



# RXSOL

VARANASI CHEMICAL | RX MARINE INTERNATIONAL

**RXSOL-15-1500-025**

Bleaching Liquid

## Material Safety Data Sheet (MSDS)

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### 1. Product and Company Identification

|              |                     |
|--------------|---------------------|
| Product Name | DI METHYL FORMAMIDE |
| Part Number  | RXSOL-19-1142-050   |

#### Company Details:

RX MARINE INTERNATIONAL  
105, A wing , BSEL , TECH PARK.  
VASHI ,NEW BOMBAY 400703 INDIA

Branch : Kandla, Mumbai , Chennai, Vizag, Kolkata, UAE , OMAN , CANADA and KENYA

|         |                                                          |
|---------|----------------------------------------------------------|
| Phone   | +91 22 20871200 - 1400                                   |
| Fax     | +91 22 27612100 ::::AOH :0091 9821214367                 |
| Email   | <a href="mailto:mail@rxmarine.com">mail@rxmarine.com</a> |
| Website | <a href="http://www.rxmarine.com">www.rxmarine.com</a>   |

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### 2. Composition / Information on ingredients

| Chemical Name     | CAS     | EC number | Weight   | Formula                          |
|-------------------|---------|-----------|----------|----------------------------------|
| Dimethylformamide | 68-12-2 | 200-679-5 | <= 100 % | C <sub>3</sub> H <sub>7</sub> NO |

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### 3. Hazards Identification

|                                                |                                                                                                                                                                        |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signal Word                                    | Danger                                                                                                                                                                 |
| Hazard Statements                              | H226 Flammable liquid and vapor. H312 + H332 Harmful in contact with skin or if inhaled. H319 Causes serious eye irritation. H360D May damage the unborn child.        |
| P280 Wear protective gloves.P305 + P351 + P338 | Wear eye protection/ face protection. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |

|                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Precautionary statements                   | P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P303 + P361 + P533 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| Classification of the substance or mixture | Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Supplemental Hazard Statements             | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Other hazards                              | This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.                                                                                                                                                                                                                                                                                                                                                                                                        |

#### 4. First Aid Measures

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|                                                                            |                                                                                                                                                            |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General advice                                                             | Show this material safety data sheet to the doctor in attendance.                                                                                          |
| If inhaled                                                                 | After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.        |
| Eye Contact                                                                | After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.                                                         |
| Swallowed                                                                  | After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.                                                          |
| Skin Contact                                                               | In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.                               |
| Inhalation                                                                 | Remove patient to fresh air, keep warm and at rest and get medical assistance in necessary.                                                                |
| Ingestion                                                                  | Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately. |
| Most important symptoms and effects, both acute and delaye                 | The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11                                        |
| Indication of any immediate medical attention and special treatment needed | No data available                                                                                                                                          |

#### 5. Fire-fighting Measures

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|                                                       |                                                                                                                                                                                                                                                           |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flammability                                          | May be combustible at high temperature.                                                                                                                                                                                                                   |
| Suitable extinguishing media                          | Water Foam Carbon dioxide (CO2) Dry powder                                                                                                                                                                                                                |
| Unsuitable extinguishing media                        | For this substance/mixture no limitations of extinguishing agents are given.                                                                                                                                                                              |
| Special hazards arising from the substance or mixture | Carbon oxides Nitrogen oxides (NOx) Combustible. Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air at elevated temperatures. Development of hazardous combustion gases or vapours possible in the event of fire. |

|                                            |                                                                                                                                                                                                                       |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Further information                        | Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system. |
| Hazardous combustion products              | Fire may cause the evolution of Sulphur oxides, nitrogen oxides.                                                                                                                                                      |
| Advice for firefighters                    | Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.                                                         |
| Protective Equipment                       | Use personal protective equipment.                                                                                                                                                                                    |
| Specific Hazards Arising from the Chemical | Has a fire-promoting effect due to the release of oxygen. Ambient fire may liberate hazardous vapours.                                                                                                                |

## 6. Accidental Release Measures

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|                                                                     |                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal precautions, protective equipment and emergency procedures | Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.                                               |
| Spillage                                                            | Oxidizing material. Stop leak if without risk. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Prevent entry into sewers, basements or confined areas dike if needed. Eliminate all ignition sources. Call for assistance on disposal. |
| Personal Protection                                                 | Advice for non-emergency personnel: Avoid inhalation of dusts. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: Protective equipment see section 8.                                                                                                                          |
| Environmental Precaution                                            | Do not let product enter drains. Risk of explosion.                                                                                                                                                                                                                                                                                     |
| Methods and materials for containment and cleaning                  | Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.                                                                                                      |

