| Requirements | Description |
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| 1. IDENTIFICATION AND COMPANY NAME | Product identifier: Ammonia (anhydrous)<br>Product type : Gas<br><br>Product Origin : INDIA<br><br>Produced by : BAMCO<br><br>Importer/Supplier: National Industrial Gas Plants<br>Address: Salwa Industrial Area Street 45, Gate 75 - Doha Qatar<br>P.O. Box: 1391<br>Telephone: : Head Office + 974 4468-9083, Sales: 4442-8844, Plant: 4450-00-08<br>Fax : Head Office +974 4458-3333, Sales: 4450-00-33, Plant: 4460-35-32<br>E-mail: nigp@qatar.net.qa , sales45@nigpqatar.com<br>Emergency HOT LINE Tel.: + 974-7776-6277<br>Web Site: https://www.almanaholding.com.qa |
| 2. HAZARD IDENTIFICATION | Hazard pictograms:<br>  <br>GHS04 – gases under pressure, GHS05 – corrosive, GHS07 – health risk/hazardous for the ozone layer<br>GHS09 – hazardous for the environment<br>Signal Word : Danger<br><br>Hazard statements<br>Classification according to Regulation (EC) No 1272/2008<br>Flammable gases (Category 2), H221<br>Gases under pressure (Liquefied gas), H280<br>Acute toxicity, Inhalation (Category 3), H331<br>Skin corrosion (Sub-category 1B), H314<br>Serious eye damage (Category 1), H318<br>Short-term (acute) aquatic hazard (Category 1), H400<br>Long-term (chronic) aquatic hazard (Category 2), H411<br><br>Precautionary statements<br>General: Read and follow all Safety Data Sheets (SDS'S) before use. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.<br>Prevention: Wear protective gloves. Wear eye or face protection. Wear protective clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Avoid breathing gas. Wash hands thoroughly after handling. |

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| | Response: Collect spillage.<br>IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or physician.<br>IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting.<br>IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician.<br>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.<br>Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.<br>Storage: Store locked up. Protect from sunlight. Store in a well-ventilated place.<br>Disposal: Dispose of contents and container in accordance with all local, regional, national and international regulations.<br>Hazards not otherwise classified: In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation. |
| 3. COMPOSITION / INGREDIENT IDENTIFICATION | Formula : H3N<br>Molecular weight : 17,03 g/mol<br>CAS-No. : 7664-41-7<br>EC-No. : 231-635-3<br>Index-No. : 007-001-00-5 |
| 4. FIRST AID MEASURES | Eye Contact: Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention immediately. Call medical doctor or poison control center immediately. Chemical burns must be treated promptly by a physician.<br>Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately. Call medical doctor or poison control center immediately. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.<br>Skin Contact: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Continue to rinse for at least 10 minutes. Get medical attention immediately. Call medical doctor or poison control center immediately. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.<br>Ingestion: As this product is a gas, refer to the inhalation section. |
| 5. FIRE-FIGHTING MEASURES | Suitable extinguishing media : Carbon dioxide (CO2) Foam Dry powder<br>Unsuitable extinguishing media : Water<br>Special hazards arising from the substance or mixture :<br>Nitrogen oxides (NOx)<br>Not combustible.<br>Pay attention to flashback.<br>Ambient fire may liberate hazardous vapours.<br>Advice for firefighters<br>Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing. |

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| | Further information<br>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. |
| 6. ACCIDENTAL RELEASE MEASURES | For non-emergency personnel: Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.<br>For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".<br>Environmental Precautions: Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.<br><br>Methods and materials for containment and cleaning up<br>Small Spill: Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.<br>Large Spill: Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal. |
| 7. STORAGE AND HANDLING | Protective measures: Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Do not breathe gas. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Store and use away from heat, sparks, open flame or any other ignition source. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.<br>Advice on general occupational hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.<br>Conditions for safe storage including any incompatibilities: Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Store locked up. Eliminate all ignition sources. Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).<br>Refer to ANSI/CGA G-2.1, Section 5.13 for electrical classification of anhydrous ammonia storage and handling areas. Where anhydrous ammonia is stored indoors, use electrical (ventilating, lighting and material handling) equipment with the appropriate electrical classification rating and use only non-sparking tools. |
| 8. EXPOSURE CONTROLS / PERSONAL PROTECTION | Occupational Exposure limits<br>California PEL for Chemical Contaminants (Table AC-1) (United States).<br>PEL: 25 ppm 8 hours.<br>STEL: 35 ppm 15 minutes. |

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| | ACGIH TLV (United States, 3/2017).<br>TWA: 25 ppm 8 hours.<br>TWA: 17 mg/m³ 8 hours.<br>STEL: 35 ppm 15 minutes.<br>STEL: 24 mg/m³ 15 minutes.<br>OSHA PEL 1989 (United States, 3/1989).<br>STEL: 35 ppm 15 minutes.<br>STEL: 27 mg/m³ 15 minutes.<br>NIOSH REL (United States, 10/2016).<br>TWA: 25 ppm 10 hours.<br>TWA: 18 mg/m³ 10 hours.<br>STEL: 35 ppm 15 minutes.<br>STEL: 27 mg/m³ 15 minutes.<br>OSHA PEL (United States, 6/2016).<br>TWA: 50 ppm 8 hours.<br>TWA: 35 mg/m³ 8 hours.<br>Eye/face protection: Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles<br>Skin protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.<br>Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.<br>Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.<br>Respiratory protection : Recommended Filter type: Filter type K<br>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.<br>Control of environmental exposure: Do not let product enter drains. |
| 9. PHYSICAL AND CHEMICAL PROPERTIES | Physical state : Liquefied gas<br>Color : colorless<br>Odor: stinging, Do not attempt to smell the product as it is hazardous.<br>Melting point/freezing point: Melting point/range: -78 °C - lit.<br>Initial boiling point and boiling range: -33 °C - lit.<br>Flammability (solid, gas) : The product is not flammable<br>Upper/lower flammability or explosive limits<br>Upper explosion limit: 25 %(V)<br>Lower explosion limit: 16 %(V)<br>Flash point : Not applicable<br>Auto ignition temperature : 651 °C<br>Decomposition temperature : > 450 °C<br>pH : ca.10 - 12 at 50 g/l at 20 °C |

