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NAS JACKSONVILLE
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SITE SPECIFIC HEALTH AND SAFETY PLAN FOR BUILDING 101 NAS JACKSONVILLE FL
9/10/1992
ENVIRONMENTAL RECOVERY GROUP

SITE SPECIFIC HEALTH AND SAFETY PLAN

**NAVAL AVIATION DEPOT (NADEP), JACKSONVILLE, FL
OLD ENGINE PROCESSING FACILITY, BUILDING 101,
NAS JACKSONVILLE**

Prepared by:



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Atlantic Beach, Florida 32233**

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APPENDIX A

HAZARDOUS SUBSTANCE INFORMATION SHEETS

APPENDIX B

COPIES OF M.S.D.S

1.0 SITE SPECIFIC HEALTH AND SAFETY PLAN

Date: September 10, 1992

1. Name of Contractor: Environmental Recovery Group
2. Contract Name: NADEP
3. Project: Identify & Remediate
4. Location: NAS Jacksonville, Florida

5. Hazards Known: Listed on attachment with MSDS sheets.

2.0 General Safety Rules

The following are general safety rules to be adhered to by all personnel onsite to perform the contracted work. The rules are applicable to Environmental Recovery Group (ERG) employees as well as subcontractors.

- 1) Any practice (eating, drinking, chewing gum, or tobacco, smoking, etc...) that increases the probability of hand-to-mouth transfers and ingestion of toxic material is prohibited in the areas designed as the exclusion and contamination reduction zones.
- 2) Hands and face must be thoroughly washed upon leaving the work area.
- 3) Whenever decontamination procedures for outer garments are in effect, the entire body should be thoroughly washed as soon as possible after the protective garment is removed.
- 4) No facial hair which interferes with a satisfactory fit of the mask-to-face seal is allowed on personnel required to wear respirators.
- 5) Contact with contaminated or suspected contaminated surfaces should be avoided. Whenever possible, do not walk through puddles, leachate, discolored surfaces, kneel on ground, lean, sit, or place equipment on drums, containers, or the ground.
- 6) Medicine and alcohol can intensify the effects from exposure to toxic chemicals. Prescribed drugs should not be taken by personnel on response operations where the potential for absorption, inhalation, or ingestion of toxic substances exists unless specifically approved by a qualified physician. Alcoholic beverage intake during assessment/remediation operations is strictly prohibited.
- 7) Personnel shall avoid breathing dust or vapors. Any detection of strange odors shall warrant a re-evaluation of the air quality situation at the site and, if necessary, additional precautions shall be take.

General Safety Rules (continued)

- 8) All supplied breathing air shall be certified as grade D or better.
- 9) Where practical, all tools/equipment will be spark proof, explosion resistant, and/or bonded and grounded.
- 10) Fire extinguishes will be on-site for use on equipment or small fires only.
- 11) Since site evacuation may be necessary if an explosion, fire, or release occurs, an individual shall be assigned to sound an alert and notify the responsible public officials if required. For example, the evacuation signal may be two horn long blasts every 30 seconds until all personnel are evacuated and accounted for.
- 12) An adequately stocked first-aid kit and fire extinguishes will be on-scene at all times during operational hours.
- 13) All personnel must pass through the contamination reduction zone to enter or exit the exclusion zone.
- 14) As a minimum, emergency eye washes will be at the entrance of the contamination reduction zone and/or at the work station.
- 15) As a minimum, and emergency water spray bottles are to be located on the clean side of the contamination reduction area.
- 16) Suitable storage shall be provided for all tools, materials, and supplies.
- 17) Tools and equipment shall be kept from underfoot, and shall not be thrown or dropped.
- 18) Work areas, platforms, walkways, scaffolding, and other access ways shall be kept free of oil, grease, and obstructions.
- 19) While on the work site, all workers shall wear hardhats, protective goggles, steel toe boots, and standard work clothes/coveralls.

3.0 Site Visit

Based on the initial site visit and the site conditions observed, the initial support zone/ clean area will be in Level D Equipment and protective clothing. Level B protective equipment will be on hand and readily available in the support zone should the need arise. If any hazardous or harmful substances are encountered outside of the exclusion and contamination reduction zones, the operations will be ceased and the crew withdrawn.

4.0 Entry Objectives

The specific objectives of the project are:

- 1) The scope of work consist of identify vapor and remediate.

5.0 Environmental Monitoring

The following Environmental Monitoring Instruments will be used on site at frequent intervals.

O₂ Meter: A calibrated) O₂ meter & combustible meter used
OVA frequently to maintain the cleaning process.

Air Sampling Tubes:
 Testing to be done daily.

The health and safety aspects of the operation will be re-evaluated and upgraded if there are unexpected contaminants detected. Level B protective equipment will be used on site and additional equipment will be readily available should the need arise. If any unexpected hazardous or harmful substances are encountered, the operations will be ceased and the crew withdrawn.

6.0 Hazard Evaluation

The following substance(s) are known to be on site. The primary hazards of each are identified.

<u>Substances Involved</u>	<u>Concentrations (If Know)</u>	<u>Primary Hazards</u>
As per MSDS supplied by NAS. (attachement A)		

Hazardous substance information forms for the involved substances have been completed and are included in this plan.

Definition of TLV-TWA: The Threshold Limit Value-Time Weighted Average (TLV-TWA) - the time-weighted average concentration for a normal 8-hour workday and a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.

(TLV-TWA)

NOTE: Are in accordance with Material Safety Data Sheets & Noish pocket guide to chemical hazards.

7.0 Onsite Control

A safe perimeter will be established at least 100 feet from the work location and will extend in a circle around the work site using marking tape and/or mark signs. No unauthorized person should be inside this area.

All personnel arriving or departing should log in and out with the site safety officer. All activities on site associated with this project must be cleared through ERG Job superintendent or ERG Job safety officer to prevent access to work area. Barrier tape will be used and access will be monitored by ERG.

8.0 Onsite Work Plan

Tasks will be performed in such a fashion as to allow each person to be watched by others. The following ERG personnel will be performing the field work:

Project Manager/Safety Coordinator - Terry
Dennis/Phillip Georgariou
Environmental Specialist - Terry Dennis

The following work parties will be working together in the field:

Work Party #1 - Project Manager/Safety Coordinator: Coordinate health and safety practices, sampling, reporting, and compliance.

Safety Officer/Environmental Specialist: Ensure health & safety practices, record keeping.

Decontamination Team: Work Party #1 and available ERG personnel will perform equipment decontamination.

Foreman: Coordinate the activities and identify and remediate the source of vapors.

Leaderman: Assist the foreman with coordinating the work parties and scheduling the subcontractors.

9.0 Personnel Protective Equipment

In all site operations, selecting the appropriate personal protective equipment is one of the first steps in reducing the potential for adverse health effects. Personnel must wear protective equipment when response activities involve known or suspected atmospheric contamination, or when vapor, gases, or particulate may be generated, or when direct contact with skin-affecting substances may occur. Respirators can protect lungs, gastrointestinal tract, and eyes against air toxins. Chemical resistant clothing can protect the skin from contact with skin-destructive and absorbable chemicals.

Specific protective equipment for each level of protection utilized is as follows:

Level B: Pressure-demand, full-facepiece SCBA or pressure-demand supplied-air respirator with escape SCBA/Chemical resistant clothing (overalls and long-sleeved jacket; hooded, one-or-two piece chemical splash site; disposable chemical-resistant one-piece suit)/Inner and outer chemical-resistant gloves/chemical-resistant safety boots-shoes/hard hat

Level C: Hard hat, air-purifying respirator with acid gas/organic vapor cartridges, chemical resistant boots and gloves, and standard work clothes/tyvek coveralls.

Level D: Hard hat, steel toed boots, chemical resistant gloves, standard work clothes/coveralls.

Level B: protective equipment will be worn in exclusion zone.

Level C: protective equipment will be worn in the contamination reduction zone.

When air-purifying respirators are used, an acid gas/organic vapor cartridge is the appropriate canister for use with the involved substances. A competent individual has determined that all criteria for using this type of reprinter protection have been met. The employees have been properly trained in the use and limitation of air-purifying respirators

NO CHANGES TO THE SPECIFIED LEVELS OF PROTECTION SHALL BE MADE WITHOUT THE APPROVAL OF THE SAFETY OFFICER OR SITE HEALTH AND SAFETY COORDINATOR.

9.0 Personnel Protective Equipment (continued)

All onsite personnel authorized to enter the exclusion zone must be certified as being able to wear the respiratory protection and must have received required training (OSHA 29 CFR 1910) and been fit tested.

10.0 Decontamination Procedures

Decontamination of protective and all other equipment used will be performed prior to initiating work, between job phases and upon project completion. Decontamination will be disposed at the direction of the project manager. Personnel and equipment leaving the exclusion zone shall be thoroughly decontaminated. The standard Level C decontamination protocol shall be used with the following decontamination stations:

- | | | |
|---|----|--|
| Station 1: Equipment Drop | 1. | Deposit equipment used on-site (tools, sampling devices, containers, monitoring instruments, radios, clipboards, etc...) on plastic sheets. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool down station may be set up within this area. |
| Station 2: Outer Garment, Boots, and gloves | 2. | Scrub outer boots, outer gloves, and tyvek suite with decon wash and rinse. |
| Station 3: Outer boot, and glove removal | 3. | Remove outer boots and gloves. Deposit on plastic sheets. |
| Station 4: Canister or mask change | 4. | Worker's canister is exchanged, outer gloves and boot covers dunned, joints taped, and worker returns to duty. |
| Station 5: Boot, gloves and outer garment removal | 5. | Boots, tyveks, inner gloves removed and deposited on separate sheets of plastic. |
| Station 6: Face Piece removal | 6. | Face Piece is removed. Avoid touching face with fingers. Face piece deposited on plastic sheet. |
| Station 7: Field Wash | 7. | Hands and face thoroughly washed. Shower as soon as possible. |

11.0 Communication Procedures

Two long horn blasts every 30 seconds is the emergency signal to indicate that all personnel should leave the exclusion zone.

The following standard hand signals will be used if no other form of communication is possible:

Hand gripping throat.....Out of air, can't breathe

Grip partner's wrist or
both hands around waist.....Leave area immediately

Hands on top of head.....Need assistance

Thumbs up.....OK, I'm all right, I understand

Thumbs down.....No, Negative

12.0 Emergency Medical Care

Local ambulance service is available from The Naval Air Station Fire & Rescue, number ~~911~~. First-aid equipment is available on site at the following locations:

3333

Command Post

Entrance to exclusion area

This includes:

- A. First-aid kit
- B. Emergency eye wash
- C. Decontamination water

Emergency medical information for substances present:

<u>Substance</u>	<u>Exposure Symptoms</u>	<u>First-Aid Instructions</u>
(see attachment A)	Irritation & burns of any bodily tissues. Breathing difficultly. Contact with eyes can result in loss of vision.	<i>Inhalation:</i> remove victim to fresh air; keep warm. If breathing difficult or has stopped, administer artificial respiration. Get medical attention immediately. If victim is conscious, administer large quantities of water immediately. Do not attempt to make the victim vomit. Get medical attention immediately. <i>Skin & Eye Contact:</i> Flush eyes immediately with water for at least 15 minutes, occasionally lifting the eyelids, remove all contaminated clothing. Wash affected body areas with large amounts of water. Get medical attention immediately.
<i>Ingestion:</i>		

12.0 Emergency Medical Care (continued)

List of emergency phone numbers:

<u>Agency/Facility</u>	<u>Phone #</u>	<u>Contact</u>
Police	911	
Hospital	911	
Fire/Ambulance	911	

Local - NAS JAX → ON call-Contact
Police 2661
NADEP SECURITY 3077 DON WILSON
Hospital 777-7340 ON CALL CONTACT
(EMER ROOM)
FIRE 3333
AMBULANCE } 3333
NAVAL HOSP }
Industrial Hygienist 2532 Bob GARRE

13.0 Emergency Procedures

The following standard emergency procedures will be used by onsite personnel. The site Safety Officer or alternate shall be notified of any onsite emergencies and be responsible for ensuring that appropriate procedures are followed.

Personnel Injury: Upon notification of an injury the Project Manager and Site Safety Officer/Alternate will assess the nature of the injury. If the cause of the injury or loss of the injured person does not affect the performance of site personnel, operations may continue, with qualified personnel initiating the appropriate first aid necessary. If the injury increases the risk to others, the designated emergency signal of two long horn blasts at 30 second intervals shall be sounded and all site personnel shall move to the decontamination location for further instructions. Activities on site will stop until the added risk is removed or minimized.

Fire/Explosion: Upon notification of a fire or explosion on site, the designated emergency signal shall be sounded and all site personnel assembled at the decontamination location. The fire department shall be alerted and all personnel moved to a safe distance from the involved area.

Personal Protective Equipment Failure: If any site worker experiences a failure or alteration of protective equipment that affects the protection factor, that person and his/her buddy shall immediately leave the Exclusion Zone. Reentry shall not be permitted until the equipment has been repaired or replaced.

Other Equipment Failure: If any other equipment on site fails to operate properly, the Project Manager and Site Safety Officer/Alternate shall be notified and then determine the effects of this failure on continuing operations on site. If the failure affects the safety of personnel or prevents completion of the onsite Work Plan tasks, all personnel shall leave the Exclusion Zone until the situation is evaluated and appropriate actions taken.

13.0 Emergency Procedures (continued)

In all situations, when an onsite emergency results in evacuation of the Exclusion Zone, personnel shall not re-enter until:

1. The conditions resulting in the emergency have been corrected;
2. The hazards have been reassessed;
3. The Site Safety Plan has been reviewed and revised, if necessary; and
4. Site personnel have been briefed on any changes in the Site Safety Plan.

14.0 Key Personnel Responsible for Site Safety

Site Safety Officer
Site Safety Coordinator
Team Leader

Ken Busen
Phillip Georgariou
Terry Dennis

18.0 Summary of Important Telephone Numbers

NAS Police Department 911

NAS Fire Department 911

Ambulance 911

Hospital 911

Copies of this list will be posted at several locations at the work site.

410,36,52

=====
=====| Master Print |=====

Stock Number: 002929625
FSC: 6810
Manufacturers CAGE: 82925
Part No. Indicator: A
Part Number/Trade Name: O-T-620 [REDACTED] ECH. INHIB.

=====
=====| General Information |=====

Safety Focal Point: D
Record No. for this Safety Entry: 001
Total Safety Entries, This No.: 004
Date MSDS Prepared: PRE-HCS
Safety Data Review Date: 26AUG78
Item Name: 1,1,1-TRICHLOROETHANE, TECHNICAL

Manufacturer Name: OCTAGON PROCESS, INC
Emergency Phone No.: 201 945 9400

MSDS Serial Number: BDVRV
Specification Number: OT620
Hazard Characteristic Code: L2
Unit of Issue: CN
Unit of Iss. Container Qt.: 32 OZS

=====
=====| Ingredients/Identity Information |=====

ISN : 01
Proprietary : NO

IFP : D
NIOSH (RETECS): KJ2975000

Ingredient : 1,1,1 TRICHLOROETHANE
Percent : 90.0

ACGIH TLV : 350 PPM

=====
=====| Physical/Chemical Characteristics |=====

Appearance and Odor: COLORLESS LIQUID, MILD SWEET ODOR
Boiling Point: 142.2F
Vapor Pressure(MM Hg/70 F): 100
Vapor Density (Air=1): 1.35
Specific Gravity: 1.284
Solubility in Water: APPRECIABLE
% Volatiles by Volume: 100

=====
=====| Fire & Explosion Hazard Data |=====

Flash Point: NONE

[Extinguishing Media]
WATER FOG IF FIRE BREAKS OUT UNDER ABNORMAL CONDITIONS

[Special Fire Fgting Proc]
LF CONTAINED BREATHING APPARATUS

[Unusual Fire & Expl. Hzrds]
IN FIRE MATERIAL EMITS HIGHLY TOXIC & IRRITATING FUMES

=====| Reactivity Data |=====
Stability: YES

[Cond. to Avoid(Stability)]
OPEN FLAMES,WELDING ARCS,HIGH TEMPERATURE SOURCES

[Materials to Avoid]
STRONG ALKALIS,WATER

[Hazardous Decomp. Products]
HYDROGEN CHLORIDE & VERY SMALL AMOUNTS OF PHOSGENE & CL*2

[Hazardous Poly. Occur]
NO

=====| Health Hazard Data |=====

[Health Hazards-Acute & Chronic]

[Signs and Symptoms of Overexposure]
CONJUNCTIVITIS,DERMATITIS,DIZZINESS,MENTAL CONFUSION,DROWSINESS,
COORDINATION,UNCONSCIOUSNESS

[Emergency and First Aid Procedures]
IRRIGATE EYES WITH WATER.WASH CONTAMINATED AREAS OF BODY WITH SOAP & WATER.
STOMACH WASH IF SWALLOWED,FOLLOWED BY SALINE CATHARSIS.OXYGEN IF NECESSARY.
NOT ADRENALINE.

=====| Precautions for Safe Handling & Use |=====

[Steps if Material Released or Spilled]
SELF CONTAINED BREATHING APPARATUS.SMALL LEAKS:MOP UP,WIPE UP OR SOAK UP
IMMEDIATELY.REMOVE TO OUT OF DOORS.LARGE SPILLS:EVACUATE AREA.CONTAIN
LIQUID;TRANSFER TO CLOSED METAL CONTAINERS.KEEP OUT OF WATER SUPPLY

[Waste Disposal Method]
SEND SOLVENT TO A RECLAIMER.IN SOME CASES IT CAN BE TRANSPORTED TO AN AREA
WHERE IT CAN BE PLACED ON THE GROUND & ALLOWED TO EVAPORATE SAFELY

[Handling and Storage Precautions]
PROTECTION FROM MOISTURE BE PROVIDED FOR BULK STORAGE & DO NOT STORE IN
ALUMINUM CONTAINERS.WEAR SAFETY GOGGLES,RUBBER GLOVES,SELF CONTAINED
BREATHER.

[Other Precautions]

STORE IN A COOL, DRY WELL VENTILATED AREA, AWAY FROM STRONG ALKALIS. AVOID BREATHING VAPOR

=====
=====| Control Measures |=====

[Respiratory Protection]
SELF CONTAINED BREATHING APPARATUS

[Ventilation]
LIMIT CONCENTRATION IN AIR TO TLV

[Protective Gloves]
RUBBER

[Eye Protection]
SAFETY GOGGLES

[Other Protective Equipment]
EYE WASH STATIONS & SAFETY SHOWERS

[Work Hygienic Practices]

[Sup. Safe and Health Data]
THE ITEM COMPOSITION IS IN VOLUME PERCENT 1,1,1 TRICHLOROETHANE IS THE SAME AS METHYL CHLOROFORM

=====
=====| Transportation Data |=====

Transportation Focal Point: D
Trans. Data Rev. Date: 78238
DOT Proper Shipping Name: METYL CHLOROFORM
DOT Class: ORM-A
DOT Label: NONE
Limited Quantity: NO
DOT Mode Indicator: YES
IMO Proper Shipping Name: N/A
IATA UN ID Number: 1133
IATA Proper Shipping Name: METHYLCHLOROFORM
AFR 71-4 Proper Ship. Name: METHYL CHLOROFORM
AFR 71-4 Class: ORM-A
AFR 71-4 Label: NONE
Additional Trans. Data: THIS ITEM IS TYPE I IN THE
FEDERAL SPECIFICATION

=====
=====| Disposal Data |=====

Disposal Data Action Code:
Disposal Data Focal Point: E
Disposal Data Review Date: 88085
RecNo. for this Disp. Entry: 01
Total Disp Ent-This Stk #: 004
Account. Accept. by DRMS: YES
EIS/EA Availability: NO
Transfer (New Condition): NO
Donation (New Condition): NO
Sales (New Condition): NO
Reutil. (Used Condition): NO

Transfer (Used Condition): NO
Donation (Used Condition): NO
Sales (Used Condition): NO
Disposal Supplement Code: N043
Disposal Supplemental Data: THE ITEM COMPOSITION IS IN
VOLUME PERCENT 1,1,1
TRICHLOROETHANE IS THE SAME AS
METHYL CHLOROFORM

DO NOT DISPOSE VIA
SANITARY SEWER OR SANITARY
LANDFILL.

---| EPA |-----
1st Edit Table Code (New): U226
 1st Code (New): U226
 1st Name (New): 1,1,1-TRICHLOROETHANE;
 METHYLCHLOROFORM
1st Characteristics (New): TOXIC (T)
 1st Acute Hazard (New): NO
1st Edit Table Code (Used): U226
 1st Code (Used): U226
 1st Name (Used): 1,1,1-TRICHLOROETHANE;
 METHYLCHLOROFORM
1st Characteristics (Used): TOXIC (T)
 1st Acute Hazard (Used): NO

---| DISPOSAL |-----
 1st Code (Small Qty): SR01
1st Method (Small Qty): (SR01) DISPOSE AS PER GUIDELINE:
 SOLVENT RECOVERY
 (RECYCLING/RECLAMATION OF
 HAZARDOUS SOLVENT WASTE)
 2nd Code (Small Qty): IN01
2nd Method (Small Qty): (IN01) DISPOSE AS PER GUIDELINE:
 INCINERATION OF HAZARDOUS
 WASTE.
 1st Code (Large Qty): SR01
1st Method (Large Qty): (SR01) DISPOSE AS PER GUIDELINE:
 SOLVENT RECOVERY
 (RECYCLING/RECLAMATION OF
 HAZARDOUS SOLVENT WASTE)
 2nd Code (Large Qty): IN01
2nd Method (Large Qty): (IN01) DISPOSE AS PER GUIDELINE:
 INCINERATION OF HAZARDOUS
 WASTE.
Disposal Restrictions: IN CASE OF ACCIDENTAL EXPOSURE
 OR DISCHARGE, CONSULT HEALTH
 AND SAFETY FILE FOR PRECAUTIONS.
Rptable Qty-Disposal File: NO
 EPA Hazard Waste Label: YES
Waste Proper Shipping Name: WASTE 1,1,1 TRICHLOROETHANE

STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES	STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES
6810-00-184-4800	2U130	A	D		001 OF 005	6810-00-184-4800	2U130	A	D		001 OF 005

PART NO/TRADE NAME.....
 DATE MSDS PREP/REVISED, INTERIM.....
 DATE TECH REVIEW-SAFE.. 03NOV86
 SUPPLY ITEM MANAGER..... CX

*** GENERAL INFORMATION ***

PROPRIETARY DATA..... NO
 ITEM NAME..... TRICHLOROETHYLENE, TECHNICAL
 MANUFACTURER..... OLD WORLD TRADING CO
 STREET..... *1 N BROADWAY
 CITY..... *DES PLAINES
 STATE..... *IL
 COUNTRY..... *US
 ZIP CODE..... *60016-2335
 MSDS SERIAL NO..... BDGX2
 SPECIFICATION NO..... O-T-634
 HAZ CHARACTERISTIC CODE.. T4
 UNIT OF ISSUE..... DR
 U/I CONTAINER QUANTITY.. 55.0 GL
 TYPE CONTAINER..... DRUM
 NET UNIT WEIGHT..... 55.0 GL

*** INGREDIENTS/IDENTITY INFORMATION ***

NIOSH RTECS NO..... ? KX455000
 CAS NO..... ? 79-01-6
 INGREDIENT NO..... ? TRICHLOROETHYLENE
 PERCENT NO..... ? 100
 OSHA PEL NO..... ? 50 PPM/200 STEL
 ACGIH TLV NO..... ? 50 PPM/200 STEL; 8990

*** PHYSICAL/CHEMICAL CHARACTERISTICS ***

BOILING POINT..... 86C/186C
 VAP PRESS/MM HG/70 F... 52
 VAP DENSITY (AIR =1)... 4.9
 SPECIFIC GRAVITY..... 1.460
 EVAP RATE & REFERENCE.. 2.5 (ETHER=1)
 SOLUBILITY IN WATER.... NEGLIGIBLE
 PCT VOLATILES BY VOL... 100

*** FIRE AND EXPLOSION HAZARD DATA ***

FLASH POINT..... N/R
 LOWER EXPLOSIVE LIMIT.. N/R
 UPPER EXPLOSIVE LIMIT.. N/R
 EXTINGUISHING MEDIA... DRY CHEMICAL, CO2, FOAM
 SPEC FIRE FIGHT PROC... USE WATER SPRAY TO COOL CONTRS. USE SCBA
 IN FIRES AND CONFINE
 UNUS FIRE & EXPLOS HAZ.. KEEP AWAY FROM OXIDIZERS, HEAT AND OPEN F
 LAME. AVOID EXTREME HEAT.

