MP19
Portable tank and bulk container instructions (ADR) : T2
Portable tank and bulk container special provisions (ADR) : TP2
Tank code (ADR) : LGBF
Vehicle for tank carriage : FL
Transport category (ADR) : 3
Special provisions for carriage - Packages (ADR) : V12
Special provisions for carriage - Operation (ADR) : S2
**N,N-DIMETHYL FORMAMIDE MOLECULAR BIOLOGY GRADE**

**Safety Data Sheet**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<tr>
<td>Hazard identification number (Kemler No.)</td>
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<tr>
<td>Orange plates</td>
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<td>Tunnel restriction code (ADR)</td>
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<td>EAC code</td>
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**- Transport by sea**

<table>
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<tr>
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<tbody>
<tr>
<td>Packing instructions (IMDG)</td>
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<td>IBC packing instructions (IMDG)</td>
<td>IBC03</td>
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<tr>
<td>Tank instructions (IMDG)</td>
<td>T2</td>
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<tr>
<td>Tank special provisions (IMDG)</td>
<td>TP2</td>
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<tr>
<td>EmS-No. (Fire)</td>
<td>F-E</td>
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<tr>
<td>EmS-No. (Spillage)</td>
<td>S-D</td>
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<td>Stowage category (IMDG)</td>
<td>A</td>
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<tr>
<td>Flash point (IMDG)</td>
<td>58°C c.c.</td>
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<tr>
<td>Properties and observations (IMDG)</td>
<td>Colourless liquid. Flashpoint: 58°C c.c. Explosive limits: 2.2% to 16% Miscible with water. May react violently with oxidizing materials.</td>
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<tr>
<td>MFAG-No</td>
<td>129</td>
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**- Air transport**

<table>
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<tbody>
<tr>
<td>PCA Excepted quantities (IATA)</td>
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<tr>
<td>PCA Limited quantities (IATA)</td>
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<td>PCA limited quantity max net quantity (IATA)</td>
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<td>PCA packing instructions (IATA)</td>
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<tr>
<td>PCA max net quantity (IATA)</td>
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<tr>
<td>CAO packing instructions (IATA)</td>
<td>366</td>
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<tr>
<td>CAO max net quantity (IATA)</td>
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<td>ERG code (IATA)</td>
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</table>

**- Inland waterway transport**

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<td>Limited quantities (ADN)</td>
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<tr>
<td>Excepted quantities (ADN)</td>
<td>E1</td>
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<tr>
<td>Carriage permitted (ADN)</td>
<td>T</td>
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<td>Equipment required (ADN)</td>
<td>PP, EX, A</td>
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<td>Ventilation (ADN)</td>
<td>VE01</td>
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<td>Number of blue cones/lights (ADN)</td>
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</table>

**- Rail transport**

<table>
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<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Classification code (RID)</td>
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<tr>
<td>Excepted quantities (RID)</td>
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<tr>
<td>Packing instructions (RID)</td>
<td>P001, IBC03, LP01, R001</td>
</tr>
<tr>
<td>Mixed packing provisions (RID)</td>
<td>MP19</td>
</tr>
<tr>
<td>Portable tank and bulk container instructions (RID)</td>
<td>T2</td>
</tr>
<tr>
<td>Portable tank and bulk container special provisions (RID)</td>
<td>TP2</td>
</tr>
<tr>
<td>Tank codes for RID tanks (RID)</td>
<td>LGBF</td>
</tr>
<tr>
<td>Transport category (RID)</td>
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</tr>
<tr>
<td>Special provisions for carriage – Packages (RID)</td>
<td>W12</td>
</tr>
<tr>
<td>Colis express (express parcels) (RID)</td>
<td>CE4</td>
</tr>
<tr>
<td>Hazard identification number (RID)</td>
<td>30</td>
</tr>
</tbody>
</table>
SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No REACH Annex XVII restrictions
N,N-dimethylformamide is on the REACH Candidate List
N,N-DIMETHYL FORMAMIDE MOLECULAR BIOLOGY GRADE is not on the REACH Annex XIV List

15.1.2. National regulations

Germany
Reference to AwSV: Water hazard class (WGK) 2, significant hazard to water (Classification according to AwSV; ID No. 83)

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV: Is not subject of the 12. BlmSchV (Hazardous Incident Ordinance)

Netherlands
SZW-lijst van kankerverwekkende stoffen: The substance is not listed
SZW-lijst van mutagene stoffen: The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding: The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid: The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling: N,N-DIMETHYL FORMAMIDE MOLECULAR BIOLOGY GRADE is listed

Denmark
Class for fire hazard: Class III-1
Store unit: 50 liter
Classification remarks: Flammable according to the Danish Ministry of Justice; Emergency management guidelines for the storage of flammable liquids must be followed
Recommendations Danish Regulation: Young people below the age of 18 years are not allowed to use the product
Pregnant/breastfeeding women working with the product must not be in direct contact with the product
The requirements from the Danish Working Environment Authorities regarding work with carcinogens must be followed during use and disposal

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information
Full text of R-, H- and EUH-statements:

<table>
<thead>
<tr>
<th>R-, H- and EUH Statements</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Tox. 4 (Dermal)</td>
<td>Acute toxicity (dermal), Category 4</td>
</tr>
<tr>
<td>Acute Tox. 4 (Inhalation)</td>
<td>Acute toxicity (inhal.), Category 4</td>
</tr>
<tr>
<td>Eye Irrit. 2</td>
<td>Serious eye damage/eye irritation, Category 2</td>
</tr>
<tr>
<td>Flam. Liq. 3</td>
<td>Flammable liquids, Category 3</td>
</tr>
<tr>
<td>Repr. 1B</td>
<td>Reproductive toxicity, Category 1B</td>
</tr>
<tr>
<td>H226</td>
<td>Flammable liquid and vapour.</td>
</tr>
<tr>
<td>H312</td>
<td>Harmful in contact with skin.</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td>H332</td>
<td>Harmful if inhaled.</td>
</tr>
<tr>
<td>H360D</td>
<td>May damage the unborn child.</td>
</tr>
<tr>
<td>R10</td>
<td>Flammable</td>
</tr>
<tr>
<td>R20</td>
<td>Harmful by inhalation</td>
</tr>
<tr>
<td>R21</td>
<td>Harmful in contact with skin</td>
</tr>
<tr>
<td>R36</td>
<td>Irritating to eyes</td>
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<tr>
<td>R61</td>
<td>May cause harm to the unborn child</td>
</tr>
<tr>
<td>Xi</td>
<td>Irritant</td>
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<tr>
<td>Xn</td>
<td>Harmful</td>
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</table>

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.