

## Safety Data Sheet

Conforms to 1907/2006/EC

Version 2

Issue date 10-8-2009

### Ammonia, aqueous solution 24.5 %

| 1 Identification of the substance/preparation and of the company/undertaking |   |               |                |               |                  |  |
|--|---|---------------|----------------|---------------|------------------|--|
| <b>Commercial product name</b>   | Ammonia, aqueous solution 24.5 %  |               |                |               |                  |  |
| <b>Common chemical name</b>  | Ammonia, aqueous solution 24.5 %  |               |                |               |                  |  |
| <b>Synonyms</b>  | Ammonium hydroxide; ammonia solution  |               |                |               |                  |  |
| <b>Chemical formula</b>  | NH4OH   |               |                |               |                  |  |
| <b>Use of the substance/preparation</b>                                      | This substance is used in the chemical industry.  |               |                |               |                  |  |
| <b>Company name</b>  | DSM Agro B.V.   |               |                |               |                  |  |
| <b>Company address</b>   | P.O. Box 601<br>6160 AP Geleen<br>The Netherlands   |               |                |               |                  |  |
| <b>Company telephone</b>   | (31) 46 476 00 55   |               |                |               |                  |  |
| <b>Company e-mail</b>  | <a href="mailto:dsm-agro@dsm.com">dsm-agro@dsm.com</a>  |               |                |               |                  |  |
| <b>Emergency telephone</b>   | (31) 46 476 55 55   |               |                | 24/24 hours   | 7/7 days         |  |
| 2 Hazards identification   |   |               |                |               |                  |  |
| <b>Physical/chemical hazards</b>   | Reacts violently with acids.  |               |                |               |                  |  |
| <b>Environmental hazards</b>   | May cause adverse effects in the aquatic environment due to changes in pH.  |               |                |               |                  |  |
| <b>Effect(s) of (over)exposure</b>   | Causes burns. Irritating to respiratory system.   |               |                |               |                  |  |
| <b>Symptom(s) of (over)exposure</b>  | Exposure can cause lung irritation, chest pain and oedema, which may be fatal. Symptoms may be delayed.   |               |                |               |                  |  |
| <b>Inhalation</b>  | Exposure can cause lung irritation, chest pain and oedema, which may be fatal. Symptoms may be delayed.   |               |                |               |                  |  |
| <b>Ingestion</b>   | May cause burns to mouth, throat and stomach.   |               |                |               |                  |  |
| <b>Skin contact</b>  | Skin contact may produce burns. May cause permanent skin damage.  |               |                |               |                  |  |
| <b>Eye contact</b>   | Corrosive to eyes. Permanent vision changes, loss of vision or total blindness. Tearing eyes.   |               |                |               |                  |  |
| 3 Composition/information on ingredients                                     |   |               |                |               |                  |  |
| <b>Chemical name</b>   | <b>CAS no.</b>  | <b>EC no.</b> | <b>% (w/w)</b> | <b>Symbol</b> | <b>R phrases</b> |  |
| Water  | 7732-18-5   | 231-791-2     | 75,5           | -             | -                |  |
| Ammonia  | 1336-21-6   | 215-647-6     | 24,5           | C , N         | R34 , R50        |  |
| <i>EC no. means EINECS or ELINCS number.</i>                                 |   |               |                |               |                  |  |
| 4 First aid measures   |   |               |                |               |                  |  |
| <b>General</b>   | Protection of first-aiders: Put on appropriate personal protective equipment (see section 8). Move exposed person to fresh air. Remove contaminated clothing and shoes.                           |               |                |               |                  |  |
| <b>Ingestion</b>   | If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting. If affected person is conscious, give plenty of water to drink. Seek immediate medical attention. |               |                |               |                  |  |
| <b>Inhalation</b>  | Remove to fresh air. Keep victim at rest in half-upright position. If not breathing, give artificial respiration. Get medical attention immediately.  |               |                |               |                  |  |
| <b>Skin contact</b>  | Take off immediately all contaminated clothing. Do not pull clothing loose from skin. Rinse with plenty of running water. Get medical attention immediately.                                      |               |                |               |                  |  |
| <b>Eye contact</b>   | Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention immediately.   |               |                |               |                  |  |
| <b>Note to physician</b>   | Ensure that eyewash stations and safety showers are close to the workstation location.  |               |                |               |                  |  |

