

# ***Chem-Impex International Inc.***

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## **S A F E T Y   D A T A   S H E E T**

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### **SECTION 1.   CHEMICAL IDENTIFICATION**

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|                                 |                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------|
| CATALOG #:                      | 51265                                                                              |
| NAME:                           | 4-Methylpiperidine solution,<br>20% (w/w) in DMF<br>Suitable for peptide synthesis |
| 24 HOUR EMERGENCY<br>TELEPHONE: | (800) 535-5053(USA)<br><br>352-323-3500 (INTERNATIONAL)                            |
| TO REQUEST AN MSDS:             | (800) 869-9290                                                                     |
| CUSTOMER<br>SERVICE:            | (630) 766-2112                                                                     |

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### **SECTION 2.   HAZARDS IDENTIFICATION**

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#### **CLASSIFICATION OF THE SUBSTANCE OR MIXTURE**

##### **GHS CLASSIFICATION IN ACCORDANCE WITH 29 CFR 1910 (OSHA HCS)**

FLAMMABLE LIQUIDS (CATEGORY 3), H226  
ACUTE TOXICITY (ORAL), (CATEGORY 4), H302  
ACUTE TOXICITY (INHALATION), (CATEGORY 4), H332  
ACUTE TOXICITY (DERMAL), (CATEGORY 4), H312  
SKIN CORROSION (CATEGORY 1B), H314

SERIOUS EYE DAMAGE (CATEGORY 1), H318  
CARCINOGENICITY (CATEGORY 1B), H350  
REPRODUCTIVE TOXICITY (CATEGORY 1B), H360

FOR THE FULL TEXT OF THE H-STATEMENTS MENTIONED IN THIS SECTION, SEE SECTION 16.

**GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS  
PICTOGRAM**



SIGNAL WORD                      DANGER

**HAZARD STATEMENT(S)**

|                    |                                                           |
|--------------------|-----------------------------------------------------------|
| H226               | FLAMMABLE LIQUID AND VAPOR.                               |
| H302 + H312 + H332 | HARMFUL IF SWALLOWED, IN CONTACT WITH SKIN OR IF INHALED. |
| H314               | CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.                  |
| H350               | MAY CAUSE CANCER.                                         |
| H360               | MAY DAMAGE FERTILITY OR THE UNBORN CHILD.                 |

**PRECAUTIONARY STATEMENT(S)**

|                    |                                                                                                                         |
|--------------------|-------------------------------------------------------------------------------------------------------------------------|
| 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/ VAPOURS/ SPRAY.                                                                  |
| P264               | WASH SKIN THOROUGHLY AFTER HANDLING.                                                                                    |
| P270               | DO NOT EAT, DRINK OR SMOKE WHEN USING THIS PRODUCT.                                                                     |
| P271               | USE ONLY OUTDOORS OR IN A WELL-VENTILATED AREA.                                                                         |
| P280               | WEAR PROTECTIVE GLOVES/ EYE PROTECTION/ FACE PROTECTION.                                                                |
| P301 + P312 + P330 | IF SWALLOWED: CALL A POISON CENTER/ DOCTOR IF YOU FEEL UNWELL. RINSE MOUTH.                                             |
| P301 + P330 + P331 | IF SWALLOWED: RINSE MOUTH. DO NOT INDUCE VOMITING.                                                                      |
| P303 + P361 + P353 | IF ON SKIN (OR HAIR): TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING. RINSE SKIN WITH WATER/ SHOWER.                    |
| P304 + P340 + P310 | IF INHALED: REMOVE PERSON TO FRESH AIR AND KEEP COMFORTABLE FOR BREATHING.<br>IMMEDIATELY CALL A POISON CENTER/ DOCTOR. |

|                                                                      |                                                                                                                                                                            |
|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| P305 + P351 + P338 + P310                                            | IF IN EYES: RINSE CAUTIOUSLY WITH WATER FOR SEVERAL MINUTES. REMOVE CONTACT LENSES, IF PRESENT AND EASY TO DO. CONTINUE RINSING. IMMEDIATELY CALL A POISON CENTER/ DOCTOR. |
| P308 + P313                                                          | IF EXPOSED OR CONCERNED: 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 TO EXTINGUISH.                                                                                       |
| P403 + P235                                                          | STORE IN A WELL-VENTILATED PLACE. KEEP COOL.                                                                                                                               |
| P405                                                                 | STORE LOCKED UP.                                                                                                                                                           |
| P501                                                                 | DISPOSE OF CONTENTS/ CONTAINER TO AN APPROVED WASTE DISPOSAL PLANT.                                                                                                        |
| <b>HAZARDS NOT OTHERWISE CLASSIFIED (HNOC) OR NOT COVERED BY GHS</b> | NONE                                                                                                                                                                       |

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### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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SUBSTANCE / MIXTURE                      MIXTURE

#### HAZARDOUS COMPONENTS

| COMPONENT             | CAS NO./UNIQUE ID | CONCENTRATION |
|-----------------------|-------------------|---------------|
| N,N-DIMETHYLFORMAMIDE | 68-12-2           | >= 70 - < 90  |
| 4-METHYLPIPERIDINE    | 626-58-4          | >= 10 - < 20  |

FOR THE FULL TEXT OF THE H-STATEMENTS MENTIONED IN THIS SECTION, SEE SECTION 16.

