

One Energy Place
Pensacola, Florida 32520

850.444.6111

RECEIVED
AUG 23 1999

Industrial Wastewater Section

CERTIFIED MAIL

August 23, 1999



Mr. Michael Hatcher, P.E.
Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Permit Revision (Minor)
Wastewater Permit FL0002283
Gulf Power Company - Plant Scholz

Dear Mr. Hatcher:

Attached is an application for a minor permit revision for Plant Scholz that involves the use of hydrazine and ammonia in the Scholz boiler water feed system. As you may recall, a similar permit revision was granted for Gulf Power's Plant Crist in December 1997. The purpose of the modification is to minimize corrosion in the plant's boiler tubes. Hydrazine is a very effective oxygen scavenger, which has been used safely in the electric utility industry for many years.

Please modify the Plant Scholz NPDES Permit as follows:

- 1) The approval to use hydrazine in Scholz generating units 1 and 2. Similar to the Crist modification, hydrazine will be used under two different scenarios: 1) normal steam generator operation and 2) long term steam generator storage. For normal steam generator operation, the objective is to continuously feed hydrazine into the boiler feedwater system so as to achieve a target residual in the range of 0.01 to 0.05 ppm at the final feedwater sample point. The actual feed rate will vary, depending upon how much dissolved oxygen is present.

Again, as for Plant Crist, there may be a need to place a unit out of service for an extended period of time. This is commonly referred to as being in "long term storage". In that situation, the boiler tubes are filled with water and closed off. In order to control corrosion of the boiler tubes during those periods, it is desirable to maintain a higher level of hydrazine in the system; therefore, the target residual will be 500 ppm.

Due to the low dosage rates involved and the fact that hydrazine will thermally decompose in the boiler, we do not anticipate any measurable residual to be present in the boiler blowdown. As described in the Scholz NPDES Permit, boiler blowdown is discharged to the Scholz ash pond.

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Under long term storage conditions, the boiler will be drained to the ash pond prior to restart of the unit. Again, we do not anticipate any measurable hydrazine residual to be present in the ash pond. This is due to the fact that decomposition of hydrazine will be caused by the presence of ionic species and/or catalytic surfaces in the ash pond as well as by dilution. The ash pond is large, currently containing approximately 77,000 cubic yards (15,554,000 gallons) of available retention space.

- 2) As described for Plant Crist, ammonia will also serve as part of the Scholz boiler tube corrosion control program. The ammonia will accomplish this by elevating the pH in the boiler feedwater system. The objective is to maintain the copper concentration at <2.0 ppb and the iron concentration at <5.0 ppb. In order to achieve those objectives, a residual of 1.0 ppm in the boiler water system will be maintained during normal steam generator operation. For long term storage situations, an ammonia residual of 10 ppm will be maintained.

Plant Scholz would like to receive approval to begin utilizing the hydrazine and the ammonia by October 1, 1999 if at all possible. Therefore, your timely response to this minor modification request would be greatly appreciated. We believe that this modification will greatly reduce boiler tube corrosion problems. We have been pleased with the results of their use at Plant Crist.

Attached is the \$250 permit modification fee as well as the MSDSs for both hydrazine and ammonia. If you have any questions, please contact me at (850) 444-6127.

Sincerely,



Rachel Terry
Environmental Affairs Specialist

Attachments

cc: FDEP - NW District
Bill Evans

Gulf Power Company
Kim Flowers
Joe Neese
Kenny Peacock
Jim Vick



APPLICATION FOR A MINOR REVISION TO A WASTEWATER FACILITY PERMIT

1. Instructions

- a. In accordance with Rule 62-620.330, F.A.C., this form must be submitted to the appropriate Department district office or approved local program when requests for minor revisions to a permit or minor modifications to a facility are made by a permittee, except for transfer of a permit to a new permittee and addition of a major user of reclaimed water to a Part III reuse system. Application for transfer of a permit to a new permittee shall be made on DEP Form 62-620.910(11). Application for addition of a major user of reclaimed water shall be made on DEP Form 62-610.910(7).
- b. Each applicable item must be completed in full in order to avoid delay in processing of this form. Where attached sheets or other technical documentation are provided, indicate appropriate cross-references.
- c. Three (3) copies of this application with supporting documentation shall be submitted with this form.
- d. All information is to be typed or printed in ink. Dates are to be entered in MM/DD/YR format.
- e. This application and attachments shall be signed in accordance with Rule 62-620.305, F.A.C. Also, as applicable, this application and all attachments shall be signed and sealed by a professional engineer registered in Florida in accordance with Rule 62-620.310, F.A.C.

2. Facility Information

- | | | | |
|---------------------------|--|------------------------------------|------------------|
| a. Permit Number: | <u>FL0002283</u> | b. Facility Identification Number: | <u>FL0002283</u> |
| c. Project/Facility Name: | <u>Scholz Electric Generating Plant</u> | | |
| d. Contact Name: | <u>Rachel Terry - Gulf Power Company</u> | | |
| Number and Street: | <u>One Energy Place</u> | | |
| City/State/Zip Code: | <u>Pensacola, FL 32520-0328</u> | | |
| Telephone | <u>(850) 444-6127</u> | | |

3. Type of Revision

- ☐ **Correct Typographical Errors¹** - Submit one copy of each page of the permit showing revisions being requested.
- ☐ **Change Improvement Schedule¹** - Provide a description of the improvement, a list of the dates to be revised, and a reason for the proposed change in each date.
- ☐ **Change Expiration Date of Permit¹** - Provide the current and proposed expiration dates for the permit and the reasons for the proposed change.
- ☐ **Change Staffing Requirements²** - Describe the proposed change and submit justification for the change in accordance with Chapter 62-699, F.A.C.
- ☐ **Change Monitoring and Reporting Requirements²** - Describe the proposed change and submit justification for the change in accordance with Chapter 62-601, F.A.C.

¹A processing fee is not required.

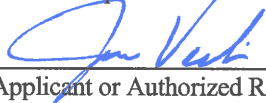
²A processing fee is required with the application in accordance with Rule 62-4.050, F.A.C.

- ☐ **Modify Approved Pretreatment Program¹** - Describe the proposed modification and provide the information required by Rule 62-625.540, F.A.C.
- ☐ **Delete Point Source Outfall¹** - Identify the outfall and explain why the outfall is being eliminated.
- ☐ **Modify or Expand Approved Residuals Land Application Sites²** - Attach a new or updated Agricultural Use or Dedicated Site Plan as required by Chapter 62-640, F.A.C.
- ☒ **Minor Modification to the Facility²** - Provide a description of the proposed modification. If applicable, attach any reports, plans, and specifications which have been developed to implement this modification.
- ☐ **Other²** - Provide appropriate documentation. Describe.

4. Certifications

a. Applicant or Authorized Representative

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

 8/19/99
(Signature of Applicant or Authorized Representative³) (Date)

Name (please type) Jim Vick Company Name Gulf Power Company
Title Manager of Environmental Affairs Company Address: One Energy Place
Phone: (850) 444-6311 City/State/Zip Code: Pensacola, FL 32520

b. Professional Engineer Registered in Florida

I certify that the engineering features of this domestic wastewater project have been (designed) (examined) by me and found to conform to engineering principles applicable to such projects. In my professional judgement, this facility, when properly constructed, operated, and maintained, will comply with all applicable statutes of the State of Florida and rules of the Department.