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| <b>5 Fire-fighting measures</b>   |  |
| <b>Extinguishing media</b>  |  |
| <b>Small fire</b>   | Non-combustible. Use extinguishing media suitable for surrounding materials.   |
| <b>Large fire</b>   | Non-combustible. Use extinguishing media suitable for surrounding materials.   |
| <b>Extinguishing media not to be used</b>   |  |
| <b>Unusual fire and explosion hazards</b>   | Under specific conditions the substance can form combustible vapour/air mixtures, which are difficult to ignite.   |
| <b>Hazardous thermal decomposition and combustion products</b>                                  | In case of fire, may produce hazardous decomposition products such as nitrogen oxides (NO, NO <sub>2</sub> ), ammonia (NH <sub>3</sub> ), amines.  |
| <b>Special fire fighting procedures</b>   | Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.<br>Wear suitable protective clothing. Self-contained breathing apparatus.<br>In a fire or if heated, a pressure increase will occur and the container may burst. (tanks) Use water spray to keep fire-exposed containers cool. |
| <b>6 Accidental release measures</b>  |  |
| <b>Personal precautions</b>   | Provide adequate ventilation. Avoid contact with eyes, skin and clothing. Self-contained breathing apparatus. Use suitable protective equipment (section 8). Consult expert immediately.   |
| <b>Environmental precautions</b>  | Prevent entry into sewers, basements or confined areas. Dyke if necessary.   |
| <b>Methods for cleaning up</b>  |  |
| <b>Small spill and leak</b>   | Take up with suitable material. Place in a suitable container. Clean up affected area with a large amount of water.  |
| <b>Large spill and leak</b>   | Prevent entry into sewers, basements or confined areas. Dyke if necessary. Absorb spill material with inert material (e.g., dry sand or earth), then place in a chemical waste container. Recycle, if possible. Neutralize the residue with a suitable diluted agent. Absorb with an inert material and place in an appropriate waste disposal container.        |
| <b>Remarks</b>  | Wash away remainder with plenty of water.  |
| <i>Note: see section 8 for personal protective equipment and section 13 for waste disposal.</i> |  |
| <b>7 Handling and storage</b>   |  |
| <b>Handling</b>   | Preferably use in closed systems. Use with adequate ventilation. Use suitable protective equipment. Avoid contact with eyes, skin and clothing.  |
| <b>Storage</b>  | Keep away from incompatibles such as acids. Keep in a cool place. Keep container in a wellventilated place.  |
| <b>Specific use(s)</b>  |  |
| <b>Packaging materials</b>  | Only store in packaging intended/designed for the substance.   |
| <i>Note: See section 10 for stability and reactivity</i>  |  |
| <b>8 Exposure controls / Personal protection</b>  |  |
| <b>Exposure limit values</b>  |  |
| <b>Engineering measures</b>   | Use only with adequate ventilation. Local exhaust ventilation should be provided.  |
| <b>Hygienic measures</b>  | When using do not eat, drink or smoke. Wash hands after handling compounds and before eating, smoking, using lavatory, and at the end of day.  |
| <b>Personal protection</b>  | Production scale   |
| <b>Respiratory system</b>   | Self-contained breathing apparatus. (airhood, air fed respirator).   |
| <b>Skin and body</b>  | Chemical-resistant protective suit.  |
| <b>Hands</b>  | Wear suitable gloves.<br>4-8 hours (breakthrough time): Nitril rubber, butyl rubber, neoprene, Viton, PVC, Teflon.<br><1 hour (breakthrough time): Polyethylene, polyvinyl alcohol (PVA) (these materials may degrade).<br>Replace damaged gloves.   |
| <b>Eyes</b>   | Full-face mask   |
| <b>Environmental exposure controls</b>  |  |
| <i>Advice on personal protection is applicable for high exposure levels.</i>                    |  |
| <i>Select proper personal protection based on a risk</i>  |  |
| <b>9 Physical and chemical properties</b>   |  |
| <b>Appearance</b>   | Liquid.  |
| <b>Color</b>  | Colourless   |
| <b>Odor</b>   | Characteristic. Pungent. Ammonia.  |
| <b>Odor threshold</b>   | 5 to 25 ppm  |