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### SECTION 4. FIRST-AID MEASURES

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#### DESCRIPTION OF FIRST AID MEASURES

|                                |                                                                                                                                                        |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GENERAL ADVICE</b>          | FIRST AIDERS NEED TO PROTECT THEMSELVES. SHOW THIS MATERIAL SAFETY DATA SHEET TO THE DOCTOR IN ATTENDANCE.                                             |
| <b>IF INHALED</b>              | AFTER INHALATION: FRESH AIR. IMMEDIATELY CALL IN PHYSICIAN.<br>IF BREATHING STOPS: IMMEDIATELY APPLY ARTIFICIAL RESPIRATION, IF NECESSARY ALSO OXYGEN. |
| <b>IN CASE OF SKIN CONTACT</b> | IN CASE OF SKIN CONTACT: TAKE OFF IMMEDIATELY ALL CONTAMINATED CLOTHING. RINSE SKIN WITH WATER/ SHOWER. CALL A PHYSICIAN IMMEDIATELY.                  |

|                                                                                   |                                                                                                                                                                    |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IN CASE OF EYE CONTACT</b>                                                     | AFTER EYE CONTACT: RINSE OUT WITH PLENTY OF WATER. IMMEDIATELY CALL IN OPHTHALMOLOGIST. REMOVE CONTACT LENSES.                                                     |
| <b>IF SWALLOWED</b>                                                               | AFTER SWALLOWING: MAKE VICTIM DRINK WATER (TWO GLASSES AT MOST), AVOID VOMITING (RISK OF PERFORATION). CALL A PHYSICIAN IMMEDIATELY. DO NOT ATTEMPT TO NEUTRALISE. |
| <b>MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED</b>                | THE MOST IMPORTANT KNOWN SYMPTOMS AND EFFECTS ARE DESCRIBED IN THE LABELLING (SEE SECTION 2.2) AND/OR IN SECTION 11                                                |
| <b>INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED</b> | FOR PERSONAL PROTECTION SEE SECTION 8                                                                                                                              |

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## SECTION 5. FIRE AND EXPLOSION DATA

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### EXTINGUISHING MEDIA

|                                                              |                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SUITABLE EXTINGUISHING MEDIA</b>                          | SUITABLE EXTINGUISHING MEDIA<br>FOAM CARBON DIOXIDE (CO2) DRY POWDER                                                                                                                                                                                    |
|                                                              | UNSUITABLE EXTINGUISHING MEDIA<br>FOR THIS SUBSTANCE/MIXTURE NO LIMITATIONS OF EXTINGUISHING AGENTS ARE GIVEN.                                                                                                                                          |
| <b>SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE</b> | MIXTURE WITH COMBUSTIBLE INGREDIENTS.<br>VAPORS ARE HEAVIER THAN AIR AND MAY SPREAD ALONG FLOORS.<br>FORMS EXPLOSIVE MIXTURES WITH AIR AT ELEVATED TEMPERATURES.<br>DEVELOPMENT OF HAZARDOUS COMBUSTION GASES OR VAPOURS POSSIBLE IN THE EVENT OF FIRE. |
| <b>HAZARDOUS COMBUSTION PRODUCTS</b>                         | CARBON OXIDES NITROGEN OXIDES (NOX)                                                                                                                                                                                                                     |
| <b>SPECIFIC EXTINGUISHING METHODS</b>                        | NO DATA AVAILABLE                                                                                                                                                                                                                                       |
| <b>FURTHER INFORMATION</b>                                   | REMOVE CONTAINER FROM DANGER ZONE AND COOL WITH WATER.<br>SUPPRESS (KNOCK DOWN) GASES/VAPORS/MISTS WITH A WATER SPRAY JET.<br>PREVENT FIRE EXTINGUISHING WATER FROM                                                                                     |

|                                                      |                                                                                                                                                               |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                      | CONTAMINATING SURFACE WATER OR THE GROUND WATER SYSTEM.                                                                                                       |
| <b>SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS</b> | STAY IN DANGER AREA ONLY WITH SELF-CONTAINED BREATHING APPARATUS. PREVENT SKIN CONTACT BY KEEPING A SAFE DISTANCE OR BY WEARING SUITABLE PROTECTIVE CLOTHING. |

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

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|                                                                            |                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES</b> | ADVICE FOR NON-EMERGENCY PERSONNEL:<br>DO NOT BREATHE VAPORS, AEROSOLS.<br>AVOID SUBSTANCE CONTACT.<br>ENSURE ADEQUATE VENTILATION.<br>KEEP AWAY FROM HEAT AND SOURCES OF IGNITION.<br>EVACUATE THE DANGER AREA, OBSERVE EMERGENCY PROCEDURES, CONSULT AN EXPERT.<br>ADVICE FOR EMERGENCY RESPONDERS:<br>FOR PERSONAL PROTECTION SEE SECTION 8. |
| <b>ENVIRONMENTAL PRECAUTIONS</b>                                           | DO NOT LET PRODUCT ENTER DRAINS.<br>RISK OF EXPLOSION.                                                                                                                                                                                                                                                                                          |
| <b>METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP</b>               | COVER DRAINS. COLLECT, BIND, AND PUMP OFF SPILLS.<br>OBSERVE POSSIBLE MATERIAL RESTRICTIONS (SEE SECTIONS 7 AND 10).<br>TAKE UP CAREFULLY WITH LIQUID-ABSORBENT MATERIAL (E.G. CHEMIZORB®). DISPOSE OF PROPERLY.<br>CLEAN UP AFFECTED AREA.                                                                                                     |
| <b>REFERENCE TO OTHER SECTIONS</b>                                         | FOR DISPOSAL SEE SECTION 13.                                                                                                                                                                                                                                                                                                                    |