CONTINUED ON TOP RIGHT HAND SIDE OF THIS FRAME/PAGE
 N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

*** REACTIVITY DATA ***

* STABILITY..... YES
 * COND TO AVOID (STABIL).. HEAT OPEN FLAME
 * MATERIALS TO AVOID..... STRONG OXIDIZERS
 * HAZ DECOMPOSITION PROD.. ON BURNING GIVES CO, HCL, TRACES OF PHOSGE
 * HAZ POLYMERIZATN OCCUR.. NO
 * COND TO AVOID (POLYMR).. NOT SPECIFIED

*** HEALTH HAZARD DATA ***

* SIGNS AND SYMPTOMS OF
 * EXPOSURE..... EYES: IRRIT, REDNESS; SKIN: IRRIT, DERMATITIS
 ; INHAL: ANESTHETIC, CNS DEPRESSION, DAMAGE
 TO KIDNEYS, LIVER BLO
 * EMERGENCY AND FIRST AID
 * PROCEDURES..... INHALE: REMOVE TO FRESH AIR, GIVE CPR/0+2
 IF NEED; EYES/SKIN: FLUSH W LG AMTS H*20
 FOR 15 MIN; INGEST: RINSE MOUTH; GET MEDIC
 AL ATTENTION FOR EYES, BREATHING DIFFICU
 LTY, OR OTHER SYMPTOMS OF OVEREXPOSURE.

*** PRECAUTIONS FOR SAFE HANDLING AND USE ***

* STEPS TO BE TAKEN IF
 * MATL IS RELEASED/SPILL.. USE PROPER PERSONAL PROTECTION. DIKE AND
 CONTAIN; USE ABSORBENT MATERIAL AND RECOV
 ER FOR PROPER DISPOSAL.
 * WASTE DISPOSAL METHOD.. DISPOSE OF COLLECTED MATERIAL IN ACCORDA
 NCE WITH LOCAL, STATE AND FEDERAL REGULAT
 IONS.
 * HANDLING/STORAGE PREC.. STORE IN COOL, DRY AND WELL VENTILATED AR
 EA. KEEP AWAY FROM HEAT, OPEN FLAMES. KEEP
 CONTAINER CLOSED WHEN NOT IN USE.
 * OTHER PRECAUTIONS..... AVOID CONTACT WITH SKIN AND EYES. DO NOT
 INHALE VAPORS.

*** CONTROL MEASURES ***

* RESPIRATORY PROTECTION.. USE NIOSH/MSHA APPROVED SCBA OR ORGANIC
 VAPORS RESPIRATOR.
 * VENTILATION..... LOCAL EXHAUST TO MAINTN BELOW TLV.
 * PROTECTIVE GLOVES..... IMPERVIOUS
 * EYE PROTECTION..... SAFETY/CHEM GOGGLES
 * OTHER PROTECTIVE EQUIP.. FULL PROTECTIVE CLOTHING, SAFETY SHOWER, E
 YE WASH STATION
 * SUPPLEMENTAL SAFETY &
 * HEALTH DATA..... MSDS DATED 5/85

*** TRANSPORTATION DATA ***

* CONTINUED ON NEXT FRAME/PAGE BELOW
 * N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES	STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES
6810-00-184-4800	2U130	A	D		001 OF 005	6810-00-184-4800	2U130	A	D		001 OF 005

DATE TECH REVIEW-TRANS: 03NOV86

DOT PSN CODE..... NFB

DOT SHIPPING NAME..... TRICHLOROETHYLENE

DOT HAZARD CLASS..... ORM-A

DOT LABEL..... NONE

DOT MODE INDICATOR..... EA

DOT ID NUMBER..... UN1710

IMO PSN CODE..... OVL

IMO SHIPPING NAME..... TRICHLOROETHYLENE

IMDG PAGE NUMBER..... 6273

UN NUMBER..... 1710

UN CLASS..... 6.1

SUBSIDIARY RISK LABEL.....

IATA PSN CODE..... YMD

IATA SHIPPING NAME..... TRICHLOROETHYLENE

IATA CLASS OR DIVISION..... 6.1

IATA LABEL..... KEEP AWAY FROM FOOD

UN OR ID NUMBER..... 1710

AFR 71-6 PSN CODE..... JNM

AFR 71-6 SHIPPING NAME..... TRICHLOROETHYLENE

AFR 71-6 CLASS..... ORM-A

AFR 71-6 LABEL..... NONE

ID NUMBER..... UN1710

*** LABEL DATA ***

OSHA HCS LABEL REQUIRED YES

STATUS - LABEL..... E

SPECIFIC HAZ & PRECAUT. VAPORS MAY CAUSE DIZZINESS OR SUFFOCATIO

- N. EXPOSURE IN AN ENCLOSED AREA MAY BE V
- ERY HARMFUL. CONTACT MAY IRRITATE OR BUR
- N SKIN AND EYES. FIRE MAY PRODUCE IRRITA
- TING OR POISONOUS GASES. RUNOFF FROM FIR
- E CONTROL OR DILUTION WATER MAY CAUSE PO
- LLUTION.

NAME (LABEL)..... OLD WORLD TRADING CO INC

STREET (LABEL)..... 1 N BROADWAY

CITY (LABEL)..... DES PLAINES

STATE (LABEL)..... IL

ZIP CODE (LABEL)..... 60016-2335

COUNTRY (LABEL)..... US

STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES	STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES
6810-00-184-4800	5A188	A	D	SM	002 OF 005	6810-00-184-4800	5A188	A	D	SM	002 OF 005

PART NO/TRADE NAME..... TRICHLOROETHYLENE DEGREASE COLD/VAPOR
 DATE MSDS PREP/REVISED.. 15JAN87
 DATE TECH REVIEW-SAFE... 08AUG89
 SUPPLY ITEM MANAGER..... CX

*** GENERAL INFORMATION ***

PROPRIETARY DATA..... NO
 ITEM NAME..... TRICHLOROETHYLENE, TECHNICAL
 MANUFACTURER..... ASHLAND CHEMICAL COMPANY
 STREET..... INDUSTRIAL CHEMICALS AND SOLVENTS
 P.O. BOX..... 2219
 CITY..... COLUMBUS
 STATE..... OH
 COUNTRY..... US
 ZIP CODE..... 43216-2219
 EMERGENCY TELEPHONE NO. (606)324-1133
 INFORMATION TELE NO..... 614-889-3333
 PREPARER OF MSDS..... N/K
 DISTR/VENDOR-NO ?..... N/R
 MSDS SERIAL NO..... BDGYB
 SPECIFICATION NO..... O-T-634
 TYPE GRADE, CLASS ETC... TYPE II
 HAZ CHARACTERISTIC CODE.. T4
 UNIT OF ISSUE..... DR
 U/I CONTAINER QUANTITY.. 55.0 GL
 TYPE CONTAINER..... DRUM
 NET UNIT WEIGHT..... 55.0 GL
 NRC/STATE LICENSE NO... N/R
 NET PROPELL WT-AMPO.... N/R

*** INGREDIENTS/IDENTITY INFORMATION ***

NIOSH RTECS NO..... ? KX4550000
 CAS NO..... ? 79-01-6
 INGREDIENT NO..... ? TRICHLOROETHYLENE
 PERCENT NO..... ? >95.0
 OSHA PEL NO..... ? 50 PPM/200 STEL
 ACGIH TLV NO..... ? 50 PPM/200 STEL; 8990
 OTHER REC LIMIT NO..... ? N/R

*** PHYSICAL/CHEMICAL CHARACTERISTICS ***

APPEARANCE AND ODOR... COLORLESS LIQUID, SWEET CHLOROFORM ODOR
 BOILING POINT..... 189F/87C
 MELTING POINT..... N/K
 VAP PRESS/MM HG/70 F... 60
 VAP DENSITY (AIR =1)... 4.5
 SPECIFIC GRAVITY..... 1.462
 DECOMPOSITION TEMP.... N/K
 EVAP RATE & REFERENCE.. 3.10 (ETHER=1)
 SOLUBILITY IN WATER... NEGLIGIBLE

CONTINUED ON TOP RIGHT HAND SIDE OF THIS FRAME/PAGE
 N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

* PCT VOLATILES BY VOL... 100
 * CORROSION RATE (IPY)... N
 * AUTOIGNITION TEMP..... N/R

*** FIRE AND EXPLOSION HAZARD DATA ***

* FLASH POINT..... N/R
 * LOWER EXPLOSIVE LIMIT.. 8.0
 * UPPER EXPLOSIVE LIMIT.. 10.5
 * EXTINGUISHING MEDIA... WATER FOG, CO*2, DRY CHEMICAL
 * SPEC FIRE FIGHT PROC... USE WATER SPRAY TO COOL CONTAINERS. USE S
 * CBA FOR FIRES.
 * UNUS FIRE & EXPLOS HAZ. KEEP AWAY FROM WELDING OR CUTTING TORCH.

*** REACTIVITY DATA ***

* STABILITY..... YES
 * COND TO AVOID (STABIL).. HEAT, OPEN FLAME
 * MATERIALS TO AVOID..... STRONG ALKALIES, OXIDIZERS, AL, MG.
 * HAZ DECOMPOSITION PROD. CO, CO*2, HCL, PHOSGENE
 * HAZ POLYMERIZATN OCCUR. NO
 * COND TO AVOID (POLYMR).. NONE SPECIFIED

*** HEALTH HAZARD DATA ***

* LD50-LC50-MIXTURE..... N/K
 * ROUTE OF ENTRY-INHAL... YES
 * ROUTE OF ENTRY-SKIN... YES
 * ROUTE OF ENTRY-INGEST.. YES
 * HEALTH HAZARDS-ACUTE
 * AND CHRONIC..... ACUTE: EYE IRRITATION, REDNESS, TEARING, SKI
 * N IRRITATION, NASAL AND RESPIRATORY IRRIT
 * ATION, DIZZINESS, WEAKNESS, FATIGUE, NAUSEA,
 * HEADACHE, CNS DEPRESSION, G.I. IRRITATION, N
 * AUSEA, VOMITING & DIARRHEA. CHRONIC: DERMA
 * TITIS, LIVER AND KIDNEY DAMAGE, OR LUNG DA
 * MAGE.
 * CARCINOGENITY-NTP..... NO
 * CARCINOGENITY-IARC..... YES
 * CARCINOGENITY-OSHA..... N/K
 * EXPLANATION-CARCINOGEN. LIVER CARCINOGEN WHEN GIVEN ORALLY TO MI
 * CE.

* MEDICAL CONDITIONS GEN
 * AGGRAVATED BY EXPOSURE. NOT KNOWN.
 * EMERGENCY AND FIRST AID
 * PROCEDURES..... INHALE: REMOVE TO FRESH AIR, GIVE CPR/O*2
 * IF NEED; EYES/SKIN: FLUSH W LG AMTS H*20
 * FOR 15 MIN; INGEST: RINSE MOUTH; GET MEDIC
 * AL ATTENTION FOR EYES, BREATHING DIFFICU
 * LTY, OR OTHER SYMPTOMS OF OVEREXPOSURE.

*** PRECAUTIONS FOR SAFE HANDLING AND USE ***

* CONTINUED ON NEXT FRAME/PAGE BELOW
 * = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

STOCK NUMBER	MFR CAGE	PM IND	FP IND	STATUS	NO ENTRIES	STOCK NUMBER	MFR CAGE	PM IND	FP IND	STATUS	NO ENTRIES
6810-00-184-4800	5A188	A	D	SM	002 OF 005	6810-00-184-4800	5A188	A	D	SM	002 OF 005

STEPS TO BE TAKEN IF MATL IS RELEASED/SPILL: USE PROPER PERSONAL PROTECTION. DIKE AND CONTAIN. USE SUITABLE ABSORBENT AND RECOVER FOR PROPER DISPOSAL.

WASTE DISPOSAL METHOD: DISPOSE OF COLLECTED MATERIAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

HANDLING/STORAGE PRECAUTIONS: STORE IN COOL, DRY AND WELL VENTILATED AREA. KEEP AWAY FROM OPEN FLAMES AND EXTREME HEAT. DO NOT TEMPER WITH THE CONTAINER, KEEP TIGHTLY CLOSED WHEN NOT USED.

OTHER PRECAUTIONS: AVOID CONTACT WITH SKIN AND EYES. DO NOT INHALE VAPORS.

CONTROL MEASURES

RESPIRATORY PROTECTION: USE NIOSH/MSHA APPROVED RESPIRATOR FOR ORGANIC VAPORS/MIST IF ABOVE PEL/TLV OR SUBSTITUTION IN AN ENCLOSED AREA.

VENTILATION: PROVIDE MECHANICAL (GENERAL/LOCAL EXHAUST) VENT TO MAINTAIN <TLV.

PROTECTIVE GLOVES: PV/RUBBER

EYE PROTECTION: SAFETY/CHEM GOGGLES

OTHER PROTECTIVE EQUIPMENT: FULL WORK CLOTHING TO PREVENT REPEATED OR PROLONGED CONTACT.

WORK HYGIENIC PRACTICES: AVOID CONTACT WITH EYES AND SKIN; DO NOT BREATHE VAPORS/MIST.

AFR 71-4 PSN CODE..... JNM
 AFR 71-4 SHIPPING NAME. TRICHLOROETHYLENE
 AFR 71-4 CLASS..... ORM-A
 AFR 71-4 LABEL..... NONE
 ID NUMBER..... UN1710

*** LABEL DATA ***

OSHA HCS LABEL REQUIRED YES
 STATUS - LABEL..... E
 SPECIFIC HAZ & PRECAUT. VAPORS MAY CAUSE DIZZINESS OR SUFFOCATION. VAPORS MAY CAUSE DIZZINESS OR SUFFOCATION.

NAME (LABEL)..... ASHLAND CHEMICAL CO.
 P.O. BOX (LABEL)..... 2219
 CITY (LABEL)..... COLUMBUS
 STATE (LABEL)..... OH
 ZIP CODE (LABEL)..... 43216
 COUNTRY (LABEL)..... US
 EMERGENCY TELE (LABEL). 606-324-1133

*** TRANSPORTATION DATA ***

DATE TECH REVIEW-TRANS: 21NOV87

DOT PSN CODE..... NFB
 DOT SHIPPING NAME..... TRICHLOROETHYLENE
 DOT HAZARD CLASS..... ORM-A
 DOT LABEL..... NONE
 DOT MODE INDICATOR..... EA
 DOT ID NUMBER..... UN1710

IMO PSN CODE..... OVL
 IMO SHIPPING NAME..... TRICHLOROETHYLENE
 IMO PAGE NUMBER..... 6273
 UN NUMBER..... 1710
 UN CLASS..... 6.1
 SUBSIDIARY RISK LABEL..... -

IATA PSN CODE..... YMD
 IATA SHIPPING NAME..... TRICHLOROETHYLENE
 IATA CLASS OR DIVISION..... 6.1
 IATA LABEL..... KEEP AWAY FROM FOOD
 UN OR ID NUMBER..... 1710

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 N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

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STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES	STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES
6810-00-184-4800	62910	A	D	SM	003 OF 005	6810-00-184-4800	62910	A	D	SM	003 OF 005

PART NO/TRADE NAME..... TRICHLOROETHYLENE
 DATE MSDS PREP/REVISED.. 13JUL87
 DATE TECH REVIEW-SAFE.. 17OCT89
 SUPPLY ITEM MANAGER..... CX

*** GENERAL INFORMATION ***

PROPRIETARY DATA..... NO
 ITEM NAME..... TRICHLOROETHYLENE, TECHNICAL
 MANUFACTURER..... MALLINCKRODT INC; SCIENCE PRODUCT DIVISIO
 N
 STREET..... PARIS BYPASS
 P.O. BOX..... N
 CITY..... PARIS
 STATE..... KY
 COUNTRY..... US
 ZIP CODE..... 40367
 EMERGENCY TELEPHONE NO. 314-982-5000
 INFORMATION TELE NO. 314-982-5000
 PREPARER OF MSDS..... N/K
 DISTR/VENDOR-NO 1..... N/R
 MSDS SERIAL NO..... BHBGJ
 SPECIFICATION NO..... 0-T-634
 TYPE GRADE, CLASS ETC... IT TYPE
 HAZ CHARACTERISTIC CODE.. JS
 UNIT OF ISSUE..... DR
 U/I CONTAINER QUANTITY.. 55.0 GL
 NET UNIT WEIGHT..... 664.3 LBS
 NRC/STATE LICENSE NO... N/R
 NET PROPELL WT-AMMO.... N/R

*** INGREDIENTS/IDENTITY INFORMATION ***

NIOSH RTECS NO..... KX455000
 CAS NO..... 79-01-6
 INGREDIENT NO..... TRICHLOROETHYLENE
 PERCENT NO..... 100.0
 OSHA PEL NO..... 50 PPM/200 STEL
 ACGIH TLV NO..... 50 PPM/200 STEL; 8990
 OTHER REC LIMIT NO.... N/R

*** PHYSICAL/CHEMICAL CHARACTERISTICS ***

APPEARANCE AND ODOR.... CLEAR, COLORLESS LIQUID, CHLOROFORM-LIKE.
 BOILING POINT..... 188.6F/87C
 MELTING POINT..... -99.4F/-73C
 VAP PRESS/100 HG/70 F... 57.8
 VAP DENSITY (AIR =1).... 4.5; AIR=1
 SPECIFIC GRAVITY..... 1.45
 DECOMPOSITION TEMP.... N/K
 EVAP RATE & REFERENCE.. N/K
 SOLUBILITY IN WATER.... NEGLIIBLE

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 N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

* PCT VOLATILES BY VOL... N/K
 * AUTOIGNITION TEMP..... 770F
 *
 * *** FIRE AND EXPLOSION HAZARD DATA ***
 *
 * FLASH POINT..... NONE
 * LOWER EXPLOSIVE LIMIT.. 12.5
 * UPPER EXPLOSIVE LIMIT.. 90
 * EXTINGUISHING MEDIA... WATER SPRAY, CO*2, DRY CHEMICAL, FOAM.
 * SPEC FIRE FIGHT PROC... FULL PROTECTIVE CLOTHING AND NIOSH/MSHA
 * APPROVED SCBA IN AN ENCLOSED AREA.
 * UNUS FIRE & EXPLOS HAZ. A STRONG IGNITION SOURCE CAN/PRODUCE IGN
 * ITION.
 *
 * *** REACTIVITY DATA ***
 *
 * STABILITY..... YES
 * COND TO AVOID (STABIL).. EXTREME HEAT, FLAMES, LIGHT, UV LIGHT.
 * MATERIALS TO AVOID..... ALKALI HYDROXIDES, POWDERED METALS, LIQUID
 * OXYGEN.
 * HAZ DECOMPOSITION PROD. CO, PHOSGENE AND HCL VAPORS.
 * HAZ POLYMERIZATN OCCUR. NO
 * COND TO AVOID (POLYMR). N/R
 *
 * *** HEALTH HAZARD DATA ***
 *
 * LD50-LC50-MIXTURE..... ORAL RAT LD50: 4920MG/KG
 * ROUTE OF ENTRY-INHAL... YES
 * ROUTE OF ENTRY-SKIN... YES
 * ROUTE OF ENTRY-INGEST.. YES
 * HEALTH HAZARDS-ACUTE
 * AND CHRONIC..... ACUTE: IRRITATION OF EYES, SKIN, RESPIRATOR
 * Y OR G.I. TRACT; SEVERE PAIN, REDNESS OF EY
 * ES; DRYNESS OF SKIN; CNS EFFECT LIKE, VISUA
 * L; DRYNESS OF SKIN; CNS EFFECT LIKE, VISUAL
 * DISTURBANCES AND MENTAL CONFUSION, HEADA
 * CHE, NAUSEA, DIZZINESS, VOMITING, DIZZINESS/
 * CHRONIC; LIVER, KIDNEY DAMAGE, CNS EFFECTS.
 *
 * CARCINOGENITY-NTP..... NO
 * CARCINOGENITY-IARC..... YES
 * CARCINOGENITY-OSHA..... NO
 * EXPLANATION-CARCINOGEN. SUSPECTED ANIMALS CARCINOGEN.
 * SIGNS AND SYMPTOMS OF
 * EXPOSURE..... SEE HEALTH HAZARDS DATA.
 * MEDICAL CONDITIONS GEN
 * AGGRAVATED BY EXPOSURE. PRE-EXISTING CONDITIONS MAY BE WORSEN.
 * EMERGENCY AND FIRST AID
 * PROCEDURES..... INHALATION: REMOVE TO FRESH AIR. CPR/OXYGE
 * N IF NECESSARY; CONSULT A PHYSICIAN. INGE
 * STION: IF CONSCIOUS, GIVE TWO GLASSES OF W
 * ATER; CONSULT A PHYSICIAN IMMEDIATELY, SKI
 * N AND EYES: FLUSH WITH PLENTY OF WATER FO

* CONTINUED ON NEXT FRAME/PAGE BELOW
 * N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES	STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES
6810-00-184-4800	62910	A	D	SM	003 OF 005	6810-00-184-4800	62910	A	D	SM	003 OF 005

• R ABOUT 15-20 MINUTES, CALL A PHYSICIAN I
 • IMMEDIATELY.

*** PRECAUTIONS FOR SAFE HANDLING AND USE ***

STEPS TO BE TAKEN IF
 MATL IS RELEASED/SPILL... USE PROPER PERSONAL PROTECTION; CONTAIN F
 REE LIQUID IF POSSIBLE; REMOVE ALL IGNITI
 ON SOURCES; USE SUITABLE INERT ABSORBENT
 MATERIAL AND RECOVER FOR PROPER DISPOSAL

NEUTRALIZING AGENT... N/R
 WASTE DISPOSAL METHOD... CONSULT LOCAL AUTHORITIES; DISPOSAL MUST
 BE IN ACCORDANCE WITH LOCAL, STATE AND FE
 DERAL REGULATIONS.
 HANDLING/STORAGE PREC... STORE IN COOL, DRY AND WELL VENTILATED AR
 EA. KEEP TIGHTLY CLOSED; PROTECT AGAINST P
 HYSICAL DAMAGE.

*** CONTROL MEASURES ***

RESPIRATORY PROTECTION... USE NIOSH/MSHA APPROVED RESPIRATOR FOR O
 RGANIC VAPORS/MIST IF ABOVE PEL/TLV OR S
 CBA IN AN ENCLOSED AREA.
 VENTILATION... LOCAL EXHAUSTED/GENERAL TO MAIN PEL/TLV
 PROTECTIVE GLOVES... IMPERVIOUS
 EYE PROTECTION... CHEMICAL SAFETY GOGGLES.
 OTHER PROTECTIVE EQUIP... IMPERVIOUS APRON; EYE-WASH FACILITIES.
 WORK HYGIENIC PRACTICE... AVOID CONTACT WITH EYES AND SKIN; DO NOT
 BREATHE VAPORS/MIST; WASH THOROUGHLY AFTE
 R EACH USE.