|  |  |                   |                         |               |
|--|--|-------------------|-------------------------|---------------|
| <b>Molecular weight</b>                      | Not applicable.  |                   |                         |               |
| <b>pH</b>                                    | 14   |                   |                         |               |
| <b>Boiling point</b>                         | 36 °C  |                   |                         |               |
| <b>Melting point/ range</b>                  | -55 °C   |                   |                         |               |
| <b>Flash point</b>                           | Not applicable.  |                   |                         |               |
| <b>Flammability</b>                          | Not applicable.  |                   |                         |               |
| <b>Autoignition temperature</b>              | 651 °C   |                   |                         |               |
| <b>Decomposition temperature</b>             | Not applicable.  |                   |                         |               |
| <b>Lower explosion limit</b>                 | Not applicable.  |                   |                         |               |
| <b>Upper explosion limit</b>                 | Not applicable.  |                   |                         |               |
| <b>Relative density</b>                      | Not applicable.  |                   |                         |               |
| <b>Density</b>                               | 0.9 g/cm <sup>3</sup> (20°C)   |                   |                         |               |
| <b>Loose bulk density</b>                    | Not applicable.  |                   |                         |               |
| <b>Vapour pressure at 20°C</b>               | 651 °C   |                   |                         |               |
| <b>Vapour density</b>                        | 0.8 (Air = 1)  |                   |                         |               |
| <b>Partition coefficient n-octanol/water</b> |  |                   |                         |               |
| <b>Viscosity</b>                             | 1.2 mPa.s (1.2 cP)   |                   |                         |               |
| <b>Mean particle size</b>                    | Not applicable.  |                   |                         |               |
| <b>Solubility in water</b>                   | Easily soluble in cold water   |                   |                         |               |
| <b>Miscibility</b>                           |  |                   |                         |               |
| <b>Fat solubility</b>                        |  |                   |                         |               |
| <b>Conductivity</b>                          |  |                   |                         |               |
| <b>Gas group</b>                             |  |                   |                         |               |
| <b>Remarks</b>                               | Vapours may form explosive mixtures with air.( in confined spaces )  |                   |                         |               |
| <b>10 Stability and reactivity</b>           |  |                   |                         |               |
| <b>Stability</b>                             | Stable under recommended storage and handling conditions (see section 7). Reactive material.   |                   |                         |               |
| <b>Conditions to avoid</b>                   | Exposure to sources of heat.   |                   |                         |               |
| <b>Materials to avoid</b>                    | Reactive with metals and acids. Acids , oxidizing substances . Halogens , aluminium , zinc , copper , Gold compounds. Silver oxide and Mercury oxide : (→ compounds, sensitive to mechanical shocks) . |                   |                         |               |
| <b>Hazardous decomposition products</b>      | Nitrogen oxides (NO, NO <sub>2</sub> )   |                   |                         |               |
| <b>11 Toxicological information</b>          |  |                   |                         |               |
| <b>Acute toxicity</b>                        |  |                   |                         |               |
| <b>Ingredient name</b>                       | <b>Test</b>  | <b>Species</b>    | <b>Route</b>            | <b>Result</b> |
| Ammonia                                      | LD <sub>50</sub>   | Rat               | Oral                    | 350 mg/kg     |
|  | LD <sub>Lo</sub>   | Human             | Oral                    | 43 mg/kg      |
|  | LD <sub>Lo</sub>   | Cat               | Oral                    | 750 mg/kg     |
| <b>Irritation</b>                            | Hazardous in case of skin contact (corrosive), of eye contact (corrosive), of inhalation (lung irritant, lung corrosive).  |                   |                         |               |
| <b>Sensitization</b>                         | Not available  |                   |                         |               |
| <b>Chronic toxicity</b>                      | Not available  |                   |                         |               |
| <b>Carcinogenicity</b>                       | Not available  |                   |                         |               |
| <b>Mutagenicity</b>                          | Not available  |                   |                         |               |
| <b>Reproductive toxicity</b>                 | Not available  |                   |                         |               |
| <b>Remarks</b>                               | Lacrymator. Inhalation of vapour/mist may result in lung oedema. Symptoms may occur after a latency period has elapsed.  |                   |                         |               |
| <b>12 Ecological information</b>             |  |                   |                         |               |
| <b>Acute toxicity</b>                        |  |                   |                         |               |
| <b>Ingredient name</b>                       | <b>Aquatic half-life</b>   | <b>Photolysis</b> | <b>Biodegradability</b> |               |
| Ammonia                                      | -  | -                 | Readily                 |               |
| <b>Mobility</b>                              | For data on physical state, solubility and vapour pressure see section 9.  |                   |                         |               |
| <b>Persistence and degradability</b>         | Not available  |                   |                         |               |
| <b>Bioaccumulative potential</b>             | Not available  |                   |                         |               |
| <b>Ecotoxicity</b>                           | Not available  |                   |                         |               |