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## SECTION 7. HANDLING AND STORAGE

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|                                                                     |                                                                                                                                                                                                                       |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PRECAUTIONS FOR SAFE HANDLING</b>                                | KEEP AWAY FROM OPEN FLAMES, HOT SURFACES AND SOURCES OF IGNITION.<br>TAKE PRECAUTIONARY MEASURES AGAINST STATIC DISCHARGE.<br>WORK UNDER HOOD. DO NOT INHALE SUBSTANCE/MIXTURE. AVOID GENERATION OF VAPOURS/AEROSOLS. |
| <b>CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES</b> | KEEP CONTAINER TIGHTLY CLOSED IN A DRY AND WELL VENTILATED PLACE.<br>KEEP AWAY FROM HEAT AND SOURCES OF IGNITION.<br>KEEP LOCKED UP OR IN AN AREA ACCESSIBLE ONLY TO QUALIFIED OR AUTHORIZED PERSONS.                 |

STORAGE CLASS : 3, FLAMMABLE LIQUIDS

STORE AT RT

**SPECIFIC END USE(S)** APART FROM THE USES MENTIONED IN SECTION 1.2 NO OTHER SPECIFIC USES ARE STIPULATED.

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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### CONTROL PARAMETERS

#### INGREDIENTS WITH WORKPLACE CONTROL PARAMETERS

| COMPONENTS            | CAS-NO. | VALUE TYPE<br>(FORM OF<br>EXPOSURE) | CONTROL<br>PARAMETERS /<br>PERMISSIBLE<br>CONCENTRATION | BASIS     |
|-----------------------|---------|-------------------------------------|---------------------------------------------------------|-----------|
| N,N-DIMETHYLFORMAMIDE | 68-12-2 | TWA                                 | 5 PPM                                                   | ACGIH     |
|                       |         | TWA                                 | 10 PPM<br>30 MG/M3                                      | NIOSH REL |
|                       |         | TWA                                 | 10 PPM<br>30 MG/M3                                      | OSHA Z-1  |

#### BIOLOGICAL OCCUPATIONAL EXPOSURE LIMITS

|  | COMPONENTS            | CAS-NO. | CONTROL<br>PARAMETERS                 | BIOLOGICAL<br>SPECIMEN | SAMPLING TIME                                                        | PERMISSIBLE<br>CONCENTRATION | BASIS     |
|--|-----------------------|---------|---------------------------------------|------------------------|----------------------------------------------------------------------|------------------------------|-----------|
|  | N,N-DIMETHYLFORMAMIDE | 68-12-2 | TOTAL NMETHYLFORMAMIDE                | URINE                  | END OF SHIFT<br>(AS SOON AS<br>POSSIBLE AFTER<br>EXPOSURE<br>CEASES) | 30 MG/L                      | ACGIH BEI |
|  |                       |         | N-ACETYLS-(NMETHYLCARBAMOYL) CYSTEINE |                        | WORKWEEK                                                             |                              |           |

### EXPOSURE CONTROLS

ENGINEERING MEASURES

NO DATA AVAILABLE

### PERSONAL PROTECTIVE EQUIPMENT

**EYE/FACE PROTECTION**

USE EQUIPMENT FOR EYE PROTECTION TESTED AND APPROVED UNDER APPROPRIATE GOVERNMENT STANDARDS SUCH AS NIOSH (US) OR EN 166(EU). SAFETY GLASSES

**SKIN PROTECTION**

HANDLE WITH GLOVES. GLOVES MUST BE INSPECTED PRIOR TO USE. USE PROPER GLOVE REMOVAL TECHNIQUE (WITHOUT TOUCHING GLOVE'S OUTER SURFACE) TO AVOID SKIN CONTACT WITH THIS PRODUCT. DISPOSE OF CONTAMINATED GLOVES AFTER USE IN ACCORDANCE WITH APPLICABLE LAWS AND GOOD LABORATORY PRACTICES. WASH AND DRY HANDS.

**FULL CONTACT**

MATERIAL : NITRILE RUBBER  
BREAK THROUGH TIME : 480 MIN  
GLOVE THICKNESS : 0.4 MM  
PROTECTIVE INDEX : FULL CONTACT  
MANUFACTURER : CAMATRIL (SIZE M)

**SPLASH CONTACT**

MATERIAL : NITRILE RUBBER  
BREAK THROUGH TIME : 60 MIN  
GLOVE THICKNESS : 0.2 MM  
PROTECTIVE INDEX : SPLASH CONTACT  
MANUFACTURER : DERMATRIL® P (SIZE M)

IF USED IN SOLUTION, OR MIXED WITH OTHER SUBSTANCES, AND UNDER CONDITIONS WHICH DIFFER FROM EN 374, CONTACT THE SUPPLIER OF THE CE APPROVED GLOVES. THIS RECOMMENDATION IS ADVISORY ONLY AND MUST BE EVALUATED BY AN INDUSTRIAL HYGIENIST AND SAFETY OFFICER FAMILIAR WITH THE SPECIFIC SITUATION OF ANTICIPATED USE BY OUR CUSTOMERS. IT SHOULD NOT BE CONSTRUED AS OFFERING AN APPROVAL FOR ANY SPECIFIC USE SCENARIO.