Name (please type): Gregory N. Terry
Florida Registration Number: 52786
Company Name: Gulf Power Company
Company Address: One Energy Place
City/State/Zip Code: Pensacola, FL 32520-0340
Phone Number: (850) 429-2381

 8-22-99
(Seal, Signature, Date, Registration Number)



³If signed by the authorized representative, attach a letter of authorization in accordance Rule 62-620.305, F.A.C.

.SWITCH

.ORIG

TO: LAURA PICKENS
INDUSTRIAL CHEMICAL
BIRMINGHAM AL 35216

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OLIN CORPORATION
Material Safety Data Sheet

09/23/87

FOR FURTHER INFORMATION (OTHER THAN EMERGENCIES) CALL:

(800) 511-MSDS

Product Name: SCAV-OX(R) 35% HYDRAZINE SOLUTION
Product Code: CPE134000
MSDS Number : CPE00129.0001

OCEAN NETWORK EMERGENCY PHONE 1-800-OLIN-911

This Material Safety Data Sheet (MSDS) has been prepared in compliance with the Federal OSHA Hazard Communication Standard, 29 CFR 1910.1200. This product may be considered to be a hazardous chemical under that standard. (Refer to the OSHA classification in SEC. I.) This information is required to be disclosed for safety in the workplace. The exposure to the community, if any, is quite different.

I. PRODUCT IDENTIFICATION

REVISION NUMBER : 30
REVISION DATE : 01/01/97
MSDS FILE NUMBER: CPE00129.0001
PRODUCT CODE : 134000
MSDS NAME : SCAV-OX(R) 35% HYDRAZINE SOLUTION

SYNONYMS: Hydrazine hydrate

CHEMICAL FAMILY: Hydrazine

FORMULA: N_2H_4 (active ingredient)

DESCRIPTION: Corrosion inhibitor for boilers

OSHA HAZARD CLASSIFICATION: Suspect human carcinogen; irritant; toxic;
skin and eye hazard; sensitizer; liver,
kidney, nervous system, blood and lung toxin

II. COMPONENT-DATA

PRODUCT COMPOSITION

SCAV-OX(R) 35% HYDRAZINE SOLUTION

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CAS or CHEMICAL NAME: Hydrazine
CAS NUMBER: 302-01-2
PERCENTAGE RANGE: 30-40%
HAZARDOUS PER 29 CFR 1910.1200: Yes
EXPOSURE STANDARDS:

OSHA(PEL)
ppm mg/cubic-meter
TWA: 1 1.3 (skin)
CEILING: None
STEL: None

ACGIH(TLV)
ppm mg/cubic-meter
0.01 0.013 (skin)
None
None

CAS or CHEMICAL NAME: Water
CAS NUMBER: 7732-18-5
PERCENTAGE RANGE: 60-70%
HAZARDOUS PER 29 CFR 1910.1200: No
EXPOSURE STANDARDS: None Established

III. SAFE HANDLING AND STORAGE

DO NOT TAKE INTERNALLY. AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. UPON CONTACT WITH SKIN OR EYES, WASH OFF WITH WATER. AVOID BREATHING VAPOR OR MIST.

STORAGE CONDITIONS: Store away from heat, sparks, open flame, and oxidants. Store only in well-ventilated areas. Do not contaminate. Although 35% hydrazine has no flash point, transfer lines and piping should be electrically grounded. To avoid gradual oxidation of hydrazine in 35% solutions, maintain an inert atmosphere over the solutions at all times. Nitrogen has been adopted as the padding material of choice.

DO NOT STORE AT TEMPERATURES ABOVE: 51 Deg.C (124 Deg.F)

OTHER: Do not expose to direct light.

PRODUCT STABILITY AND COMPATIBILITY

SHELF LIFE LIMITATIONS: 5 years if not opened and exposed to the atmosphere. Material older than 5 years should be retested before use.

INCOMPATIBLE MATERIALS FOR PACKAGING: Package only in Teflon(R); high density polyethylene; or 304L, or 347 stainless steel; 316SS may be used at temperatures not exceeding 150 Deg.F.

INCOMPATIBLE MATERIALS FOR STORAGE OR TRANSPORT: Oxidizing agents; acids; metal oxides; metals other than low-molybdenum (<0.5%) stainless steel (see comments above on 316SS), Inconel, titanium, selected aluminum alloys, and chromium; and organic materials with high surface area such as rags, cotton waste, sawdust, etc.

IV. PHYSICAL DATA

APPEARANCE: Clear, colorless liquid

FREEZING POINT: -85 Deg.C (-85 Deg.F)

BOILING POINT: 108 Deg.C (228 Deg.F)

DECOMPOSITION TEMPERATURE: >250 Deg.C (> 482 Deg.F) after removal of water

SPECIFIC GRAVITY: 1.027

BULK DENSITY: 1.027 g/cc

pH @ 25 DEG.C: 10.1-10.7 (1% solution)

VAPOR PRESSURE @ 30 DEG.C: 22 mm Hg (total pressure)

1.0 mm Hg (partial pressure)

SOLUBILITY IN WATER: Completely miscible

VOLATILES, PERCENT BY VOLUME: 100

EVAPORATION RATE: No Data
VAPOR DENSITY: No Data
MOLECULAR WEIGHT: 32.04 (active ingredient)
SCAV-OX(R) 35% HYDRAZINE SOLUTION

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ODOR: Ammonia

COEFFICIENT OF OIL/WATER DISTRIBUTION: No Data

V. PERSONAL PROTECTIVE EQUIP

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT:

RESPIRATORY PROTECTION: Wear a NIOSH/MSHA approved respirator if any exposure occurs.

VENTILATION: Use local exhaust ventilation to maintain levels to below the TLV.

SKIN PROTECTIVE EQUIPMENT: Wear gloves, boots, apron and a face shield with safety glasses. A full impermeable suit is recommended if exposure is possible to large portion of body.

OTHER: Eye wash and safety shower must be available at or near work area.

EQUIPMENT SPECIFICATIONS (WHEN APPLICABLE) :

RESPIRATOR TYPE: NIOSH/MSHA approved full-face positive pressure supplied air respirator.

PROTECTIVE CLOTHING TYPE (This includes: gloves, boots, apron, protective suit): Butyl rubber

VI. FIRE & EXPLOSION HAZARDS

FLAMMABILITY DATA:

FLAMMABLE: No

COMBUSTIBLE: No

PYROPHORIC: No

FLASH POINT: Not Applicable - aqueous solution, will not burn

AUTOIGNITION TEMPERATURE: Not Applicable - aqueous solution, will not burn

FLAMMABLE LIMITS AT NORMAL ATMOSPHERIC TEMPERATURE AND PRESSURE (PERCENT VOLUME IN AIR): LEL - Not flammable UEL - Not flammable

NFPA RATINGS: Not Established

HMIS RATINGS:

Health: 2

Flammability: 0

Reactivity: 0

EXTINGUISHING MEDIA: Not Applicable-Choose extinguishing media suitable for surrounding materials.

FIRE FIGHTING TECHNIQUES AND COMMENTS: Use water to cool containers exposed to fire. See Section XI for protective equipment for fire fighting.

VII. REACTIVITY

CONDITIONS UNDER WHICH THIS PRODUCT MAY BE UNSTABLE:

TEMPERATURES ABOVE: 270 Deg.C (518 Deg.F), after removal of water

MECHANICAL SHOCK OR IMPACT: No

ELECTRICAL (STATIC) DISCHARGE: No

HAZARDOUS POLYMERIZATION: Will not occur

INCOMPATIBLE MATERIALS: Avoid contact with strong oxidizers such as

hydrogen peroxide, halogen fluorides, fuming nitric acid and hypochlorite solution (bleach). Avoid contact with metal oxides such as those of iron, copper, lead, manganese, and molybdenum.

