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MATERIAL SAFETY DATA SHEET

SECTION 1. IDENTIFICATION OF PRODUCT

Product Name: AMMONIA CLOUDY Date Issued: 08/89
Chemical Name: AMMONIUM HYDROXIDE, AQUA AMMONIA National Item#: 2605XX
UN/NA NUMBER: NA 2672
Shipping Name: DOT: AMMONIUM
HYDROXIDE (RQ-100/454) Formula: NH₄OH

SECTION 2. HAZARDOUS INGREDIENTS/MIXTURES

MATERIAL OR COMPONENT	CAS NUMBER UN/NA NO.	PERCENT BY WEIGHT	HAZARD DATA
AMMONIUM HYDROXIDE	1336-21-6 NA 2672	4.9 %	WARNING: CAUSES BURNS. VAPOR EXTREMELY IRRITATING. SEE SECTION 7, HEALTH HAZARD INFORMATION REQUIREMENTS UNDER SARA

*THESE MATERIALS ARE SUBJECT TO THE REPORTING
TITLE III, SECTION 313 AND 40 CFR PART 372.

SECTION 3. PHYSICAL DATA

Boiling Point (F): 760 mm Hg: AMMONIA Specific Gravity (Water=1):
VAPORS RELEASED ON WARNING 0.8974 @ 60F
Vapor Pressure (mm Hg.): 420-475 @ 15.5C Volatile by Volume: 100% @ 212F
Vapor Density (Air=1): 0.6-1.2, DRY AMMONIA = .6
Solubility in Water: COMPLETE Freezing Point: -40F
Melting Point: N/A pH Range: 13.5
Appearance and Odor: COLORLESS LIQUID. AMMONIA VAPORS ARE COLORLESS.
Color: PUNGENT ODOR.

Section 4. FIRE AND EXPLOSION DATA

Flash Point (Test Method): N/A Auto Ignition (99% NH₃) Temp: 1204F
Flammable Limits: In Air By Volume %: (99% NH₃) LEL= 16 UEL= 25
Extinguishing Media: AQUEOUS AMMONIA DOES NOT PRESENT A FIRE OR
EXPLOSION HAZARD ITSELF. HOWEVER, MIXTURE OF AMMONIA (GAS) AND
AIR ARE COMBUSTIBLE IF THE PRODUCT IS INVOLVED IN A FIRE FROM
ANOTHER CAUSE. A SPRAY OR FOG TYPE SPRAY OF WATER IS EFFECTIVE IN
REMOVING THE GENERATED AMMONIA GAS FROM THE ATMOSPHERE. FIREMEN,
IN SUCH CIRCUMSTANCES, MUST BE PROTECTED FROM THE GENERATED
AMMONIA GAS WITH APPROPRIATE RESPIRATORY EQUIPMENT INCLUDING A
SELF-CONTAINED AIR SUPPLY.
Special Fire Fighting Procedures: NOT CONSIDERED A PRIMARY FIRE HAZARD,
BUT CARE SHOULD BE TAKEN TO AVOID EXPOSURE TO LIQUID PRODUCT
INVOLVED IN FIRE. WEAR SPLASH-PROOF, GAS TIGHT CHEMICAL GOGGLES,
RESPIRATORY PROTECTION, RUBBER GLOVES AND CLOTHING TO AVOID
CONTACT AS NEEDED. COOL FIRE-EXPOSED CONTAINER.
Unusual Fire & Explosion Hazards: WHEN HEATED, MATERIAL WILL GIVE OFF
AMMONIA GAS, A STRONG IRRITANT TO EYE, RESPIRATORY TRACT, AND
MOIST SKIN. CLOSED CONTAINERS EXPOSED TO EXTREME HEAT MAY DEVELOP
PRESSURE. COMBUSTION OF RELEASED AMMONIA MAY FORM TOXIC NITROGEN
OXIDES.

SECTION 5. REACTIVITY DATA

Conditions Contributing To Instability:
Stability: MATERIAL IS STABLE IN COOL STORAGE IN CLOSED CONTAINERS.
AMMONIUM HYDROXIDE IS STRONGLY ALKALINE AND IS INCOMPATIBLE WITH
ACID MATERIAL AND WITH COPPER, TIN, ZINC, ALUMINUM, AND THEIR
ALLOYS AND WITH GALVANIZED SURFACES.
Incompatibility - Materials to Avoid: VIOLENT REACTIONS CAN OCCUR FOR
EXAMPLE, WITH DIMETHYL SULFATE, CHLORINE, BROMINES, OR FLUORINE.
EXPLOSIVE MATERIALS CAN RESULT FROM REACTION WITH IODINE OR WITH
SILVER, MERCURY, AND WITH SEVERAL SILVER COMPOUNDS. ADDING NaOH
TO THIS MATERIAL AND/OR HEATING WILL VOLATIZE NH₃. DANGEROUS
REACTIONS OCCUR WITH ACETALDEHYDE, ACROLEIN, BORON, HYPOCHLORITES,
ETHYLENE OXIDE, CHROMIUM TRIOXIDE, GOLD AND OTHER STRONG ACIDS.
Hazardous Polymerization: NONE
Hazardous Decomposition Products: AMMONIA VAPOR.