**BODY PROTECTION**

COMPLETE SUIT PROTECTING AGAINST CHEMICALS, FLAME RETARDANT ANTISTATIC PROTECTIVE CLOTHING. THE TYPE OF PROTECTIVE EQUIPMENT MUST BE SELECTED ACCORDING TO THE CONCENTRATION AND AMOUNT OF THE DANGEROUS SUBSTANCE AT THE SPECIFIC WORKPLACE.

|                                          |                                                                                                                                                                                                                                                        |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>RESPIRATORY PROTECTION</b>            | REQUIRED WHEN VAPOURS/AEROSOLS ARE GENERATED. OUR RECOMMENDATIONS ON FILTERING RESPIRATORY PROTECTION ARE BASED ON THE FOLLOWING STANDARDS: DIN EN 143, DIN 14387 AND OTHER ACCOMPANYING STANDARDS RELATING TO THE USED RESPIRATORY PROTECTION SYSTEM. |
| <b>HYGIENE MEASURES</b>                  | IMMEDIATELY CHANGE CONTAMINATED CLOTHING. APPLY PREVENTIVE SKIN PROTECTION. WASH HANDS AND FACE AFTER WORKING WITH SUBSTANCE.                                                                                                                          |
| <b>CONTROL OF ENVIRONMENTAL EXPOSURE</b> | PREVENT FURTHER LEAKAGE OR SPILLAGE IF SAFE TO DO SO. DO NOT LET PRODUCT ENTER DRAINS. DISCHARGE INTO THE ENVIRONMENT MUST BE AVOIDED.                                                                                                                 |

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## SECTION 9.      PHYSICAL AND CHEMICAL PROPERTIES

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### INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

|                                  |                                  |
|----------------------------------|----------------------------------|
| APPEARANCE                       | COLORLESS TO LIGHT YELLOW LIQUID |
| ODOUR                            | NO DATA AVAILABLE                |
| ODOUR THRESHOLD                  | NO DATA AVAILABLE                |
| PH                               | NO DATA AVAILABLE                |
| MELTING                          | NO DATA AVAILABLE                |
| POINT/FREEZING POINT             |                                  |
| BOILING POINT                    | NO DATA AVAILABLE                |
| FLASH POINT                      | NO DATA AVAILABLE                |
| EVAPORATION RATE                 | NO DATA AVAILABLE                |
| FLAMMABILITY (SOLID, GAS)        | NO DATA AVAILABLE                |
| UPPER/LOWER                      | NO DATA AVAILABLE                |
| FLAMMABILITY OR                  |                                  |
| EXPLOSIVE LIMITS                 |                                  |
| LOWER EXPLOSION                  | NO DATA AVAILABLE                |
| LIMIT / LOWER                    |                                  |
| FLAMMABILITY LIMIT               |                                  |
| VAPOUR PRESSURE                  | NO DATA AVAILABLE                |
| VAPOUR DENSITY                   | NO DATA AVAILABLE                |
| RELATIVE DENSITY                 | NO DATA AVAILABLE                |
| WATER SOLUBILITY                 | NO DATA AVAILABLE                |
| PARTITION                        | NO DATA AVAILABLE                |
| COEFFICIENT: N-<br>OCTANOL/WATER |                                  |
| AUTO-IGNITION                    | NO DATA AVAILABLE                |
| TEMPERATURE                      |                                  |
| DECOMPOSITION                    | NO DATA AVAILABLE                |
| TEMPERATURE                      |                                  |
| VISCOSITY, KINEMATIC             | NO DATA AVAILABLE                |

|                          |                              |
|--------------------------|------------------------------|
| EXPLOSIVE PROPERTIES     | NOT CLASSIFIED AS EXPLOSIVE. |
| OXIDIZING PROPERTIES     | NO DATA AVAILABLE            |
| DENSITY                  | 0.920 G/CM3                  |
| OTHER SAFETY INFORMATION | NO DATA AVAILABLE            |

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## SECTION 10. STABILITY AND REACTIVITY

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|                                    |                                                                                        |
|------------------------------------|----------------------------------------------------------------------------------------|
| REACTIVITY                         | VAPOR/AIR-MIXTURES ARE EXPLOSIVE AT INTENSE WARMING.                                   |
| CHEMICAL STABILITY                 | THE PRODUCT IS CHEMICALLY STABLE UNDER STANDARD AMBIENT CONDITIONS (ROOM TEMPERATURE). |
| POSSIBILITY OF HAZARDOUS REACTIONS | NO DATA AVAILABLE                                                                      |
| CONDITIONS TO AVOID                | HEATING.                                                                               |
| INCOMPATIBLE MATERIALS             | STRONG OXIDIZING AGENTS                                                                |
| HAZARDOUS DECOMPOSITION PRODUCTS   | IN THE EVENT OF FIRE: SEE SECTION 5                                                    |