SCAV-OX(R) 35% HYDRAZINE SOLUTION

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Such contact may lead to decomposition. Avoid contact with organic materials having large surface areas or porous surfaces. Absorption of hydrazine solution by rags, cotton waste, sawdust, or similar organic materials will eventually result in spontaneous combustion.

HAZARDOUS DECOMPOSITION PRODUCTS: Ammonia, hydrogen

OTHER CONDITIONS TO AVOID: Concentration of hydrazine solution by evaporation of water

SUMMARY OF REACTIVITY:

OXIDIZER:	No
PYROPHORIC:	No
ORGANIC PEROXIDE:	No
WATER REACTIVE:	No
OTHER:	Strong reducing agent

VIII. FIRST AID

EYES: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, the clothing should be removed immediately and should be laundered before re-use.

INGESTION: Immediately drink large quantities of water. Induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION: If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician.

In the event that an individual inhales enough vapor to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

IX. TOXICOLOGY & HEALTH

ROUTES OF ABSORPTION

Inhalation, dermal and eye contact, oral ingestion

WARNING STATEMENTS AND WARNING PROPERTIES

HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION. CAN CAUSE LIVER, KIDNEY, BLOOD, LUNG AND NERVOUS SYSTEM DAMAGE. MAY CAUSE AN ALLERGIC SKIN REACTION. MAY CAUSE CANCER BASED ON ANIMAL DATA.

HUMAN THRESHOLD RESPONSE DATA

ODOR THRESHOLD: 3.7 ppm (anhydrous hydrazine)

IRRITATION THRESHOLD: This value has not been established.

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH: 50 ppm (anhydrous hydrazine)

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SIGNS, SYMPTOMS, AND EFFECTS OF EXPOSURE

INHALATION

ACUTE:

Toxic by inhalation and rapidly absorbed through the lungs. If inhaled, may cause moderate to severe irritation to the nose, throat, mucous membranes, upper respiratory tract and lungs. Irritation would be expected to be transient with no permanent damage expected. Damage may also result to liver, kidneys and blood. High exposure may give rise to hemolysis of the blood cells. Vomiting, diarrhea, nausea, dizziness, cyanosis and convulsions may also occur.

CHRONIC:

The repeated inhalation of hydrazine may produce inflammation of the nasal, tracheal and bronchial tissue. Chronic bronchitis can result. Damage to the liver, kidneys, and blood may also occur. Damage to blood may be characterized by hemolysis and reduction of packed cell volume. Repeated inhalation of hydrazine has produced cancer in laboratory animals.

SKIN

ACUTE:

Hydrazine is rapidly absorbed through the skin and is highly toxic by this route which is dependent on exposed skin surface area and concentration of the solution. Exposure to large areas of the skin may lead to a significant dose being absorbed causing systemic toxicity similar to the effects described for inhalation exposure. Hydrazine can produce moderate to severe irritation. Dermatitis may also occur.

CHRONIC:

Repeated exposure can cause an allergic reaction resulting in dermatitis and a characteristic rash. Other effects would be similar to those described under chronic inhalation exposure.

EYE

Exposure can cause moderate to severe irritation consisting of inflammation, swelling, redness and discharge. Temporary blindness can occur.

INGESTION

ACUTE:

Toxic by ingestion. Ingestion may cause moderate to severe irritation of the GI tract and may also cause gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting, lethargy and diarrhea. The other effects would be similar as stated under inhalation exposure.

CHRONIC:

Inflammation to the gastrointestinal tract can occur. Other effects would be similar as stated under inhalation exposure. Chronic ingestion of hydrazine has caused cancer in laboratory animals.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Diseases of the liver, kidneys and blood, as well as asthma, cardiovascular disease, and nervous system disorders.

INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY:

None known or reported

ANIMAL TOXICOLOGY

ACUTE TOXICITY:

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Inhalation LC 50: Approximately 1600 ppm (4 hr. exposure, rat)

Dermal LD 50: 420 mg/kg (rabbit)

Oral LD 50: 185 mg/kg (rat)

Irritation: Irritant to skin and eyes

ACUTE TARGET ORGAN TOXICITY:

Damage to lungs, liver, kidneys, blood and central nervous system.

CHRONIC TARGET ORGAN TOXICITY:

Repeated exposure to hydrazine has produced damage to the lungs, liver, kidneys, blood and nervous system. Cancer has also been observed in laboratory animals.

REPRODUCTIVE AND DEVELOPMENTAL TOXICITY:

High concentrations of hydrazine have produced embryoletality and fetal malformations to the offspring of animals exposed during pregnancy. These findings were only observed at concentrations that cause significant maternal toxicity. Under industrial use conditions where exposures are kept at or below the recommended occupational exposure standards, exposure to this product should not pose a reproductive or developmental toxicity hazard.

CARCINOGENICITY:

Hydrazine is recognized as a cancer-causing agent in animals by IARC and OSHA. It is considered a suspect carcinogen in humans by these two organizations.

MUTAGENICITY:

Hydrazine has been shown to cause DNA and chromosomal damage in a number of test systems. It is considered mutagenic.

AQUATIC TOXICITY:

The 96-hour LC50 for rainbow trout (*Salmo gairdneri*) exposed to this product is 4.3mg/l.

The 96-hour LC50 for bluegill (*Lepomis macrochirus*) exposed to this product is 4.2mg/l.

The 48-hour LC50 for the water flea (*Daphnia magna*) exposed to this product is 0.46mg/l.

X. TRANSPORTATION

THIS MATERIAL IS REGULATED AS A DOT HAZARDOUS MATERIAL.

DOT DESCRIPTION FROM THE HAZARDOUS MATERIALS TABLE 49 CFR 172.101:

LAND (U.S. DOT): HYDRAZINE AQUEOUS SOLUTION, B.I., UN 3293, PG III
(WITH NOT MORE THAN 37% HYDRAZINE BY MASS)

WATER (IMO): SAME AS ABOVE

AIR (IATA/ICAO): SAME AS ABOVE

HAZARD LABEL/PLACARD: TOXIC

REPORTABLE QUANTITY: 1 lb (Per 49 CFR 172.101, Appendix)

EMERGENCY GUIDE NO: 152

XI. SPILL & LEAKAGE

FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.

REPORTABLE QUANTITY: This product is subject to a Reportable Quantity with

respect to hydrazine. RQs are subject to change and reference should be made to 40 CFR 302.4 for the current requirements

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SPILL MITIGATION PROCEDURES:

Evacuation procedures must be placed into effect. Rope off spill area and evacuate all non-essential personnel. Hazardous concentrations in air may be found in local spill area and immediately downwind. Utilize emergency response personal protective equipment prior to the start of any response. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel.

AIR RELEASE: Vapors may be suppressed by the use of water fog. Contain all liquid for treatment and/or disposal as a (potential) hazardous waste.

WATER RELEASE: This material is heavier than and soluble in water. Notify all downstream water users of possible contamination. Divert water flow around spill if possible and safe to do so.