## 7. Handling and Storage

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|                                                              |                                                                                                                                                                                                                                   |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Advice on safe handling                                      | Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.                                                                                                                                           |
| Advice on protection against fire and explosion              | Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.                                                                                                           |
| Incompatible materials                                       | Keep away from alkalis, strong oxidizing agents and metals. Provide containment walls of adequate capacity to hold any accidental spills.                                                                                         |
| Hygiene measures                                             | Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.                                                                    |
| Conditions for safe storage, including any incompatibilities | Store the container tightly closed in a dry, cool and well-ventilated place. Store apart from foodstuff containers or incompatible materials.                                                                                     |
| Storage conditions                                           | Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons. Handle and store under inert gas. |
| Storage class                                                | Storage class (TRGS 510): 3: Flammable liquids                                                                                                                                                                                    |

|                                        |                                                                                                                           |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Specific end use(s)                    | Apart from the uses mentioned in section 1.2 no other specific uses are stipulated                                        |
| Advice on general occupational hygiene | Advice on safe handling Observe label precautions. Change contaminated clothing. Wash hands after working with substance. |
| Requirements for storage               | Keep in cool and store under shade.                                                                                       |

## 8. Exposure controls and personal protection

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| Application Area | Routes of exposure | Health effect              | Value          |
|------------------|--------------------|----------------------------|----------------|
| Workers          | Skin contact       | Acute systemic effects     | 26,3mg/kg BW/d |
| Workers          | Inhalation         | Acute systemic effects     | 30 mg/m3       |
| Workers          | Skin contact       | Long-term systemic effects | 3,31mg/kg BW/d |
| Workers          | Inhalation         | Long-term systemic effects | 15 mg/m3       |
| Workers          | Inhalation         | Long-term local effects    | 15 mg/m3       |

### Predicted No Effect Concentration (PNEC)

| Compartment          | Value        |
|----------------------|--------------|
| Water                | 30 mg/l      |
| Soil                 | 16,235 mg/kg |
| Sea water            | 3 mg/kg      |
| Fresh water sediment | 25,05 mg/kg  |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Exposure controls        | No specific additional engineering controls are required. Provide good natural or artificial ventilation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Engineering Control      | Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Body Protection          | Flame retardant antistatic protective clothing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Skin protection          | This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de). Full contact Material: butyl-rubber Minimum layer thickness: 0,7 mm Break through time: 480 min Material tested:Butoject® (KCL 898) This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de). Splash contact Material: Viton® Minimum layer thickness: 0,7 mm Break through time: 240 min Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M) |
| Respiratory protection   | Recommended Filter type: Filter A-(P2) The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Other Protection Measure | Handle in accordance with good industrial hygiene and safety practice.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                                   |                                                     |
|-----------------------------------|-----------------------------------------------------|
| Control of environmental exposure | Do not let product enter drains. Risk of explosion. |
| Thermal hazards                   | No data available                                   |

## 9. Physical and chemical properties

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|                                              |                           |
|----------------------------------------------|---------------------------|
| Physical state                               | Liquid, clear             |
| Colour                                       | Colorless                 |
| Odour                                        | Amine-like                |
| Odor Threshold                               | Not Applicable            |
| pH                                           | 7 at 200 g/l at 20 °C     |
| Melting Point                                | 61 °C                     |
| Boiling Point                                | 153 °C                    |
| Flash Point                                  | 57,5 °C                   |
| Evaporation Rate                             | Not Applicable            |
| Flammability (solid, gas)                    | No data available         |
| Viscosity, dynamic                           | 0,86 mPa.s at 20 °C       |
| Upper/lower flammability or explosive limits | 16 %(V) / 2,2 %(V)        |
| Autoignition temperature                     | 435 °C at 1.013 hPa       |
| Decomposition temperature                    | > 350 °C                  |
| Vapour pressure                              | 3,77 hPa at 20 °C         |
| Density                                      | 0,944 g/mL                |
| Relative Vapour Density                      | 2,52 - (Air = 1.0)        |
| Freezing point                               | No data available         |
| Specific Gravity                             | No data available         |
| Partition coefficient                        | log Pow: -0,85 at 25 °C   |
| Explosive properties                         | No data available         |
| Solubility                                   | 1.000 g/l at 20 °C        |
| Ignition temperature                         | No information available. |
| Particle characteristics                     | No data available         |

