Comet Chemical Company Ltd.

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Materials Safety Data - AMMONIUM HYDROXIDE

(Aqua Ammonia, Ammonia Solution)

UN - 2672

Shipping Name	AMMONIA SOLUTION
Transport of Dangerous Goods Class	Class 8; Packing Group III
WHMIS Class	D 1B; E
Material Use	rayon mfg., refrigeration, pharmaceuticals, cleaning prod., fertilisers, etc.

1. HAZARDOUS INGREDIENTS

	CAS NUMBER	%	TWAEV (ppm)	LD_{50} ORAL	(mg/kg) SKIN	LC_{50} ppm INHALATION
Ammonia	7664-41-7	25 - 30%	25	350	not known	2000

2. PHYSICAL CHARACTERISTICS

Odour & Appearance	clear, colourless, liquid with an extremely pungent "barnyard" odour
Odour Threshold	17 ppm (varies widely: 0.5ppm - 50ppm!) ***NOTE**: TWAEV lies within the odour threshold range - odour unreliable warning of hazard.*
Vapour Pressure	approx 8 atm at (20°C) ***Warning: highly volatile!***
Vapour Density (air = 1)	0.6
Boiling Range	27°C - ammonia gas will bubble off on heating
Freezing Point	-72°C
Specific Gravity	0.92 (20°C)
Water Solubility	ammonia gas is highly soluble - 90g/100ml (0°C) or 53g/100ml (25°C)
pH	11 - 12 ***highly alkaline!***

3. FLAMMABILITY & REACTIVITY

Flash Point	not flammable
Autoignition Temperature	not flammable
Flammable Limits	16% - 25% (ammonia gas)
Hazardous Combustion Products	nitrogen oxides and ammonia gas - ***highly corrosive!***
Firefighting Precautions	as for flammables sustaining fire; water fog will help to contain ammonia vapour firefighters must wear SCBA
Sensitivity to Static Discharge	not sensitive
Sensitivity to Mechanical Impact	not sensitive
Chemical Stability	stable; will not polymerize
Reactive With	strong oxidising agents, powdered metals, aluminium & alloys, copper, zinc, tin, acrylic acid, acrolein, nitromethane, halogens, & acids; reacts violently with halogens
Dangerous Decomposition Products	none apart from "Hazardous Combustion Products"

4. TOXICOLOGY

EFFECTS OF ACUTE EXPOSURE

Skin Contact	severe burning pain, ***corrosive to all tissue contacting product***
Skin Absorption	nil - severe skin damage precludes absorption
Eye Contact	severely irritating and painful; clouds the cornea causing blindness
Inhalation	irritation, coughing, vomiting, tightness in chest, lightheadedness, confusion & collapse
Ingestion	severe burning pain in mouth, chest & abdomen, vomiting, confusion & collapse

(Ammonium Hydroxide, cont'd)

EFFECTS OF CHRONIC EXPOSURE

General	so unpleasant that repeated and/or chronic exposure to toxic quantities is highly unlikely
Sensitising	no
Carcinogenic	tumorigen; carcinogenic by RTECS criteria but only at high dose **no effects are documented in humans**
Reproductive Effect	reproductive effector by RTECS criteria but only at high doses **no effects are documented in humans**
Synergistic With	not known
Estimated LD_{50}	1200 mg/kg (oral)
Estimated LC_{50}	2000 ppm (rat) 4350 ppm (mouse)

5. PROTECTIVE EQUIPMENT

Hands	butyl rubber, nitrile rubber, neoprene rubber gloves (**pay great attention to the condition of gloves**)
Eyes	chemical goggles; face shield recommended to protect against splashing
Respirator	not required if good mechanical ventilation is present (see TWAEV, (1) above), or use organic vapour cartridge in a tight-fitting respirator
Clothing	(see hands, above) apron , boots, long sleeves, if splashing is anticipated

6. ENVIRONMENT

Leak Precaution	dyke to control spillage and prevent environmental contamination
Handling Spill	ventilate contaminated area; wearing respiratory protection, recover free liquid with suitable pumps; absorb residue on an inert sorbent (dry sand, earth) and store in closed containers for disposal
Waste Disposal	**do not flush to sewer;** residue must be neutralised with sodium bicarbonate or a dilute weak acid, diluted and then flushed to sewage

7. STORAGE & HANDLING

Store and use in a cool environment, away from sources of heat and from oxidising agents. ***Must be used with effective mechanical ventilation - vapour is immediately hazardous and incapacitating!*** Do not cut, drill, weld or grind on or near this container. Avoid prolonged contact with skin and wash work clothes frequently. An eye bath and safety shower should be available near the workplace. In case of ventilator failure, a respirator with organic vapour cartridge must be available at the workplace for all personnel working with aqua ammonia. ***In case of spill, remember that the vapour is light and rises - breathable air may be found at floor level.***

NOTE: *An ammonia leak detection system with alarm should be installed*

8. FIRST AID

SKIN:	Wash with soap and plenty of water. Remove contaminated clothing and do not reuse until thoroughly cleaned or laundered.
EYES:	Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is any irritation.
INHALATION:	Remove from contaminated area promptly. **CAUTION: Rescuer must not endanger himself!** If breathing stops, administer artificial respiration and seek medical aid promptly.
INGESTION:	Give plenty of milk, fruit juice or dilute vinegar to neutralise and dilute product . Do not induce vomiting (see NOTE below). Keep victim quiet. Watch for spontaneous vomiting *(which is likely to happen)* and keep victim's head below the hips to prevent inhalation of vomited material. Seek medical help promptly.

NOTE: Inadvertent inhalation of vomited material may seriously damage the lungs. **Medical personnel must watch carefully for signs of pulmonary oedema and/or oesophageal stricture.**

Emergency telephone numbers	- weekdays from 8:00 - 5:00	(705) 436-5580
	at all other times	(800) 567-7455 (Philip Environmental)

Prepared for Comet Chemical Co. Ltd., by ***Nicholas Morgan, August 2002; August 2005***

The information herein is given in good faith but no warranty, expressed or implied is made.

PLEASE ENSURE THAT THIS **MSDS** *IS GIVEN TO AND* **EXPLAINED** *TO THE PERSON USING THIS PRODUCT.*

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