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## SECTION 11. TOXICOLOGICAL INFORMATION

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### INFORMATION ON TOXICOLOGICAL EFFECTS

#### MIXTURE

|                           |                                |
|---------------------------|--------------------------------|
| ACUTE TOXICITY            | NO DATA AVAILABLE              |
|                           | INHALATION: NO DATA AVAILABLE  |
|                           | DERMAL: NO DATA AVAILABLE      |
|                           | NO DATA AVAILABLE              |
| SKIN CORROSION/IRRITATION | REMARKS: MIXTURE CAUSES BURNS. |

|                                                                   |                                                                                                                                                                   |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SERIOUS EYE<br/>DAMAGE/EYE<br/>IRRITATION</b>                  | REMARKS: MIXTURE CAUSES SERIOUS EYE DAMAGE.<br>RISK OF BLINDNESS!                                                                                                 |
| <b>RESPIRATORY OR SKIN<br/>SENSITISATION</b>                      | NO DATA AVAILABLE                                                                                                                                                 |
| <b>GERM CELL<br/>MUTAGENICITY</b>                                 | NO DATA AVAILABLE                                                                                                                                                 |
| <b>CARCINOGENICITY</b><br>POSSIBLE CARCINOGEN.<br>IARC:           | NO INGREDIENT OF THIS PRODUCT PRESENT AT<br>LEVELS GREATER THAN OR EQUAL TO 0.1% IS<br>IDENTIFIED AS PROBABLE, POSSIBLE OR CONFIRMED<br>HUMAN CARCINOGEN BY IARC. |
| NTP:                                                              | NO INGREDIENT OF THIS PRODUCT PRESENT AT<br>LEVELS GREATER THAN OR EQUAL TO 0.1% IS<br>IDENTIFIED AS A KNOWN OR ANTICIPATED<br>CARCINOGEN BY NTP.                 |
| OSHA:                                                             | NO COMPONENT OF THIS PRODUCT PRESENT AT<br>LEVELS GREATER THAN OR EQUAL TO 0.1% IS ON<br>OSHA'S LIST OF REGULATED CARCINOGENS.                                    |
| <b>REPRODUCTIVE<br/>TOXICITY</b>                                  | MAY HARM THE UNBORN CHILD.<br>MAY IMPAIR FERTILITY.                                                                                                               |
| <b>SPECIFIC TARGET<br/>ORGAN TOXICITY -<br/>SINGLE EXPOSURE</b>   | NO DATA AVAILABLE                                                                                                                                                 |
| <b>SPECIFIC TARGET<br/>ORGAN TOXICITY -<br/>REPEATED EXPOSURE</b> | NO DATA AVAILABLE                                                                                                                                                 |
| <b>ASPIRATION HAZARD</b>                                          | NO DATA AVAILABLE                                                                                                                                                 |

**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,

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL,  
PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE  
NOT BEEN THOROUGHLY INVESTIGATED.

OTHER DANGEROUS PROPERTIES CAN NOT BE  
EXCLUDED.

THIS SUBSTANCE SHOULD BE HANDLED WITH  
PARTICULAR CARE.

HANDLE IN ACCORDANCE WITH GOOD INDUSTRIAL  
HYGIENE AND SAFETY PRACTICE.

**COMPONENTS**  
**N,N-DIMETHYLFORMAMIDE**  
**ACUTE TOXICITY**

LD50 ORAL - RAT - MALE AND FEMALE - 3,010 MG/KG  
(OECD TEST GUIDELINE 401)

ACUTE TOXICITY ESTIMATE INHALATION - 4 H - 11.1  
MG/L - VAPOR (EXPERT JUDGMENT)

REMARKS: (REGULATION (EC) NO 1272/2008, ANNEX VI)

LD50 DERMAL - RABBIT - 1,500 MG/KG REMARKS:  
(REGULATION (EC) NO 1272/2008, ANNEX VI) (IUCLID)

NO DATA AVAILABLE

**SKIN**  
**CORROSION/IRRITATION**

SKIN – RABBIT  
RESULT: NO SKIN IRRITATION - 20 H  
REMARKS: (ECHA)

**SERIOUS EYE**  
**DAMAGE/EYE**  
**IRRITATION**

EYES – RABBIT  
RESULT: IRRITATING TO EYES.  
(OECD TEST GUIDELINE 405)  
REMARKS: (REGULATION (EC) NO 1272/2008, ANNEX VI)

**RESPIRATORY OR SKIN**  
**SENSITIZATION**

LOCAL LYMPH NODE ASSAY (LLNA) – MOUSE  
RESULT: NEGATIVE  
(OECD TEST GUIDELINE 406)

