

1. Product and Company Identification

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Product Name Ammonia
Part Number RXSOL-19-1227-005

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
Ammonia	7664-41-7	231-635-3	17,03 g/mol	H ₃ N

3. Hazards Identification

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Signal Word	Danger
Hazard Statements	H221 Flammable gas. H280 Contains gas under pressure; may explode if heated. H314 Causes severe skin burns and eye damage. H331 Toxic if inhaled. H410 Very toxic to aquatic life with long lasting effects.
Precautionary statements	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P260 Do not breathe gas. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P403 + P233 Store in a well-ventilated place. Keep container tightly closed. 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.

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. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.
Eye Contact	After eye contact rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

Swallowed	After swallowing make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.
Skin Contact	In case of skin contact Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.
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	Carbon dioxide (CO2) Foam Dry powder
Unsuitable extinguishing media	Water
Special hazards arising from the substance or mixture	Nitrogen oxides (NOx) Not combustible. Pay attention to flashback. Ambient fire may liberate hazardous vapours.
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 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	No data available
Methods and materials for containment and cleaning	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.
Incompatible materials	No data available
Hygiene measures	General industrial hygiene practice. For precautions see section 2.2.
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	Tightly closed. Keep locked up or in an area accessible only to qualified

	or authorized persons. Keep away from combustible materials and sources of ignition. Contents under pressure.
Storage class	Storage class (TRGS 510): 2A Gas
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	Recommended Filter type Filter type K 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	Stinging, Do not attempt to smell the product as it is hazardous
Odor Threshold	No data available
pH	ca.10 - 12 at 50 g/l at 20 °
Melting Point	-78 °C - lit.
Boiling Point	-33 °C - lit.
Flash Point	No data available
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 25 %(V) Lower explosion limit 16 %(V)
Autoignition temperature	651 °C
Decomposition temperature	> 450 °C
Vapour pressure	8.600 hPa at 20 °C
Viscosity	Dynamic 0,254 mPa.s at -33 °
Density	0,7 g/cm ³ at -33 °C - liquid
Specific Gravity	No data available
Partition coefficient	No data available
Explosive properties	No data available
Solubility	531 g/l at 20 °C - OECD Test Guideline 105
Ignition temperature	No data available
Particle characteristics	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	Exothermic reaction with: Acetaldehyde Acrolein boron triiodide boron trifluoride Bromine hydrogen bromide Hydrogen chloride gas chromyl chloride dimethylsulfate nitrogen oxides Hydrogen fluoride Carbon dioxide (CO ₂) mercaptans chlorates nitril compounds Phosgene Oxides of phosphorus Acids hydrogen sulphide sulphur dioxide chromium(VI) oxide metal catalysts Barium halogen-halogen compounds halogen compounds hypochlorous acid phosphorus hydrogen tetra methylammonium amide propinyl chloride Ethylene oxide polymerization A risk of explosion and/or of toxic gas formation exists with the following substances: Ammonium salts antimony hydride Calcium Chlorine Chlorites Fluorine halogens perchlorates sodium hypochlorite strong oxidising agents Mercury mercury compounds sulfur silver silver salt silver oxide hydrogen peroxide nitrogen trichloride azides halogen oxides Nitro compounds chlorinated solvents Hydrocarbons with Air Oxygen with Catalyst Risk of ignition or formation of inflammable gases or vapours with: Boron Boranes Nitric acid silicon-hydrogen Aldrich-294993 Page 9 of 15 The life science business of Merck operates as MilliporeSigma in the US and Canada Generates dangerous gases or fumes in contact with: Carbon monoxide with heat Possible formation of: Hydrogen cyanide (hydrocyanic acid)
Conditions to avoid	No data available
Incompatible materials	various metals
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 - 4,93 mg/l - vapor (ECHA)
Skin corrosion/irritation	Skin - Rabbit Corrosive - 4 h (OECD Test Guideline 404) (Regulation (EC) No 1272/2008, Annex VI)
Serious eye damage/irritation	Causes serious eye damage.
Respiratory or skin sensitization	No data available
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: Micronucleus test Species Mouse Cell type: Bone marrow Application Route: Intraperitoneal Method OECD Test Guideline 474 Result: negative (in analogy to similar products) The value is given in analogy to the following substances ammonium chloride
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 - 35 Days - NOAEL (No observed adverse effect level) - 250 mg/kg - LOAEL (Lowest observed adverse effect level) - 750 mg/kg Remarks: (in analogy to similar products) The value is given in analogy to the following substances: diammonium hydrogenphosphate RTECS: BO0875000 To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Liver - Irregularities - Based on Human Evidence

12. Ecological information

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Persistence and degradability	Biodegradability rapidly biodegradable Readily biodegradable.
Toxicity to fish	Flow-through test LC50 - Pimephales promelas (fathead minnow) - 0,068 mg/l - 96 h (in analogy to similar products) (ECHA) The value is given in analogy to the following substances ammonium sulphate
Toxicity to daphnia and other aquatic invertebrates	Static test LC50 - Daphnia magna (Water flea) - 101 mg/l - 48 h (ECHA) EC50 - Daphnia pulex - 1,16 mg/l - 48 h
Toxicity	No data available
Toxicity to bacteria	No data available
Toxicity to algae	No data available
Products Biodegradation	No data available
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	No data available

13. Disposal considerations

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Product	Pressurised gas bottle: dispose of only in empty condition!.
Contaminated packaging	Dispose of as unused product
Waste treatment Method	No data available

14. Transport information

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UN number	ADR/RID:1005	IMDG:1005	IATA:1005
UN proper shipping name	ADR/RID:AMMONIA, ANHYDROUS	IMDG:AMMONIA, ANHYDROUS	IATA:AMMONIA, ANHYDROUS
Transport hazard class(es)	ADR/RID:2.3 (8)	IMDG:2.3 (8)	IATA:2.3 (8)
Packaging group	ADR/RID:-	IMDG:-	IATA:-
Environmental hazards	ADR/RID:Yes	IMDG:Yes	IATA:No
Special precautions for user	Tunnel restriction code (C/D)		
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	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
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