

1. Product and Company Identification

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Product Name Dimethyl Ether
Part Number RXSOL-61-6010-002

Company Details:

RX MARINE INTERNATIONAL
105, A wing , BSEL , TECH PARK.
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2. Composition / Information on ingredients

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| Product name | Cas No | EC No | Weight | Formula |
|----------------|----------|-----------|-------------|---------------------------------|
| Dimethyl ether | 115-10-6 | 204-065-8 | 46,07 g/mol | C ₂ H ₆ O |

3. Hazards Identification

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| Signal Word | Danger |
| Hazard Statements | H220 Extremely flammable gas. H280 Contains gas under pressure; may explode if heated. |
| Precautionary statements | P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381 In case of leakage, eliminate all ignition sources. P410 + P403 Protect from sunlight. Store in a well-ventilated place |
| Classification of the substance or mixture | No data available |
| Supplemental Hazard Statements | No data available |
| 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. 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. |

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. |
| Eye Contact | After eye contact: rinse out with plenty of water. Remove contact lenses. |
| Swallowed | After swallowing immediately make victim drink water (two glasses at most). Consult a physician. 4.2 Most important |
| Skin Contact | In case of skin contact Take off immediately all contaminated clothing. Rinse skin with water/ shower |

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| Inhalation | No data available |
| Ingestion | No data available |
| Most important symptoms and effects, both acute and delay | 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 | No data available |
| Suitable extinguishing media | Water Foam Carbon dioxide (CO ₂) 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 Combustible. Pay attention to flashback. Vapors are heavier than air and may spread along floors. Development of hazardous combustion gases or vapours possible in the event of fire |
| Further information | Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system. |
| Hazardous combustion products | No data available |
| Advice for firefighters | In the event of fire, wear self-contained breathing apparatus |
| Protective Equipment | No data available |
| Specific Hazards Arising from the Chemical | No data available |

6. Accidental Release Measures

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| Personal precautions, protective equipment and emergency procedures | Advice for non-emergency personnel Do not breathe gas. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8. |
| Spillage | No data available |
| Personal Protection | No data available |
| Environmental Precaution | Do not let product enter drains. Risk of explosion. |
| Methods and materials for containment and cleaning | Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Stop flow of gas, move leaking cylinder to open air if without risk. |
| Reference to other sections | For disposal see section 13. |

7. Handling and Storage

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| 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 | No data available |
| Hygiene measures | Change contaminated clothing. Wash hands after working with substance. For precautions see section 2.2. |
| Advice on safe handling | For precautions see section 2.2. |
| Conditions for safe storage including any incompatibilities | No data available |
| Storage conditions | Tightly closed. Keep away from combustible materials and sources of ignition. Contents under pressure. |
| Storage class | Storage class (TRGS 510) 2A Gases |

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| Specific end use(s) | Apart from the uses mentioned in section 1.2 no other specific uses are stipulated |
| Advice on general occupational hygiene | No data available |

8. Exposure controls and personal protection

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| Exposure controls | Personal protective equipment |
| Engineering Control | No data available |
| 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) |
| Respiratory protection | Required when vapours/mists 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. Recommended Filter type: Filter type ABEK 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 | No data available |

9. Physical and chemical properties

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| Physical state | Liquefied gas |
| Colour | Colorless |
| Odour | Alcohol-like |
| Odor Threshold | No data available |
| pH | 7,0 at 10 g/l at 20 °C |
| Melting Point | -141 °C - lit. |
| Boiling Point | -24,8 °C - lit. |
| Flash Point | -41 °C - closed cup |
| Evaporation Rate | No data available |
| Flammability (solid, gas) | No data available |
| Explosive limits | No data Available |
| Upper/lower flammability or explosive limits | Upper explosion limit 27 %(V) Lower explosion limit 3,4 %(V) |
| Autoignition temperature | 226 °C at 1.013 - 1.027 hPa |
| Decomposition temperature | No data available |
| Vapour pressure | 5.333 hPa at 20 °C |
| Viscosity | No data available |
| Density | 0,661 g/cm ³ at 20 °C |
| Relative Density | No data available |
| Specific Gravity | No data available |
| Partition coefficient | No data available |
| Explosive properties | No data available |
| Solubility | 353 g/l at 24 °C at 1.013 hPa |
| Ignition temperature | No data available |