**GERM CELL  
MUTAGENICITY**

TEST TYPE: SISTER CHROMATID EXCHANGE ASSAY  
TEST SYSTEM: CHINESE HAMSTER OVARY CELLS  
RESULT: NEGATIVE  
REMARKS: (ECHA)  
TEST TYPE: UNSCHEDULED DNA SYNTHESIS ASSAY  
TEST SYSTEM: HUMAN DIPLOID FIBROBLASTS  
RESULT: NEGATIVE  
REMARKS: (ECHA)  
TEST TYPE: AMES TEST  
TEST SYSTEM: SALMONELLA TYPHIMURIUM  
RESULT: NEGATIVE  
REMARKS: (ECHA)  
SPECIES: MOUSE - MALE - BONE MARROW  
RESULT: NEGATIVE  
REMARKS: (ECHA)  
SPECIES: RAT – MALE  
RESULT: NEGATIVE  
REMARKS: (ECHA)  
SPECIES: MOUSE – MALE  
RESULT: NEGATIVE  
REMARKS: (ECHA)

**CARCINOGENICITY**

NO DATA AVAILABLE

**REPRODUCTIVE  
TOXICITY**

MAY DAMAGE THE UNBORN CHILD.

**SPECIFIC TARGET  
ORGAN TOXICITY -  
SINGLE EXPOSURE**

NO DATA AVAILABLE

**SPECIFIC TARGET  
ORGAN TOXICITY -  
REPEATED EXPOSURE**

NO DATA AVAILABLE

**ASPIRATION HAZARD**

NO DATA AVAILABLE

**COMPONENT  
4-METHYLPYPERIDINE  
ACUTE TOXICITY**

ACUTE TOXICITY ESTIMATE ORAL - 500.1 MG/KG  
(EXPERT JUDGMENT)  
REMARKS: THE VALUE / STATEMENT GIVEN IS BASED  
ON A (Q)SAR APPROACH

INHALATION: NO DATA AVAILABLE

DERMAL: NO DATA AVAILABLE

NO DATA AVAILABLE

**SKIN  
CORROSION/IRRITATION**

REMARKS: CAUSES SEVERE BURNS.  
THE VALUE / STATEMENT GIVEN IS BASED ON A  
(Q)SAR APPROACH

|                                                                   |                                                                                                     |
|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>SERIOUS EYE<br/>DAMAGE/EYE<br/>IRRITATION</b>                  | REMARKS: CAUSES SERIOUS EYE DAMAGE.<br>THE VALUE / STATEMENT GIVEN IS BASED ON A<br>(Q)SAR APPROACH |
| <b>RESPIRATORY OR SKIN<br/>SENSITIZATION</b>                      | NO DATA AVAILABLE                                                                                   |
| <b>GERM CELL<br/>MUTAGENICITY</b>                                 | NO DATA AVAILABLE                                                                                   |
| <b>CARCINOGENICITY</b>                                            | NO DATA AVAILABLE                                                                                   |
| <b>REPRODUCTIVE<br/>TOXICITY</b>                                  | NO DATA AVAILABLE                                                                                   |
| <b>SPECIFIC TARGET<br/>ORGAN TOXICITY -<br/>SINGLE EXPOSURE</b>   | NO DATA AVAILABLE                                                                                   |
| <b>SPECIFIC TARGET<br/>ORGAN TOXICITY -<br/>REPEATED EXPOSURE</b> | NO DATA AVAILABLE                                                                                   |
| <b>ASPIRATION HAZARD</b>                                          | NO DATA AVAILABLE                                                                                   |

---

## SECTION 12. ECOLOGICAL INFORMATION

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### TOXICITY COMPONENTS: N,N-DIMETHYLFORMAMIDE:

|                                                           |                                                                                                                                                                                             |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TOXICITY TO FISH                                          | LC50 (LEPOMIS MACROCHIRUS (BLUEGILL SUNFISH)):<br>7,100 MG/L<br>END POINT: MORTALITY<br>EXPOSURE TIME: 96 H<br>TEST TYPE: FLOW-THROUGH TEST<br>ANALYTICAL MONITORING: YES<br>METHOD: US-EPA |
| TOXICITY TO DAPHNIA<br>AND OTHER AQUATIC<br>INVERTEBRATES | EC50 (DAPHNIA MAGNA (WATER FLEA)): 13,100 MG/L<br>END POINT: IMMOBILIZATION<br>EXPOSURE TIME: 48 H<br>TEST TYPE: STATIC TEST<br>METHOD: OECD TEST GUIDELINE 202                             |
| TOXICITY TO<br>ALGAE/AQUATIC PLANTS                       | ERC50 (DESMODESMUS SUBSPICATUS (GREEN<br>ALGAE)): > 1,000 MG/L<br>EXPOSURE TIME: 72 H<br>TEST TYPE: STATIC TEST<br>METHOD: DIN 38412                                                        |

|                                                                                 |                                                                                                                                                        |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| TOXICITY TO DAPHNIA<br>AND OTHER AQUATIC<br>INVERTEBRATES<br>(CHRONIC TOXICITY) | NOEC (DAPHNIA MAGNA (WATER FLEA)): 1,500 MG/L<br>END POINT: REPRODUCTION RATE<br>EXPOSURE TIME: 21 D<br>TEST TYPE: SEMI-STATIC TEST<br>REMARKS: (ECHA) |
|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|

|                               |                                                                                                                                             |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| TOXICITY TO<br>MICROORGANISMS | EC50 (VIBRIO FISCHERI): 12,300 - 17,500 MG/L<br>END POINT: GROWTH RATE<br>EXPOSURE TIME: 5 MIN<br>TEST TYPE: STATIC TEST<br>REMARKS: (ECHA) |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|