*** TRANSPORTATION DATA ***

DATE TECH REVIEW-TRANS... 17OCT89

DOT PSN CODE... NFB
 DOT SHIPPING NAME... TRICHLOROETHYLENE
 DOT HAZARD CLASS... ORM-A
 DOT LABEL... NONE
 DOT MODE INDICATOR... A
 DOT ID NUMBER... UN1710

IMO PSN CODE... OVL
 IMO SHIPPING NAME... TRICHLOROETHYLENE
 IMDG PAGE NUMBER... 6273
 UN NUMBER... 1710
 UN CLASS... 6.1
 SUBSIDIARY RISK LABEL... -

IATA PSN CODE... YMD

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* IATA SHIPPING NAME... TRICHLOROETHYLENE
 * IATA CLASS OR DIVISION... 6.1
 * IATA LABEL... KEEP AWAY FROM FOOD
 * UN OR ID NUMBER... 1710
 * AFR 71-4 PSN CODE... JMM
 * AFR 71-4 SHIPPING NAME... TRICHLOROETHYLENE
 * AFR 71-4 CLASS... ORM-A
 * AFR 71-4 LABEL... NONE
 * ID NUMBER... UN1710

*** LABEL DATA ***

* OSHA HCS LABEL REQUIRED YES
 * DATE TECH REVIEW-LABEL... 17OCT89
 * DATE OF LABEL... 13JUL87
 * MFR LABEL NUMBER... N/K
 * STATUS - LABEL... A
 * CHEMICAL/Common NAME... TRICHLOROETHYLENE
 * CHRONIC HAZARD... YES
 * SIGNAL WORD... WARNING
 * SPECIFIC HAZ & PRECAUT... WARNING:HARMFUL IF SWALLOWED OR INHALED.
 * CAUSED IRRITATION; AFFECTS CNS AND POSSIB
 * LE CANCER HAZARD BASED ON TESTS WITH LAB
 * ORATORY ANIMALS; EXPOSURE MAY CREATE A CA
 * NCER RISK. DO NOT GET IN EYES, ON SKIN OR
 * ON CLOTHING; DO NOT BREATHE VAPORS; KEEP
 * CONTAINERS TIGHTLY CLOSED; USE WITH ADEQU
 * ATE VENTILATION. WASH THOROUGHLY AFTER HA
 * NDLING.
 * PROTECT -EYE... X
 * PROTECT -SKIN... X
 * PROTECT -RESPIRATORY... X
 * NAME (LABEL)... MALLINCKRODT INC.
 * STREET (LABEL)... PARIS BYPASS
 * P.O. BOX (LABEL)... M
 * CITY (LABEL)... PARIS
 * STATE (LABEL)... KY
 * ZIP CODE (LABEL)... 40361
 * COUNTRY (LABEL)... US
 * EMERGENCY TELE (LABEL)... 314-982-5000

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 * = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES	STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES
6810-00-184-4800	82925	A	D		004 OF 005	6810-00-184-4800	82925	A	D		004 OF 005

RESPIRATORY PROTECTION: NIOSH APPROV. ORG. VAP. RESP--IF IN ENCLOSED AREA USE SCBA.
 VENTILATION: PROVIDE MECHAN(GEN/LOCAL EXHAUST) VENT TO MAINTN <TLV
 PROTECTIVE GLOVES: VITON, PVA
 EYE PROTECTION: CHEM SPLASH GOGGLES
 OTHER PROTECTIVE EQUIP: FULL FACE SHLD; FULL PROT. CLTHG/BOOTS; C OVERALLS; PROT. APRON
 SUPPLEMENTAL SAFETY & HEALTH DATA: MSDS DATED NOV. 85/OVEREXPOSURE, ING: IRR. O F MOUTH, GI TRACT, ASPIR. MAY LEAD TO CHEM. PNEUMONIA, PULM. EDEMA/PH OF SOLNS 6.7-7.5

M. EXPOSURE IN AN ENCLOSED AREA MAY BE VERY HARMFUL. CONTACT MAY IRRITATE OR BURN SKIN AND EYES. FIRE MAY PRODUCE IRRITATING OR POISONOUS GASES. RUNOFF FROM FIRE CONTROL OR DILUTION WATER MAY CAUSE POLLUTION.
 NAME (LABEL): OCTAGON PROCESS INC.
 STREET (LABEL): 596 RIVER ROAD
 CITY (LABEL): EDGEWATER
 STATE (LABEL): NJ
 ZIP CODE (LABEL): 07020-1105
 COUNTRY (LABEL): US
 EMERGENCY TELE (LABEL): 201-945-9400

*** TRANSPORTATION DATA ***

DATE TECH REVIEW-TRANS. 02APR87

DOT PSN CODE: MFB
 DOT SHIPPING NAME: TRICHLOROETHYLENE
 DOT HAZARD CLASS: ORM-A
 DOT LABEL: NONE
 DOT MODE INDICATOR: A
 DOT ID NUMBER: UN1710
 REPORTABLE QUANTITY: NO
 LIMITED QUANTITY: N/R

IMO PSN CODE: OVL
 IMO SHIPPING NAME: TRICHLOROETHYLENE
 IMDG PAGE NUMBER: 6273
 UN NUMBER: 1710
 UN CLASS: 6.1
 SUBSIDIARY RISK LABEL: -

IATA PSN CODE: YMD
 IATA SHIPPING NAME: TRICHLOROETHYLENE
 IATA CLASS OR DIVISION: 6.1
 IATA LABEL: KEEP AWAY FROM FOOD
 UN OR ID NUMBER: 1710

AFR 71-4 PSN CODE: JMD
 AFR 71-4 SHIPPING NAME: TRICHLOROETHYLENE
 AFR 71-4 CLASS: ORM-A
 AFR 71-4 LABEL: NONE
 ID NUMBER: UN1710

*** LABEL DATA ***

OSHA HCS LABEL REQUIRED YES
 STATUS - LABEL: E
 SPECIFIC HAZ & PRECAUT: VAPORS MAY CAUSE DIZZINESS OR SUFFOCATION

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 N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES	STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES
6810-00-184-4800	96717	A	D	SM	005 OF 005	6810-00-184-4800	96717	A	D	SM	005 OF 005

PART NO/TRADE NAME..... NEU-TRI SOLVENT; PRODUCT CODE; 565.0
 DATE MSDS PREP/REVISED..... INTERIM
 DATE TECH REVIEW-SAFE..... 11MAY89
 SUPPLY ITEM MANAGER..... CR

*** GENERAL INFORMATION ***

PROPRIETARY DATA..... NO
 ITEM NAME..... TRICHLOROETHYLENE, TECHNICAL
 MANUFACTURER..... DOW CHEMICAL U.S.A.
 STREET..... 2020 DOW CENTER
 P.O. BOX..... N/R
 CITY..... MIDLAND
 STATE..... MI
 COUNTRY..... US
 ZIP CODE..... 48640-6030
 EMERGENCY TELEPHONE NO..... 517-636-4407
 INFORMATION TELE NO..... 517-636-4600
 PREPARER OF MSDS..... N/R
 MSDS SERIAL NO..... BD6YD
 SPECIFICATION NO..... 0-T-634
 TYPE GRADE, CLASS ETC..... TYPE II
 HAZ CHARACTERISTIC CODE..... T4
 UNIT OF ISSUE..... DR
 U/I CONTAINER QUANTITY..... 55.0 GL
 TYPE CONTAINER..... DRUM, METAL
 NET UNIT WEIGHT..... N/R
 NRC/STATE LICENSE NO..... N/R
 NET PROPELL WT-AMMO..... N/R

*** INGREDIENTS/IDENTITY INFORMATION ***

NIOSH RTECS NO..... YK453000
 CAS NO..... 79-01-6
 INGREDIENT NO..... TRICHLOROETHYLENE
 PERCENT NO..... 99.4
 OSHA PEL NO..... 50 PPM/200 STEL
 ACGIH TLV NO..... 50 PPM/200 STEL; 899D
 OTHER REC LIMIT NO..... N/R

*** PHYSICAL/CHEMICAL CHARACTERISTICS ***

APPEARANCE AND ODOR..... CLEAR, COLORLESS LIQUID, CHLOROFORM-LIKE
 ODOR.....
 BOILING POINT..... 189F, 87C
 VAP PRESS/MM HG/70 F..... 60
 VAP DENSITY (AIR =1)..... 4.53
 SPECIFIC GRAVITY..... 1.46
 EVAP RATE & REFERENCE..... 3.7 (ETHER=1)
 SOLUBILITY IN WATER..... NEGLIGIBLE
 PCT VOLATILES BY VOL..... 100
 AUTOIGNITION TEMP..... 788F

CONTINUED ON TOP RIGHT HAND SIDE OF THIS FRAME/PAGE
 N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

*** FIRE AND EXPLOSION HAZARD DATA ***

FLASH POINT..... N/R
 LOWER EXPLOSIVE LIMIT..... 8.0
 UPPER EXPLOSIVE LIMIT..... 10.5
 EXTINGUISHING MEDIA..... WATER FOG
 SPEC FIRE FIGHT PROC..... SELF-CONTAINED RESPIRATORY PROTECTION
 UNUS FIRE & EXPLOS HAZ..... NOT CONSIDERED A FLAMMABLE LIQ. HAZ. EMIT
 S HCL & SMALL MOUNTS OF PHOSGENE & CHLOR
 INE.

*** REACTIVITY DATA ***

STABILITY..... YES
 COND TO AVOID (STABIL)..... OPEN FLAMES, WELDING ARCS OR HIGH TEMP. SO
 URCES.
 MATERIALS TO AVOID..... STRONG BASES: CAUSTIC SODA, CAUSTIC POTASH
 HAZ DECOMPOSITION PROD..... OPEN FLAMES & WELDING ARCS=HCL, & VERY SML
 AMTS OF PHOSGENE & CL
 HAZ POLYMERIZATN OCCUR..... NO
 COND TO AVOID (POLYMR)..... N/R

*** HEALTH HAZARD DATA ***

LDSO-LC50-MIXTURE..... ORAL RAT=4G/KG
 ROUTE OF ENTRY-INHAL..... YES
 ROUTE OF ENTRY-SKIN..... YES
 ROUTE OF ENTRY-INGEST..... YES
 HEALTH HAZARDS-ACUTE
 AND CHRONIC..... ACUTE: IRRITATION OF EYES, SKIN AND RESPIR
 ATORY TRACT; CNS EFFECTS HEADACHE, PRODSIN
 ESS, NAUSEA, VOMITING, CHRONIC: DERMATITIED,
 LIVER, KIDNEY DAMAGE.
 CARCINOGENITY-NTP..... N/R
 CARCINOGENITY-IARC..... YES
 CARCINOGENITY-OSHA..... N/R
 EXPLANATION-CARCINOGEN..... NO DATA PER MSDS; IARC, A SUSPECTED ANIMAL
 CARCINOGEN
 SIGNS AND SYMPTOMS OF
 EXPOSURE..... EYES: SLIGHT IRRITN/PAIN, BUT NO CORNEAL I
 NJURY; SKIN: REPEATD CONCT IRRIT/DRYNESS
 EE OTHER PRECAUTIONS
 MEDICAL CONDITIONS GEN
 AGGRAVATED BY EXPOSURE..... PRE-EXISTING CONDITIONS MSAY BE WORSEN.
 EMERGENCY AND FIRST AID
 PROCEDURES..... SKIN: WASH W. SOAP & H₂O. EYES: FLUSH W. H
 *20. INGESTED: DON'T INDUCE VOMITING. INH
 ALED: REMOVE TO FRESH AIR. GIVE CPR/ OXYGE
 N IF NEED. KEEP WARM & QUIET. REMOVE CON
 TAMINATED CLOTHING. NEVER GIVE ANYTHING

CONTINUED ON NEXT FRAME/PAGE BELOW

N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES	STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES
6810-00-184-4800	96717	A	B	SM	005 OF 005	6810-00-184-4800	96717	A	B	SM	005 OF 005

BY MOUTH TO UNCONSCIOUS PERSON.

*** PRECAUTIONS FOR SAFE HANDLING AND USE ***

STEPS TO BE TAKEN IF MATL IS RELEASED/SPILL: USE PROPER EQUIPMENT. SMALL SPILLS: MOP UP, Wipe up or soak up immediately. REMOVE TO OUT OF DOORS. LG SPILLS: EVACUATE AREA. CONTAIN LIQUID: TRANSFER TO METAL CLOSED CONTAINERS. KEEP OUT OF WATER SUPPLY.

WASTE DISPOSAL METHOD: SMALL VOL: EVAP W/LOCAL EXHAUST (HOOD). LARGE VOL: SHIP TO SOLVENT RECLAIM FACILITY. ABSORBED MATL MAY BE PUT IN TOXIC SUBSTANCE LANDFILL IAW ALL LOCAL, STATE & FED REGS. MATL MAY BE INCINERATED IF MIXED W/MORE FLAMMABLE LIQUID TO AID DESTRUCTION.

HANDLING/STORAGE PREC: HANDLE W/REASONABLE CARE. AVOID BREATHING VAPORS. STORE IN COOL PLACE.

OTHER PRECAUTIONS: CONTINO (OVEREXPOS): ON PROLONGD CONTACT; INH: ANESTHESIA, CAN BE FATAL IF MUCH INHLD; ING: MAY BE MOD TOXIC; VAP WILL COLLECT IN PIT S, DEGREASERS, STG TANKS, ETC: DO NOT ENTER W/O ASST. USE APPRVD BRTHG APP.

*** CONTROL MEASURES ***

RESPIRATORY PROTECTION: NIOSH APPRVD RESP IN ABSENCE OF ENVIRONMENTAL PROTECTION; SCBA IN EMERGENCY

VENTILATION: RECOMMEND CONTROL OF VAPORS TO SUGGESTED GUIDE

PROTECTIVE GLOVES: RUBBER

EYE PROTECTION: SAFETY GLASSES W/O SHIELD

OTHER PROTECTIVE EQUIP: FULL FACE MASK (HW) W/ORG. CANISTER FOR LEVELS UP TO 2X.

SUPPLEMENTAL SAFETY & HEALTH DATA: MSDS NUMBER FROM DOW CHEMICAL USA DATED: 10/05/85; SPEC REFERENCE: O-T-634C, TYPE II.

*** TRANSPORTATION DATA ***

DATE TECH REVIEW-TRAKS. 02MAR87

DOT PSN CODE..... NFB
 DOT SHIPPING NAME... TRICHLOROETHYLENE
 DOT HAZARD CLASS..... ORM-A
 DOT LABEL..... NONE
 DOT HAZARD INDICATOR..... EA
 DOT ID NUMBER..... UN1710
 REPORTABLE QUANTITY..... NO
 LIMITED QUANTITY..... N/R

CONTINUED ON TOP RIGHT HAND SIDE OF THIS FRAME/PAGE
 N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

IMO PSN CODE..... OVL
 IMO SHIPPING NAME..... TRICHLOROETHYLENE
 IMDG PAGE NUMBER..... 6273
 UN NUMBER..... 1710
 UN CLASS..... 6.1
 SUBSIDIARY RISK LABEL.. -
 IATA PSN CODE..... YMD
 IATA SHIPPING NAME..... TRICHLOROETHYLENE
 IATA CLASS OR DIVISION. 6.1
 IATA LABEL..... KEEP AWAY FROM FOOD
 UN OR ID NUMBER..... 1710
 AFR 71-4 PSN CODE..... JMW
 AFR 71-4 SHIPPING NAME. TRICHLOROETHYLENE
 AFR 71-4 CLASS..... ORM-A
 AFR 71-4 LABEL..... NONE
 ID NUMBER..... UN1710

*** LABEL DATA ***

OSHA HCS LABEL REQUIRED YES
 STATUS - LABEL..... E
 SPECIFIC HAZ & PRECAUT. VAPORS MAY CAUSE DIZZINESS OR SUFFOCATION. EXPOSURE IN AN ENCLOSED AREA MAY BE VERY HARMFUL. CONTACT MAY IRRITATE OR BURN SKIN AND EYES. FIRE MAY PRODUCE IRRITATING OR POISONOUS GASES. RUNOFF FROM FIRE CONTROL OR DILUTION WATER MAY CAUSE POLLUTION.
 NAME (LABEL)..... DOW CHEMICAL U S A GOVERNMENT MARKETING
 STREET (LABEL)..... 2020 DOW CENTER
 CITY (LABEL)..... MIDLAND
 STATE (LABEL)..... MI
 ZIP CODE (LABEL)..... 48640-6030
 COUNTRY (LABEL)..... US

CONTINUED ON NEXT FRAME/PAGE BELOW
 N/K = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE

DoD Hazardous Materials Information System
DoD 6050.5-LR
AS OF JUNE 15, 1989
For U.S. Government Use Only

Stock Number: 6810003687991
Manufacturers CAGE: 82925
Part No. Indicator: A
Part Number/Trade Name: O-S-809C TYPE I CLASS 2 SULFURIC
ACID
Safety Focal Point: D
Record No. for this Safety Entry: 001
Total Safety Entries, This No.: 001
Date MSDS Prepared: INTERIM
Safety Data Review Date: 17JAN87
Supply Item Manager: CX
Item Name: [REDACTED] TECHNICAL

Manufacturer Name: OCTAGON PROCESS INC
Emergency Phone No.: (201)945-9400

MSDS Serial Number: BDXGQ
Specification Number: O-S-809C
Hazard Characteristic Code: C2
Unit of Issue: DR
Unit of Iss. Container Qt.: 15.0 GL
Type of Container: DRUM
Net Unit Weight: 15.0 GL

Proprietary: NO
Ingredient Focal Point: D
Ingredient Sequence Number: 01
NIOSH (RTECS) No.: WS5600000
Ingredient: SULFURIC ACID, CAS#7664-93-9
Percent: 93.0
ACGIH TLV: 1MG/CUM
Appearance and Odor: CLEAR TO SLIGHTLY TURBID, OFF WHITE
TO STRAW COLOR
Boiling Point: 535F/279C
Vapor Pressure(MM Hg/70 F): <.5
Vapor Density (Air=1): N/K
Specific Gravity: 1.835
Evap. Rate & Reference: N/R
Solubility in Water: COMPLETE
% Volatiles by Volume: N/K
Flash Point: NONE
Lower Explosive Limit: N/R
Upper Explosive Limit: N/R
Extinguishing Media: NONE NOTED; ANY MEDIA SUITABLE FOR
SURROUNDING FIRES
Special Fire Fgting Proc: USE NIOSH/MSHA APPROVED SCBA WITH
FULL PROTECTION.
Usual Fire & Expl. Hzrds: STRONG OXIDIZER. MAY CAUSE FIRE
WHEN IN CONTACT WITH OTHER ORGANIC

MATERIALS; WILL ATTACK METAL/H*2.G

Stability: YES
Cond. to Avoid(Stability): ADDITIONS OF WATER
Materials to Avoid: ALKALINE MATERIALS, SALTS,
HYDRATED MATERIALS, COMBUST.
ORGANICS
Hazardous Decomp. Products: FUMES OF SO*2 AND SO*3.
Hazardous Poly. Occur: NO
Conditions to Avoid(Poly): NONE NOTED
Sgns and Sym of Oeposure: CAUSE SEVERE BURNS OF SKIN AND
EYES; SEVERE SKIN ULCERATION;
ASTHMA AND OTHER UPPER RESP.
AILMENTS.
Emerg. and FirstAid Procs: INHALE: REMOVE TO FRESH AIR, GIVE
CPR/O*2 IF NEED; EYES/SKIN: FLUSH
W LG AMTS H*2O FOR 15 MIN; INGEST:
RINSE MOUTH; GET MEDICAL
ATTENTION FOR EYES, BREATHING
DIFFICULTY, OR OTHER SYMPTOMS OF
OVEREXPOSURE.
if Matl. Relsd or Sped: USE PROPER PERSONAL PROTECTION;
ZONE OFF CONTAMINATED AREA.
NEUTRALIZE TO PH 7 WITH SODA ASH
OR LIME, USE NON COMBUTIBLE
ABSORBENT MATERIAL AND RECOVER
FOR PROPER DISPOSAL.
Waste Disposal Method: DISPOSE OF COLLECTED MATERIAL IN
ACCORDANCE WITH LOCAL, STATE AND
FEDERAL REGULATIONS.
Handg and Strg Precautions: STORE IN DRY AND COOL VENTILATED
AREA: KEEP SAFETY SHOWERS AND EYE
WASH NEARBY. KEEP CONTAINER CLOSED
WHEN NOT IN USE. NO SMOKING
EATING/DRINKING IN AREA
Other Precautions: AVOID CONTACT WITH SKIN AND EYES:
DO NOT INHALE MIST/VAPORS. USE
PROPER PERSONAL PROTECTION.
Respiratory Protection: USE NIOSH/MSHA APPROVED
RESPIRATOR FOR ACID MIST/VAPORS.
Ventilation: LOCAL EXHAUST TO MAINTN BELOW
TLV.
Protective Gloves: RUBBER
Eye Protection: GOGGLES/FACE SHIELD
Other Protective Equipment: FULL PROTECTIVE CLOTHING, SAFETY
SHOWER, EYE WASH STATION
Sup. Safe and Health Data: MSDS DATED 10/30/85
Transportation Focal Point: D
Trans. Data Rev. Date: 87017
DOT PSN Code: MNR
DOT Proper Shipping Name: SULFURIC ACID
DOT Class: CORROSIVE MATERIAL
DOT Label: CORROSIVE
DOT Mode Indicator: E
Identification Number: UN1830
IMO PSN Code: OFJ
IMO Proper Shipping Name: SULPHURIC ACID
Regulations Page No.: 8220
UN Number: 1830

UN Class: 8
IMO Subsidiary Risk Label: -
IATA PSN Code: XIX
IATA UN ID Number: 1830
IATA Proper Shipping Name: SULPHURIC ACID
IATA UN Class: 8
IATA Label: CORROSIVE
AFR 71-4 PSN Code: JBR
AFR 71-4 Proper Ship. Name: SULFURIC ACID
AFR 71-4 Class: CORROSIVE MATERIAL
AFR 71-4 Label: CORROSIVE
AFR 71-4 ID Number: UN1830

EPA
=====

Disposal
=====

===== | Master Print | =====

Stock Number: 002643939
FSC: 6810
Manufacturers CAGE: 22360
Part No. Indicator: A
Part Number/Trade Name: O-C-303 [REDACTED] E, TECHNICAL

===== | General Information | =====

Safety Focal Point: D
Record No. for this Safety Entry: 002
Total Safety Entries, This No.: 005
Date MSDS Prepared: PRE-HCS
Safety Data Review Date: 05OCT82
Supply Item Manager: CX
Item Name: CHROMIUM TRIOXIDE, TECHNICAL

Manufacturer Name: ESSEX CHEMICAL CORPORATION
Emergency Phone No.: 201-773-6300

MSDS Serial Number: BDQJX
Specification Number: O-C-303
Hazard Characteristic Code: R1
Unit of Issue: DR
Unit of Iss. Container Qt.: 100 LBS

===== | Ingredients/Identity Information | =====

ID : 01
Proprietary : NO

IFP : D
NIOSH (RETECS): GB6650000

Ingredient : CHROMIC ACID, SOLID
Percent : 99.5

ACGIH TLV : 0.05 MG/CUM CR6

===== | Physical/Chemical Characteristics | =====

Appearance and Odor: SOLID, DARK RED FLAKES OR POWDER, NO
ODOR
Boiling Point: GT 446F
Specific Gravity: 2.7
Solubility in Water: 62 PERCENT

===== | Fire & Explosion Hazard Data | =====

Flash Point: N.A.

[Extinguishing Media]
WATER

[Other Precautions]

PROTECT CONTAINER AGAINST PHYSICAL DAMAGE.WEAR RUBBER GLOVES,MASK,OVERALLS,
RUBBER APRONS,RUBBER SHOES & SELF CONTAINED BREATHING APPARATUS.

=====
=====| Control Measures |=====

[Respiratory Protection]

U.S.BUREAU OF MINES 2175 MODEL 7100 DUST RESPIRATOR OR MONO MASK 600

[Ventilation]

ADEQUATE TO REMOVE DUST OR MISTS.

[Protective Gloves]

RUBBER

[Eye Protection]

CHEMICAL SAFETY GOGGLES

[Other Protective Equipment]

FACE SHIELD,RUBBER SLEEVES,APRONS,BOOTS,HARD HATS,CLOTHING

[Work Hygienic Practices]

[Sup. Safe and Health Data]

=====
=====| Transportation Data |=====

Transportation Focal Point: D

Trans. Data Rev. Date: 82278

DOT PSN Code: DJB

DOT Proper Shipping Name: CHROMIC ACID,SOLID

DOT Class: OXIDIZER

DOT Label: OXIDIZER

Limited Quantity: NO

DOT Mode Indicator: E

Identification Number: NA1463

Reportable Quantity: NO

IMO PSN Code: EIT

IMO Proper Shipping Name: CHROMIC ACID, SOLID

IMO Regulations Page No.: SEE 5038

UN Number: 1463

UN Class: 5.1

IMO Subsidiary Risk Label: CORROSIVE

IATA PSN Code: GVR

IATA UN ID Number: 1463

IATA Proper Shipping Name: CHROMIUM TRIOXIDE, ANHYDROUS

IATA UN Class: 5.1

IATA Subsidiary Risk Class: 8

IATA Label: OXIDIZER & CORROSIVE

AFR 71-4 PSN Code: CQH

AFR 71-4 Proper Ship. Name: CHROMIC ACID,SOLID

AFR 71-4 Class: OXIDIZER

AFR 71-4 Label: OXIDIZER

AFR 71-4 ID Number: NA1463

=====
=====| Disposal Data |=====

[Special Fire Fgting Proc]
FLUSH WITH WATER

[Unusual Fire & Expl. Hzrds]
POWERFUL OXIDIZING AGENT.MAY IGNITE OXIDIZABLE MATERIALS.KEEP AWAY FROM
COMBUSTIBLES,E.G.PAPER,WOOD.

=====| Reactivity Data |=====
Stability: YES

[Cond. to Avoid(Stability)]
EXPOSURE TO MOIST AIR PICKS UP WATER

[Materials to Avoid]
COMBUSTIBLES & MANY ORGANICS,REDUCING AGENTS,OILS,GREASES

[Hazardous Decomp. Products]
AT 387F OXYGEN GAS & CHROMIC OXIDE

[Hazardous Poly. Occur]
NO

=====| Health Hazard Data |=====

[Health Hazards-Acute & Chronic]

[Signs and Symptoms of Overexposure]
STRONG IRRITATION OF SKIN & MUCOUS MEMBRANES.DERMATITIS,CHROME ULCER,LOSS
OF EYE SIGHT,CHROME HOLE.

