AMMONIA
MATERIAL SAFETY DATA SHEET
Complies with Directive 91/155/EEC

Date: 13/12/2005

1. Product & Company Identification

Product Identification: Ammonia

Chemical formula: NH3

Supplier: Intaglio Printmaker
9 Playhouse Court
62 Southwark Bridge Road
London
SE1 0AT
Tel: +44 (0) 207 928 2633
Fax: +44 (0) 207 928 2711

2. Composition/Information on Ingredients

Substance/Preparation Substance.
Components/Impurities Contains no other components or impurities which will influence the classification of the product.
CAS Nr 7664-41-7
EC Nr (from EINECS) 231-635-3

3. Hazards Identification

Hazards identification Flammable
Liquefied gas
Toxic by inhalation.
Corrosive to eyes, respiratory system and skin.

4. First Aid Measures

- **Inhalation:** Toxic by inhalation. Remove victim to uncontaminated area wearing self-contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped. Delayed adverse effects possible.
- **Skin/eye contact**: May cause chemical burns to skin and cornea (with temporary disturbance to vision). Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical assistance.
- **Ingestion:** Ingestion is not considered a potential route of exposure.

5. Fire Fighting Measures

Specific hazards: Exposure to fire may cause containers to rupture/explode. Hazardous combustion products If involved in a fire the following toxic and/or corrosive fumes may be produced by thermalde composition: Nitric oxide/nitrogen dioxide.
Suitable extinguishing media: All known extinguishants can be used.
Specific methods: If possible, stop flow of product. Move away from the container and cool with water from a protected position. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
Special protective equipment for fire fighters: Use self-contained breathing apparatus and chemically protective clothing.

6. Accidental Release Measures

Personal precautions: Evacuate area. Use self-contained breathing apparatus and chemically protective clothing. Ensure adequate air ventilation.
Environmental precautions: Try to stop release. Reduce vapour with fog or fine water spray.
Clean-up methods: Ventilate area. Hose down area with water. Wash contaminated equipment or sites of leaks with copious quantities of water. Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).

7. Handling and Storage

Keep container below 50°C in a well-ventilated place.
Refer to supplier's container handling instructions.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.
Contact your gas supplier if in doubt.
Do not allow back feed into the container.
Suck back of water into the container must be prevented.
Segregate from oxidant gases and other oxidants in store.
Keep away from ignition sources (including static discharges).
Purge air from system before introducing gas.

8. Exposure Controls/Personal Protection

Exposure limit value for country UK: Ammonia - LTEL: 25ppm; STEL: 35ppm (EH40/2005)
Germany: Ammonia-MAK:50ppm
France: Ammonia - VLE:50ppm; VME:25ppm
Personal protection: Protect eyes, face and skin from liquid splashes.
Keep suitable chemically resistant protective clothing readily available for emergency use.
Keep self-contained breathing apparatus readily available for emergency use.
Do not smoke while handling product.
Ensure adequate ventilation.

9 Physical and Chemical Properties

Molecular weight: 17
Melting point: -77.7 °C
Boiling point: -33 °C
Critical temperature: 132 °C
Relative density: gas 0.6 (air=1)
Relative density: liquid 0.7 (water=1)
Vapour Pressure: 20°C 8.6 bar
Solubility: mg/l water 530 g/l at 20°C
Appearance/Colour: Colourless gas
Odour: Ammoniacal
Flammability range: 15-30 vol% in air.
Autoignition temperature: 630 °C
Other data: Owing to this substance's low flammability, it is classified as non-flammable for transport purposes.

10. Stability and Reactivity

Stability and reactivity.

- Can form explosive mixture with air.
- May react violently with oxidants.
- May react violently with acids.
- Reacts with water to form corrosive alkalis.

11. Toxicological Information

General

- May cause serious damage to eyes.
- May cause inflammation of the respiratory system and skin.
- Inhalation of large amounts leads to bronchospasm, laryngeal oedema and pseudomembrane formation.
- LC50/1h (ppm) 4000 ppm

12. Ecological Information

General

- May cause pH changes in aqueous ecological systems.

13. Disposal Considerations

General

- Avoid discharge to atmosphere.
- Do not discharge into any place where its accumulation could be dangerous.
- Gas may be scrubbed in water.
- Gas may be scrubbed in sulphuric acid solution.
- Contact supplier if guidance is required.

14. Transport Information

Proper shipping name: AMMONIA, ANHYDROUS
UN Nr:1005
Class: 2.3
Subsidiary risk: 8
ADR/RID Classification code: 2TC
ADR/RID Hazard Nr: 268
Packing group: None
Labelling: ADR Label 2.3: toxic substance. Label 8: corrosive substance.
IMDG EmS codes: F-C, S-U
IMDG Marine pollutant: No
IATA passenger packing instruction: Forbidden
IATA passenger max. quantity/pack: Forbidden
IATA cargo packing instruction: 200
IATA cargo max. quantity/pack: 25kg

Other transport information: Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

Before transporting product containers ensure that they are firmly secured and:

- cylinder valve is closed and not leaking
- valve outlet cap nut or plug (where provided) is correctly fitted
- valve protection device (where provided) is correctly fitted
- there is adequate ventilation.
- compliance with applicable regulations.

15. Regulatory Information

Number in Annex I of Dir 67/548 007-001-00-5.
EC Classification R10|T;R23|C;R34|N;R50

Symbols

- T: Toxic
- N: Dangerous for the environment
- Labelling of cylinders

Symbols

- Label 8: corrosive substance.
- Label 2.3: toxic substance.

Risk phrases:

- R10 Flammable
- R23 Toxic by inhalation.
- R34 Cause burns (to eyes, respiratory system and skin).
- R50 Very toxic to aquatic organisms.

Safety phrases

- S9 Keep container in well ventilated place.
- S16 Keep away from ignition sources - No smoking.
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S33 Take precautionary measures against static discharges.
- S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
- S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.

16. Other Information

Ensure all national/local regulations are observed.
Ensure operators understand the flammability hazard.
Ensure operators understand the toxicity hazard.
Users of breathing apparatus must be trained.
This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.
Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
Details given in this document are believed to be correct at the time of going to press. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

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