|  |                  |   |              |                      |              |  |
|--|------------------|---|--------------|----------------------|--------------|--|
| <b>13 Disposal considerations</b>  |                  |   |              |                      |              |  |
| <b>Responsibility of the receiver to have knowledge of national and local regulations.</b> |                  |   |              |                      |              |  |
| <b>Methods of disposal</b>   |                  | Waste must be disposed of in accordance with national and local environmental regulations.  |              |                      |              |  |
| <b>14 Transport information</b>  |                  |   |              |                      |              |  |
| <b>Regulatory information</b>  | <b>UN number</b> | <b>Proper shipping name</b>   | <b>Class</b> | <b>Packing group</b> | <b>Label</b> | <b>Additional information</b>  |
| ADR/RID Class  | UN 2672          | Ammonia solution  | 8            | III                  |              | Hazard identification number: 80<br>Limited quantity: LQ7<br>CEFIC Tremcard: 80S2672   |
| ADNR Class   | UN 2672          | Ammonia solution  | 8            | III                  |              | -  |
| IMDG Class   | UN 2672          | Ammonia solution  | 8            | III                  |              | Emergency schedules (EmS): F-A, S-B  |
| IATA Class   | UN 2672          | Ammonia solution  | 8            | III                  |              | Quantity limitation passenger aircraft:<br>1 L : Packaging instructions: Y819<br>5 L : Packaging instructions: 819<br><br>Quantity limitation Cargo aircraft: 60 L : Packaging instructions: 813 |
| <b>15 Regulatory information</b>   |                  |   |              |                      |              |  |
| <b>Responsibility of the receiver to have knowledge of national and local regulations.</b> |                  |   |              |                      |              |  |
| <b>EU regulations</b>  |                  |   |              |                      |              |  |
| <b>Hazard symbol</b>   |                  |   |              |                      |              |  |
| <b>R- and S phrases</b>  |                  | R34, R37, S26, S36/37/39, S45   |              |                      |              |  |
| <b>National Fire protection Association (U.S.A)</b>  |                  |   |              |                      |              |  |
| <b>16 Other information</b>  |                  |   |              |                      |              |  |
| <b>Risk phrases</b>  |                  | R34- Causes burns.<br>R37- Irritating to respiratory system.<br>R50- Very toxic to aquatic organisms.   |              |                      |              |  |
| <b>Safety phrases</b>  |                  | S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.<br>S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.<br>S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). |              |                      |              |  |
| <b>Symbols</b>   |                  | C - Corrosive<br>N - Dangerous for the environment.   |              |                      |              |  |
| <b>Date previous SDS</b>   |                  | 18-9-2007   |              |                      |              |  |
| <b>Modifications in this version</b>   |                  | Adress change   |              |                      |              |  |
| <b>References</b>  |                  | DSM: WW30477  |              |                      |              |  |

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