[Emergency and First Aid Procedures]
FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.GET IMMEDIATE MEDICAL
ATTENTION FOR EYES & SKIN BURNS OR IF INGESTED.IF INHALED,REMOVE TO
UNCONTAMINATED AREA & GET IMMEDIATE MEDICAL ATTENTION.WASH CONTAMINATED
AREAS OF BODY WITH LARGE AMOUNTS H₂O

=====| Precautions for Safe Handling & Use |=====

[Steps if Material Released or Spilled]
COVER WITH WEAK REDUCING AGENTS SUCH AS HYPO,BISULFITES OR FERROUS SALTS.
BISULFITES OR FERROUS SALTS NEED ADDITIONAL PROMOTER OF SOME 3M-H₂SO₄ FOR
RAID REACTION.TRANSFER THE SLURRY INTO A LARGE CONTAINER OF WATER,
NEUTRALIZE WITH SODA ASH

[Waste Disposal Method]
USE VAST VOLUME OF CONCENTRATED SOLUTION OF REDUCING AGENT (BISULFITES OR
FERROUS SALTS WITH 3M-H₂SO₄ OR HYPO).NEUTRALIZE WITH SODA ASH OR DILUTE
SOL.DRAIN INTO AN APPROVED DISPOSAL AREA.

[Handling and Storage Precautions]
STORE IN DRY AREA WITH TIGHTLY CLOSED STEEL CONTAINERS OUT OF CONTACT WITH
COMBUSTIBLES OR ORGANICS SUCH AS GREASES.AVOID WOOD FLOORING.

Disposal Data Action Code:
Disposal Data Focal Point: E
Disposal Data Review Date: 88050
No. for this Disp. Entry: 02
Total Disp Ent-This Stk #: 005
Account. Accept. by DRMS: YES
EIS/EA Availability: NO
Transfer (New Condition): NO
Donation (New Condition): NO
Sales (New Condition): NO
Reutil. (Used Condition): NO
Transfer (Used Condition): NO
Donation (Used Condition): NO
Sales (Used Condition): NO
Disposal Supplement Code: N042
Disposal Supplemental Data: IN CASE OF ACCIDENTAL EXPOSURE
OR DISCHARGE, CONSULT HEALTH
AND SAFETY FILE FOR PRECAUTIONS.

---| EPA |-----
1st Edit Table Code (New): D001
1st Code (New): D001
1st Name (New): IGNITIBLE
1st Characteristics (New): IGNITABILITY
1st Acute Hazard (New): NO
2nd Edit Table Code (New): D007
2nd Code (New): D007
2nd Name (New): EP TOXIC (>5.0 MG/L CHROMIUM)
2nd Characteristics (New): EP TOXICITY
2nd Acute Hazard (New): NO
1st Edit Table Code (Used): D001
1st Code (Used): D001
1st Name (Used): IGNITIBLE
1st Characteristics (Used): IGNITABILITY
1st Acute Hazard (Used): NO
2nd Edit Table Code (Used): D007
2nd Code (Used): D007
2nd Name (Used): EP TOXIC (>5.0 MG/L CHROMIUM)
2nd Characteristics (Used): EP TOXICITY
2nd Acute Hazard (Used): NO

---| DISPOSAL |-----
1st Code (Small Qty): TM01
1st Method (Small Qty): (TM01) DISPOSE AS PER GUIDELINE:
WASTE CONTAINING TOXIC
METALS (EXCLUDING CYANIDE AND
FLUORIDE SALTS)
2nd Code (Small Qty): CR01
2nd Method (Small Qty): (CR01) DISPOSAL OF OXIDIZERS BY
CHEMICAL REDUCTION.
3rd Code (Small Qty): AN03
3rd Method (Small Qty): (AN03) DISPOSE AS PER GUIDELINE:
TOXIC ACID WASTE.
1st Code (Large Qty): TM01
1st Method (Large Qty): (TM01) DISPOSE AS PER GUIDELINE:
WASTE CONTAINING TOXIC

METALS (EXCLUDING CYANIDE AND
FLUORIDE SALTS)

2nd Code (Large Qty): CR01

2nd Method (Large Qty): (CR01) DISPOSAL OF OXIDIZERS BY
CHEMICAL REDUCTION.

3rd Code (Large Qty): AN03

3rd Method (Large Qty): (AN03) DISPOSE AS PER GUIDELINE:
TOXIC ACID WASTE.

Disposal Restrictions: DO NOT DISPOSE VIA SANITARY
SEWER OR SANITARY LANDFILL.

Rptable Qty-Disposal File: YES

EPA Hazard Waste Label: YES

Waste Proper Shipping Name: WASTE CHROMIC ACID, SOLID

===== | Master Print | =====

Stock Number: 008238010
FSC: 6810
Manufacturers CAGE: 04767
Part No. Indicator: A
Part Number/Trade Name: ██████████ 20 BE

===== | General Information | =====

Safety Focal Point: D
Record No. for this Safety Entry: 001
Total Safety Entries, This No.: 014
Date MSDS Prepared: INTERIM
Safety Data Review Date: 08DEC86
Supply Item Manager: CX
Item Name: HYDROCHLORIC ACID, TECHNICAL

Manufacturer Name: HOOKER CHEMICALS & PLASTICS CORP
Emergency Phone No.: (716) 278-7777

MSDS Serial Number: BFRCP
Specification Number: O-H-765
Hazard Characteristic Code: C2
Unit of Issue: DR
Unit of Iss. Container Qt.: 15 GAL
Type of Container: POLYETHYLENE
Net Unit Weight: N/K

===== | Ingredients/Identity Information | =====

ISN : 01
Proprietary : NO

IFP : D
NIOSH (RETECS): MW4025000

Ingredient : HYDROCHLORIC ACID; CAS #7647-01-0 (20.0 BE)
Percent : 31.5

ACGIH TLV : (C) 5MG/CUM

===== | Physical/Chemical Characteristics | =====

Appearance and Odor: CLEAR, COLORLESS TO FAINT YELLOW
LIQ W/PUNGENT ODOR
Boiling Point: 230F/110C
Vapor Pressure(MM Hg/70 F): N/K
Vapor Density (Air=1): N/K
Specific Gravity: 1.160
Evap. Rate & Reference: N/K
Solubility in Water: COMPLETE
% Volatiles by Volume: 100

===== | Fire & Explosion Hazard Data | =====

Flash Point: NONE
Lower Explosive Limit: N/R
Upper Explosive Limit: N/R

[Extinguishing Media]

EXTINGUISH WITH AGENT SUITABLE FOR SURROUNDING FIRE

[Special Fire Fgting Proc]

WEAR SELF-CNTD BRTHG, APP H*20 SPRAY TO COOL CONTR.

[Unusual Fire & Expl. Hzrds]

REACTS W/METALS TO EMIT H*2 GAS WHICH MAY FORM EXPLOSIVE MIXTURES WITH AIR.

=====
| Reactivity Data |=====
Stability: YES

[Cond. to Avoid(Stability)]

AVOID CONTACT W/METALS & SULFIDES.

[Materials to Avoid]

OXIDIZERS, FLAMM LIQUIDS, MOST METALS & STRONG ALKALIS, NH*3

[Hazardous Decomp. Products]

HCL GAS, H*2 & CL*2 GAS

[Hazardous Poly. Occur]

[Conditions to Avoid(Poly)]

NOT KNOWN

=====
| Health Hazard Data |=====
=====

[Health Hazards-Acute & Chronic]

[Signs and Symptoms of Overexposure]

EYES/SKIN: CAUSE BURNS, IRRITN. DAMAGES EYE-BLINDNESS; INHAL: IRRIT RESP TRACT;
INGEST: IRRIT/BURNS GI

[Emergency and First Aid Procedures]

SKIN: WASH W. SOAP & H*2O. EYES: FLUSH W. H*2O. INGESTED: DON'T INDUCE VOMITING.
INHALED: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEED. KEEP WARM & QUIET.
REMOVE CONTAMINATED CLOTHING. NEVER GIVE ANYTHING BY MOUTH TO UNCONSCIOUS PERSON.

=====
| Precautions for Safe Handling & Use |=====
=====

[Steps if Material Released or Spilled]

ELIMINATE IGNITION SOURCES. STOP LEAK W/O RISK. EVACUATE AREA. SM SPILL:
ABSORB WITH INERT ABSORBENT, FLUSH AREA WITH WATER. LG SPILL: NEUTRALIZE WITH
SODA ASH. FLUSH NEUTRALIZED SOLUTION TO SEWER IN ACCORDANCE WITH
INTERNATIONAL FED, STA, & LOCAL REGS.

AFR 71-4 PSN Code: FCL
AFR 71-4 Proper Ship. Name: HYDROCHLORIC ACID
AFR 71-4 Class: CORROSIVE MATERIAL
AFR 71-4 Label: CORROSIVE
AFR 71-4 ID Number: UN1789

=====| Disposal Data |=====

Disposal Data Action Code:
Disposal Data Focal Point: E
Disposal Data Review Date: 88291
RecNo.for this Disp. Entry: 01
Total Disp Ent-This Stk #: 012
Account. Accept. by DRMS: YES
EIS/EA Availability: NO
Transfer (New Condition): NO
Donation (New Condition): NO
Sales (New Condition): NO
Reutil. (Used Condition): NO
Transfer (Used Condition): NO
Donation (Used Condition): NO
Sales (Used Condition): NO
Disposal Supplement Code: N042
Disposal Supplemental Data: MSDS FM MFR DATED:10/76; SPEC
REF: O-H-765C

IN
CASE OF ACCIDENTAL EXPOSURE OR
DISCHARGE, CONSULT HEALTH AND
SAFETY FILE FOR PRECAUTIONS.

---| EPA |-----
1st Edit Table Code (New): D002
1st Code (New): D002
1st Name (New): CORROSIVE
1st Characteristics (New): CORROSIVITY
1st Acute Hazard (New): NO
1st Edit Table Code (Used): D002
1st Code (Used): D002
1st Name (Used): CORROSIVE
1st Characteristics (Used): CORROSIVITY
1st Acute Hazard (Used): NO

---| DISPOSAL |-----
1st Code (Small Qty): AN01
1st Method (Small Qty): (AN01) DISPOSE AS PER GUIDELINE:
LIQUID CONCENTRATED ACIDS.
1st Code (Large Qty): AN01
1st Method (Large Qty): (AN01) DISPOSE AS PER GUIDELINE:
LIQUID CONCENTRATED ACIDS.
Disposal Restrictions: DO NOT DISPOSE VIA SANITARY
SEWER OR SANITARY LANDFILL.

[Waste Disposal Method]

KEEP IN COVERED DRUMS, PENDING DISPOSAL. HANDLE & DISPOSE IN FULL COMPLIANCE WITH ALL APPLICABLE INTERNATIONAL, FEDERAL, STATE, & LOCAL REGULATIONS.

[Handling and Storage Precautions]

STORE IN COOL, DRY, WELL VENTILATED AREA. PROTECT FROM PHYSICAL DAMAGE. AVOID ANY PHYSICAL CONTACT. KEEP CONTAINERS TIGHTLY CLOSED

[Other Precautions]

STORE AWAY FROM HNO₃, CHLORATES & SULFIDES. DO NOT BREATHE VAP/MIST. AVOID SKIN/CLOTHING CONTACT.

=====
===== | Control Measures | =====

[Respiratory Protection]

ACID GAS TYPE CANISTER; FOR EMERGENCIES, WEAR SCBA.

[Ventilation]

MECHANICAL VENT TO MAINTN EXPOS BELOW TLV(S)

[Protective Gloves]

RUBBER/NEOPRENE

[Eye Protection]

GOGGLES/FACE SHIELD

[Other Protective Equipment]

FULL PROTECTIVE CLOTHING, SAFETY SHOWER, EYE WASH STATION

[Work Hygienic Practices]

[Sup. Safe and Health Data]

MSDS FM MFR DATED: 10/76; SPEC REF: O-H-765C

=====
===== | Transportation Data | =====

Transportation Focal Point: D

Trans. Data Rev. Date: 86342

DOT PSN Code: HHF

DOT Proper Shipping Name: HYDROCHLORIC ACID

DOT Class: CORROSIVE MATERIAL

DOT Label: CORROSIVE

Limited Quantity: NO

DOT Mode Indicator: E

Identification Number: UN1789

Reportable Quantity: NO

IMO PSN Code: IEX

IMO Proper Shipping Name: HYDROCHLORIC ACID, SOLUTION

IMO Regulations Page No.: 8174

UN Number: 1789

UN Class: 8

IMO Subsidiary Risk Label: -

IATA PSN Code: NPG

IATA UN ID Number: 1789

IATA Proper Shipping Name: HYDROCHLORIC ACID SOLUTION

IATA UN Class: 8

IATA Label: CORROSIVE

LAND DISPOSAL OF THIS ITEM
IS LIMITED BY THE RESTRICTIONS
OF 40 CFR 268.

Rptable Qty-Disposal File: YES
EPA Hazard Waste Label: YES
Waste Proper Shipping Name: WASTE HYDROCHLORIC ACID,
SOLUTION



ENTHONE
INCORPORATED

MATERIAL SAFETY DATA SHEET

[REDACTED] **N-122A**

[REDACTED]

**P.O. BOX 1900
NEW HAVEN, CT 06508**

EMERGENCY PHONE NUMBERS				PRODUCT CODE#: 2534
PLANTS	203-934-8611	(8:30am-5pm EST)		DATE ISSUED: 7/9/87
	312-598-3210	(8:30am-5pm CST)		SUPERCEDES: 11/78
MFSA	313-644-5626	(24 hours)		PREPARER: B.A. Whalen
CHEMTREC	800-424-9300	(Transportation)		

II. HAZARDOUS INGREDIENTS

FRH

COMPONENT	COMMON NAME	CAS NO.	OSHA-PEL	ACGIH-TLV	%
Mixture of aliphatic amines			6mg/m3	4mg/m3	

*Trade secret

III. PHYSICAL PROPERTIES

SPECIFIC GRAVITY (WATER =1)	1.013	BOILING POINT, °F	342
EVAP.RATE (BUTYL ACETATE=1)	NI	MELTING POINT, °F	ca. 15
VAPOR PRESSURE, mmHg	NI	SOLUBILITY IN WATER	complete
VAPOR DENSITY (AIR=1)	NI	APPEARANCE	colorless liquid
pH (AS IS)	>13	ODOR	ammonia-like

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT, °F	209 (o.c.)	FLAMMABLE LIMITS (AIR)	NI	LEL	NI	UEL
EXTINGUISHING MEDIA						
<input type="checkbox"/> Not Combustible <input checked="" type="checkbox"/> Water fog or spray <input checked="" type="checkbox"/> Carbon Dioxide <input checked="" type="checkbox"/> Dry Chemical <input type="checkbox"/> Alcohol Foam <input checked="" type="checkbox"/> Foam <input type="checkbox"/> Sand or Earth						
SPECIAL FIRE FIGHTING PROCEDURES						
Wear NIOSH approved full protective clothing and self-contained breathing apparatus. Keep containers cool to prevent rupture and release of material.						
UNUSUAL FIRE AND EXPLOSION HAZARDS						
When exposed to high temperatures product may release toxic oxides of nitrogen.						

LL-HAZ-0058

V. HEALTH HAZARD DATA**EFFECTS OF ACUTE EXPOSURE:**

INHALATION: Mist or vapor may damage upper respiratory tract and lung tissue which may cause chemical pneumonia depending upon severity of exposure.

INGESTION: Can cause severe burns to mouth, throat, esophagus, and stomach.

SKIN: Can cause severe burns.

EYES: Causes severe burns with damage to eyes and possible blindness.

EFFECTS OF CHRONIC EXPOSURE:

Superficial destruction of skin or primary irritant dermatitis. Inhalation of mist or vapor may result in irritation or damage to respiratory tract tissue and increased susceptibility to respiratory illness.

CARCINOGEN: Not listed by NTP, IARC, OSHA

REFERENCE:**EMERGENCY AND FIRST AID PROCEDURES**

INHALATION: Remove person from contaminated area. If breathing has stopped, resuscitate and administer oxygen if available.
Seek immediate medical attention.

INGESTION: Never give anything by mouth to an unconscious person, obtain immediate medical attention. If vomiting occurs spontaneously, keep airway clear. If swallowed DO NOT INDUCE VOMITING, give large amounts of water.
Seek immediate medical attention.

SKIN: Immediately wash contaminated skin with plenty of water for 15 minutes. Remove contaminated clothing and footwear. Wash clothing before reuse. Discard footwear if it cannot be decontaminated.
Seek immediate medical attention.

EYES: Immediately flush eyes with plenty of water for at least 15 minutes holding lids apart to ensure flushing of entire surface. Washing eyes within several seconds of exposure is essential to minimize damage.
Seek immediate medical attention.

VI. PRECAUTIONS FOR SAFE HANDLING AND USE**SPILL PROCEDURES:**

Avoid contact with skin, eyes, and clothing. Wear protective equipment (see Section VII). Do not breathe mist or vapors. Contain spill and soak up in suitable absorbent. Shovel up into plastic-lined steel containers and cover. Dispose of in accordance with Local, State, and Federal regulations.

STORAGE AND HANDLING PRECAUTIONS:

Store in a cool, dry place. Keep away from acids and oxidizers. Loosen cover cautiously when opening.

ADDITIONAL INFORMATION:

Store above freezing temperature.

VII. CONTROL MEASURES

VENTILATION: Local exhaust recommended.

RESPIRATOR: Use NIOSH approved respirator when air concentration is greater than the TLV or PEL.
Use cartridge filter for alkaline mist.

EYE PROTECTION: Safety glasses Chemical safety goggles Face shield

PROTECTIVE GLOVES: Neoprene Natural rubber Other:

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Chemically resistant coveralls, hat, and shoes or boots.

WORKHYGENIC PRACTICES:

Emergency eye wash and safety shower should be available. Wash thoroughly after handling.

ADDITIONAL INFORMATION:

For waste disposal of operating solutions consult Enthone Waste Disposal Procedures. For major spills consult Enthone for disposal assistance. Dispose of in accordance with Local, State, and Federal regulations.

CAS = Chemical Abstract Service

NI = No relevant information available

NA = Not applicable

Trade Secret = Claimed as allowed under 29 CFR 1910.1200

PEL = OSHA Permissible Exposure Limit

TLV = ACGIH Threshold Limit Value

NTP = National Toxicology Program

IARC = Int'l Agency for Research on Cancer

VIII. REACTIVITY DATA

X	Stable	CONDITIONS TO AVOID: Stable under normal conditions. See Incompatibility information.	
	Unstable		
INCOMPATIBILITY (Materials to avoid): Oxidizing agents, acids, acid salts.			
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic oxides of nitrogen, carbon			
HAZARDOUS POLYMERIZATION		May occur	CONDITIONS TO AVOID: NA
	X	Will not occur	

IX. ADDITIONAL INFORMATION

This Material Safety Data Sheet may be used to comply with OSHA's Hazard Communication Standard, 29.CFR 1910.1200. Enthone, Inc. furnishes the data contained herein in good faith at customer's request without liability or legal responsibility for same whatsoever, and no warranty or guarantee, express or implied, is made with respect to such data; nor does Enthone, Inc. grant permission, recommendation, or inducement to infringe any patent whether owned by Enthone or others. The data is offered solely for your information and consideration. Since conditions of use are beyond Enthone's control, user assumes all responsibility and risk.

MATERIAL SAFETY DATA SHEET

DATE: 8/25/88

CODE: 19711

SECTION I

Manufacturer's Name MacDermid Incorporated	EMERGENCY TELEPHONE 203-575-5700
Address (Number, Street, City, State, Zip Code) 526 Huntington Avenue Waterbury, CT. 06708	MSDS EMERGENCY 24 HOUR HOTLINE (313) 4644-1870
Chemical Name and Synonyms N/A	TRADE NAME AND SYNONYMS Metex Nickel Stripper
Chemical Family Amine	FORMULA SCB B Mixture

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVE & SOLVENTS	%	TLV (UNITS)	ALLOYS & METALLIC COATINGS	%	TLV (UNITS)
PIGMENTS	N/A		BASE METAL	N/A	
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OR OTHER LIQUIDS, SOLIDS, OR GASES					
Ethylenediamine (107-15-3)			2	10-25	10 ppm
Ammonium Hydroxide (1366-21-6) PEL: 50 ppm*			2		25 ppm*

*as ammonia

SECTION III - PHYSICAL DATA

BOILING POINT (F)	> 212	SPECIFIC GRAVITY (H ₂ O = 1)	0.99
VAPOR PRESSURE (MM. HG.)	< 10	PERCENT VOLATILE BY VOLUME (%)	2
VAPOR DENSITY (AIR = 1)	> 1	EVAPORATION RATE (Ethyl Ether = 1)	< 1
SOLUBILITY IN WATER	Complete	pH	> 12

APPEARANCE AND ODOR

Clear, colorless liquid - Ammonia odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED) Non-Flammable	FLAMMABLE LIMITS N/A	LEL	UEL
EXTINGUISHING MEDIA Compatible with waterspray, CO ₂ , dry chemical, foam, Halon			
SPECIAL FIRE FIGHTING PROCEDURES Wear self contained breathing apparatus, full protective clothing.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Will emit ammonia gas and oxides of nitrogen and sulfur when heated.			

MacDermid

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Not established for product. See Section II.

EFFECTS OF EXPOSURE - UNLESS OTHERWISE STATED, CHRONIC OR LONG-TERM HEALTH EFFECTS UNKNOWN
 May cause irritation or burns to eyes, skin, mucous membranes. Inhalation of ammonia vapors may cause headache, nausea, vomiting. Prolonged exposure may cause severe irritation of the respiratory tract with coughing, bronchospasm, edema, respiratory arrest. Bronchitis or pneumonia may follow severe exposure.

EMERGENCY AND FIRST AID PROCEDURES

- EYES: Flush with water for 15 minutes. Contact physician
- SKIN: Wash with water.
- INGESTION: Give water, do not induce vomiting. Contact physician at once!
- INHALATION: Remove to fresh air.

SECTION VI - REACTIVITY DATA

UNSTABLE		CONDITIONS TO AVOID
----------	--	---------------------

STABLE	X	N/A
--------	---	-----

INCOMPATIBILITY (MATERIALS TO AVOID)
 Strong Acids

HAZARDOUS DECOMPOSITION PRODUCTS
 Ammonia, oxides of nitrogen/sulfur

HAZARDOUS POLYMERIZATION	CONDITIONS TO AVOID
--------------------------	---------------------

MAY OCCUR		N/A
-----------	--	-----

WILL NOT OCCUR	X	
----------------	---	--

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 Wear protective clothing. Never discharge directly into sewers or waterways. Ventilate area. Flush with water to chemical drain.

WASTE DISPOSAL METHOD
 Always check and comply with government disposal regulations. Neutralize to pH 6 to 8 and discard.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (SPECIFY TYPE)
 NIOSH-approved respirator rated for ammonia vapors

VENTILATION	LOCAL EXHAUST	X	SPECIAL
	MECHANICAL (GENERAL)	N/A	N/A
			OTHER
			N/A

PROTECTIVE GLOVES	Rubber	EYE PROTECTION	Face Shield
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OTHER PROTECTIVE EQUIPMENT
 Rubber apron/boots

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING
 Keep in tightly closed containers in a cool storage location

OTHER PRECAUTIONS
 Avoid eye contact. Always wash clothing before re-use. Wash thoroughly after handling.