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SECTION 6. SPILL OR LEAK PROCEDURES

Steps To Be Taken If Material Is Released or Spilled:
CONTAIN SPILL, FLUSH WITH WATER TO HOLDING AREA FOR
NEUTRALIZATION (DO NOT FLUSH DIRECTLY TO SEWER TO SURFACE WATER).
RECOVER IF FEASIBLE. OTHERWISE, ABSORB BULK LIQUID WITH FLY ASH OR
CEMENT POWDER. NEUTRALIZE WITH DILUTE VINEGAR (ACETIC ACID) OR
OTHER DILUTE ACID.
Waste Disposal: CONTACT FEDERAL, STATE, COUNTY, OR LOCAL ENVIRONMENTAL
REGULATOR FOR GUIDANCE. THERE MAY BE REGULATION OF pH, NH₃
CONTENT, AND SALTS CONTENT FOR EFFLUENTS.
Neutralizing Chemicals: DILUTE HCl OR DILUTE H₂SO₄.

SECTION 7. HEALTH HAZARD DATA

Routes of Exposure:

Inhalation: DANGEROUS. EMITS IRRITATING AMMONIA GAS FUMES.
IRRITATING TO THE MUCOUS MEMBRANCES OF THE RESPIRATORY TRACT.
TLV-TWA-25ppm FOR AMMONIA GAS.

Skin contact: MAY SEVERELY INJURE SKIN ON CONTACT.

Skin Absorption: SEE SKIN CONTACT

Eye Contact: MAY SEVERELY INJURE EYES ON CONTACT.

Ingestion: CORROSIVE TO THE DIGESTIVE TRACT.

Effects of Overexposure (Acute):

Eye Contact: CONCENTRATED SOLUTIONS OF AMMONIA REMAINING IN CONTACT
WITH THE EYE FOR EVEN A SHORT TIME WILL CAUSE SERIOUS EYE
DAMAGE WHICH MAY RESULT IN ULCERATION OF THE CORNEA, PERFORATION
OF THE EYE, SCARRING OR BLINDNESS.

Skin Contact: CONSEQUENCES OF SKIN CONTACT WITH AQUEOUS AMMONIA VARY
FROM A RELATIVELY MILD IRRITATION TO SEVERE BURNS, DEPENDING
UPON THE STRENGTH OF THE SOLUTION, LENGTH OF CONTACT, AND
INDIVIDUAL SKIN SENSITIVITY.

Inhalation: CAN RESULT IN HEADACHES, COUGHING, SEVERE LUNG CONGESTION
(EDEMA AND DIFFICULTY IN BREATHING). LC₅₀ (HUMAN) = 5000 ppm.

Acute Overexposure Swallowing: CORROSIVE TO DIGESTIVE TRACT; SWALLOWING
AS LITTLE AS A TEASPOONFUL OF CONCENTRATED AMMONIUM HYDROXIDE
HAS CAUSED DEATH. ORAL LD₅₀ (HUMAN) = 43 mg/kg.

Chronic Overexposure: (FOR AMMONIA FUMES) CHRONIC ANIMAL STUDIES AT
EXPOSURE LEVELS BELOW CONCENTRATIONS CAUSING ACUTE EFFECTS SHOWED
LITTLE EVIDENCE OF TOXIC EFFECTS. CHRONIC BRONCHITIS IN HUMANS IS
REPORTED TO RESULT FROM LONG-TERM EXPOSURES TO THIS MATERIAL.

Primary route(s) of Entry: INHALATION, EYES, SKIN

SECTION 8. EMERGENCY AND FIRST AID PROCEDURES

Eye: IMMEDIATELY FLUSH WITH LOTS OF RUNNING WATER FOR AT LEAST
15 MINUTES, INCLUDING UNDER THE EYELIDS; THEN CONTACT PHYSICIAN
IMMEDIATELY, PREFERABLY AN OPHTHALMOLOGIST. SPEED AND THOROUGHNESS
IN RINSING EYES IS IMPORTANT TO AVOID PERMANENT INJURY.

Skin: IMMEDIATELY FLUSH WITH LOTS OF WATER WHILE REMOVING
CONTAMINATED CLOTHING AND SHOES. GET MEDICAL HELP PROMPTLY IF
LARGE AREAS ARE AFFECTED OR IRRITATION PERSISTS.

