

1. Product and Company Identification

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Product Name EPICHLOROHYDRIN
Part Number RXSOL-19-1165-050

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

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| Chemical Name | Cas No | EC No | Weight | Formula |
|----------------------------|--------------|-----------|-------------|-----------------------------------|
| Epichlorohydrine synthesis | for 106-89-8 | 203-439-8 | 92,53 g/mol | C ₃ H ₅ ClO |

3. Hazards Identification

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| Signal Word | Danger |
| Hazard Statements | H317 May cause an allergic skin reaction. H350 May cause cancer. H314 Causes severe skin burns and eye damage. H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled |
| Precautionary statements | P202 Do not handle until all safety precautions have been read and understood. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated Millipore- 8.03296 Page 3 of 14 The life science business of Merck operates as MilliporeSigma in the US and Canada clothing. Rinse skin with water. P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor. 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 | 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 |

4. First Aid Measures

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| General advice | First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance |
| If inhaled | After inhalation fresh air. Immediately call in physician. |
| Eye Contact | Rinse out with plenty of water. Remove contact lenses |
| Swallowed | If swallowed give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not |

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| | available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. Do not attempt to neutralise. |
| Skin Contact | In case of skin contact Take off immediately all contaminated clothing. Rinse skin with water/ shower. |
| Inhalation | No data available |
| Ingestion | No data available |
| Most important symptoms and effects, both acute and delaye | No data available |
| 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 | Small (incipient) fires must be extinguished with alcohol resistant foam, dry chemical powder or carbon dioxide. Large amounts of water are ineffective. Cool containers with large amounts of water. |
| Unsuitable extinguishing media | Carbon oxides Hydrogen chloride gas Combustible. Fire may cause evolution of: Hydrogen chloride gas, Phosgene, dioxin 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 |
| Special hazards arising from the substance or mixture | Carbon oxides 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 | No data available |
| 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 | 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 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 | 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 | Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area |
| 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 | No data available |
| Advice on safe handling | Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols. |
| Conditions for safe storage, including any incompatibilities | No data available |
| 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. Recommended storage temperature see product label. |
| 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 | 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 EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de). Full contact Material: Viton® Minimum layer thickness: 0,7 mm Break through time: 480 min Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M) 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 EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de). Splash contact Material: butyl-rubber Minimum layer thickness: 0,7 mm Break through time: 30 min Material tested: Butoject® (KCL 898) |
| Respiratory protection | Recommended Filter type Filter A (acc. to DIN 3181) for vapours of organic compounds 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 | Liquid |
| Colour | Colorless |
| Odour | Stinging |
| Odor Threshold | No data available |
| pH | 7,0 |
| Melting Point | -57 °C at 1.013 hPa |
| Boiling Point | 117 °C at 1.013 hPa |
| Flash Point | 28 °C - DIN 51755 Part 1 |
| Evaporation Rate | No data available |

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| Flammability (solid, gas) | No data available |
| Explosive limits | No data available |
| Upper/lower flammability or explosive limits | Upper explosion limit 21 %(V) Lower explosion limit 3,8 %(V) |
| Autoignition temperature | 385 °C at 1.013 hPa |
| Decomposition temperature | 225 °C |
| Vapour pressure | 16,5 hPa at 20 °C 22,8 hPa at 25 °C |
| Viscosity | Dynamic ca.1,03 mPa.s at 20 °C |
| Density | 1,18 g/cm ³ at 20 °C |
| Relative Density | 1,18 at 20 °C |
| Specific Gravity | No data available |
| Partition coefficient | Log Pow 0,45 at 25 °C - Bioaccumulation is not expected. |
| Explosive properties | No data available |
| Solubility | ca.65,9 g/l at 25 °C - completely soluble |
| Ignition temperature | No data available |
| Particle characteristics | No data available |

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 | Risk of explosion with: aluminium chloride Amines anilines metallic chlorides Chlorites Tin Zinc Exothermic reaction with: Alkali metals Alcohols alkalines Water Zinc Tin acids Ethyleneimine aromatic amines Nitric acid sulfuric acid trichloroethene |
| Conditions to avoid | Heat, flames and sparks. Heating |
| Incompatible materials | No data available |
| Hazardous product decomposition | No data available |