PREPARED BY: MacDermid Incorporated **DATE:** 8/25/88
 13711

+-----+
| DoD Hazardous Materials Information System |
| DoD 6050.5-LR |
| AS OF JUNE 15, 1989 |
| For U.S. Government Use Only |
+-----+

Stock Number: 6810001741815
Manufacturers CAGE: 80000
Part No. Indicator: A
Part Number/Trade Name: NICKEL CHLORIDE SPEC 101
Safety Focal Point: D
Record No. for this Safety Entry: 003
Total Safety Entries, This No.: 003
Date MSDS Prepared: INTERIM
Safety Data Review Date: 19NOV86
Supply Item Manager: CX
Item Name: [REDACTED]
TECHNICAL

Manufacturer Name: HARSHAW CHEMICAL CO.
Emergency Phone No.: 216-721-8300

MSDS Serial Number: BDFMF
Specification Number: DOD-N-51512
Hazard Characteristic Code: L1
Unit of Issue: LB
Unit of Iss. Container Qt.: 1 LB
Type of Container: BOTTLE
Net Unit Weight: 1.0 POUND

Proprietary: NO
Ingredient Focal Point: D
Ingredient Sequence Number: 01
NIOSH (RTECS) No.: QR6480000
Ingredient: NICKEL CHLORIDE, HEXAHYDRATE, CAS
7718-54-9, TLV FOR NICKEL
Percent: 100
ACGIH TLV: 1 MG/CUM
Appearance and Odor: GREEN HYDRATED CRYSTAL.
Boiling Point: NONE
Vapor Pressure(MM Hg/70 F): N/R
Vapor Density (Air=1): N/R
Specific Gravity: 3.55
Evap. Rate & Reference: N/R
Solubility in Water: COMPLETE
% Volatiles by Volume: N/R
Flash Point: NONE
Lower Explosive Limit: N/R
Upper Explosive Limit: N/R
Extinguishing Media: EXTINGUISH WITH AGENT SUITABLE FOR
SURROUNDING FIRE
Special Fire Fgting Proc: WEAR SELF-CNTND BRTHG APP
Unusual Fire & Expl. Hzrds: NONE NOTED BY MANUFACTURER.
Stability: YES
d. to Avoid(Stability): NONE

Materials to Avoid: NONE NOTED BY MFR.
Hazardous Decomp. Products: THERMAL DECOMPOSITION MAY
PRODUCE HCL GAS & NICKEL OXIDE
Hazardous Poly. Occur: NO
Conditions to Avoid(Poly): NOT KNOWN
Sans and Sym of Oexposure: SKIN-CAUSES IRRITATION:INGESTED:
THERE IS CONFLICTING EVIDENCE ON
NICKEL TOXICITY.
Emerg. and FirstAid Procs: SKIN:WASH WITH SOAP AND WATER.
EYES: FLUSH WITH WATER. INHALED:
REMOVE TO FRESH AIR. REMOVE
CONTAMINATED CLOTHING. GASTRIC
LAVAGE MAY BE INDICATED FOR
INGESTION OF SOLUBLE SALTS.
if Matl. Relsd or Sped: SM SPL: TAKE UP WITH SAND, OR
OTHER NONCOMB. ABSORB MATL THEN
FLUSH AREA WITH H*20. SM DRY SPL:
SHOVEL INTO DRY CONTRS, THEN
FLUSH AREA W/H*20.LG SPLS:DIKE
FAR AHEAD OF SPL FOR LATER
DISPOSAL. NO CONTACT W/SPILLED
MATL. STOP LK.ELIM IGN SOURCES.
Waste Disposal Method: ELIMINATE IGNITION SOURCES. SORT,
CLASSIFY INTO APPROPRIATE
CONTAINERS FOR DISPOSAL BY
QUALIFIED PERSONNEL.
Handg and Strg Precautions: STORE IN COOL, DRY, WELL
VENTILATED, LOW FIRE RISK AREA.
PROTECT FROM PHYSICAL DAMAGE.
KEEP CONTAINERS CLOSED. MAINTAIN
STANDARD HYGIENE FOR CHEM
HANDLING
Other Precautions: WASH THOROUGHLY AFTER HANDLING.
Respiratory Protection: IF VENT INADEQUATE, USE BUREAW OF
MINES APPROVED RESPIRATORY
PROTECTN
Ventilation: NO SPECIAL REQUIREMENTS W
ADEQUATE VENT.
Protective Gloves: IMPERVIOUS
Eye Protection: GOGGLES
Other Protective Equipment: LIQUID PROOF HAND PROTECTION.
Sup. Safe and Health Data: MSDS DATED:4/19/72;SPEC
REFERENCE:MIL SPEC:DOD-N-51512,
TYPE III;DLSC-TIR REFERS TO FED
SPEC:O-N-335.
Transportation Focal Point: D
Trans. Data Rev. Date: 86323
DOT PSN Code: ZZZ
DOT Proper Shipping Name: NOT REGULATED FOR THIS MODE OF
TRANSPORTATION
DOT Class: N/R
DOT Label: N/R
Identification Number: N/R
Reportable Quantity: NO
IMO PSN Code: ZZZ
IMO Proper Shipping Name: NOT REGULATED FOR THIS MODE OF
TRANSPORTATION
Regulations Page No.: N/R

UN Number: N/R
UN Class: N/R
IMO Subsidiary Risk Label: N/R
IATA PSN Code: ZZZ
IATA UN ID Number: N/R
IATA Proper Shipping Name: NOT REGULATED BY THIS MODE OF
TRANSPORTATION
IATA UN Class: N/R
IATA Subsidiary Risk Class: N/R
IATA Label: N/R
AFR 71-4 PSN Code: ZZZ
AFR 71-4 Proper Ship. Name: NOT REGULATED FOR THIS MODE OF
TRANSPORTATION
AFR 71-4 Class: N/R
AFR 71-4 Label: N/R
AFR 71-4 ID Number: N/R
Additional Trans. Data: PRODUCT IS REGULATED AS AN ORM-E
ONLY IF THE REPORTABLE QUANTITY
IS MET(5000/2270).
Disposal Data Focal Point: E
Disposal Data Review Date: 88036
RecNo.for this Disp. Entry: 03
Total Disp Ent-This Stk #: 003
Account. Accept. by DRMS: YES
EIS/EA Availability: NO
Transfer (New Condition): NO
Donation (New Condition): NO
Sales (New Condition): NO
Reutil. (Used Condition): NO
Transfer (Used Condition): NO
Donation (Used Condition): NO
Sales (Used Condition): NO
Disposal Supplement Code: N002
Disposal Supplemental Data: MSDS DATED:4/19/72;SPEC REFERENCE:
MIL SPEC:DOD-N-51512,TYPE III;
DLSC-TIR REFERS TO FED SPEC:O-N-
335.

ITEM
NOT REGULATED AS A RCRA HAZARDOUS
WASTE BY THE FEDERAL EPA, BUT MAY
BE REGULATED IN CERTAIN STATES.

EPA
=====

1st Name (New): NOT REGULATED
1st Charecteristics (New): NOT REGULATED BY RCRA
1st Acute Hazard (New): NO
1st Name (Used): NOT REGULATED
1st Charecteristics (Used): NOT REGULATED BY RCRA
1st Acute Hazard (Used): NO

Disposal
=====

1st Code (Small Qty): AN02
1st Method (Small Qty): (AN02) DISPOSE AS PER GUIDELINE:

NONREGULATED ACID WASTE (SOLIDS).

1st Code (Large Qty): AN02
1st Method (Large Qty): (AN02) DISPOSE AS PER GUIDELINE:
NONREGULATED ACID WASTE (SOLIDS).

Disposal Restrictions: DO NOT DISCHARGE TO SANITARY
SEWER.

Rptable Qty-Disposal File: NO

EPA Hazard Waste Label: NO

Waste Proper Shipping Name: N/A

Electroless
Nickel

11-74

M A T E R I A L S A F E T Y D A T A S H E E T S

Shibley Company Inc.
2300 Washington Street
Newton, Massachusetts 02162
Emergency Phone: (617) 969-5500

EFFECTIVE DATE: 13 Apr. 1984

LL HAZ -0057

PRODUCT NAME: NIPOSIT®

DOT CLASS: Not Regulated

SECTION I - HAZARDOUS MIXTURES

INGREDIENT (TYPICAL VALUES - NOT SPECIFICATIONS)	PERCENT	TLV
Nickel, soluble compounds (as Ni) 7440-02-0	10	0.1mg/M ³
Sulfuric Acid 7864-93-9	<2	1mg/M ³
Sodium Hypophosphite	5	unknown
Proprietary Ingredients	83	

Including Water, not deemed hazardous per OSHA definition.

SECTION II - PHYSICAL DATA

BOILING POINT(°F): >212
SPECIFIC GRAVITY (H₂O=1):
Approx. 1.3
% VOLATILE BY VOL.: Water based solution
VAPOR PRESSURE(mmHg): N.A.
VAPOR DENSITY(Air=1): N.A.
SOLUBILITY IN WATER:
Complete
EVAPORATION RATE: N.A.
APPEARANCE AND ODOR: Green liquid with a slight non-irritating odor

SECTION III - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: Non-flammable
FLAMMABLE LIMITS:
METHOD USED:
EXTINGUISHING MEDIA: Water, Dry chemical, CO₂
SPECIAL FIRE FIGHTING PROCEDURES: None
UNUSUAL FIRE AND EXPLOSION HAZARDS: Dried residues may be ignited or decomposed by excessive heat.

SECTION IV - REACTIVITY DATA

STABILITY: Stable
CONDITIONS TO AVOID:
INCOMPATIBILITY: Strong Oxidants
HAZARDOUS DECOMPOSITION: Unknown
HAZARDOUS POLYMERIZATION: Will not occur

M A T E R I A L S A F E T Y D A T A S H E E T
Shipley Company Inc., Newton, Massachusetts 02162
Emergency Phone: (617) 969-5500
NIPOSIT® R NICKEL REPLENISHER

SECTION V - SPILL, LEAK AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS: Flush area with cold water into Waste Treatment System.
DISPOSAL METHOD: Contact Shipley Technical Services Department

SECTION VI - HEALTH HAZARD DATA

INGESTION: Contact Physician immediately
EYE CONTACT: Flush with water for 15 minutes--contact physician
SKIN CONTACT: Flush with copious amounts of water
INHALATION: Move to fresh air
EFFECT OF OVEREXPOSURE: Possible irritation to skin.

SECTION VII - SPECIAL PROTECTION INFORMATION

VENTILATION: Local exhaust
RESPIRATORY PROTECTION: N.A.
PROTECTIVE CLOTHING: Chemical gloves, suitable protective clothing
EYE PROTECTION: Chemical goggles

SECTION VIII - SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Treat as an acidic solution of nickel salts. Store in a dry area away from strong oxidant at 50-90°F. Do not store in direct sunlight. Keep container closed when not in use.

N.A. denotes non-applicable

The Information and recommendations contained herein are believed to be accurate. However, no guarantee or warranty, expressed or implied, is given.

HAZARDOUS MATERIALS INFORMATION SYSTEM BASIC PUBLICATION

STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES	STOCK NUMBER	MFR CAGE	PN IND	FP IND	STATUS	NO ENTRIES
6810-00-281-2686	0AM91	A	D	SM	001 OF 005	6810-00-281-2686	0AM91	A	D	SM	001 OF 005
MEDICAL CONDITIONS GEN AGGRAVATED BY EXPOSURE. NONE REPORTED. EMERGENCY AND FIRST AID PROCEDURES.....						* * * TRANSPORTATION DATA * * * TRANS FILE ACTION CODE.C DATE TECH REVIEW-TRANS. 28APR88 DOT PSN CODE..... MAP DOT SHIPPING NAME..... SODIUM DICHROMATE DOT HAZARD CLASS..... ORM-A DOT LABEL..... NONE DOT MODE INDICATOR..... A DCT ID NUMBER..... NA1479 REPORTABLE QUANTITY.... YES IMO PSN CODE..... ZZZ IMO SHIPPING NAME..... NOT REGULATED FOR THIS MODE OF TRANSPORT IATA PSN CODE..... ZZZ IATA SHIPPING NAME..... NOT REGULATED BY THIS MODE OF TRANSPORT IATA CLASS OR DIVISION. N/R IATA SUBSID RISK CLASS. N/R IATA LABEL..... N/R UN OR ID NUMBER..... N/R AFR 71-4 PSN CODE..... IRN AFR 71-4 SHIPPING NAME. SODIUM DICHROMATE AFR 71-4 CLASS..... ORM-A AFR 71-4 LABEL..... NONE ID NUMBER..... NA1479 ADDITIONAL TRANSP DATA. RQ=1000/454 * * * LABEL DATA * * * OSHA HCS LABEL REQUIRED YES STATUS - LABEL..... E SPECIFIC HAZ & PRECAUT. CONTACT MAY CAUSE BURNS TO SKIN AND EYES . VAPORS OR DUST MAY BE IRRITATING. FIRE . MAY PRODUCE IRRITATING OR POISONOUS GAS . ES. RUNOFF FROM FIRE CONTROL OR DILUTION . WATER MAY CAUSE POLLUTION. NAME (LABEL)..... VAN WATERS AND ROGERS INC STREET (LABEL)..... 2600 CAMPUS DRIVE P.O. BOX (LABEL)..... 5932 CITY (LABEL)..... SAN MATEO STATE (LABEL)..... CA					
* * * PRECAUTIONS FOR SAFE HANDLING AND USE * * * STEPS TO BE TAKEN IF MATL IS RELEASE/SPILL..											
WASTE DISPOSAL METHOD..											
HANDLING/STORAGE PREC..											
OTHER PRECAUTIONS.....											
* * * CONTROL MEASURES * * * RESPIRATORY PROTECTION.											
VENTILATION.....											
PROTECTIVE GLOVES.....											
EYE PROTECTION.....											
OTHER PROTECTIVE EQUIP.											
WORK HYGIENIC PRACTICE.											
SUPPLEMENTAL SAFETY & HEALTH DATA.....											
CONTINUED ON TOP RIGHT HAND SIDE OF THIS FRAME/PAGE N/X = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE						CONTINUED ON NEXT FRAME/PAGE BELOW N/X = NOT KNOWN N/R = NOT RELEVANT N/A = NOT APPLICABLE					

DoD Hazardous Materials Information System
DoD 6050.5-LR
AS OF JUNE 15, 1989
For U.S. Government Use Only

Stock Number: 6810002229643
Manufacturers CAGE: 1CX92
Part No. Indicator: A
Part Number/Trade Name: O-A-451F
Safety Focal Point: D
Record No. for this Safety Entry: 001
Total Safety Entries, This No.: 008
Date MSDS Prepared: INTERIM
Safety Data Review Date: 27OCT86
Item Name: [REDACTED]

[REDACTED]
(ONLY TO CONTROL PH)

Manufacturer Name: MAIN POOL & CHEMICAL SUPPL
Emergency Phone No.: (302)774-2421

MSDS Serial Number: BDKCG
Specification Number: O-A-451F
Hazard Characteristic Code: B2

Proprietary: NO
Ingredient Focal Point: D
Ingredient Sequence Number: 01
NIOSH (RTECS) No.: BQ9625000
Ingredient: AMMONIUM HYDROXIDE, CAS #1336-21-6
Percent: 59.3
ACGIH TLV: 25PPM
Appearance and Odor: COLORLESS, CLEAR LIQ.-VERY PUNGEN,
CHOKING.
Boiling Point: 82.4F/28C
Vapor Pressure(MM Hg/70 F): 646
Vapor Density (Air=1): 0.6
Specific Gravity: 0.9
Evap. Rate & Reference: >1
Solubility in Water: COMPLETE
Autoignition Temperature: 1204F
Flash Point: NONE
Lower Explosive Limit: 16.
Upper Explosive Limit: 25.
Extinguishing Media: EXTINGUISH WITH AGENT SUITABLE FOR
SURROUNDING FIRE
Special Fire Fgting Proc: WTR SPRAY TO COOL CONTNRS/STAY
UPWIND OF FIRE/PROTECT.CLOTH.
Unusual Fire & Expl. Hzrds: RELEASES FLAMMABLE AMMONIA GAS AT
ALL TEMPS., WHICH CAN BE EXPLOSIVE
UNDER SOME CONDITIONS.
Stability: NO
Cond. to Avoid(Stability): UNSTABLE W/HEAT.-RELEASES
AMMONIA GAS.
Materials to Avoid: STRNG OXID., CA, HYPOCHL.BLEACHS,
HALOGENS, GOLD.-SEE SUPPLEMENT.

Hazardous Decomp. Products: MAY RELEASE AMMONIA GAS.

Hazardous Poly. Occur: NO

Sgns and Sym of Oexposure: SEVERE EYE/SKIN BURN.-CONTACT W/
EYE MAY CAUSE PERMANENT INJURY.-
VAPOR IS EXTREMELY IRRITATING.

Emerg. and FirstAid Procs: INHAL:RMV TO FRESH AIR. IF NOT
BRTHNG GIVE CPR; IF BRTHNG DIFF
GIVE OXYGEN. EYE:IMMED FLUSH W/
PLENTY OF WATER. SKIN:WASH W/
SOAP & WATER. RMV CONTAM CLTHG &
SHOES. INGEST:DO NOT INDUCE
VOMIT. NOTHG BY MOUTH IF UNCONSC.
GET MEDICAL ATTN.

if Matl. Relsd or Sped: KEEP UPWIND OF LEAK.-EVACUATE
AREA.-FLUSH AREA WITH WATER
SPRAY.-AFTER DILUTION,WATER MAY
BE NEUTRALIZED W/DILUTE HCL.

Waste Disposal Method: IF APPVD,DILUTE SOLUTIONS MAY BE
WASHED TO WASTEWATER TREATMENT
SYSTEM.-COMPLY W/LOCAL,STATE &
FEDERAL REGULATIONS.

Handg and Strg Precautions: STR.IN WELL VENTILATED AREA.-
KEEP CNTNRS TIGHTLY CLSD.-KEEP
AWAY FROM HEAT,SPARKS AND FLAME.

Other Precautions: BEFORE USING,READ DUPONT
REAGENTS DATA SHEET.-FOR MORE
INFO.REFER TO NIOSH GUIDE TO
RESPIRATORY PROTECTN:PUBLIC.76-
189 AND NIOSH/OSHA POCKET GUIDE
TO CHEM.HAZARDS.

Respiratory Protection: CHEM.CARTR.RESP.W/AMM.CARTER.OR
SCBA.-HI CONC. SEE OTHER
PRECAUTIONS

Ventilation: USE ONLY W/VENTILATION ADEQ.TO
MAINTAIN EXPOSURE LIMITS.

Protective Gloves: RUBBER/PLASTIC

Eye Protection: CHEM SPLASH GOGGLES

Other Protective Equipment: APRON & SHOES/LONG SLEEVE SHIRT/
WOOL OR ORLON TROUSERS.

Sup. Safe and Health Data: ALT.PHONE # (800)424-9300.-EXPL.
LIMITS ARE FOR DRY AMMONIA GAS.-
TLV IS FOR AMMONIA GAS.-INCOMPAT:
MERCURY,SILVER AND THEIR SALTS,
DIMETHYLSULFATE.-MSDS DATED MAY
80.

Transportation Focal Point: D

Trans. Data Rev. Date: 86300

DOT PSN Code: ANF

DOT Proper Shipping Name: AMMONIA SOLUTION

DOT Class: NONFLAMMABLE GAS

DOT Label: NONFLAMMABLE GAS

DOT Mode Indicator: E

Identification Number: UN2073

Reportable Quantity: YES

IMO PSN Code: AWT

IMO Proper Shipping Name: AMMONIA,ANHYDROUS,LIQUEFIED OR
AMMONIA SOLUTIONS

Regulations Page No.: 2016

UN Number: 1005
UN Class: 2(2.3)
IMO Subsidiary Risk Label: -
IATA PSN Code: BJY
IATA UN ID Number: 1005
IATA Proper Shipping Name: AMMONIA, ANHYDROUS, LIQUEFIED OR
AMMONIA SOLUTIONS
IATA UN Class: 2
IATA Subsidiary Risk Class: 6.1,3
IATA Label: POISON GAS & FLAMMABLE GAS
AFR 71-4 PSN Code: AQP
AFR 71-4 Proper Ship. Name: AMMONIA SOLUTION
AFR 71-4 Class: NONFLAMMABLE GAS
AFR 71-4 Label: NONFLAMMABLE GAS
AFR 71-4 ID Number: UN2073
Disposal Data Focal Point: E
Disposal Data Review Date: 88231
RecNo. for this Disp. Entry: 01
Total Disp Ent-This Stk #: 006
Account. Accept. by DRMS: YES
EIS/EA Availability: NO
Transfer (New Condition): NO
Donation (New Condition): NO
Sales (New Condition): NO
Reutil. (Used Condition): NO
Transfer (Used Condition): NO
Donation (Used Condition): NO
Sales (Used Condition): NO
Disposal Supplement Code: N042
Disposal Supplemental Data: ALT.PHONE # (800)424-9300.-EXPL.
LIMITS ARE FOR DRY AMMONIA GAS.-
TLV IS FOR AMMONIA GAS.-INCOMPAT:
MERCURY, SILVER AND THEIR SALTS,
DIMETHYLSULFATE.-MSDS DATED MAY
80.
IN CASE OF ACCIDENTAL EXPOSURE OR
DISCHARGE, CONSULT HEALTH AND
SAFETY FILE FOR PRECAUTIONS.

EPA

=====
1st Edit Table Code (New): D002
1st Code (New): D002
1st Name (New): CORROSIVE
1st Characteristics (New): CORROSIVITY
1st Acute Hazard (New): NO
1st Edit Table Code (Used): D002
1st Code (Used): D002
1st Name (Used): CORROSIVE
1st Characteristics (Used): CORROSIVITY
1st Acute Hazard (Used): NO

Disposal

=====
1st Code (Small Qty): BN01
1st Method (Small Qty): (BN01) DISPOSE AS PER GUIDELINE:

INORGANIC ALKALI WASTE (LIQUID
OR SOLID).

1st Code (Large Qty): BN01

1st Method (Large Qty): (BN01) DISPOSE AS PER GUIDELINE:
INORGANIC ALKALI WASTE (LIQUID
OR SOLID).

Disposal Restrictions: DO NOT DISPOSE VIA SANITARY
SEWER OR SANITARY LANDFILL.

Rptable Qty-Disposal File: N/K

EPA Hazard Waste Label: YES

Waste Proper Shipping Name: WASTE AMMONIUM HYDROXIDE,
SOLUTION

=====
===== | Master Print | =====

Stock Number: 002816933
FSC: 6810
Manufacturers CAGE: 9K202
Part No. Indicator: A
Part Number/Trade Name: [REDACTED] IICAL

=====
===== | General Information | =====

Safety Focal Point: D
Record No. for this Safety Entry: 004
Total Safety Entries, This No.: 004
Status: SM
Date MSDS Prepared: 00JUN87
Safety Data Review Date: 19OCT88
Supply Item Manager: CX
Item Name: SODIUM CYANIDE, TECHNICAL

Manufacturer Name: VAN WATER AND ROGERS
Street: 1600 NORTON BLDG
City: SEATTLE
State: WA
Country: US
Zip Code: 98104-1564
Emergency Phone No.: 714-864-2310 CHEMTREC 800-424-9300
Information Phone No.: 206-447-5911 (MR. DOUG EISNER)

MSDS Preparers Name: C. A. EISENHARD
Company: CHEMICAL COMMODITIES AGENCY
Street or P.O. Box: 27447 PACIFIC AVENUE
City: HIGHLAND
State: CA
Zip Code: 92346

Dist./Vendor No.1: CHEMICAL COMMODITIES AGENCY,
INCORPORATD

Dist./Vendor No.1 Cage: 60777

MSDS Serial Number: BDTBZ

Specification Number: N/R

Hazard Characteristic Code: T3

Unit of Issue: CN

Unit of Iss. Container Qt.: 25 LBS

Type of Container: PPPD723, T2, GA

Net Unit Weight: 25 LBS

NRC/State License Number: N/R

Net Propellant Weight-Ammo: N/R

=====
===== | Ingredients/Identity Information | =====

ISN : 01
Proprietary : NO

Id : D
NIOSH (RETECS): VZ7525000
CA : 143-33-9
Ingredient : SODIUM CYANIDE
Percent : >99

OSHA PEL : 5 MG/CUM
ACGIH TLV : 5 MG/CUM

=====| Physical/Chemical Characteristics |=====

Appearance and Odor: WHITE GRANULAR SOLID, FAINT ALMOND
ODOR.

Boiling Point: 2725F
Melting Point: 1047F

Vapor Pressure(MM Hg/70 F): N/R
Vapor Density (Air=1): N/R
Specific Gravity: 1.6 (DENSITY)
Evap. Rate & Reference: N/R
Solubility in Water: 37%
% Volatiles by Volume: 0
Autoignition Temperature: NONE

=====| Fire & Explosion Hazard Data |=====

Flash Point: NONE
Lower Explosive Limit: N/R
Upper Explosive Limit: N/R

[Extinguishing Media]

FLOOD W/WATER. DO NOT USE CARBON DIOXIDE WHICH PRODUCES FLAM HYDROGEN
CYANIDE GAS BY CHEM REACTION.

[Special Fire Fgting Proc]

USE SCBA & PROTECTIVE CLOTHING

[Unusual Fire & Expl. Hzrds]

CONTACT W/ACIDS/ACID SALTS LIBERATES HIGHLY TOXIC & FLAMMABLE HYDROCYANIC
ACID GAS.

=====| Reactivity Data |=====

Stability: YES

[Cond. to Avoid(Stability)]

MOISTURE,HEAT.

[Materials to Avoid]

REACTS VIOLENTLY W/STRONG OXIDIZERS, ACIDS, CARBON DIOXIDE (EVEN FM EXPOS
TO AIR)

[Hazardous Decomp. Products]

POISONOUS HYDROGEN CYANIDE GAS & AMMONIA GAS.

[Hazardous Poly. Occur]

NO

[Conditions to Avoid(Poly)]

=====| Health Hazard Data |=====

LD50-LC50 - Mixture: 6.4 MG/KG (RAT)

Route of Entry-Inhalation: YES
Route of Entry - Skin: YES
Route of Entry - Ingestion: NO

[Health Hazards-Acute & Chronic]

EXPOS TO SML AMTS OVER LONG PERIOD OF TIME CAUSES LOSS OF APPETITE, HEADACHE, WEAKNESS, NAUSEA, DIZZ & SYMPTOMS OF IRRITATION OF UPPER RESPIR TRACT & EYES.