LAND SPILL: Create a dike or trench to contain materials. Dilute spilled hydrazine to about 10% with water. Neutralize the diluted hydrazine by slowly adding a 5-8% calcium hypochlorite solution until all the hydrazine has been reacted. Steam and nitrogen gas will be evolved. **DO NOT ADD DRY CALCIUM HYPOCHLORITE TO A HYDRAZINE SPILL, A VIOLENT REACTION MAY RESULT.** The neutralized material may be absorbed using clay, sand or commercial absorbent. Do not place spill materials back in their original containers. Containerize and label all spill materials properly. Decontaminate all clothing and the spill area using strong detergent and flush with large amounts of water.

NOTE: Hydrazine can not be removed from leather. All contaminated leather articles should be rinsed with water and discarded.

SPILL RESIDUES:

Dispose of per guidelines under Section XII, WASTE DISPOSAL.

This material may be neutralized for disposal; you are requested to contact OCEAN at 800-OLIN-911 before beginning any such operation.

PERSONAL PROTECTION FOR EMERGENCY SPILL AND FIRE-FIGHTING SITUATIONS:

In case of fire, use normal fire fighting equipment.

Additional respiratory protection is necessary when a spill or fire involving this product occurs. You are recommended to use a self-contained breathing apparatus (SCBA) positive pressure unit.

Additional protective clothing must be worn to prevent personal contact with this material. Those items include but are not limited to boots, gloves, hard hat, splash-proof goggles, full face shield and impervious clothing, i.e., chemically impermeable suit, or a full encapsulated suit.

Compatible material for response to this material is butyl rubber.

XII. WASTE DISPOSAL

If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA

hazardous waste number: U133.

If this product becomes a waste, it will be a hazardous waste which is
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subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.

As a hazardous liquid waste, it must be disposed of in accordance with local, state and federal regulations in a permitted hazardous waste treatment, storage and disposal facility by incineration.

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THIS MATERIAL. THE USER OF THIS MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

XIII. ADDITIONAL REG STATUS

TOXIC SUBSTANCES CONTROL ACT:

The components of this product are listed on the Toxic Substance Control Act inventory.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 - PROPOSITION 85:

"WARNING: This product contains detectable amounts of a chemical known to the State of California to cause cancer and birth defects or other reproductive harm."

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT TITLE III:

HAZARD CATEGORIES, PER 40 CFR 370.2:

HEALTH:

Immediate (Acute)

Delayed (Chronic)

PHYSICAL:

None

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW, PER 40 CFR 355, APP.A:

EXTREMELY HAZARDOUS SUBSTANCE - THRESHOLD PLANNING QUANTITY:

1000 lbs. as hydrazine

SUPPLIER NOTIFICATION REQUIREMENTS, PER 40 CFR 372.45:

This mixture or tradename product contains a toxic chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR 372.

CHEMICALS LISTED ARE: Hydrazine

XIV. ADDITIONAL INFORMATION

MSDS REVISION STATUS: Emergency guide number revised in Section X. (10)

XV. MAJOR REFERENCES

1. Roe, F.J.C. 1977. Clinical and Epidemiological Studies on Men Exposed to Hydrazine in the Course of its Manufacture or Use. Wimbledon, London, England.
2. Haun, C. C., and E. R. Kinhead. January 1975. Chronic Inhalation Toxicity of Hydrazine. University of California, Irvine, Toxic Hazards Research Unit, Dayton, Ohio.

3. Mac Ewen, J. D., et al. June 1981. Chronic Inhalation Toxicity of Hydrazine: Oncogenic Effects. Air Force Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio.

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4. Sotaniemi, E., et al. 1971. Hydrazine Toxicity in the Human. Report of a Fatal Case. *Annals of Clinical Research* 3:30-33.
5. Verrot, E. H., et al. 1965. Long-Term Inhalation Toxicity of Hydrazine. *Fundamental and Applied Toxicology*, 5, 1050-1064.
6. Lee, S. H. and H. Aleyassine. November 1970. Hydrazine Toxicity in Pregnant Rats. *Arch. Environ. Health*. Vol. 21.
7. Wald, N., et al. 1984. Occupational exposure to hydrazine and subsequent risk of cancer. *British Journal of Industrial Medicine*. 41: 31-34.
8. Lyng, R. D., et al. March 1980. Effects of Hydrazine on Pregnant ICH Mice. Air Force Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio 45433.
9. Keller, W. C., et al. August 1982. Evaluation of the Embryotoxicity of Hydrazine in Rats. Air Force Aerospace Medical Research Laboratory, Wright-Patterson Air Force Base, Ohio 45433.
10. Toth, B. 1988. Toxicities of Hydrazines: A Review. *In Vivo*. 2:209-242.
11. United Nations Environment Programme, International Labour Organization, and World Health Organization. 1987. *Environmental Health Criteria 68*. World Health Organization.
12. Report on Acute Dermal Toxicity in Rabbits, 35% Hydrazine solution, M.B. Research Laboratories, Inc., Spinnerstown, PA, Project #MB76-1139, May 14, 1976.
13. Report on Acute Toxicity of SCAV-OX to Rainbow Trout (*Salmo gairdneri*), EG&G Bionomics Aquatic Toxicity Laboratory, Wareham, MA, Report #BW-80-9-738, September 1980.
14. Report on Acute Toxicity of SCAV-OX to Bluegill (*Lepomis macrochirus*), EG&G Bionomics Aquatic Toxicity Laboratory, Wareham, MA, Report #BW-80-9-740, September 1980.
15. Report on Acute Toxicity of SCAV-OX (35% Hydrazine solution) to the Water Flea (*Daphnia magna*), EG&G Bionomics Aquatic Toxicity Laboratory, Wareham, MA, Report #BW-80-9-739, September 1980.
16. Report on Primary Dermal Irritation in Rabbits, 35% Hydrazine solution, M.B. Research Laboratories, Inc., Spinnerstown, PA, Project #MB76-1139, April 18, 1976.
17. Report on Rabbit Eye Irritation, 35% Hydrazine solution, M.B. Research Laboratories, Inc., Spinnerstown, PA, Project #MB76-1139, April 18, 1976.
18. DOT Rabbit Test for Material Corrosivity, SCAV-OX, 35% Hydrazine solution, M.B. Research Laboratories, Inc., Spinnerstown, PA, Project #MB-78-2536, March 3, 1978.
19. Report on Oral LD50 in Rats, 35% Hydrazine solution, M.B. Research Laboratories, Inc., Spinnerstown, PA, Project #MB76-1139, April 16, 1976.
20. J. G. Burtle, Vapor Pressure-Composition Measurements on Aqueous Hydrazine Solutions, *Ind. Eng. Chem.*, vol. 44, 1952.
21. H. W. Schiessl, "Hydrazine and It's Derivatives," in *Kirk-Othmer Encyclopedia of Chemical Technology*, 3rd ed., Mark et al eds., John Wiley and Sons, New York, NY, 1980.
22. Olin Product Data, Code 731009R2, "Hydrazine, Storage of Aqueous Solutions," Olin Corporation, Stamford, CT., c1982.
23. E. W. Schmidt, *Hydrazine and It's Derivatives*, John Wiley and Sons, New York, NY, 1984.

THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET SHOULD BE PROVIDED TO

ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR SCAV-OX(R) 35% HYDRAZINE SOLUTION CPE134000 PAGE 10

HANDLING THIS PRODUCT. OLIN BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MATERIAL SAFETY DATA SHEET IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT OLIN AT THE PHONE NUMBER LISTED BELOW TO MAKE CERTAIN THAT THIS SHEET IS CURRENT.