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| | Viscosity:<br>Viscosity, kinematic: No data available<br>Viscosity, dynamic: 0,254 mPa.s at -33 °C<br>Water solubility : 531 g/l at 20 °C - OECD Test Guideline 105<br>Partition coefficient: Not applicable for inorganic substances<br>Vapor pressure : 8.600 hPa at 20 °C<br>Density : 0,7 g/cm3 at -33 °C - liquid<br>Relative density : No data available<br>Relative vapor density : No data available<br>Particle characteristics : No data available<br>Explosive properties : No data available<br>Oxidizing properties : none<br>Dissociation constant : 9,25 at 25 °C<br>Oxidation-reduction Potential : -3.090 mV |
| 10. STABILITY AND REACTIVITY | Reactivity : No data available<br>Chemical stability: The product is chemically stable under standard ambient conditions (room temperature)<br>Possibility of hazardous reactions : Exothermic reaction with Oxidizers and yellow metals<br>Conditions to avoid: Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.<br>Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced. |
| 11. TOXICOLOGICAL INFORMATION | Acute toxicity<br>Oral: No data available<br>LC50 Inhalation - Rat - male - 4 h - 4,93 mg/l - vapor<br>Remarks: (ECHA)<br>Dermal: No data available<br>Skin corrosion/irritation<br>Skin - Rabbit<br>Result: Corrosive - 4 h<br>(OECD Test Guideline 404)<br>Remarks: (Regulation (EC) No 1272/2008, Annex VI)<br>Serious eye damage/eye irritation<br>Remarks: Causes serious eye damage.<br>Respiratory or skin sensitization<br>No data available<br>Germ cell mutagenicity<br>Test Type: Ames test<br>Test system: Escherichia coli/Salmonella typhimurium<br>Metabolic activation: with and without metabolic activation<br>Method: OECD Test Guideline 471<br>Result: negative<br>Test Type: Micronucleus test<br>Species: Mouse<br>Cell type: Bone marrow<br>Application Route: Intraperitoneal<br>Method: OECD Test Guideline 474<br>Result: negative<br>Remarks: (in analogy to similar products)<br>The value is given in analogy to the following substances: ammonium chloride<br>Carcinogenicity :No data available<br>Reproductive toxicity : No data available |

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<tr><th>Requirements</th><th>Description</th></tr>
<tr><td></td><td>Specific target organ toxicity - single exposure : No data available<br>Specific target organ toxicity - repeated exposure : No data available<br>Aspiration hazard : No data available<br>Other information : IDLH : 300 ppm</td></tr>
<tr><td>12. ECOLOGICAL INFORMATION</td><td>
<table>
<tr><th>Product/ingredient name</th><th>Result</th><th>Species</th><th>Exposure</th></tr>
<tr><td>ammonia</td><td>Acute EC50 29.2 mg/l Marine water<br>Acute LC50 2080 µg/l Fresh water<br>Acute LC50 0.53 ppm Fresh water<br>Acute LC50 300 µg/l Fresh water<br>Chronic NOEC 0.204 mg/l Marine water</td><td>Algae - Ulva fasciata – Zoea<br>Crustaceans - Gammarus pulex<br>Daphnia - Daphnia magna<br>Fish - Hypophthalmichthys nobilis<br>Fish - Dicentrarchus labrax</td><td>96 hours<br>48 hours<br>48 hours<br>96 hours<br>62 days</td></tr>
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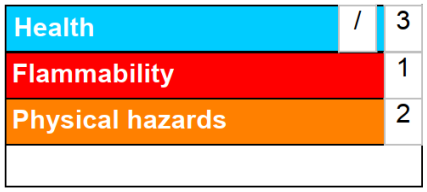
</td></tr>
<tr><td>13. DISPOSAL CONSIDERATIONS</td><td>Pressurised gas bottle: dispose of only in empty condition!<br>This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate Container.</td></tr>
<tr><td>14. TRANSPORT INFORMATION</td><td>UN number<br>ADR/RID: 1005 IMDG: 1005 IATA: 1005<br>UN proper shipping name<br>ADR/RID: AMMONIA, ANHYDROUS<br>IMDG: AMMONIA, ANHYDROUS<br>IATA: Ammonia, anhydrous<br>Passenger Aircraft: Not permitted for transport<br>Cargo Aircraft: Not permitted for transport<br> 

<br>Transport hazard class(es)<br>ADR/RID: 2.3 (8) IMDG: 2.3 (8) IATA: 2.3 (8)<br>Packaging group<br>ADR/RID: - IMDG: - IATA: -<br>Environmental hazards<br>ADR/RID: yes IMDG Marine pollutant: yes IATA: no<br>Special precautions for user<br>Tunnel restriction code : (C/D)<br>Further information : No data available</td></tr>
<tr><td>15. REGULATORY INFORMATION</td><td>This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.</td></tr>
<tr><td>16. OTHER INFORMATION</td><td>Hazardous Material Information System (U.S.A.)<br> 
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| | National Fire Protection Association (U.S.A.)<br>  <br> |

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