Inhalation: REMOVE TO FRESH AIR. RESTORE BREATHING IF REQUIRED AND/OR
HAVE TRAINED PERSON ADMINISTER OXYGEN IF BREATHING IS DIFFICULT.
KEEP WARM AND AT REST. CONTACT PHYSICIAN IMMEDIATELY.

Ingestion: IF CONSCIOUS, PROMPTLY GIVE LOTS OF WATER, DILUTE VINEGAR OR
CITRUS JUICE TO DRINK, FOLLOWED BY MILK. DO NOT INDUCE VOMITING.
CONTACT PHYSICIAN.

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SECTION 9. SPECIAL PROTECTION INFORMATION

Specific Personal Protective Equipment:

Respiratory: FOR EMERGENCY AND NON-ROUTINE CONDITIONS ABOVE
THE TLV, A CHEMICAL CARTRIDGE RESPIRATOR WITH A FULL-FACEPIECE
RESPIRATOR IS SUITABLE FOR EXPOSURES BELOW 300 ppm; ABOVE 300 ppm
OR IF CONCENTRATION IS UNKNOWN, USE APPROVED SELF-CONTAINED
RESPIRATOR WITH FULL FACEPIECE.

Ventilation: PROVIDE GENERAL AND LOCAL EXHAUST VENTILATION AS REQUIRED.
THE TLV IS 25 ppm FOR AMMONIA GAS.

Gloves: USE A RUBBER SUIT, BOOTS, GLOVES, APRON OR OTHER
PROTECTIVE CLOTHING AS REQUIRED FOR WORKPLACE CONDITIONS TO
PREVENT CONTACT WITH AMMONIUM HYDROXIDE SOLUTIONS.

Eyes: USE SPLASH-PROOF, CHEMICAL SAFETY GOGGLES, AND WHERE
NEEDED, A FACESHIELD OR MASK TO PROTECT AGAINST SPLASHES AND FROM
MISTS AND AMMONIA.

AN EYEWASH STATION AND A SAFETY SHOWER MUST BE IMMEDIATELY ACCESSIBLE
TO WORKERS WHERE THIS MATERIAL IS USED OR HANDLED. WASHING
FACILITIES AND LARGE AMOUNTS OF CLEAN WATER MUST BE AVAILABLE FOR
EMERGENCY USE WHERE SPILLS MAY OCCUR.

SECTION 10. SPECIAL PRECAUTIONS

Precautions To Be Taken In Handling:

AMMONIA CONTAINERS OF ALL TYPES MUST BE PROPERLY
LABELED AND CAREFULLY STORED AND HANDLED TO AVOID LEAKAGE,
SPILLAGE, SPLASHING, SPATTERING, BREAKING OF CARBOYS, AND ESCAPE
OF GASEOUS AMMONIA. SUPERVISORS SHOULD ASSURE THE HANDLING OF
CHEMICALS IN SUCH A WAY THAT UNSAFE MIXTURES, SUCH AS AMMONIUM
HYDROXIDE WITH A STRONG ACID OR WITH CHLORINE, BROMINE, OR IODINE,
WILL NOT BE CREATED. IT IS DESIRABLE THAT AMMONIA CONTAINERS BE
STORED IN A COOL, SPRINKLERED BUILDING.

Proper Handling and Storage Requirements: EXPOSURE TO VAPORS PRODUCES AN
INTENSE IRRITANT EFFECT. PERSONS EXPOSED MUST QUICKLY LEAVE A
CONTAMINATED AREA.

Special Precautions:

SEE "PRECAUTIONS TO BE TAKEN IN HANDLING".

Additional Regulatory Concerns:

CPSC: REGULATED UNDER THE POISON PREVENTION PACKAGING ACT (16 CFR 1500).

SARA TITLE III H&P RATINGS: Acute, YES: Chronic, NO: Fire: NO,

Press. Release: NO, Reactive: NO,

THE INFORMATION ON THIS MATERIAL SAFETY DATA SHEET REPRESENTS THE LATEST
DATA AND BEST OPINION AS TO THE PROPER USE AND HANDLING OF THIS PRODUCT
UNDER NORMAL CONDITIONS. ANY USE OF THIS PRODUCT OR METHOD OF
APPLICATION WHICH IS NOT IN CONFORMANCE WITH THIS DATA SHEET AND THE
PRODUCT LABEL DIRECTIONS, IS THE RESPONSIBILITY OF THE USER. THIS
MATERIAL SAFETY DATA SHEET WAS PREPARED TO COMPLY WITH THE OSHA HAZARD
COMMUNICATION REGULATION.