OLIN MSDS CONTROL GROUP
Olin Corporation
501 Merritt 7
P.O. Box 4500
Norwalk, CT 06856-4500
Phone Number: (800) 511-MSDS

Clin SCAV-OX®

(35% HYDRAZINE SOLUTION) FOR CORROSION CONTROL

VOIR FICHE SIGNALÉTIQUE
POUR CE PRODUIT

POUR USAGE INDUSTRIEL
SEULEMENT

DANGER!



RISQUES POUR LA SANTÉ: INHALATION, ABSORPTION CUTANÉE OU INGESTION PEUVENT PROVOQUER LA MORT, UNE CECITÉ TEMPORAIRE, DES VÉRIGES, DES NAUSEES, DES LÉSIONS NEUROLOGIQUES, DES LÉSIONS DU FOIE, DES REINS, DES POUMONS, DES ORGANES HÉMATOPOIÉTIQUES FORMANT LE SANG ET DES MALFORMATIONS FŒTALES. LES SYMPTÔMES PEUVENT ÊTRE DIFFÉRENTS. UNE DERMATITE DE SENSIBILISATION PEUT SURVENIR. IRRITANT POUR LA PEAU, LES YEUX ET LES MUCQUEUSES. CONTIENT DE L'HYDRAZINE, SUSPECTE D'ÊTRE CANCÉROGÈNE.

Ne tenir en main qu'après avoir mis des vêtements complètement protecteurs, comprenant des gants de caoutchouc à base de butyl, des tabliers, des bottes et des lunettes protectrices. Éviter le contact avec les yeux ou la peau. Utiliser seulement dans un endroit bien ventilé où l'exposition est égale ou inférieure à 0.1 ppm ou à la valeur standard de l'OSHA. Ne pas avaler.

PREMIERS SOINS: En cas de contact avec les yeux ou la peau, bien rincer à l'eau courante pendant au moins 15 minutes. Consulter un médecin. En cas d'ingestion, faire boire de l'eau, faire vomir en mettant un doigt dans la gorge. Consulter un médecin. En cas d'inhalation, emmener la victime à l'air frais. Consulter un médecin.

DANGER!

HANDLE WITH EXTREME CARE
KEEP AWAY FROM HEAT AND OXIDANTS
SEE MATERIAL SAFETY DATA SHEET FOR THIS PRODUCT

HEALTH HAZARD DISCLOSURE

1. INHALATION, SKIN ABSORPTION OR INGESTION MAY CAUSE DEATH, TEMPORARY BLINDNESS, DIZZINESS, NAUSEA, IRRITATION, NEUROLOGICAL DAMAGE, DAMAGE TO THE LIVER, KIDNEYS, LUNGS AND BLOOD FORMING ORGANS, AND FETAL MALFORMATION - SYMPTOMS MAY BE DELAYED - A SENSITIZATION DERMATITIS MAY BE PRODUCED.
2. SKIN, EYE AND MUCOUS MEMBRANE IRRITANT.
3. THIS PRODUCT CONTAINS HYDRAZINE, WHICH IS A SUSPECT CARCINOGEN.

PRECAUTIONS

- Handle only when wearing complete protective gear, including butyl rubber gloves, aprons, boots and goggles.
- Avoid contact with skin or eyes.
- Do not breathe vapor - Use only in well ventilated areas where exposure level is at or below 0.1 ppm or OSHA standard, if lower. Keep container securely closed.
- Do not SWALLOW

FIRST AID

- In case of SKIN or EYE contact immediately.
- If SWALLOWED, drink water and seek physician immediately.
- If INHALED, remove to fresh air and give artificial respiration if necessary. Do not use mouth-to-mouth respiration.
- If STEAM AND WATER SYSTEM PRODUCTS - Effect without adding to the diesel corrosion in operative boiler removal is necessary.
- OIL WELLS - Additions to attack. Write for literature.
- CHEMICAL HAZARDS
 - Mixing with oxidants may contaminate. Keep container closed.
 - Spill or leaks present hazard.
 - Empty drums may be hazardous.
 - Heat may degrade product.
- SPILLS OR LEAKS
 - Handle only when wearing aprons, boots and goggles.
 - Follow OSHA regulations.
 - Flush with large amount of water or other textile at neutralize any remaining water.
- Remove contaminated shoes, belts and clothing.
- STORAGE, HANDLING AND DISPOSAL
 - Handle in accord with label.
 - Vent carefully when open.
 - Store only in well-ventilated area.
 - Empty drum may be hazardous. Dispose of in accord with Federal, state and local regulations.

SCAV-OX® is a registered trademark

Clin CHEMICALS

OLIN CORPORATION
120 LONG RIDGE ROAD, STAMFORD, CONN. 06904

SCA

(SOLUCION DE HIDRAZINA AL 3

PELIGRO!

MANEJESE CON EXTREMO CUIDADO
MANTENGASE LEJOS DEL CALOR Y OXIDANTES

INFORMACION SOBRE PELIGRO A LA SALU

1. La inhalación, absorción por la piel o ingestión pueden causar la muerte, ceguera temporal, vértigo, náusea, irritación, daños neurológicos, daños al hígado, riñones, pulmones y a los órganos que producen la sangre, así como otros daños - Los síntomas pueden abasarse - Puede producir dermatitis de sensibilización.
2. Irritante para la piel y los ojos.
3. Este producto es un SUPUESTO CARCINOGENO.

PRECAUCIONES

- Manejese solamente mientras se usa equipamiento protector con inclusive guantes de caucho butílico o de cloruro de vinilo, delantal, botas y anteojos.
- Evítese el contacto con la piel o los ojos.
- No respire el vapor - Úsese solamente en áreas bien ventiladas, el nivel de contacto es de 0.1 ppm o menos. Manténgase el envase cerrado.

• No se INGERA.

PRIMER AUXILIO

- En caso de contacto con la PIEL u OJOS, lávese inmediatamente mucha agua por 15 minutos. Llámese enseguida al Médico.
- Si se ingiere, beba grandes cantidades de agua inmediatamente induzca el vómito. Llame a un médico inmediatamente. Retir medio de lavado gástrico.
- Si se INHALA, lívese a la persona al aire fresco. Llámese enseguida al Médico.

SISTEMAS DE VAPOR Y AGUA. EVITESE EL CONTACTO DEL V CON ALIMENTOS O MEDICINAS - Combate efectivamente la corrosión debida a la presencia del oxígeno en agua, sin agregar al contenido sólidos disueltos. Una cantidad muy pequeña de SCAV-OX inhibe el crecimiento de las calderas en funcionamiento, durante la parada húmeda las calderas y en otros casos cuando es necesaria la eliminación de oxígeno. Favor de escribirnos pidiendo folletos, para mejor inform:

For Industrial Use Only

immediately flush with water for 15 minutes. Call physician and induce vomiting by sticking finger down throat. Call

• Call physician immediately.