Carcinogenity - NTP: NO
Carcinogenity - IARC: NO
Carcinogenity - OSHA: NO

[Explanation of Carcinogenity]

N/R

[Signs and Symptoms of Overexposure]

INHAL-RESPIR TRACT IRRIT-MAY BE FATAL. EYE-IRRIT;PROLONGED CONTACT MAY BURN &/OR DAMAGE EYES. SKIN-IRRIT;POSS SORES. FATAL AMTS MAY BE ABSORBED. INGEST-CAN CAUSE DEATH THROUGH CHEMICAL ASPHYXIA.

[Medical Conditions Aggrevated by Exposure]

NONE KNOWN.

[Emergency and First Aid Procedures]

INHAL-IMMED GET TO FRESH AIR;LAY VICTIM DOWN;ADMINISTER AMYL NITRITE ANTIDOTE & OXYGEN;GET IMMED MED ATTN. EYE-IMMED FLUSH W/WATER;KEEP VICTIM WARM & QUIET;GET MED ATTN. SKIN-WASH AT ONCE,REMOVE CONTAM CLOTH;ABSORP CURS IN MINUTES. INGEST-IF CONSCIOUS,IMMED GIVE 1 PT OF 1% SODIUM BICARBONATE SOLN (OR PLAIN WATER) & INDUCE VOMIT;REPEAT UNTIL VOMIT FLUID IS CLEAR. SEE SUPPLEMENTAL DATA BELOW.

=====| Precautions for Safe Handling & Use |=====

[Steps if Material Released or Spilled]

WEAR PROTECT CLOTH INCL RUBBER: BOOTS,GLOVES,APRON & SLF-CONTND BREATH APPAR IN PRESS DEMAND MODE OR SUPPLIED-AIR RESPIR. SHOVEL INTO DOT APPROVED CONTNR;KEEP OUT OF SEWERS,DRAINS,WATER,SOIL-EXTREMELY TOXIC TO MARINE LIFE. RINSE AREA W/NEUTLZG AGENT

[Neutralizing Agent]

DILUTE SOLN OF SODIUM OR CALCIUM HYPOCHLORITE.

[Waste Disposal Method]

DISPOSE I/A/W ALL LOCAL,STATE & FEDERAL REGULATIONS.

[Handling and Storage Precautions]

STORE IN COOL,DRY,WELL-VENT PLACE,AWAY FM OTHER CHEM & POTENTIAL SOURCES OF CONTAM. DO NOT HANDLE/STORE FOOD,BEVERAGES OR TOBACCO IN CYANIDE AREAS.

[Other Precautions]

OBEY HAZARD WARNINGS & HANDLE EMPTY CONTNRS AS IF FULL DUE TO PRODUCT RESIDUES & VAPORS.

=====| Control Measures |=====

[Respiratory Protection]

USE NIOSH/MSHA APPROVED DUST RESPIRATOR OR SCBA FOR EMERGENCIES.

[Ventilation]
LOCAL EXHAUST TO MAINTAIN ADEQUATE VENTILATION.

[Protective Gloves]
RUBBER.

[Eye Protection]
GOGGLES/FACE SHIELD

[Other Protective Equipment]
HAT, LEATHER/RUBBER SAFETY SHOES, LONG SLEEVED SHIRTS.

[Work Hygienic Practices]

[Sup. Safe and Health Data]
FIRST AID USING AMYL NITRITE & OXYGEN GEN GIVEN BY LAYMAN. MED TREATMENT BY
QUAL MED PERS INVOLVES INJECTION OF SODIUM NITRITE & SODIUM THIOSULFATE.
IMMED ACTION IS REQD FOR EFFECTIVE TREATMENT.

=====
=====| Transportation Data |=====

Transportation Focal Point: D
Trans. Data Rev. Date: 87070
DOT PSN Code: LZZ
DOT Proper Shipping Name: SODIUM CYANIDE, SOLID
DOT Class: POISON B
DOT Label: POISON
DOT Mode Indicator: E
Identification Number: UN1689
IMO PSN Code: NQT
IMO Proper Shipping Name: SODIUM CYANIDE
IMO Regulations Page No.: 6227
UN Number: 1689
UN Class: 6.1
IMO Subsidiary Risk Label: -
IATA PSN Code: WOX
IATA UN ID Number: 1689
IATA Proper Shipping Name: SODIUM CYANIDE
IATA UN Class: 6.1
IATA Label: POISON
AFR 71-4 PSN Code: IQX
AFR 71-4 Proper Ship. Name: SODIUM CYANIDE, SOLID
AFR 71-4 Class: POISON B
AFR 71-4 Label: POISON
AFR 71-4 ID Number: UN1689

=====
=====| Disposal Data |=====

Disposal Data Action Code:
Disposal Data Focal Point: E
Disposal Data Review Date: 88231
Ref No. for this Disp. Entry: 04
Local Disp Ent-This Stk #: 004
Account. Accept. by DRMS: YES
EIS/EA Availability: NO
Transfer (New Condition): NO
Donation (New Condition): NO

Sales (New Condition): NO
Reutil. (Used Condition): NO
Transfer (Used Condition): NO
Donation (Used Condition): NO
Sales (Used Condition): NO
Disposal Supplement Code: N042
Disposal Supplemental Data: MSDS PREPARED BY C. A. EISENHARD,
CHEMICAL COMMODITIES AGENCY.
PHONE NUMBER 714-864-2310.

IN
CASE OF ACCIDENTAL EXPOSURE OR
DISCHARGE, CONSULT HEALTH AND
SAFETY FILE FOR PRECAUTIONS.

---| EPA |-----
1st Edit Table Code (New): P106
 1st Code (New): P106
 1st Name (New): SODIUM CYANIDE
1st Characteristics (New): ACUTELY TOXIC (H)
 1st Acute Hazard (New): YES
1st Edit Table Code (Used): P106
 1st Code (Used): P106
 1st Name (Used): SODIUM CYANIDE
1st Characteristics (Used): ACUTELY TOXIC (H)
 1st Acute Hazard (Used): YES

---| DISPOSAL |-----
 1st Code (Small Qty): CN02
1st Method (Small Qty): (CN02) DISPOSE AS PER GUIDELINE:
 CYANIDE WASTE CONTAINING
 NONREGULATED HEAVY-METALS.
 1st Code (Large Qty): CN02
1st Method (Large Qty): (CN02) DISPOSE AS PER GUIDELINE:
 CYANIDE WASTE CONTAINING
 NONREGULATED HEAVY-METALS.
Disposal Restrictions: DO NOT DISPOSE VIA SANITARY
 SEWER OR SANITARY LANDFILL.
Rptable Qty-Disposal File: YES
EPA Hazard Waste Label: YES
Waste Proper Shipping Name: WASTE SODIUM CYANIDE, SOLID

Evap. Rate & Reference: 1 (BUTACETATE=1)
Solubility in Water: APPRECIABLE

=====| Fire & Explosion Hazard Data |=====

Flash Point: NONE

[Extinguishing Media]

FLOOD W/WATER;USE CARE NOT TO SPLATTER OR SPLASH MATL.

[Special Fire Fgting Proc]

CONTACT W/MOISTURE CAN GENERATE HEAT TO IGNITE COMB MATLS. CONTACT W/SOME METALS CAN GENERATE HYDROGEN GAS.

=====| Reactivity Data |=====

Stability: YES

[Cond. to Avoid(Stability)]

EXPOSURE TO AIR/MOISTURE.

[Materials to Avoid]

ACIDS,METALS,EXPLOSIVES,ORGANIC PEROXIDES,EASILY IGNITABLE MATLS.

[Hazardous Poly. Occur]

NO

=====| Health Hazard Data |=====

Route of Entry-Inhalation: YES

Route of Entry - Skin: YES

[Health Hazards-Acute & Chronic]

CAUSES SEVERE BURNS;MAY BE FATAL IF SWALLOWED;HARMFUL IF INHALED.

Carcinogenity - NTP: NO

Carcinogenity - IARC: NO

Carcinogenity - OSHA: NO

[Signs and Symptoms of Overexposure]

SEVERE BURNS OF SKIN & EYES. INHAL-IRRIT. INGEST-SEVERE BURNS.

[Emergancy and First Aid Procedures]

EYES-FLUSH W/WATER 15 MIN. SKIN-REMOVE CONTAM CLOTH & SHOES,FLUSH W/WATER 15 MIN. INHAL-GET TO FRESH AIR;GIVE ARTIF RESPIR/OXYGEN IF NEEDED. INGEST-DO NOT INDUCE VOMIT;DILUTE BY GIVING LGE QTY MILK OR WATER FOLLOWED BY VINEGAR CIDER OR FRUIT JUICE. GET MED ATTN FOR ALL CONTACT.

=====| Precautions for Safe Handling & Use |=====

[Steps if Material Released or Spilled]

SHOVEL UP,NEUTRALIZE AREA W/ACID & FLUSH AREA W/WATER.

[Neutralizing Agent]

6M HCL

[Waste Disposal Method]

IAW FED, STATE & LOCAL REGS. CAUSTIC SODA SOLNS ARE INJURIOUS TO BACTERIA WHICH OPERATE DISPOSAL PLANTS.

[Handling and Storage Precautions]

DO NOT GET IN EYES, SKIN, CLOTHING. AVOID BREATHING DUST OR MIST. KEEP CONTNR CLOSED. USE W/ADEQUATE VENT. WASH THOROUGHLY AFTER HANDLING.

[Other Precautions]

WHEN HANDLING, USE GOGGLES/FACE SHIELD. WHEN MAKING SOLNS, USE COLD WATER & ADD CAUSTIC SODA SLOWLY IN SML AMTS TO SURFACE OF SOLN W/CONTINUOUS AGITATION TO AVOID SPLATTERING.

=====
| Control Measures |=====

[Respiratory Protection]

DUST/PARTICULATE MASK AS REQD.

[Ventilation]

LOCAL.

[Protective Gloves]

RUBBER.

[Eye Protection]

GOGGLES, FACE SHIELD.

[Other Protective Equipment]

[Work Hygienic Practices]

[Sup. Safe and Health Data]

=====
| Transportation Data |=====

Transportation Focal Point: D

Trans. Data Rev. Date: 88169

DOT PSN Code: MCL

DOT Proper Shipping Name: SODIUM HYDROXIDE, DRY SOLID, FLAKE,
BEAD, OR GRANULAR

DOT Class: CORROSIVE MATERIAL

DOT Label: CORROSIVE

Limited Quantity: YES

Identification Number: UN1823

Reportable Quantity: YES

IMO PSN Code: NSX

IMO Proper Shipping Name: SODIUM HYDROXIDE, SOLID

IMO Regulations Page No.: 8215

UN Number: 1823

UN Class: 8

IMO Subsidiary Risk Label: -

IATA PSN Code: WSO

IATA UN ID Number: 1823

IATA Proper Shipping Name: SODIUM HYDROXIDE, SOLID

IATA UN Class: 8

IATA Label: CORROSIVE

AFR 71-4 PSN Code: ISX
AFR 71-4 Proper Ship. Name: SODIUM HYDROXIDE, DRY SOLID, FLAKE,
BEAD, OR GRANULAR
AFR 71-4 Class: CORROSIVE MATERIAL
AFR 71-4 Label: CORROSIVE
AFR 71-4 ID Number: UN1823

=====| Disposal Data |=====

Disposal Data Action Code:
Disposal Data Focal Point: E
Disposal Data Review Date: 89178
RecNo. for this Disp. Entry: 01
Total Disp Ent-This Stk #: 010
Account. Accept. by DRMS: YES
EIS/EA Availability: NO
Transfer (New Condition): NO
Donation (New Condition): NO
Sales (New Condition): NO
Reutil. (Used Condition): NO
Transfer (Used Condition): NO
Donation (Used Condition): NO
Sales (Used Condition): NO
Disposal Supplement Code: N050
Disposal Supplemental Data: ITEM IS A SOLID. IN SOLUTION IT
WILL MEET EPA CHARACTERISTIC OF
CORROSIVITY {40CFR 261.22
(A)(1)}.

---| EPA |-----
1st Edit Table Code (New): D002
1st Code (New): D002
1st Name (New): CORROSIVE
1st Characteristics (New): CORROSIVITY
1st Acute Hazard (New): NO
1st Edit Table Code (Used): D002
1st Code (Used): D002
1st Name (Used): CORROSIVE
1st Characteristics (Used): CORROSIVITY
1st Acute Hazard (Used): NO

---| DISPOSAL |-----
1st Code (Small Qty): BN01
1st Method (Small Qty): (BN01) DISPOSE AS PER GUIDELINE:
INORGANIC ALKALI WASTE
(LIQUID OR SOLID).
1st Code (Large Qty): BN01
1st Method (Large Qty): (BN01) DISPOSE AS PER GUIDELINE:
INORGANIC ALKALI WASTE
(LIQUID OR SOLID).
Disposal Restrictions: REGULATED PER DLA/DoD
REQUIREMENTS; CHECK 40 CFR 261
FOR EPA REGULATORY POLICY.

DO NOT DISPOSE VIA

SANITARY SEWER OR SANITARY
LANDFILL.

Table Qty-Disposal File: YES
EPA Hazard Waste Label: YES
Waste Proper Shipping Name: WASTE SODIUM HYDROXIDE, FLAKE

=====
=====| Master Print |=====

Stock Number: 002426341
FSC: 6810
Manufacturers CAGE: 11212
Part No. Indicator: A
Part Number/Trade Name [REDACTED]

=====
=====| General Information |=====

Safety Focal Point: D
Record No. for this Safety Entry: 001
Total Safety Entries, This No.: 006
Date MSDS Prepared: PRE-HCS
Safety Data Review Date: 16NOV78
Item Name: SILVER CYANIDE

Manufacturer Name: ENGELHARD INDUSTRIES DIVISION, SILVER
PRODUCTS
Emergency Phone No.: 201 589-5000

MSDS Serial Number: BDMVS
Hazard Characteristic Code: T3
Unit of Issue: DR
Unit of Iss. Container Qt.: 6.25 LB
Type of Container: POLY LINED
Net Unit Weight: 6.25 LB

=====
=====| Ingredients/Identity Information |=====

ISN : 01
Proprietary : NO
IFP : D
NIOSH (RETECS): VW3850000
Ingredient : SILVER CYANIDE
Percent : 80.5
ACGIH TLV : 5 MG/CUM

=====
=====| Physical/Chemical Characteristics |=====

Appearance and Odor: WHITE, ODORLESS POWDER
Boiling Point: UNKNOWN
Evap. Rate & Reference: N.A.
Solubility in Water: .000022

=====
=====| Fire & Explosion Hazard Data |=====

Flash Point: N.A.

[Extinguishing Media]
DRY CHEMICAL, CARBON DIOXIDE, FOAM, WATER INEFFECTIVE

[Special Fire Fgting Proc]
FIGHT FIRES FROM FIRE DISTANCE,SELF CONTAINED BREATHER

[Unusual Fire & Expl. Hzrds]
HAZARDOUS REACTIONS WITH ALKALIS,HEATING AND EXPLOSION.EXPLOSIVE IN CONTACT WITH IGNITION SOURCES.

=====
Stability: YES | Reactivity Data |=====

[Cond. to Avoid(Stability)]
HEAT AND ACID.BECOMES UNSTABLE ABOVE 360F TEMPERATURE

[Materials to Avoid]
ACID,HEAT ALKALIS

[Hazardous Decomp. Products]
CYANIDE GASES

[Hazardous Poly. Occur]
NO

[Conditions to Avoid(Poly)]
MAY HAVE POLYMERIZATION WITH ACIDS AND HEAT.NEEDS STABILIZER

=====
Health Hazard Data |=====

[Health Hazards-Acute & Chronic]

[Signs and Symptoms of Overexposure]
HEADACHE,DIZZINESS,NAUSEA,VOMITING,DIFFICULT BREATHING,PARALYSIS,
RESPIRATORY ARREST.

[Emergancy and First Aid Procedures]
IRRIGATE EYES WITH WATER.WASH CONTAMINATED AREAS OF BODY WITH SOAP AND WATER.TRANSFER PATIENT TO FRESH AIR.REMOVE ALL CLOTHING.ADMINISTER ARTIFICIAL RESPIRATION AND OXYGEN.ADMINISTER VIA INHALATION AMYL NITRITE. VAPORS FROM AMPULE.DOSE WITH WARM SALT

=====
Precautions for Safe Handling & Use |=====

[Steps if Material Released or Spilled]
NEUTRALIZE WITH SODIUM HYDROXIDE SOLUTION.ADD SUFFICIENT CALCIUM HYPOCHLORITE TO THE ALKALI CYANIDE AND DRAIN INTO APROVED DISPOSAL AREA

[Waste Disposal Method]
SEAL THE CYLINDER AND/OR APPROVED STORAGE CONTAINER TO SPPLIER.

[Handling and Storage Precautions]
PROTECT CONTAINERS AGAINST PHYSICAL DAMAGE.REMOVE EVERY SOURCE OF IGNITION. SEPARATE FROM OTHER STORAGES,ESPECIALLY FROM COMBUSTIBLES.

[Other Precautions]

KEEP AWAY FROM HEAT,ACID,LIGHT,SKIN CONTACT AND FOOD OR FOOD PRODUCTS.KEEP CONTAINERS CLOSED AND STORED IN DRY PLACE.PURE SILVER CYANIDE EASILY LYMERIZES,ADD STABILIZER TO PREVENT THIS.

=====
=====| Control Measures |=====

[Respiratory Protection]

SELF CONTAINED BREATHER OR SELF CONTAINED BREATHING APPARATUS.

[Ventilation]

USE LOCAL AND MECHANICAL EXHAUST VENTILATION AS NEEDED.

[Protective Gloves]

LONG RUBBER

[Eye Protection]

GOGGLES

[Other Protective Equipment]

APRONS AND SPECIAL IMPERVIOUS CLOTHING

[Work Hygienic Practices]

[Sup. Safe and Health Data]

=====
=====| Transportation Data |=====

Transportation Focal Point: D

Trans. Data Rev. Date: 83011

DOT PSN Code: LZZ

DOT Proper Shipping Name: SODIUM CYANIDE,SOLID

DOT Class: POISON B

DOT Label: POISON

Limited Quantity: NO

DOT Mode Indicator: E

Identification Number: UN1689

IMO PSN Code: NQT

IMO Proper Shipping Name: SODIUM CYANIDE

IMO Regulations Page No.: 6227

UN Number: 1689

UN Class: 6.1

IMO Subsidiary Risk Label: -

IATA PSN Code: WOX

IATA UN ID Number: 1689

IATA Proper Shipping Name: SODIUM CYANIDE

IATA UN Class: 6.1

IATA Label: POISON

AFR 71-4 PSN Code: IQX

AFR 71-4 Proper Ship. Name: SODIUM CYANIDE, SOLID

AFR 71-4 Class: POISON B

AFR 71-4 Label: POISON

AFR 71-4 ID Number: UN1689

=====
=====| Disposal Data |=====

Disposal Data Action Code:

Disposal Data Focal Point: E

Disposal Data Review Date: 88272

RecNo. for this Disp. Entry: 01

Total Disp Ent-This Stk #: 005

Account. Accept. by DRMS: YES

EIS/EA Availability: NO

Transfer (New Condition): NO

Donation (New Condition): NO

Sales (New Condition): NO

Reutil. (Used Condition): NO

Transfer (Used Condition): NO

Donation (Used Condition): NO

Sales (Used Condition): NO

Disposal Supplement Code: N042

Disposal Supplemental Data: IN CASE OF ACCIDENTAL EXPOSURE
OR DISCHARGE, CONSULT HEALTH AND
SAFETY FILE FOR PRECAUTIONS.

---| EPA |-----
1st Edit Table Code (New): P104
 1st Code (New): P104
 1st Name (New): SILVER CYANIDE
1st Characteristics (New): ACUTELY TOXIC (H)
 1st Acute Hazard (New): YES
1st Edit Table Code (Used): P104
 1st Code (Used): P104
 1st Name (Used): SILVER CYANIDE
1st Characteristics (Used): ACUTELY TOXIC (H)
 1st Acute Hazard (Used): YES

---| DISPOSAL |-----
 1st Code (Small Qty): CN01
1st Method (Small Qty): (CN01) DISPOSE AS PER GUIDELINE:
 CYANIDE WASTE CONTAINING
 REGULATED HEAVY-METALS.
 1st Code (Large Qty): CN01
1st Method (Large Qty): (CN01) DISPOSE AS PER GUIDELINE:
 CYANIDE WASTE CONTAINING
 REGULATED HEAVY-METALS.
Disposal Restrictions: DO NOT DISPOSE VIA SANITARY
 SEWER OR SANITARY LANDFILL.
Rptable Qty-Disposal File: YES
EPA Hazard Waste Label: YES
Waste Proper Shipping Name: WASTE SILVER CYANIDE

LL HAZ 0554 #56



TURCO PRODUCTS, INC.
MATERIAL SAFETY DATA SHEET



00243
3881-39

THIS PRODUCT CONTAINS NO CHEMICALS SUBJECT TO SECTION 313 OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 (SARA)

SECTION I — PRODUCT NAME: [REDACTED]

Manufacturer's Name: TURCO PRODUCTS, INC.
Address: 7300 Boisa Ave., Westminster, CA 92684-3600
Emergency Telephone No.: (614) 387-6200 **Info. Tel. No.:** (714) 890-3600

SECTION II — HAZARDOUS INFORMATION:

COMPONENTS	C.A.S. Number	CERCLA RQ SPILL lbs.	RCRA Waste No.	ACGIH TLV	OSHA TWA	% WT.
Sodium hydroxide	1310-73-2	1000	D002	C 2mg/m ³	C 2mg/m ³	25
Sodium metasilicate	6834-92-0	100	D002	Nt. Estab.	Nt. Estab.	50
Sodium tripolyphosphate	7758-29-4	Nt. Lstd	NtLstd	Nt. Estab.	Nt. Estab.	10
The following non-hazardous ingredients are listed in accordance with the Worker and Community Right-to-Know Act of certain states, including Pennsylvania and New Jersey: Tall oil fatty acids, sodium soap(61790-45-2), Sodium lignin sulfonate (8061-51-6), Sodium rosin soap(61790-51-0).						
CARCINOGENS (As defined in 29CFR 1910.1200)		NTP	IARC	OSHA		
Contains no components defined to be carcinogens		Not listed	Not listed	Not regulated		
PROPER SHIPPING NAME:		HAZARD CLASS:		HAZARD I.D. No.:		
Corrosive solid, n.o.s.		Corrosive material		UN 1759		

SECTION III — PHYSICAL DATA:

BOILING POINT, °F:	Not applicable	SPECIFIC GRAVITY:	Not applicable
VAPOR PRESSURE (mmHg):	Not applicable	VOLATILE, % BY VOL:	Not applicable
VAPOR DENSITY (AIR = 1):	Not applicable	EVAPORATION RATE (Bu. Ac. = 1):	Not applicable
APPEARANCE AND ODOR:	Brown granular mix; mild odor		
	SOLUBILITY IN WATER: Appreciable pH 13		

SECTION IV — FIRE AND EXPLOSION HAZARDS:

FLASH POINT AND METHOD USED:
Nonflammable - Not applicable

EXTINGUISHING MEDIA:
Not applicable

SPECIAL FIRE FIGHTING PROCEDURE AND PRECAUTIONS:
Use self-contained respiratory protection.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Contact with water and reactive metals, such as aluminum, zinc, tin, etc., may lead to generation of hydrogen gas in explosive amounts.

SECTION V — HEALTH, EMERGENCY AND FIRST AID INFORMATION:

EFFECTS OF OVER EXPOSURE: EYES: Contact with product, product dust or product solution will cause severe burns; possible permanent tissue damage and possible blindness.

SKIN: Contact with product, product dust or product solution will cause severe irritation, possible chemical burns and possible permanent tissue damage.

INHALATION: Inhalation of dust or mist will cause severe irritation and possible permanent damage to upper respiratory tract.

INGESTION:
Severe irritation, possible permanent damage to gastrointestinal tract.

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED:
None known

FIRST AID: EYES: Speed is essential. Immediately begin flushing eyes with large volumes of water. Continue for at least 15 minutes. Hold lids apart to assure contact with all surfaces. Obtain medical attention.

SKIN: Flush affected area with large volumes of water. Continue flushing until "slippery" feel is completely gone, at least 15 minutes. If irritation is evident or blistering occurs, obtain medical attention.

INHALATION: Remove to fresh air. Administer oxygen if breathing is difficult. Obtain medical attention if irritation persists.

INGESTION: Do not induce vomiting. If victim is conscious, dilute by giving large volumes of milk or water. Obtain immediate medical attention. Never attempt to give anything by mouth to an unconscious person.