10. Stability and reactivity

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| Reactivity | No data available |
| Chemical stability | The product is chemically stable under standard ambient conditions (room temperature) |
| Possibility of hazardous reactions | Violent reactions possible with Strong oxidizing agents Hydrogen halides Fluorine nitrogen dioxide hydrides Chlorine |
| Conditions to avoid | No data available |
| Incompatible materials | Various plastics |
| Hazardous decomposition products | In the event of fire: see section 5 |

11. Toxicological information

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| Acute toxicity | LC50 Inhalation - Rat - male - 4 h - 164000 ppm - gas (OECD Test Guideline 403) Remarks: Behavioral:Ataxia. Behavioral:General anesthetic. Behavioral:Coma. |
| Skin corrosion/irritation | Skin - Rabbit No skin irritation - 24 h (OECD Test Guideline 404) |
| Serious eye damage/irritation | Eyes - Rabbit Causes serious eye irritation. (OECD Test Guideline 405) |
| Respiratory or skin sensitization | Maximization Test - Guinea pig negative (OECD Test Guideline 406) (in analogy to similar products) The value is given in analogy to the following substances: Methanol |
| Carcinogenicity | No data available |
| Germ cell mutagenicity | Test Type: Ames test Test system: Escherichia coli/Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative Test Type: In vitro mammalian cell gene mutation test Test system: Chinese hamster ovary cells Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 476 Result: negative Test Type: Chromosome aberration test in vitro Test system: Human lymphocytes Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 473 Result: negative Test Type: in vivo assay Species: Drosophila melanogaster Application Route: inhalation (gas) Method: OECD Test Guideline 477 Result: negative |
| Reproductive toxicity | No data available |
| Specific target organ toxicity - single exposure | No data available |
| Additional Information | 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. RTECS: PM4780000 Blurred vision, Headache, Dizziness, Convulsions, Asphyxia, Unconsciousness, Liver disorders, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. After absorption: Pneumonia respiratory paralysis bronchitis acidosis Gastrointestinal disturbance Vomiting agitation, spasms ataxia (impaired locomotor coordination) euphoria Circulatory collapse muscular weakness Lung edema Damage to: Kidney Liver The following applies to ethers in general: the uptake of large quantities is followed by narcosis, cardiovascular disorders. Nausea and vomiting after swallowing. Handle in accordance with good industrial hygiene and safety practice. |

12. Ecological information

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| Persistence and degradability | Biodegradability aerobic - Exposure time 28 d 5% - Not readily biodegradable. (OECD Test Guideline 301D) |
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| Toxicity to fish | Semi-static test LC50 - <i>Poecilia reticulata</i> (guppy) - > 4,1 g/l - 96 h Remarks: (ECHA) |
| Toxicity to daphnia and other aquatic invertebrates | Static test EC50 - <i>Daphnia magna</i> (Water flea) - > 4,4 g/l - 48 h (ECHA) |
| Toxicity | No data available |
| Toxicity to bacteria | Static test IC50 - activated sludge - > 1.000 mg/l - 3 h (OECD Test Guideline 209) |
| Toxicity to algae | Static test ErC50 - <i>Chlorella vulgaris</i> (Fresh water algae) - 275 mg/l - 72 h (OECD Test Guideline 201) |
| Bioaccumulation potential | Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected |
| Mobility in soil | No data 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 | Discharge into the environment must be avoided. |

13. Disposal considerations

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| Product | Pressurised gas bottle dispose of only in empty condition! |
| Contaminated packaging | No data available |
| Waste treatment Method | No data available |

14. Transport information

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| UN number | ADR/RID:1033 | IMDG:1033 | IATA:1033 |
| UN proper shipping name | ADR/RID:DIMETHYL ETHER | IMDG:DIMETHYL ETHER | IATA:DIMETHYL ETHER |
| Transport hazard class(es) | ADR/RID:2.1 | IMDG:2.1 | IATA:2.1 |
| Packaging group | ADR/RID:- | IMDG:- | IATA:- |
| Environmental hazards | ADR/RID:No | IMDG:No | IATA:No |
| Special precautions for user | Tunnel restriction code (B/D) | | |
| Further information | No data available | | |

15. Regulatory information

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| Safety, health and environmental regulations/legislation specific for substance or mixture | This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006. |
| Other regulations | Take note of Dir 94/33/EC on the protection of young people at work |
| Chemical Safety Assessment | A Chemical Safety Assessment was not carried out for this substance. |

16. Other information

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| Other Information | 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 be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary |
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damages, howsoever arising, even if Rx Marine International has been advised of the possibility of such damages.

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