11. Toxicological information

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| Acute toxicity | LD50 Oral - Rat - female - 175 mg/kg (US-EPA) LC50 Inhalation - Rat - female - 4 h - 2,05 mg/l - vapor (ECHA) LD50 Dermal - Rabbit - male and female - 515 mg/kg (ECHA) |
| Skin corrosion/irritation | Skin - Rabbit Result Corrosive (Draize Test) (Regulation (EC) No 1272/2008, Annex VI) Skin - Rabbit Result Open irritation test - 24 h |
| Serious eye damage/irritation | Eyes - Rabbit Result Corrosive - 24 h (ECHA) Causes serious eye damage |
| Respiratory or skin sensitization | Maximization Test - Guinea pig Result positive (OECD Test Guideline 406) May cause sensitization by skin contact. |
| Carcinogenicity | Presumed to have carcinogenic potential for humans |
| Germ cell mutagenicity | Test Type Ames test Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: positive Test Type: In vitro mammalian cell gene mutation test Test system: Mouse lymphoma test Metabolic activation: without metabolic activation Method OECD Test Guideline 476 Result: positive Test Type: Mutagenicity (mammal cell test): chromosome aberration. Species: Mouse Cell type: Bone marrow Application Route: Oral Method OECD Test Guideline 475 Result: positive Test Type: Mutagenicity (mammal cell test) chromosome aberration. Species: Rat Millipore- 8.03296 Page 10 of 14 The life science business of Merck operates as MilliporeSigma in the US and Canada Cell type Bone marrow Application Route: inhalation (vapor) Method: OECD Test Guideline 475 Result: Positive results were obtained in some in vivo tests |
| 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. Repeated dose toxicity - Rat - male and female - Oral - 90 d - NOAEL (No observed adverse effect level) - 1 mg/kg Remarks: Subchronic toxicity Repeated dose toxicity - Rat - male and female - Inhalation - 88 d Remarks: Subchronic toxicity Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated

12. Ecological information

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| Persistence and degradability | Biodegradability aerobic - Exposure time 20 d Result: 70 % - Readily biodegradable. (ECHA) |
| Toxicity to fish | Static test LC50 - Pimephales promelas (fathead minnow) - 10,6 - 13,2 mg/l - 96 h Remarks: (ECHA) |
| Toxicity to daphnia and other aquatic invertebrates | Static test EC50 - Daphnia magna (Water flea) - 24 mg/l - 48 h Remarks: (ECHA) Millipore- 8.03296 Page 11 of 14 The life science business of Merck operates as MilliporeSigma in the US and Canada invertebrates |
| Toxicity | No data available |
| Toxicity to bacteria | Static test NOEC - microorganisms - 35 mg/l - 72 h Remarks: (ECHA) |
| Toxicity to algae | Static test ErC50 - Pseudokirchneriella subcapitata (green algae) - 15 mg/l - 72 h (OECD Test Guideline 201) |
| Mobility in soil | No data available |
| Results of PBT av PvB 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 | No data available |

13. Disposal considerations

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| Product | No data available |
| Contaminated packaging | No data available |
| Waste treatment Method | No data available |

14. Transport information

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| UN number | ADR/RID:2023 IMDG:2023 IATA:2023 |
| UN proper shipping name | ADR/RID:EPICHLOROXYDRIN IMDG:EPICHLOROXYDRIN IATA:EPICHLOROXYDRIN |
| Transport hazard classess | ADR/RID:6.1 (3) IMDG:6.1 (3) IATA:6.1 (3) |
| Packaging group | ADR/RID:II IMDG:II IATA:II |
| Environmental hazards | ADR/RID:Yes IMDG Marine pollutant: Ye IATA: No |
| Special precautions for user | Tunnel restriction code (D/E) |
| Further information | No data available |

15. Regulatory information

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| 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 |
| 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 | For this product a chemical safety assessment was not carried out |

16. Other information

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Other Information

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