#### **PERSISTENCE AND DEGRADABILITY**

##### **COMPONENTS:**

##### **N,N-DIMETHYLFORMAMIDE:**

|                         |                                                                                                                                                   |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BIODEGRADABILITY</b> | AEROBIC CONCENTRATION: 20 MG/L RESULT:<br>READILY BIODEGRADABLE. BIODEGRADATION: 100 %<br>EXPOSURE TIME: 21 D METHOD: OECD TEST<br>GUIDELINE 301E |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|

|                                            |                                               |
|--------------------------------------------|-----------------------------------------------|
| <b>BIOCHEMICAL OXYGEN<br/>DEMAND (BOD)</b> | 900 MG/G INCUBATION TIME: 5 D REMARKS: (LIT.) |
|--------------------------------------------|-----------------------------------------------|

|             |                            |
|-------------|----------------------------|
| <b>THOD</b> | 1,863 MG/G REMARKS: (LIT.) |
|-------------|----------------------------|

|                           |                                                                                                    |
|---------------------------|----------------------------------------------------------------------------------------------------|
| <b>STABILITY IN WATER</b> | DEGRADATION HALF LIFE: CA. 50 D REMARKS:<br>REACTION WITH HYDROXYL RADICALS<br>(CALCULATED) (LIT.) |
|---------------------------|----------------------------------------------------------------------------------------------------|

#### **BIOACCUMULATIVE POTENTIAL**

##### **COMPONENTS:**

##### **N,N-DIMETHYLFORMAMIDE:**

|                        |                                                                                                                                                                                                                                                                  |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BIOACCUMULATION</b> | SPECIES: CYPRINUS CARPIO (CARP)<br>BIOCONCENTRATION FACTOR (BCF): 0.3 - 1.2<br>EXPOSURE TIME: 56 D<br>TEMPERATURE: 77 °F / 25 °C<br>CONCENTRATION: 0.002 MG/L<br>METHOD: OECD TEST GUIDELINE 305C<br>REMARKS: DOES NOT SIGNIFICANTLY ACCUMULATE<br>IN ORGANISMS. |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                  |                                                                                                                |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>PARTITION COEFFICIENT:<br/>NOCTANOL/WATER</b> | LOG POW: -0.85 (77 °F / 25 °C)<br>METHOD: OECD TEST GUIDELINE 107<br>REMARKS: BIOACCUMULATION IS NOT EXPECTED. |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------|

|                         |                   |
|-------------------------|-------------------|
| <b>MOBILITY IN SOIL</b> | NO DATA AVAILABLE |
|-------------------------|-------------------|

#### **OTHER ADVERSE EFFECTS**

##### **COMPONENTS:**

##### **4-METHYLPYPERIDINE:**

|                                         |                                                    |
|-----------------------------------------|----------------------------------------------------|
| ADDITIONAL<br>ECOLOGICAL<br>INFORMATION | DISCHARGE INTO THE ENVIRONMENT MUST BE<br>AVOIDED. |
|-----------------------------------------|----------------------------------------------------|

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## **SECTION 13. DISPOSAL CONSIDERATIONS**

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### **WASTE TREATMENT METHODS**

|                        |                                                                                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WASTE FROM RESIDUES    | WASTE MATERIAL MUST BE DISPOSED OF IN ACCORDANCE WITH THE NATIONAL AND LOCAL REGULATIONS. LEAVE CHEMICALS IN ORIGINAL CONTAINERS. NO MIXING WITH OTHER WASTE. HANDLE UNCLEARED CONTAINERS LIKE THE PRODUCT ITSELF. |
| CONTAMINATED PACKAGING | DISPOSE OF AS UNUSED PRODUCT.                                                                                                                                                                                      |

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## SECTION 14. TRANSPORT INFORMATION

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### DOT (US)

|                           |                                                                                 |
|---------------------------|---------------------------------------------------------------------------------|
| PROPER SHIPPING NAME:     | CORROSIVE LIQUID, FLAMMABLE, N.O.S. (4-METHYLPYPERIDINE, N,N-DIMETHYLFORMAMIDE) |
| UN NUMBER:                | 2920                                                                            |
| CLASS:                    | 8 (3)                                                                           |
| PACKING GROUP:            | II                                                                              |
| REPORTABLE QUANTITY (RQ): |                                                                                 |
| POISON INHALATION HAZARD: | NO                                                                              |
| MARINE POLLUTANT          | NO                                                                              |

### IMDG

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| PROPER SHIPPING NAME: | CORROSIVE LIQUID, FLAMMABLE, N.O.S. (4-METHYLPYPERIDINE, N,N-DIMETHYLFORMAMIDE) |
| UN NUMBER:            | 2920                                                                            |
| CLASS:                | 8 (3)                                                                           |
| PACKING GROUP:        | II                                                                              |
| EMS-NO:               | F-E, S-C                                                                        |
| MARINE POLLUTANT      | NO                                                                              |