- THE STEAM MUST NOT CONTACT FOOD OR HUMAN
combats corrosion due to the presence of oxygen in water
solids content. A very small amount of SCAV-OX inhibits
in wet lay-up of boilers, and other situations where oxy-
genate information, write for literature.
pletion muds prevents causing corrosion due to oxygen

it in violent reaction. Keep away from oxidants. Do not
securely closed.

wards.

is.
ep away from heat.

omplete protective gear, including butyl rubber gloves,
and a NIOSH/MSHA approved self contained breathing
ations for respirator use (29 CFR 1910.134).
water and drain into a catch basin; do not use rags, saw-
nts. Transfer into an approved DCT container and seal.
dial with dilute hypochlorite solution and wash down with

g immediately and wash without delay. Discard contami-
or contaminated leather materials after soaking in water
IPD&AL
ecutions

reas.

is. Always fill empties to overflowing with water and flush
1 water, drums and any unused product in a manner
Drums should not be reused. Consult the appropriate
very agencies to ascertain proper disposal procedures.

mark of Olin Corporation

Olin CHEMICALS

CERTIFICATE OF COMPLIANCE

BATCH #

ASSAY

	% (min)
HYDRAZINE (N ₂ H ₄)	35.0
Chloride (Cl)	2
Sodium (Na)	3
Iron (Fe)	3
Fluoride (F)	2

Meets Westinghouse Standard M51280 AP, REV. D

Contains: Hydrazine (CAS #302-01-2)
Water (CAS #7732-18-5)

NO REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED OF MERCHANTABILITY OR OTHERWISE ARE MADE ON CONTAINER HEREIN, EXCEPT THAT THE PRODUCT CONFORMS TO OUR COMPANY'S SPECIFICATIONS THEREFOR. OUR MANUFACTURER'S RESPONSIBILITY FOR ANY CLAIMS, INCLUDING CLAIMS BASED ON NEGLIGENCE, ARISING IN CONNECTION WITH THE PURCHASE, USE, STORAGE OR HANDLING OF THE PRODUCT WILL BE LIMITED TO THE PRICE OF THE PRODUCT WITH RESPECT TO WHICH DAMAGES ARE CLAIMED. IN NO EVENT WILL OUR LIABILITY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING IN CONNECTION WITH THE PURCHASE, USE, STORAGE OR HANDLING OF THE PRODUCT EXCEED THE AMOUNT PAID BY THE PURCHASER FOR THE PRODUCT. Buyer accepts full responsibility for compliance with all applicable Federal, State and local laws and regulations.

SCAV-BUS-CANNEX-195

EMERGENCY PHONE:
U.S.A. 1-800-OUN-911
OUTSIDE U.S.A. (615) 336-4970



RG HYDRAZINE,
AQUEOUS SOLUTION
(with not more than 37%
Hydrazine by mass)
UN3293

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T-223 P.05/19 F-262

205-978-0485

FROM: INDUSTRIAL CHEMICALS

OCT 29 '97 16:40

SCAV-OXTM

(SOLUCION DE HIDRAZINA AL 35%) PARA EL CONTROL DE LA CORROSION.

PELIGRO!

MANEJESE CON EXTREMO CUIDADO
MANTENGASE LEJOS DEL CALOR Y OXIDANTES

INFORMACION SOBRE PELIGRO A LA SALUD

1. La inhalación, absorción por la piel o ingestión pueden causar la muerte, ceguera temporal, vértigo, náuseas, irritación, daños neurológicos, daños al hígado, riñones, pulmones y a los órganos que producen la sangre, así como otros daños - Los síntomas pueden atrasarse - Puede producir dermatitis de sensibilización.
2. Irritante para la piel y los ojos.
3. Este producto es un SUPUESTO CARCINOGENO.

PRECAUCIONES

- Manejese solamente mientras se usa equipamiento protector completo. Inclúyase guantes de caucho butílico o de cloruro de vinilo, delantales, botas y anteojos.
- Evítase el contacto con la piel o los ojos.
- No respire el vapor - Úsese solamente en áreas bien ventiladas, donde el nivel de contacto es de 0.1 ppm o menos. Manténgase el envase bien cerrado.
- No se INGIERA.

PRIMER AUXILIO

- En caso de contacto con la PIEL u OJOS, lávese inmediatamente con mucha agua por 15 minutos. Llámese enseguida al Médico.
- Si se Ingiera, beba grandes cantidades de agua inmediatamente. No induce el vómito. Llame a un médico inmediatamente. Retire por medio de lavado gástrico.
- Si se INHALA, llévase a la persona al aire fresco. Llámese enseguida al Médico.

SISTEMAS DE VAPOR Y AGUA. EVITESE EL CONTACTO DEL VAPOR CON ALIMENTOS O MEDICINAS - Combata efectivamente la corrosión debida a la presencia del oxígeno en agua, sin agregar al contenido de sólidos disueltos. Una cantidad muy pequeña de SCAV-OX inhibe la corrosión de las calderas en funcionamiento, durante la parada húmeda de las calderas y en otros casos cuando es necesaria la eliminación del oxígeno. Favor de escribirnos pidiendo folletos, para mayor información.

POZOS DE PETROLEO. El agregarlo a los lodos de terminación impide la corrosión de las tuberías, debido al ataque del oxígeno. Escriba pidiendo más folletos.

PELIGROS QUIMICOS

- La mezcla con oxidantes puede causar una reacción violenta. Manténgase lejos de oxidantes. No se contamine. Manténgase el envase cerrado.
- Los derrames o goteos son dañinos a la salud.
- Los tambores vacíos pueden ser dañinos.
- El calor puede degradar el producto causando un aumento de la presión. Manténgase lejos del calor.

DERRAMES O GOTEOS

- Manejese solamente al llevar equipamiento protector completo, inclúyase guantes de caucho butílico, delantales, botas y anteojos, aparato de respirar autónomo aprobado. Sígase las instrucciones el uso del aparato respiratorio.
- Lávese con gran cantidad de agua y vacíese en un sumidero; no se aserrín, trapos u otro absorbente textil. Trasládese a un envase apdo y séllese. Neutralícese cualquier residuo de material con una solución diluida de hipoclorito y lávese con agua.
- Quítase la ropa contaminada enseguida y lávese sin demora. Bó los zapatos, cinturones y otros materiales contaminados después de remojarlos en agua.

ALMACENAMIENTO, MANEJO Y EVACUACION

- Manejese de acuerdo a las precauciones de la etiqueta.
- Ventílese cuidadosamente al abrirlo.
- Almacénese solamente en un área bien ventilada.
- Los tambores vacíos pueden ser dañinos. Siempre llénense envases vacíos con agua limpia hasta que rebosen y lávese dosamente. Dispóngase del agua del lavado y de los tambores de manera segura químicamente, de acuerdo a las leyes y reglamentos locales aplicables. Los tambores no se deben volver a usar.

LA FABRICA NO OFRECE NINGUNA GARANTIA, EXPLICITA O IMPLICITA, POR LA COMERCIALIZACION DE ESTE PRODUCTO O DE QUE ES APROPIADO PARA CUALQUIER PROPOSITO Y USOS OTROS QUE LA CLASE DE VAPOR EXCEPTO DE QUE ESTE PRODUCTO ESTA CONFORME CON LAS ESPECIFICACIONES DE OLIN. EL COMPRADOR ASUME TODOS LOS RIESGOS DE SU USO, ALMACENAMIENTO Y MANEJO. LA RESPONSABILIDAD EXCLUIDA DE OLIN POR CUALQUIER RECLAMO QUE FUERE SURTIDA CON RELACION A LA PRODUCCION, INCLUIDO SI SE LIMITASE POR ELLO A RECLAMOS PAGADOS EN MEDIANCIA POR PARTE DE OLIN. NO EXCEDE NINGUN CASO, EL PRECIO DE ADQUISICION PAGADO A OLIN POR EL PRODUCTO CON RESPECTO AL CUAL RECLAMAN DAÑOS O PERJUICIOS. OLIN CORPORATION NO ES RESPONSABLE POR NINGUN DAÑO ESPERIMENTAL O COMO CONSECUENCIA REGULADA DIRECTA O INDIRECTAMENTE DE LA COMPRA, ALMACENAMIENTO O MANEJO DE ESTE PRODUCTO.