## 10. Stability and reactivity

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|            |                                                                                         |
|------------|-----------------------------------------------------------------------------------------|
| Reactivity | Vapor/air-mixtures are explosive at intense warming.                                    |
| Stability  | The product is chemically stable under standard ambient conditions (room temperature) . |

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Possibility of hazardous reactions | Violent reactions possible with: Alkali metals halogens halides Reducing agents triethylaluminium nitrates metallic oxides nonmetallic oxides Halogenated hydrocarbon Isocyanates sodium Sodium borohydride hydrides Oxidizing agents Oxides of phosphorus Tin Strong oxidizing agents rubber Copper Copper alloys various metals A risk of explosion and/or of toxic gas formation exists with the following substances: azides Bromine Chlorine chromium(VI) oxide potassium permanganate triethylaluminium chlorates Halogenated hydrocarbon with Iron |
| Conditions to avoid                | Heating.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Incompatible materials             | Various plastics, Copper, Copper alloys, Tin, Strong oxidizing agents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Hazardous Polymerization           | In the event of fire: see section 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## 11. Toxicological information

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|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 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)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Toxicity to Animal                               | WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE Acute oral toxicity (LD50): 689 mg/kg [Rat].                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Toxic Effects on Human                           | May cause damage to the following organs: upper respiratory tract. Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, sensitizer), of ingestion, of inhalation (lung irritant, lung sensitizer).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Carcinogenicity                                  | Carcinogenicity - No carcinogenic properties suspected. (IUCLID)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Germ cell mutagenicity                           | Test Type: sister chromatid exchange assay Test system: Chinese hamster ovary cells Metabolic activation: with and without metabolic activation Result: negative Remarks: (ECHA) Test Type: unscheduled DNA synthesis assay Test system: human diploid fibroblasts Metabolic activation: with and without metabolic activation Result: negative Remarks: (ECHA) Test Type: Ames test Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Result: negative Remarks: (ECHA) Test Type: Micronucleus test Species: Mouse Cell type: Bone marrow Application Route: Intraperitoneal injection Result: negative Remarks: (ECHA) Test Type: dominant lethal test Species: Rat Application Route: Inhalation Result: negative Remarks: (ECHA) Test Type: dominant lethal test Species: Mouse Application Route: Intraperitoneal Result: negative Remarks: (ECHA). |
| Reproductive toxicity                            | May damage the unborn child.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Specific target organ toxicity - single exposure | No data available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Special Remarks on other Toxi Effects on Humans  | Acute Potential Health Effects: Skin: Causes skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Eyes: Causes eye irritation. Ingestion: Causes gastrointestinal (digestive) tract irritation with nausea, vomiting, and diarrhea. May be harmful if swallowed. Inhalation: Causes respiratory tract irritation. May cause chemical pneumonitis and pulmonary edema, inflammation, edema of bronchi and larynx. Chronic Potential Health Effects: Repeated or prolonged skin exposure may cause allergic reactions in sensitive individuals. Repeated or prolonged exposure by inhalation may affect respiration and metabolism.                                                                                                                                                                                             |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Additional Information          | RTECS: AF3675000 Gastrointestinal disturbance To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. After uptake of large quantities: muscular symptoms agitation Convulsions Headache Tremors Nausea psychoses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Endocrine disrupting properties | The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. Repeated dose toxicity - Rat - male and female - Oral - 28 d - NOAEL (No observed adverse effect level) - 238 mg/kg - LOAEL (Lowest observed adverse effect level) - 475 mg/kg Remarks: Subacute toxicity RTECS: LQ2100000 Vomiting Diarrhea Abdominal pain Warning: intolerance for alcohol can occur up to 4 days after dimethylformamide exposure. N,N-dimethylformamide is considered to be a potent liver toxin. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. After absorption: Headache Dizziness Drowsiness Damage to: Kidney Liver This substance should be handled with particular care. |