### IATA

|                       |                                                                                 |
|-----------------------|---------------------------------------------------------------------------------|
| PROPER SHIPPING NAME: | CORROSIVE LIQUID, FLAMMABLE, N.O.S. (4-METHYLPYPERIDINE, N,N-DIMETHYLFORMAMIDE) |
| UN NUMBER:            | 2920                                                                            |
| CLASS:                | 8 (3)                                                                           |
| PACKING GROUP:        | II                                                                              |

### SPECIAL PRECAUTIONS FOR USER

THE TRANSPORT CLASSIFICATION(S) PROVIDED HEREIN ARE FOR INFORMATIONAL PURPOSES ONLY, AND SOLELY BASED UPON THE PROPERTIES OF THE UNPACKAGED MATERIAL AS IT IS DESCRIBED WITHIN THIS SAFETY DATA SHEET. TRANSPORTATION CLASSIFICATIONS MAY VARY BY MODE OF TRANSPORTATION, PACKAGE SIZES, AND VARIATIONS IN REGIONAL OR COUNTRY REGULATIONS.

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## SECTION 15. REGULATORY INFORMATION

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| CERCLA REPORTABLE QUANTITY |         | COMPONENT RQ (LBS) | CALCULATED<br>PRODUCT RQ (LBS) |
|----------------------------|---------|--------------------|--------------------------------|
| COMPONENTS                 | CAS-NO. |                    |                                |
| N,N-DIMETHYLFORMAMIDE      | 68-12-2 | 100                | 121                            |

**SARA 304 EXTREMELY HAZARDOUS SUBSTANCES REPORTABLE QUANTITY**  
THIS MATERIAL DOES NOT CONTAIN ANY COMPONENTS WITH A SECTION 304 EHS RQ.

**SARA 302 EXTREMELY HAZARDOUS SUBSTANCES THRESHOLD PLANNING QUANTITY**  
THIS MATERIAL DOES NOT CONTAIN ANY COMPONENTS WITH A SECTION 302 EHS TPQ.

**SARA 311/312 HAZARDS**  
FIRE HAZARD  
ACUTE HEALTH HAZARD  
CHRONIC HEALTH HAZARD

**SARA 313**  
THE FOLLOWING COMPONENTS ARE SUBJECT TO REPORTING LEVELS ESTABLISHED BY SARA TITLE III, SECTION 313:  
N,N-DIMETHYLFORMAMIDE 68-12-2 >= 70 - < 90 %

**US STATE REGULATIONS**  
**MASSACHUSETTS RIGHT TO KNOW**  
N,N-DIMETHYLFORMAMIDE 68-12-2

**PENNSYLVANIA RIGHT TO KNOW**  
N,N-DIMETHYLFORMAMIDE 68-12-2

**MAINE CHEMICALS OF HIGH CONCERN**  
PRODUCT DOES NOT CONTAIN ANY LISTED CHEMICALS

**VERMONT CHEMICALS OF HIGH CONCERN**  
PRODUCT DOES NOT CONTAIN ANY LISTED CHEMICALS

**WASHINGTON CHEMICALS OF HIGH CONCERN**  
PRODUCT DOES NOT CONTAIN ANY LISTED CHEMICALS

**CALIFORNIA PROP. 65**  
WARNING: THIS PRODUCT CAN EXPOSE YOU TO CHEMICALS INCLUDING N,N-DIMETHYLFORMAMIDE, WHICH IS/ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.  
FOR MORE INFORMATION GO TO [WWW.P65WARNINGS.CA.GOV](http://WWW.P65WARNINGS.CA.GOV).

**THE COMPONENTS OF THIS PRODUCT ARE REPORTED IN THE FOLLOWING INVENTORIES:**  
**TSCA** ALL SUBSTANCES LISTED AS ACTIVE ON THE TSCA INVENTORY

**TSCA LIST**  
NO SUBSTANCES ARE SUBJECT TO A SIGNIFICANT NEW USE RULE.  
NO SUBSTANCES ARE SUBJECT TO TSCA 12(B) EXPORT NOTIFICATION REQUIREMENTS.

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## SECTION 16. OTHER INFORMATION

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### FULL TEXT OF H-STATEMENTS REFERRED TO UNDER SECTIONS 2 AND 3.

|                    |                                                           |
|--------------------|-----------------------------------------------------------|
| H226               | FLAMMABLE LIQUID AND VAPOR.                               |
| H302 + H312 + H332 | HARMFUL IF SWALLOWED, IN CONTACT WITH SKIN OR IF INHALED. |
| H314               | CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.                  |
| H350               | MAY CAUSE CANCER.                                         |
| H360               | MAY DAMAGE FERTILITY OR THE UNBORN CHILD.                 |

### MSDS LEGEND

|        |                                                          |
|--------|----------------------------------------------------------|
| MW:    | MOLECULAR WEIGHT                                         |
| MF:    | MOLECULAR FORMULA                                        |
| VOC:   | VOLATILE ORGANIC COMPOUNDS                               |
| ACGIH: | AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGINISTS |
| CAS:   | CHEMICAL ABSTRACTS SERVICE REGISTRY NUMBER               |
| OSHA:  | OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION            |
| PEL:   | PERMISSIBLE EXPOSURE LIMIT (OSHA)                        |
| TLV:   | THRESHOLD LIMIT VALUE (ACGIH)                            |

### IMPORTANT:

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