SCAV-OX[®] ES UNA MARCA DE FABRICA DE OLIN CORPORATION

Olin CHEMICALS

OLIN CORPORATION • 120 LEECHBURGH ROAD • STAMFORD, CONNECTICUT 06907

AMMONIUM HYDROXIDE 29%

DANGER! CAUSES BURNS

NOT GET IN EYES, ON SKIN, OR ON CLOTHING. DO NOT BREATHE VAPOR OR MISTS. USE WITH ADEQUATE VENTILATION. USE ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. AVOID CONTACT WITH STRONG MINERAL ACIDS, GALVANIZING SURFACES AND HEATING.

DOT Shipping Name: Ammonia Solution
DOT Hazard Class: 8 (CORROSIVE)

SPECIAL PRECAUTIONS

Keep in strong glass or plastic, tightly closed containers. Store in cool and well ventilated area. Workplace protective equipment should be near, but outside of aqua ammonia area. Avoid unnecessary exposure. Use protective equipment as needed. Do not wear contact lenses. No smoking in aqua ammonia storage area.

SPILL OR LEAK PROCEDURES

Wear respiratory protection and protective clothing. Stop source if possible. Stay upwind and use water spray to absorb the evolved gas. Dilute with large amount of water. Clean spill by diking. Keep spill from entering streams, rivers, or sewers. Comply with local, state and federal regulations for disposal.

FIRST AID PROCEDURES

EYES OR SKIN: Immediately flush with plenty of water for at least 15 minutes. Remove contaminated clothing. Seek prompt medical attention.
INHALATION: Remove to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. Seek prompt medical attention.
INGESTION: If conscious, give large amount of water to drink. Refer immediately to physician.
GET PROMPT MEDICAL ATTENTION IN ALL CASES.

HEALTH HAZARD INFORMATION

Inhalation of fumes or mists can cause irritation or corrosive burns to the upper respiratory system. Severe lung congestion and breathing difficulty can occur. Ingestion can cause irritation and corrosive burns to throat, mouth, and stomach. Can be fatal if swallowed. Causes burns, local irritation, and blister formation on skin contact. Liquid contact with eyes can cause irritation, corneal burns and blindness. Primary route is inhalation.

PERSONAL PROTECTION

RESPIRATORY: Full face protection is recommended.
EYES AND FACE: Splash-proof chemical safety goggles or face shield required.
OTHER: Rubber gloves and aprons required. Full protective clothing required when handling.

KEEP OUT OF REACH OF CHILDREN

CONSULT MSDS FOR FURTHER INFORMATION

The supplier makes no warranty of any kind, expressed or implied, concerning the use of this product or its suitability for combination with other substances. These are assumed at the user's risk. To the best of the supplier's knowledge, the information herein is accurate. However, neither the supplier nor the manufacturer assumes any liability whatsoever for the accuracy or completeness of this information.

Industrial Chemicals Inc.

2042 Montreat Drive Birmingham Alabama 205-823-7330

AQUA AMMONIA

UN2672

AQA100-P1
NET CONTENTS
400 POUNDS
CAS NO. 1336-21-6



CORROSIVE LIQUID
HAZARD DIAMOND GOES HERE

DANGER!

THIS CONTAINER IS
HAZARDOUS WHEN EMPTY.
Since emptied containers
retain product residues,
(vapor or liquid), all hazard
warnings must be observed.

FOR CHEMICAL
EMERGENCY,
SPILL, LEAK, FIRE,
EXPOSURE OR ACCIDENT
CALL CHEMTREC
DAY OR NIGHT 800-424-9300

HEALTH	3
FLAMMABILITY	1
REACTIVITY	0



PRODUCT SPECIFICATION

AMMONIUM HYDROXIDE (AQUA AMMONIA) REAGENT GRADE

NH₄OH**Formula Weight 35.05**

Ammonium Hydroxide (Aqua Ammonia) covered by this specification will meet the following ACS Reagent Grade requirements:

Assay - Not less than 28% nor more than 30% NH₃

Appearance - Colorless and free from suspended matter or sediment

Residue After Ignition Not more than 0.002%

Carbon Dioxide (CO₂) Not more than 0.002%

Chloride (Cl) Not more than 0.5 ppm

Phosphate (PO₄) Not more than 2 ppm

Total Sulfur (as SO₄) Not more than 2 ppm

Heavy Metals (as Pb) Not more than 0.5 ppm

Iron (Fe) Not more than 0.2 ppm

Substances Reducing Permanganate To pass test

Note:

When performing assay tests, sample containers and contents shall be cooled to between 5°C and 10°C and maintained at this temperature to prevent the loss of ammonia gas when opening and transferring for analysis. All transferring shall be done as quickly as possible.

PS-3

5/89

The technical data in this bulletin are based on information which we believe to be accurate. However, nothing in this bulletin is to be construed as an expressed or implied warranty regarding the accuracy of the data or the use of any of the products herein described. Nothing contained herein should be considered as a recommendation for the use of any product or method in violation of any valid patent now effective or which may issue hereafter. All risks of liability rest solely with the user of the data or products herein described.

LaRoche Industries Inc.
1100 JOHNSON FERRY ROAD, N.E./ATLANTA, GEORGIA 30342
(404) 851-0355

Material Safety Data Sheet # 4002

LaRoche Industries Inc.

Last Revision 5/15/96

SECTION 1: CHEMICAL PRODUCT & COMPANY IDENTIFICATION

CHEMICAL NAME: Ammonium hydroxide
PRODUCT CODE: 5B05, 5B06, 5B09, 5B22 & 5B23
MANUFACTURER AND/OR DISTRIBUTOR:
 LaRoche Industries Inc.
 1100 Johnson Ferry Rd., NE
 Atlanta, GA 30342

TRADE NAMES/SYNONYMS: Aqua ammonia, Ammonium hydroxide
EMERGENCY TELEPHONE NUMBERS:
 Transportation (CHEMTREC): (800) 424-9300
 Environmental/Health/Safety: (800) 528-4963
 Customer Service: (404) 491-7987

SECTION 2: COMPOSITION INFORMATION ON INGREDIENTS

CHEMICAL	FORMULA	% BY WEIGHT	CAS	OSHA PEL	NIOSH REL / ACGIH TLV	IDLH
Ammonia	NH ₃	19-30	7664-41-7	50 ppm(TWA)	25 ppm (TWA) 35 ppm (STEL)	300ppm
Water	H ₂ O	81-70	7732-18-5	None	None	None
Aqua Ammonia	NH ₄ OH	100	1336-21-6	-----	-----	-----

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: 1) Colorless liquid with pungent odor 2) Avoid contact with liquid and vapor 3) Not flammable
 4) Mixes with water 5) Harmful to aquatic life in very low concentrations 6) Stop discharge if possible

POTENTIAL HEALTH EFFECT:

ROUTES OF ENTRY: Inhalation, Skin Contact, Eye Contact, Ingestion

TARGET ORGANS: Eyes, skin and respiratory system

EYE CONTACT: May be severely irritating upon liquid exposure, with mild irritation from fumes.

SKIN CONTACT: High concentrations can cause severe irritation and burns.

INHALATION: The gas can be suffocating and is irritating to the mucous membranes and lung tissue.

INGESTION: Can cause vomiting, nausea and corrosive burns to the esophagus and stomach. The exact nature and intensity of toxic effects following ingestion of varying amounts of strong aqua ammonia solution (e.g. 28%) is unpredictable. The most accepted view is that any amount from one teaspoon or greater can be dangerous if ingested.