PRIMARY ROUTES OF ENTRY: INHALATION SKIN CONTACT OTHER _____

SECTION VI — REACTIVITY DATE:

STABILITY: STABLE UNSTABLE _____ HAZARDOUS POLYMERIZATION WILL NOT OCCUR

CONDITIONS TO AVOID:

Contact with strong acids, reactive metals, organic materials

HAZARDOUS DECOMPOSITION PRODUCTS:

None

SECTION VII — SPILL, LEAK AND DISPOSAL PROCEDURE:

SPILL OR RELEASE PROCEDURE: CONCENTRATE: Cleanup personnel should use appropriate protective equipment. Shovel dry spill into DOT-approved drums for disposal. Keep spill dry until as much as possible has been swept up and shoveled into disposal drums. Residual amounts should be dissolved in water and solution collected in DOT-approved drums for disposal. If local regulations permit, residual amounts may be neutralized with bicarbonate of soda and flushed to sewer.

USE SOLUTION: Confine spill. Stop leak at source if this can be done safely. Ventilate area. Evacuate nonessential personnel. Pump liquid into DOT-approved drums for disposal. Absorb remaining liquid onto inert absorbent and place in DOT-approved drums for disposal. Neutralize area with bicarbonate of soda and wash with water. Neutralized wash water may be released to sewer if local regulations permit.

DISPOSAL INFORMATION: CONCENTRATE: (1) Transfer to reclaiming center for recycling or reuse, if possible. (2) Transfer to licensed hazardous waste treatment or disposal site for disposition under applicable local, state and regional regulations as hazardous waste. (3) Small amounts may be dissolved in water and neutralized with acid and treated to remove phosphate, if required. Neutralized water solution may be released to sewer if local regulations permit.

SPENT SOLUTION AND RINSES:

Dispose per (1) or (2) above, or spent solution and rinses can be neutralized and floatable soil separated. Any residual organic matter may be removed by oxidation and/or carbon treatment. Treat to remove phosphates if required. Clarified water may be released to sewer if local regulations permit.

SECTION VIII — SPECIAL PROTECTION INFORMATION:

RESPIRATORY PROTECTION: For dust or mist conditions, a NIOSH-approved respirator for dust and mists is advised. If respirators are used, a formal training and screening program must be initiated. See 29 CFR 1910-134.

VENTILATION:

Maintain sufficient mechanical ventilation to keep particulate concentration below TLV.

PROTECTIVE EQUIPMENT: CHEMICAL FACE SHIELD OR GOGGLES: **GLOVES:** **BOOTS:** **APRON:** **PROTECTIVE SUIT:** **Not normally required**

RECOMMENDED PERSONAL HYGIENE: Wash hands and face with soap and water before smoking or eating. Immediately remove all contaminated clothing. Launder before reuse. Do not launder at home. Discard contaminated shoes.

SECTION IX — OTHER INFORMATION:

SPECIAL PRECAUTIONS — STORAGE AND HANDLING: Store in dry protected area. **CAUTION:** Hazardous carbon monoxide gas can form upon contact with food and beverage products. This can collect in enclosed spaces and can be fatal. Follow appropriate tank entry procedures (See ANSI Z117-1-1977). Personnel entering such areas must be provided with respiratory protection and a safety line. They should be kept under observation while in the area by another man at a safe distance.

MIXING: Add slowly to tepid water while mixing. Never dump large amounts into water - violent steam eruption may occur. Add only as fast as product dissolves. Make additions to in-use tank slowly and cautiously, preferably pre-dissolved in water.

REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT: Relieve any pressure. Cover openings to avoid splashing. Clean exterior and interior by flushing with water. Collect flushings for disposal. Use protective equipment for eyes, skin and inhalation.

DATE PREPARED:

DATE REVIEWED:

APPROVED: JPJ 5/89

O.C. DEPT./

R & D DEPT./

SAFETY & ENVIRON.

DOD Hazardous Materials Information System

DoD 6050.5-LR

AS OF MAY 1992

For U.S. Government Use Only

#64) 3,82

FSC: 6810

NIIN: 00F020906

Manufacturer's CAGE: 24747

Part No. Indicator: A

Part Number/Trade Name: 

=====
General Information
=====

Item Name:

Manufacturer's Name: PHILIPP BROTHERS CHEMICALS INC

Manufacturer's Street: 10 COLUMBUS CIRCLE

Manufacturer's P. O. Box: N/K

Manufacturer's City: NEW YORK CITY

Manufacturer's State: NY

Manufacturer's Country:

Manufacturer's Zip Code: 10019

Manufacturer's Emerg Ph #: (212) 586-6020

Manufacturer's Info Ph #: (212) 586-6020

Distributor/Vendor # 1:

Distributor/Vendor # 1 Cage:

Distributor/Vendor # 2:

Distributor/Vendor # 2 Cage:

Distributor/Vendor # 3:

Distributor/Vendor # 3 Cage:

Distributor/Vendor # 4:

Distributor/Vendor # 4 Cage:

Safety Data Action Code: A

Safety Focal Point: F

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 001

Status:

Date MSDS Prepared: UNDATED

Safety Data Review Date: 28JAN92

Supply Item Manager:

MSDS Preparer's Name:

Preparer's Company: PHILIPP BROTHERS CHEMICALS INC

Preparer's St Or P. O. Box: 10 COLUMBUS CIRCLE

Preparer's City: NEW YORK CITY

Preparer's State: NY

Preparer's Zip Code: 10019

Other MSDS Number:

MSDS Serial Number: BMKPP

Specification Number:

Spec Type, Grade, Class:

Hazard Characteristic Code:

Unit Of Issue:

Unit Of Issue Container Qty:

Type Of Container:

Net Unit Weight:

NRC/State License Number:

Net Explosive Weight:

Net Propellant Weight-Ammo:

Coast Guard Ammunition Code:

=====
Ingredients/Identity Information
=====

Proprietary: NO
Ingredient: COPPER (DUST & MIST), BRONZE POWDER
Ingredient Sequence Number: 01
Percent: 71%
Ingredient Action Code: A
Ingredient Focal Point: F
NIOSH (RTECS) Number: GL5325000
CAS Number: 7440-50-8
OSHA PEL: 0.1 MG(CU)/M3 (FUME)
ACGIH TLV: 0.2 MG/M3 (FUME)
Other Recommended Limit: 1 MG(CU)/M3 (DUST)

Proprietary: NO
Ingredient: CYANOGEN
Ingredient Sequence Number: 02
Percent: 29%
Ingredient Action Code: A
Ingredient Focal Point: F
NIOSH (RTECS) Number: GT1925000
CAS Number: 460-19-5
OSHA PEL: 10 PPM
ACGIH TLV: 21 MG/CUM
Other Recommended Limit: 10 PPM
=====

Physical/Chemical Characteristics
=====

Appearance And Odor: OFF-WHITE TO CREAM POWDER, FAINT ALMOND ODOR (TOXIC)
Boiling Point: N/K
Melting Point: 887F
Vapor Pressure (MM Hg/70 F): N/K
Vapor Density (Air=1): 65
Specific Gravity: 2.9
Decomposition Temperature: N/K
Evaporation Rate And Ref: N/K
Solubility In Water: NEGLIGIBLE
Percent Volatiles By Volume: N/R
Viscosity:
pH: N/R
Radioactivity:
Form (Radioactive Matl):
Magnetism (Milligauss):
Corrosion Rate (IPY): N/K
Autoignition Temperature:
=====

Fire and Explosion Hazard Data
=====

Flash Point: N/R
Flash Point Method: N/R
Lower Explosive Limit: N/R
Upper Explosive Limit: N/R
Extinguishing Media: DON'T USE CARBON DIOXIDE. USE ALKALINE DRY CHEMICAL.
Special Fire Fighting Proc: N/K
Unusual Fire And Expl Hazrds: N/K

=====
Reactivity Data
=====

Stability: YES
Cond To Avoid (Stability): N/K
Materials To Avoid: ACIDS & OXIDIZING MATERIALS
Hazardous Decomp Products: TOXIC & FLAMMABLE/POISONOUS HYDROGEN CYANIDE GAS
Hazardous Poly Occur: YES
Conditions To Avoid (Poly): ACIDIFICATION; HYDROGEN CYANIDE GAS MAY POLYMERIZE VIOLENTLY.
=====

=====
Health Hazard Data
=====

LD50-LC50 Mixture: N/K
Route Of Entry - Inhalation: YES
Route Of Entry - Skin: YES
Route Of Entry - Ingestion: NO
Health Haz Acute And Chronic: INHALATION: DIZZINESS, CONFUSION, HEADACHE, VOMITING, LOSS OF CONSCIOUSNESS, DEATH, IRRITATION TO EYES/NOSE, MOUTH. SKIN: IRRITATION.
Carcinogenicity - NTP: NO
Carcinogenicity - IARC: NO
Carcinogenicity - OSHA: NO
Explanation Carcinogenicity: NONE
Signs/Symptoms Of Overexp: INHALATION: DIZZINESS, CONFUSION, HEADACHE, VOMITING, LOSS OF CONSCIOUSNESS, DEATH, IRRITATION TO THE EYES, NOSE & MOUTH. SKIN: IRRITATION.
Med Cond Aggravated By Exp: N/K
Emergency/First Aid Proc: EYES: WASH W/PLENTY OF WATER AT LEAST 15 MINS. SKIN: WASH THOROUGHLY W/PLENTY OF WATER. INHALATION: REMOVE TO FRESH AIR. START TREATMENT IMMEDIATELY W/CYANIDE FIRST AID KIT. INHALATION: KEEP VICTIM WARM. GASTRIC LAVAGE & CATHARSIS SHOULD BE DELAYED UNTIL ANTIDOTES GIVEN. OBTAIN MEDICAL ATTENTION IN ALL CASES.
=====

=====
Precautions for Safe Handling and Use
=====

Steps If Matl Released/Spill: DON'T FLUSH TO SEWER OR STREAM. COVER W/TIME PICK UP DRY FOR DISPOSAL. WASH CONTAMINATED AREA W/HYPOCHLORITE SOLUTION TO OXIDIZE RESIDUAL CYANIDE.
Neutralizing Agent: N/K
Waste Disposal Method: AS PRESCRIBED FOR CYANIDES & HEAVY METALS BY LOCAL, STATE, & FEDERAL REGULATIONS.
Precautions-Handling/Storing: DON'T SHIP OR STORE NEXT TO ACIDS OR OXIDIZING AGENTS. KEEP CONTAINERS TIGHTLY CLOSED. AVOID CONTACT W/EYES, SKIN OR MUCOUS MEMBRANES.
Other Precautions: DON'T SWALLOW. KEEP SOLUTIONS ALKALINE. DON'T WEAR CONTACT LENSES. AVOID FLUSHING TO SEWER OR STREAM; POISONOUS TO HUMANS & ANIMALS.
=====

=====
Control Measures
=====

Respiratory Protection: RESPIRATORS APPROVED FOR CYANIDE DUSTS OR MISTS.
Ventilation: LOCAL EXHAUST: ADEQUATE VENTILATION
Protective Gloves: RUBBER GAUNTLET
Eye Protection: CHEMICAL SAFETY GLASSES
Other Protective Equipment: RUBBER BOOTS, APRON

Work Hygienic Practices: REMOVE CONTAMINATED CLOTHING BEFORE REUSE.
Suppl. Safety & Health Data: N/K

W/AN ACRID ODOR.

Boiling Point: 244F-251F

Vapor Pressure(MM Hg/70 F): 0.0

Vapor Density (Air=1): N/A

Specific Gravity: 1.41

Evap. Rate & Reference: <1.0, ETHER

Solubility in Water: COMPLETE

% Volatiles by Volume: N/A

=====
=====| Fire & Explosion Hazard Data |=====

Flash Point: N/A

Lower Explosive Limit: N/A

Upper Explosive Limit: N/A

[Extinguishing Media]

NOT FLAMMABLE

[Special Fire Fgting Proc]

AVOID INHALATION OF POIS OXIDES.USE SELF-CONT.BREATH.APPARAT

[Unusual Fire & Expl. Hzrds]

WILL NITRATE WOOD & OTHER ORGANICS CAUSING SPONTANEOUS IGNITION OR GREATLY
INCR.FLAMMABLT.Y.EXPL(H*2S

=====
=====| Reactivity Data |=====

Stability: YES

[Materials to Avoid]

MOST METALS, HYDROGEN SULFIDE, WOOD,EXCELSIOR,PAPER,COTTON.

[Hazardous Decomp. Products]

POISONOUS OXIDES OF NITROGEN GAS.

=====
=====| Health Hazard Data |=====

[Health Hazards-Acute & Chronic]

[Signs and Symptoms of Overexposure]

WILL CAUSE SEVERE BURNS TO SKIN OR EYES.INGESTION CAUSES SEVERE INT.BURNS.
BURNS LUNGS.DELAYED SYMPTS

[Emergancy and First Aid Procedures]

FLUSH SKIN WITH LARGE AMOUNTS OF WATER IMMEDIATELY.FLUSH EYES WITH PLENTY
OF WATER FOR AT LEAST 15 MINUTES. GET IMMEDIATE MEDICAL ATTENTION FOR EYES &
SKIN BURNS.IF INHALED,CARRY TO UNCONTAMINATED AREA & GET IMMEDIATE MEDICAL
ATTENTION.AVOID EXERTION

=====
=====| Precautions for Safe Handling & Use |=====

[Steps if Material Released or Spilled]

FLUSH WITH PLENTY OF WATER & NEUTRALIZE WITH ALKALINE MATERIAL SUCH AS SODA ASH, LIME, ETC; PROVIDE ADEQUATE VENTILATION TO ELIMINATE OXIDES OF NITROGEN FUMES AND ANY CO*2 GAS FROM USE OF SODA ASH OR LIMESTONE.

[Waste Disposal Method]

DILUTE AND NEUTRALIZE WITH ALKALINE MATERIAL SUCH AS SODA ASH, LIME, ETC; DISCHARGE THE SOLUTION WITH LARGE AMOUNT OF WATER INTO AN APPROVED DISPOSAL AREA.

[Handling and Storage Precautions]

PROTECT AGAINST PHYSICAL DAMAGE. SEPARATE FROM METALLIC POWDERS, CARBIDES, HYDROGEN SULFIDE, TURPENTINE, ORGANIC ACIDS, & ALL COMBUSTIBLES, ORGANICS.

[Other Precautions]

SEPARATE FROM READILY OXIDIZABLE MATERIALS. PROVIDE GOOD VENTILATION & AVOID DIRECT SUNLIGHT. WEAR RUBBER GLOVES, SELF-CONTAINED BREATHING APPARATUS, PROTECTIVE WORK CLOTHING, BODY PROTECT. SHIELD.

=====
===== | Control Measures | =====

[Respiratory Protection]

USE SELF-CONTAINED OXYGEN OR CLEAN AIR-SUPPLIED BREATHING APPARATUS.

[Ventilation]

LOCAL EXHAUST TO ELIMINATE ALL FUMES.

[Protective Gloves]

RUBBER

[Eye Protection]

SAFETY GOGGLES

[Other Protective Equipment]

RUBBER APRONS, RUBBER SAFETY SHOES, HARD HATS, RUBBER CLOTHING.

[Work Hygienic Practices]

[Sup. Safe and Health Data]

ITEM IS 61.0% MIN. BY WT. NITRIC ACID.

=====
===== | Transportation Data | =====

Transportation Focal Point: D

Trans. Data Rev. Date: 82278

DOT PSN Code: JOL

DOT Proper Shipping Name: NITRIC ACID

DOT Class: OXIDIZER

DOT Label: OXIDIZER AND CORROSIVE

Limited Quantity: NO

DOT Mode Indicator: E

Identification Number: UN2031

IMO PSN Code: KPF

IMO Proper Shipping Name: NITRIC ACID

IMO Regulations Page No.: 8185

UN Number: 2031

UN Class: 8

IMO Subsidiary Risk Label: -

IATA PSN Code: RWA
IATA UN ID Number: 2031
FA Proper Shipping Name: NITRIC ACID
IATA UN Class: 8
IATA Label: CORROSIVE
AFR 71-4 PSN Code: GVZ
AFR 71-4 Proper Ship. Name: NITRIC ACID
AFR 71-4 Class: OXIDIZER
AFR 71-4 Label: OXIDIZER & CORROSIVE
AFR 71-4 ID Number: UN2031
Additional Trans. Data: ITEM IS FORBIDDEN FOR PASSENGER
AIRCRAFT.

=====| Disposal Data |=====

Disposal Data Action Code:
Disposal Data Focal Point: E
Disposal Data Review Date: 89275
RecNo.for this Disp. Entry: 01
Total Disp Ent-This Stk #: 004
Account. Accept. by DRMS: YES
EIS/EA Availability: NO
Transfer (New Condition): NO
Donation (New Condition): NO
Sales (New Condition): NO
Reutil. (Used Condition): NO
Transfer (Used Condition): NO
Donation (Used Condition): NO
Sales (Used Condition): NO
Disposal Supplement Code: N042
Disposal Supplemental Data: ITEM IS 61.0% MIN. BY WT. NITRIC
ACID.

IN
CASE OF ACCIDENTAL EXPOSURE OR
DISCHARGE, CONSULT HEALTH AND
SAFETY FILE FOR PRECAUTIONS.

---| EPA |-----
1st Edit Table Code (New): D001
1st Code (New): D001
1st Name (New): IGNITIBLE
1st Characteristics (New): IGNITABILITY
1st Acute Hazard (New): NO
2nd Edit Table Code (New): D002
2nd Code (New): D002
2nd Name (New): CORROSIVE
2nd Characteristics (New): CORROSIVITY
2nd Acute Hazard (New): NO
1st Edit Table Code (Used): D001
1st Code (Used): D001
1st Name (Used): IGNITIBLE
1st Characteristics (Used): IGNITABILITY
1st Acute Hazard (Used): NO
2nd Edit Table Code (Used): D002

2nd Code (Used): D002
2nd Name (Used): CORROSIVE
2nd Characteristics (Used): CORROSIVITY
2nd Acute Hazard (Used): NO

---| DISPOSAL |-----

1st Code (Small Qty): AN01
1st Method (Small Qty): (AN01) DISPOSE AS PER GUIDELINE:
LIQUID CONCENTRATED ACIDS.

1st Code (Large Qty): AN01
1st Method (Large Qty): (AN01) DISPOSE AS PER GUIDELINE:
LIQUID CONCENTRATED ACIDS.

Disposal Restrictions: LAND DISPOSAL OF THIS ITEM IS
LIMITED BY THE RESTRICTIONS
OF 40 CFR 268.

DO NOT DISPOSE VIA
SANITARY SEWER OR SANITARY
LANDFILL.

Rptable Qty-Disposal File: NO
EPA Hazard Waste Label: YES
Waste Proper Shipping Name: WASTE NITRIC ACID



=====**Master Print**=====

Stock Number: 002816933
FSC: 6810
Manufacturers CAGE: 4V473
Part No. Indicator: A
Part Number/Trade Name:

=====**General Information**=====

Safety Focal Point: N
Record No. for this Safety Entry: 001
Total Safety Entries, This No.: 004
Date MSDS Prepared: PRE-HCS
Safety Data Review Date: 05AUG85

Manufacturer Name: KRAFT CHEM CO (ICI AMERICAS INC)
Emergency Phone No.: 302-575-3000

MSDS Serial Number: BDTBW
Hazard Characteristic Code: T3
NRC/State License Number: N/A
Net Propellant Weight-Ammo: N/A

=====**Ingredients/Identity Information**=====

ID : 01
Proprietary : NO

ID : N
NIOSH (RETECS): VZ7525000

Ingredient : SODIUM CYANIDE
Percent : 100

ACGIH TLV : S,5 MG/CUM

=====**Physical/Chemical Characteristics**=====

Appearance and Odor: WHITE, SLIGHT ALMOND ODOR, SOLID
(GRANUL, FLAKE, EGG)

Boiling Point: 300F/149C
Vapor Pressure(MM Hg/70 F): 1
Vapor Density (Air=1): N/A
Specific Gravity: N/A
Solubility in Water: READILY
% Volatiles by Volume: N/A

=====**Fire & Explosion Hazard Data**=====

Flash Point: N/A

[Extinguishing Media]
WATER FOG. *DO NOT USE CARBON DIOXIDE*

[Special Fire Fgting Proc]

SELF CONTAIN BREATH APP.DO NOT USE CO*2,PROTECTIVE CLOTHING

[Unusual Fire & Expl. Hzrds]

N GAS IS RELEASED IN CONTACT ACID,ACID FUME,MOIST AIR & CO*2. FLASH POINT FOR GAS IS -0.04F/-17.8C

=====| Reactivity Data |=====
Stability: YES

[Cond. to Avoid(Stability)]

ACIDS,ACID FUMES,MOIST AIR. CO*2 MAY CAUSE ACID HYDROLYSIS

[Materials to Avoid]

ACID,OXIDIZING MATERIAL,STRONG REDUCING AGENTS.

[Hazardous Decomp. Products]

HCN GAS

[Hazardous Poly. Occur]

NO

=====| Health Hazard Data |=====

[Health Hazards-Acute & Chronic]

[Signs and Symptoms of Overexposure]

EYE/SKIN: CORROSIVE/ABSORPTION. INGESTION: LIKELY FATAL. INHALATION: >181 PPM,FATAL

[Emergency and First Aid Procedures]

EYE/SKIN: FLUSH WITH WATER,IMMEDIATELY FOR 15 MIN,CALL PHYSICIAN.
INHALATION: REMOVE FROM EXPOSURE,BREAK AN AMYL NITRITE PEARL & HOLD UNDER NOSE FOR 15 SEC,CALL MD,IF UNCONSCIOUS GIVE ARTIF RESP (NOT MOUTH TO MOUTH).
INGESTION: INDUCE (SEE SUP DATA)

=====| Precautions for Safe Handling & Use |=====

[Steps if Material Released or Spilled]

WEAR FULL PROTECTIVE EQUIPMENT,SWEEP UP SPILLED MATERIAL & RETURN TO CONTAINER OR USE IMMEDIATELY. NEVER FLUSH TO PUBLIC SEWERS OR DRAINAGE DITCHES.

[Waste Disposal Method]

COMPLY WITH LOCAL,STATE AND FEDERAL REGULATIONS.

[Handling and Storage Precautions]

STORE IN DRY,COOL VENTILATED AREA. KEEP CONTAINER CLOSED. PROTECT FROM EXPOSURE TO ACIDS,ACID VAPOR,REDUCING & OXIDIZING AGENTS & PHYSICAL DAMAGE.

[Other Precautions]

DO NOT EAT,SMOKE OR DRINK WHERE CYANIDES ARE PRESENT. NACN IS HARMFUL TO

AQUATIC LIFE IN VERY LOW CONCENTRATES. THE EPA HAZARDOUS WASTE NUMBER FOR SODIUM CYANIDE IS P-106.

=====
=====| Control Measures |=====

[Respiratory Protection]

NIOSH/MSHA APPROVED RESP DEVICE IN ACCORD WITH EXPOSURE OF CONCERN.

[Ventilation]

LOCAL EXHAUST

[Protective Gloves]

RUBBER GAUNTLET

[Eye Protection]

CHEM GOGGLES/FACE SHIELD

[Other Protective Equipment]

RUBBER APRONS & BOOTS

[Work Hygienic Practices]

[Sup. Safe and Health Data]

FIRST AID CONT: VOMITING IF CONSCIOUS WHILE BREAKING AMYL NITRITE PEARL UNDER NOSE. CALL PHYSICIAN. CONTAINER SIZE: 25 LB DRUM

=====
=====| Transportation Data |=====

Transportation Focal Point: N

Trans. Data Rev. Date: 85275

DOT PSN Code: LZZ

DOT Proper Shipping Name: SODIUM CYANIDE, SOLID

DOT Class: POISON B

DOT Label: POISON

Limited Quantity: NO

DOT Mode Indicator: E

Identification Number: UN1689

IMO PSN Code: NQT

IMO Proper Shipping Name: SODIUM CYANIDE

IMO Regulations Page No.: 6227

UN Number: 1689

UN Class: 6.1

IMO Subsidiary Risk Label: -

IATA PSN Code: WOX

IATA UN ID Number: 1689

IATA Proper Shipping Name: SODIUM CYANIDE

IATA UN Class: 6.1

IATA Label: POISON

AFR 71-4 PSN Code: IQX

AFR 71-4 Proper Ship. Name: SODIUM CYANIDE, SOLID

AFR 71-4 Class: POISON B

AFR 71-4 Label: POISON

AFR 71-4 ID Number: UN1689

=====
=====| Disposal Data |=====

Disposal Data Action Code:

Disposal Data Focal Point: E
Disposal Data Review Date: 88085
R No.for this Disp. Entry: 01
Total Disp Ent-This Stk #: 004
Account. Accept. by DRMS: YES
EIS/EA Availability: NO
Transfer (New Condition): NO
Donation (New Condition): NO
Sales (New Condition): NO
Reutil. (Used Condition): NO
Transfer (Used Condition): NO
Donation (Used Condition): NO
Sales (Used Condition): NO
Disposal Supplement Code: N042
Disposal Supplemental Data: FIRST AID CONT: VOMITING IF
CONSCIOUS WHILE BREAKING AMYL
NITRITE PEARL UNDER NOSE. CALL
PHYSICIAN. CONTAINER SIZE: 25 LB
DRUM

IN CASE OF ACCIDENTAL
EXPOSURE OR DISCHARGE, CONSULT
HEALTH AND SAFETY FILE FOR
PRECAUTIONS.