## 12. Ecological information

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|                                                     |                                                                                                                                                                                                                                                             |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Persistence and degradability                       | Biodegradability aerobic - Exposure time 21 d Result: 100 % - Readily biodegradable. (OECD Test Guideline 301E) Biochemical Oxygen Demand (BOD) 900 mg/g Remarks: (Lit.) Theoretical oxygen demand 1.863 mg/g Remarks: (Lit.)                               |
| Bioaccumulative potential                           | Bioaccumulation Cyprinus carpio (Carp) - 56 d at 25 °C - 0,002 mg/l(N,N-dimethylformamide) Bioconcentration factor (BCF): 0,3 - 1,2 (OECD Test Guideline 305C) Remarks: Does not significantly accumulate in organisms.                                     |
| Toxicity to fish                                    | Flow-through test LC50 - Lepomis macrochirus (Bluegill sunfish) - 7.100 mg/l - 96 h (US-EPA)                                                                                                                                                                |
| Toxicity to daphnia and other aquatic invertebrates | Static test EC50 - Daphnia magna (Water flea) - 13.100 mg/l - 48 h (OECD Test Guideline 202)                                                                                                                                                                |
| Toxicity to algae                                   | Static test ErC50 - Desmodesmus subspicatus (green algae) - > 1.000 mg/l - 72 h (DIN 38412)                                                                                                                                                                 |
| Products Biodegradation                             | The methods for determining the biological degradability are not applicable to inorganic substances.                                                                                                                                                        |
| Mobility in soil                                    | No Information available                                                                                                                                                                                                                                    |
| Results of PBT and vPvB assessment                  | This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.                                                          |
| Endocrine disrupting properties                     | The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher. |
| Other adverse effects                               | Stability in water - ca.50 d Remarks: reaction with hydroxyl radicals(calculated)(Lit.)                                                                                                                                                                     |

## 13. Disposal considerations

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|                        |                                                                                                                                                                                                                                                                                                                                    |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disposal methods       | The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.                                                                           |
| Contaminated packaging | Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials. |

|                        |                                                                                                                                                                                         |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Waste treatment Method | See <a href="http://www.retrologistik.com">www.retrologistik.com</a> for processes regarding the return of chemicals and containers, or contact us there if you have further questions. |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 14. Transport information

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|                              |                                                                                           |
|------------------------------|-------------------------------------------------------------------------------------------|
| UN number                    | ADR/RID: 2265    IMDG: 2265    IATA: 2265                                                 |
| UN proper shipping name      | ADR/RID:N,N-Dimethylformamide    IMDG:N,N-Dimethylformamide    IATA:N,N-Dimethylformamide |
| Transport hazard class(es)   | ADR/RID: 3    IMDG: 3    IATA: 3                                                          |
| Packaging group              | ADR/RID: III    IMDG: III    IATA: III                                                    |
| Environmental hazards        | ADR/RID: No    IMDG: No    IATA: No                                                       |
| Special precautions for user | Tunnel restriction code : (C/E)                                                           |
| Further information          | Not classified as dangerous in the meaning of transport regulations.                      |

## 15. Regulatory information

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|                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inventory status                                                                               | Components are on the following inventories: Polymaleic acid: - US TSCA, Canadian DSL, EU EINECS, Australian AICS, Korean, Philippine PICCS and Chinese Xi irritant R 36/38 Irritant to eyes & skin R 41 Risk of serious damage to eyes S24/25 Avoid contact with skin and eyes S26/28 In case of contact eyes & skin, rinse with plenty water and seek medical advice Section 312/313: Not listed. Not listed under California proposition 65. |
| Safety, health and environmental regulations/legislation specific for the substance or mixture | This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006                                                                                                                                                                                                                                                                                                                                                 |
| Safety, health and environmental regulations specific for the product in question              | European Inventory of Existing Commercial Chemical Substances (EINECS) -Listed.EC Inventory Listed. United States Toxic Substances Control Act (TSCA) Inventory-Listed. China Catalog of Hazardous chemicals 2015 Not- Listed. New Zealand Inventory of Chemicals (NZIoC)Listed. PICCS -Listed. Vietnam National Chemical Inventory -Listed. IECSC Listed. Korea Existing Chemicals List (KECL) -Listed.                                        |
| Authorisations and/or restrictions on use                                                      | REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : N,N-dimethylformamide REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : N,N-dimethylformamide                                                                                                                                                            |
| National legislation                                                                           | Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. : FLAMMABLE LIQUIDS                                                                                                                                                                                                                                                                     |
| Other regulations                                                                              | Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable. Take note of Dir 94/33/EC on the protection of young people at work.                                                                                                                                                                                                                                 |
| Chemical Safety Assessment                                                                     | A Chemical Safety Assessment has been carried out for this substance.                                                                                                                                                                                                                                                                                                                                                                           |

## 16. Other information

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|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Other Information | <p>The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Rx Marine International has been advised of the possibility of such damages.</p> <p><b>DISCLAIMER OF LIABILITY :</b> The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.</p> |
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