SECTION 4: FIRST AID MEASURES

EYE CONTACT: Flush with large amount of water for at least 15 minutes then immediately seek medical aid.

SKIN CONTACT: Immediately flush with large quantities of water for at least 15 minutes while removing clothing. Clothing frozen to the skin should be thawed with water before removal. Seek immediate medical aid.

INHALATION: Remove from exposure. If breathing has stopped or is difficult, administer artificial respiration or oxygen as needed. Seek immediate medical aid.

INGESTION: Do not induce vomiting. Have the victim drink large quantities of water if conscious. Immediately seek medical aid. Never give anything by mouth to an unconscious person.

SECTION 5: FIRE FIGHTING MEASURES

FLASH POINT: Not Applicable

FLAMMABLE LIMITS: 16-25% in air (NH₃)

EXTINGUISHING MEDIA: Water fog or spray for escaping ammonia gas.

SPECIAL FIRE FIGHTING PROCEDURES: The mixture will not burn but escaping ammonia gas can burn in the range of 16-25% in air. Wear full protective clothing and self-contained breathing apparatus in the pressure demand mode.

NFPA HAZARD CLASSIFICATION (Aqua): Not rated by NFPA

NFPA HAZARD CLASSIFICATION (Ammonia): Health: 3 Flammability: 1 Reactivity: 2 (least-0 4-highest)

SECTION 6: ACCIDENTAL RELEASE MEASURES

Releases of 1,000 lbs. or more of ammonium hydroxide (aqua ammonia) within 24 hours must be immediately (within minutes) reported to the National Response Center at 1-800-424-8802, as well as appropriate local and state agencies. **Suggested Local Action:** Releases will liberate irritating vapors. Spilled liquids should be contained and not washed into sewers or ground water. Prevent large quantities from contact with vegetation or waterways. Ammonium hydroxide (aqua ammonia) is a regulated material and reporting of any release may be required. Any release of this material, during the course of loading, transporting, unloading or temporary storage, must be reported to the US D.O.T as required by 49 CFR 171.15 and 171.16.

SECTION 7: HANDLING AND STORAGE

Store in vented containers or pressure vessels away from heat. Open containers cautiously in case of pressure build up. Zinc, copper and copper alloys such as brass are rapidly corroded by ammonium hydroxide (aqua ammonia).

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Respiratory protection approved by NIOSH/MSHA for ammonia must be used when exposure limits are exceeded. Whether a chemical cartridge respirator or a self contained breathing apparatus is sufficient for effective respiratory protection depends on the type and magnitude of exposure.

SKIN PROTECTION: Rubber gloves and rubber or other types of approved protective clothing should be used to prevent skin contact. A face shield should be used for increased protection from contact with liquid.

EYE PROTECTION: Chemical splash goggles, approved for use with ammonia, must be worn to prevent eye contact with liquid or vapor. A face shield should be used for increased protection from contact with liquid.

VENTILATION: Local positive pressure and/or exhaust ventilation should be used to reduce vapor concentrations in confined spaces. Ammonia vapor, being lighter than air, can be expected to dissipate to the upper atmosphere. Ammonia concentrations may also be reduced by the use of an appropriate absorbent or reactant material.

OTHER EQUIPMENT: Emergency eye wash stations and deluge safety showers must be available in the work area. Post a list of emergency response contacts and telephone numbers.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: 83°F (30% Soln.) **Vapor Pressure(mmHg.):** 720 @ 80°F(30% Soln.) **Vapor Density:** 0.60 @ 32°F (Air=1)
Melting Point: Approx. -98°F(30% Soln.) **pH:** Approx. 11.6 for 1 N NH₃ Soln **Percent Volatile By Volume:** 100%
Solubility In Water: Complete **Specific Gravity:** 0.896@60°F(30% Soln.)(Water=1) **Appearance:** Colorless (pungent)liquid

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Material generally considered stable. However, heating above ambient temperatures causes the vapor pressure of ammonia to increase rapidly.

INCOMPATIBILITY (Materials to Avoid): Strong acids. Aqua ammonia reacts with bromine, chlorine, mercury, silver, silver solder and hypochlorite (bleach) to form explosive compounds. Avoid use of metals containing copper or zinc.

HAZARDOUS DECOMPOSITION PRODUCTS: Heating and contact of vapors with very hot surfaces may form hydrogen. The decomposition temperature may be lowered to 575°F by contact with certain metals such as nickel.

HAZARDOUS POLYMERIZATION: Will not occur. **CONDITIONS TO AVOID:** Not applicable.

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicity by Ingestion: Grade 3; Oral Rat, LD₅₀ = 350 mg/kg

Ammonia is a strong alkali and readily damages all body tissues. Ammonia is not a cumulative metabolic poison.

SECTION 12: ECOLOGICAL INFORMATION

Aquatic Toxicity: 6.25 ppm 24 hr/L trout/Lethal/Freshwater **Waterfowl Toxicity:** Data not available
15 ppm 48 hr/Sunfish/TLM/Tap Water

Biochemical Oxygen Demand: Data not available **Food Chain Concentration Potential:** None

SECTION 13: DISPOSAL CONSIDERATIONS

Consult local, state or federal regulatory agencies for acceptable disposal procedures and disposal locations. Disposal in streams or sewers may be contrary to federal, state and local regulations. For Hazardous Waste Regulations call 1-800-424-9346, the RCRA Hotline.

SECTION 14: TRANSPORT INFORMATION

Proper shipping name: Ammonia Solutions
DOT Hazard Class: 8
Identification Number: UN2672
Packing Group: III

SECTION 15: REGULATORY INFORMATION

NOTICE: This product is subject to the reporting requirements of SARA (1986, Section 313 of Title III) and 40 CFR Part 370. OSHA HAZARD COMMUNICATION RULE, 29 CFR 1910.1200 Aqua ammonia is a hazardous chemical.

TOXIC SUBSTANCE CONTROL ACT: Ammonium Hydroxide (CAS# 1336-21-6) is listed in the TSCA Inventory.

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT (SARA, TITLE III) Section 302 Extremely

Hazardous Substance: No **Section 311/312 Hazardous Categories:** Immediate (Acute) Health Hazard
Section 313 Toxic Chemical: Yes (Ammonia)

CERCLA/SUPERFUND, 40 CFR 117.302: This product is 100% Ammonium Hydroxide which if released into the environment in quantities of 1,000 lbs. or more requires notification to the National Response Center in Washington, DC at 1-800-424-8802.

WHMIS: One Percent (1%), as ammonia **CALIFORNIA PROPOSITION 65:** Reproductive: No Carcinogen: No

OSHA PROCESS SAFETY MANAGEMENT, 29 CFR 1910.119: This product is not subject to the Process Safety Management requirements of 29 CFR 1910.119.

EPA CHEMICAL ACCIDENT RELEASE PREVENTION, 40 CFR PART 68: This product is subject to the Risk Management Plan requirements of 40 CFR Part 68 if ammonia concentration is 20% or greater and maintained on-site in quantities of 20,000 lbs. or greater.

DRINKING WATER: Maximum use dosage in potable water is 10 mg/l.

SECTION 16: OTHER INFORMATION

REASON FOR REVISION: 1) New reduced size format 2) Additives of drinking standard information to section 15 3) Supersedes MSDS dated 3/01/95. **MSDS PREPARED BY:** LaRoche Industries Inc.'s Corporate Office of Regulatory Affairs