---| EPA |-----
1st Edit Table Code (New): P106
1st Code (New): P106
1st Name (New): SODIUM CYANIDE
1st Characteristics (New): ACUTELY TOXIC (H)
1st Acute Hazard (New): YES
2nd Edit Table Code (New): D003
2nd Code (New): D003
2nd Name (New): REACTIVE
2nd Characteristics (New): REACTIVITY
2nd Acute Hazard (New): NO
1st Edit Table Code (Used): P106
1st Code (Used): P106
1st Name (Used): SODIUM CYANIDE
1st Characteristics (Used): ACUTELY TOXIC (H)
1st Acute Hazard (Used): YES
2nd Edit Table Code (Used): D003
2nd Code (Used): D003
2nd Name (Used): REACTIVE
2nd Charecteristics (Used): REACTIVITY
2nd Acute Hazard (Used): NO

---| DISPOSAL |-----
1st Code (Small Qty): SEA1
1st Method (Small Qty): NAVSEA: DISPOSAL PROCEDURE FOR
GROUP 1 HAZARDOUS WASTE
2nd Code (Small Qty): CN02
2nd Method (Small Qty): (CN02) DISPOSE AS PER GUIDELINE:
CYANIDE WASTE CONTAINING
NONREGULATED HEAVY-METALS.
1st Code (Large Qty): SEA1
1st Method (Large Qty): NAVSEA: DISPOSAL PROCEDURE FOR

GROUP 1 HAZARDOUS WASTE

2nd Code (Large Qty): CN02

2nd Method (Large Qty): (CN02) DISPOSE AS PER GUIDELINE:
CYANIDE WASTE CONTAINING
NONREGULATED HEAVY-METALS.

Disposal Restrictions: DO NOT DISPOSE VIA SANITARY
SEWER OR SANITARY LANDFILL.

Rptable Qty-Disposal File: YES

EPA Hazard Waste Label: YES

Waste Proper Shipping Name: WASTE SODIUM CYANIDE

===== | Master Print | =====

Stock Number: 002854314
FSC: 6850
Manufacturers CAGE: 60777
Part No. Indicator: A
Part Number/Trade Name: P-C-535

===== | General Information | =====

Safety Focal Point: D
Record No. for this Safety Entry: 001
Total Safety Entries, This No.: 002
Date MSDS Prepared: PRE-HCS
Safety Data Review Date: 09NOV81
Item Name: [REDACTED]

Manufacturer Name: CHEM.COMMODITIES INC.
Emergency Phone No.: 714-864-2310

MSDS Serial Number: BDTNG
Specification Number: P-C-535
Hazard Characteristic Code: B2
Unit of Issue: DR
Unit of Iss. Container Qt.: 450 LB
Net Unit Weight: 450 LB

===== | Ingredients/Identity Information | =====

ISN : 01
Proprietary : NO

IFP : D
NIOSH (RETECS): WB4900000

Ingredient : SODIUM HYDROXIDE (DRY)
Percent : 65.0

ACGIH TLV : 2 MG/CUM.

===== | Physical/Chemical Characteristics | =====

Appearance and Odor: WHITE SOLID, NO ODOR
Boiling Point: 2534F.
Vapor Pressure(MM Hg/70 F): N/A
Vapor Density (Air=1): N/A
Solubility in Water: 1.09 @ 68 F
% Volatiles by Volume: N/A

===== | Fire & Explosion Hazard Data | =====

Flash Point: N/A
Lower Explosive Limit: N/A
Upper Explosive Limit: N/A

[Extinguishing Media]

FOOD W/WATER, USING CARE NOT TO SPLATTER OR SPLASH MATL.

[Special Fire Fgting Proc]

IN WATER SOLUTION CAUSTIC CAN REACT W/AL GENERATING H*2(EXPL

[Unusual Fire & Expl. Hzrds]

N/A

=====| Reactivity Data |=====

Stability: YES

[Cond. to Avoid(Stability)]

MELTING POINT OF 604F.

[Materials to Avoid]

ACIDS, METALS, EXPLOSIVES, ORGANIC PEROXIDES & IGNITABLE MATLS

[Hazardous Poly. Occur]

NO

=====| Health Hazard Data |=====

[Health Hazards-Acute & Chronic]

[Signs and Symptoms of Overexposure]

CONJUNCTIVITIS, CORNEAL BURNS, DEEP SKIN BURNS, IRRITATION OF RESPIRATORY TRACT, INFLAMMATION OF LUNGS

[Emergency and First Aid Procedures]

NEVER GIVE FLUIDS OR INDUCE VOMIT. IF PERSON IS UNCONSCIOUS OR HAVING CONVULSIONS. EYES: IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINS. SKIN: PROMPTLY FLUSH W/PLENTY OF WATER FOR AT LEAST 15 MIN. INHAL: MOVE TO FRESH AIR.

=====| Precautions for Safe Handling & Use |=====

[Steps if Material Released or Spilled]

USE APPROPRIATE SAFETY EQUIPMENT: SHOVEL UP, FOLLOW BY FLUSHING W/WATER. DILUTE W/WATER & NEUTRALIZE WITH 6M-HCL. DRAIN INTO AN APPROVED STORAGE CONTAINERS WITH SUFFICIENT WATER.

[Waste Disposal Method]

PUT INTO LARGE VESSEL CONTAINING WATER. NEUTRALIZE WITH HCL. DISCHARGE INTO AN APPROVED DISPOSAL AREA WITH SUFFICIENT WATER.

[Handling and Storage Precautions]

PROTECT AGAINST PHYSICAL DAMAGE OF CONTAINER. STORE IN DRY PLACE. PROTECT AGAINST MOISTURE & WATER. KEEP CONTAINERS CLOSED & SEALED.

[Other Precautions]

SOLUTION WITH WATER GENERATES EXCESSIVE HEAT & MIST. SOLUTIONS OF > 45% ARE SCOUS & VERY SLIPPERY. SEPARATE FROM ACIDS, METALS, EXPLOSIVES, ORGANIC PEROXIDES & EASILY IGNITABLE MATLS.

=====
=====| Control Measures |=====

[Respiratory Protection]

DUST RESPIRATOR

[Ventilation]

LOCAL EXHAUST IS RECOMMENDED

[Protective Gloves]

RUBBER

[Eye Protection]

FULL FACE SHIELD

[Other Protective Equipment]

CLEAN WORK CLOTHES, APRONS, BOOTS, GAUNTLETS.

[Work Hygienic Practices]

[Sup. Safe and Health Data]

EMERGENCY & FIRST AID PROCEDURES (CONTD): INHAL: (CONTD): KEEP PERSON QUIET & WARM & GET MEDICAL ATTENTION. INGEST: GIVE MILK OR PLENTY OF WATER & CALL PHYSICIAN IMMEDIATELY. DO NOT INDUCE VIMIT.

=====
=====| Transportation Data |=====

Transportation Focal Point: D

Trans. Data Rev. Date: 84041

DOT PSN Code: MCL

DOT Proper Shipping Name: SODIUM HYDROXIDE, DRY SOLID, FLAKE, BEAD, OR GRANULAR

DOT Class: CORROSIVE MATERIAL

DOT Label: CORROSIVE

Limited Quantity: NO

DOT Mode Indicator: E

Identification Number: UN1823

Reportable Quantity: NO

IMO PSN Code: NSX

IMO Proper Shipping Name: SODIUM HYDROXIDE, SOLID

IMO Regulations Page No.: 8215

UN Number: 1823

UN Class: 8

IMO Subsidiary Risk Label: -

IATA PSN Code: WSO

IATA UN ID Number: 1823

IATA Proper Shipping Name: SODIUM HYDROXIDE, SOLID

IATA UN Class: 8

IATA Label: CORROSIVE

AFR 71-4 PSN Code: ISX

AFR 71-4 Proper Ship. Name: SODIUM HYDROXIDE, DRY SOLID, FLAKE, BEAD, OR GRANULAR

AFR 71-4 Class: CORROSIVE MATERIAL

AFR 71-4 Label: CORROSIVE

===== | Disposal Data | =====

Disposal Data Action Code:
 Disposal Data Focal Point: E
 Disposal Data Review Date: 88092
 RecNo.for this Disp. Entry: 01
 Total Disp Ent-This Stk #: 002
 Account. Accept. by DRMS: YES
 EIS/EA Availability: NO
 Transfer (New Condition): NO
 Donation (New Condition): NO
 Sales (New Condition): NO
 Reutil. (Used Condition): NO
 Transfer (Used Condition): NO
 Donation (Used Condition): NO
 Sales (Used Condition): NO
 Disposal Supplement Code: N047
 Disposal Supplemental Data: EMERGENCY & FIRST AID PROCEDURES
 (CONTD): INHAL: (CONTD): KEEP
 PERSON QUIET & WARM & GET
 MEDICAL ATTENTION. INGEST: GIVE
 MILK OR PLENTY OF WATER & CALL
 PHYSICIAN IMMEDIATELY. DO NOT
 INDUCE VOMIT. REGULATED PER
 DLA/DoD REQUIREMENTS; CHECK 40
 CFR 261 FOR EPA REGULATORY
 POLICY.

---| EPA |-----
 1st Edit Table Code (New): D002
 1st Code (New): D002
 1st Name (New): CORROSIVE
 1st Characteristics (New): CORROSIVITY
 1st Acute Hazard (New): NO
 1st Edit Table Code (Used): D002
 1st Code (Used): D002
 1st Name (Used): CORROSIVE
 1st Characteristics (Used): CORROSIVITY
 1st Acute Hazard (Used): NO

---| DISPOSAL |-----
 1st Code (Small Qty): SEAL
 1st Method (Small Qty): NAVSEA: DISPOSAL PROCEDURE FOR
 GROUP 1 HAZARDOUS WASTE
 2nd Code (Small Qty): BN01
 2nd Method (Small Qty): (BN01) DISPOSE AS PER GUIDELINE:
 INORGANIC ALKALI WASTE
 (LIQUID OR SOLID).
 1st Code (Large Qty): SEAL
 1st Method (Large Qty): NAVSEA: DISPOSAL PROCEDURE FOR
 GROUP 1 HAZARDOUS WASTE
 2nd Code (Large Qty): BN01
 2nd Method (Large Qty): (BN01) DISPOSE AS PER GUIDELINE:
 INORGANIC ALKALI WASTE

(LIQUID OR SOLID).

Disposal Restrictions: DO NOT DISPOSE VIA SANITARY
SEWER OR SANITARY LANDFILL.

Rptable Qty-Disposal File: YES

EPA Hazard Waste Label: YES

Waste Proper Shipping Name: WASTE SODIUM HYDROXIDE, DRY
SOLID, FLAKE, BEAD, OR GRANULAR

Lower Explosive Limit: N/A
Upper Explosive Limit: N/A

[Extinguishing Media]

EXTINGUISH W. AGENT SUITABLE FOR SURROUNDING FIRE.

[Special Fire Fgting Proc]

WEAR CHEM PROT. SUIT WITH SCBA. COOL CONTRS WITH H*2O.

[Unusual Fire & Expl. Hzrds]

NOT APPLICABLE

=====| Reactivity Data |=====

Stability: YES

[Cond. to Avoid(Stability)]

NOT APPLICABLE

[Materials to Avoid]

MAGNESIUM PLUS HEAT MAY REACT EXPLOSIVELY.

[Hazardous Decomp. Products]

CDO FUMES MAY BE GENERATED AT TEMPS APPROACHING DECOMP

[Hazardous Poly. Occur]

NO

=====| Health Hazard Data |=====

[Health Hazards-Acute & Chronic]

[Signs and Symptoms of Overexposure]

FUME EXPOS:LUNG IRRITNT,PULMONARY EDEMA,MAY BE FATAL.CHRONIC EXPOS:
EMPHYSEMA,KID DYSFUNCT.SUPP DATA

[Emergancy and First Aid Procedures]

INHALED:IF EXPOSD AND SYNPTOMS OF RESPIR DISTRESS APPEAR,REMOVE TO FRESH AIR.
PLACE INDIVIDUAL IN BED.IMMEDIATELY CALL A PHYSICIAN.INGESTION:INDUCE
VOMITING IN A CONSCIOUS INDIVIDUAL.

=====| Precautions for Safe Handling & Use |=====

[Steps if Material Released or Spilled]

CLEAN-UP PROCEDURE SHOULD MINIMIZE EXPOS.VACUUMING IS PREFERRED.PLACE ALL
MATL IN CLOSED CONTR.DO NOT USE COMPRESSED AIR FOR CLEANING.USE APPRVD
RESPIR PROTECTION IF POSSIBILITY IF DUST/FAME EXPOSURE EXISTS.

[Waste Disposal Method]

IF HAZ UNDER 40CFR 261,SUBPARTS B & C,MATL MUST BE TREATED/DISPOSED IN AN
APPROVED FACILITY.IF NON-HAZARDOUS,MATL SHOULD BE DISPOSED IN A FACILITY
MEETING REAUIREMENTS OF 40CFR257.

===== | Disposal Data | =====

Disposal Data Action Code:
Disposal Data Focal Point: E
Disposal Data Review Date: 88085
RecNo.for this Disp. Entry: 01
Total Disp Ent-This Stk #: 005
Account. Accept. by DRMS: YES
EIS/EA Availability: NO
Transfer (New Condition): NO
Donation (New Condition): NO
Sales (New Condition): NO
Reutil. (Used Condition): NO
Transfer (Used Condition): NO
Donation (Used Condition): NO
Sales (Used Condition): NO
Disposal Supplement Code: N042
Disposal Supplemental Data: EXPOSURE:IRRITATS STOMACH,NAUS,
VOMIT,IRRITATS SKIN/EYES.

IN
CASE OF ACCIDENTAL EXPOSURE OR
DISCHARGE, CONSULT HEALTH AND
SAFETY FILE FOR PRECAUTIONS.

EPA | -----

Edit Table Code (New): D006
1st Code (New): D006
1st Name (New): EP TOXIC (>1.0 MG/L CADMIUM)
1st Characteristics (New): EP TOXICITY
1st Acute Hazard (New): NO
1st Edit Table Code (Used): D006
1st Code (Used): D006
1st Name (Used): EP TOXIC (>1.0 MG/L CADMIUM)
1st Characteristics (Used): EP TOXICITY
1st Acute Hazard (Used): NO

--- | DISPOSAL | -----

1st Code (Small Qty): TM01
1st Method (Small Qty): (TM01) DISPOSE AS PER GUIDELINE:
WASTE CONTAINING TOXIC
METALS(EXCLUDING CYANIDE AND
FLUORIDE SALTS)
1st Code (Large Qty): TM01
1st Method (Large Qty): (TM01) DISPOSE AS PER GUIDELINE:
WASTE CONTAINING TOXIC
METALS(EXCLUDING CYANIDE AND
FLUORIDE SALTS)

Disposal Restrictions: DO NOT DISPOSE VIA SANITARY
SEWER OR SANITARY LANDFILL.

Table Qty-Disposal File: YES
EPA Hazard Waste Label: YES
Waste Proper Shipping Name: HAZARDOUS WASTE, SOLID, N.O.S

[Handling and Storage Precautions]

FULL PROTECTV REQUIRED FOR BULK LEAVNG PLANT.KEEP DUSTY CONDITIONS MINIMUM.
ORE IN COOL,DRY AREA.

=====
=====| Control Measures |=====

[Respiratory Protection]

NIOSH/MSHA APPRVD RESPIR FOR TOXIC DUST AND/OR FUME.

[Ventilation]

NOT APPLICABLE

[Protective Gloves]

IMPERVIOUS

[Eye Protection]

SAFETY GLASSES

[Other Protective Equipment]

FULL WORK CLOTHING TO PREVENT REPEATED OR PROLONGED CONTACT.

[Work Hygienic Practices]

[Sup. Safe and Health Data]

EXPOSURE:IRRITATS STOMACH,NAUS,VOMIT,IRRITATS SKIN/EYES.

=====
=====| Transportation Data |=====

Transportation Focal Point: D

Trans. Data Rev. Date: 84349

DOT PSN Code: ZZZ

DOT Proper Shipping Name: NOT REGULATED FOR THIS MODE OF
TRANSPORTATION

DOT Class: N/R

DOT Label: N/R

Identification Number: N/R

IMO PSN Code: DHD

IMO Proper Shipping Name: CADMIUM COMPOUNDS

IMO Regulations Page No.: 6087

UN Number: 2570

UN Class: 6.1

IMO Subsidiary Risk Label: -

IATA PSN Code: EUK

IATA UN ID Number: 2570

IATA Proper Shipping Name: CADMIUM COMPOUNDS

IATA UN Class: 6.1

IATA Label: KEEP AWAY FROM FOOD

AFR 71-4 PSN Code: ZZZ

AFR 71-4 Proper Ship. Name: NOT REGULATED FOR THIS MODE OF
TRANSPORTATION

AFR 71-4 Class: N/R

AFR 71-4 Label: N/R

AFR 71-4 ID Number: N/R

Additional Trans. Data: DOT & MILITARY AIR:NOT REGULATED;
MEETS TOXICITY REQUIREMENTS FOR
PACKAGING GROUP III VIA TMO/IATA;
LD50(ORAL RAT) IS 72MG/KG.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME Mitchell-Bradford Chemical Co., Inc.		EMERGENCY TELEPHONE NO. (203) 878-0671
ADDRESS (Number, Street, City, State, and ZIP Code) Wampus Lane - P.O. Box 169 - Milford, Connecticut 06460		
CHEMICAL NAME / ND SYNONYMS Alkali-Nitrate Mixture	TRADE NAME AND SYNONYMS "S"	
CHEMICAL FAMILY Alkali	FORMULA Na OH - Nitrates, Nitrites & Detergents	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)	
PIGMENTS	N.A.		BASE METAL	N.A.		
CATALYST	N.A.		ALLOYS	N.A.		
VEHICLE	N.A.		METALLIC COATINGS	N.A.		
SOLVENTS	N.A.		FILLER METAL PLUS COATING OR CORE FLUX	N.A.		
ADDITIVES	N.A.		OTHERS	N.A.		
OTHERS	N.A.					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	TLV (Units)
Contains caustic Soda.						

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N.A.	SPECIFIC GRAVITY (H ₂ O=1)	2.5
VAPOR PRESSURE (mm Hg.)	N.A.	PERCENT VOLATILE BY VOLUME (%)	N.A.
VAPOR DENSITY (AIR=1)	N.A.	EVAPORATION RATE (_____ =1)	N.A.
SOLUBILITY IN WATER	Appreciable		
APPEARANCE AND ODOR	White to slightly colored dry chemical mixture - slight odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	Let	Uel
EXTINGUISHING MEDIA	N.A.			
SPECIAL FIRE FIGHTING PROCEDURES	N.A.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	N.A.			

11-11-77
0900 - 0060

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

2 Mg/M³ (Dust) 1969

EFFECTS OF OVEREXPOSURE

Caustic soda in mixture is destructive to tissues producing severe burns. Dust inhalation can injure respiratory tract. When making solution, add slowly to surface of solution to avoid violent spattering.

EMERGENCY AND FIRST AID PROCEDURES

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. For eyes, get medical attention. Contaminated clothing should be washed before re-use.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) Acids			
HAZARDOUS DECOMPOSITION PRODUCTS Reaction with acids causes evolution of nitrogen dioxide.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Spilled "Activated" BLACK MAGIC "Plus" salts may be shoveled up, followed by flushing with water. Spilled "Activated" BLACK MAGIC "Plus" solution should be flushed

with water. Dilute acetic acid can be used to neutralize final trace after flushing.

WASTE DISPOSAL METHOD

Waste solution should not be discharged directly into sewers or streams. It should first be neutralized with dilute acid and then well diluted with water.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)		
VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER
PROTECTIVE GLOVES Rubber		EYE PROTECTION Close fitting safety goggles
OTHER PROTECTIVE EQUIPMENT Rubber boots, rubber aprons, safety shower and eye wash fountain.		

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Do not get in eyes, on skin, or clothing. Avoid breathing dust. Do not take internally. Wear safety equipment when handling "Activated" BLACK MAGIC "Plus"

OTHER PRECAUTIONS

salt mixture and solution.

L-142-0060

P-2



MATERIAL SAFETY DATA SHEET

CP CHEMICALS, Inc.

Required under 29 CFR 1910, 1200

DATE PREPARED 12/86

H-13-22

EMERGENCY HAZARD RATING

4 - EXTREME		HEALTH	REACTIVITY
3 - HIGH			
2 - MODERATE			
1 - SLIGHT			
0 - INSIGNIFICANT			

SPECIFIC HAZARD

Arbor Street, Sewaren, NJ 07077 • 201-636-4300 • CHEMTREC 800-424-9300

SECTION I - PRODUCTION INFORMATION: SINGLE SUBSTANCE MIXTURE

Chemical Name & CAS No. XXXXXXXXXX Mixture See Section II

Trade Name & Synonyms **BRASS PLATING CONCENTRATE**

Chemical Family **Solubilized Cyanide Salts** Chemical Formula **CuCu, ZnO in NaCN Solution**

SECTION II - HAZARDOUS INGREDIENTS AND/OR CHARACTERISTICS

Copper Cyanide-CAS # [544-92-3] - 9.2%

Zinc Oxide-CAS [1314-13-2] - 2.6%

Sodium Cyanide-CAS # [143-33-9] - 17.0%

Water -CAS # [7732-18-5] - 71.2%

SECTION III - PHYSICAL DATA

Melting Point (°F)	NA	Specific Gravity (H ₂ O=1)	1.23
Boiling Point (°F)	Decomposes	Percent Volatile by Volume (%)	0
Bulk Density (LBS/Per Gal.)	10.25	pH	11

Solubility in Water **Complete**

Appearance and Odor **Clear to yellowish solution; faint almond odor - POISONOUS.**

SECTION IV - REACTIVITY DATA

Stability	Unstable	Conditions to Avoid
	Stable X	

Incompatibility (Materials to Avoid) **Acids and oxidizing materials.**

Hazardous Decomposition Products **Hydrogen Cyanide gas (toxic and flammable)**

Hazardous Polymerization	May Occur	Conditions to Avoid
	Will Not Occur	

SECTION V - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	NA	Flammable Limits	NA	LeL	NA	UeL	NA
---------------------------	----	------------------	----	-----	----	-----	----

Extinguishing Media **Alkaline dry chemical, water fog.**

Special Fire Fighting Procedures **Do not use carbon dioxide or other acidic type extinguishers.**

Avoid flushing to sewer. Wear fully protective gear and self-contained (positive pressure) breathing apparatus.

Unusual Fire and Explosion Hazards

In contact with acids, liberates poisonous and flammable hydrogen cyanide gas. Reacts vigorously with oxidizers.

DOT EMERGENCY RESPONSE GUIDENO. (55-suggested)

D-5

NEXTFRAME

TEL - H.A.Z. - 0048

SECTION VI - HEALTH HAZARD DATA

Exposure Limits (ACGIH) Cyanide (as CN), Skin: 5 mg/m³
 TLV (ACGIH) skin: 5 mg/m³ TWA: Calling: NDA 2-4
 Effects of Overexposure: Dizziness, confusion, headache, vomiting, loss of consciousness, death after inhalation or swallowing.

Medical Conditions aggravated by exposure: Pre-existing skin diseases, cardiovascular and nervous disorders, those susceptible to effects of anoxia or anemia, and upper respiratory diseases.

Emergency First Aid Procedures: Always have on hand fresh Cyanide First Aid Kit.
 Eye: Wash with copious amounts of water (under lids) for at least 15 minutes. Get immediate medical attention.
 Skin: Flush with copious amounts of water, remove contaminated clothing. Start treatment with Cyanide First Aid Kit.
 Inhalation: Remove to fresh air. Start treatment immediately with Cyanide First Aid Kit.
 Ingestion: Same as inhalation. Keep victim warm. Contact nearest poison control center or physician.

OTHER HEALTH INFORMATION:
 LISTED: Carcinogen Teratogen Mutagen Other NDA

SECTION VII - SPECIAL PROTECTION INFORMATION - PRODUCTION AND/OR MAINTENANCE OPERATIONS

Respiratory Protection (Specify Type): Air mask or respirator of type approved for cyanides.

Ventilation	Local Exhaust	Required	Special
	Mechanical (General)	Exhaust fan	Do not wear contact lenses. Other: Fresh Cyanide First Aid Kit. Eli-Lilly Item #M76-NDC# 002-238-501
Protective Gloves		Rubber gauntlet	Eye Protection Chemical Safety glasses
Other Protective Equipment		Rubber boots, apron.	

SECTION VIII - SPILL OR LEAK PROCEDURES

to be Taken in Case Material is Released or Spilled: Cover with lime; pick up dry for disposal. Wash contaminated area with hypochlorite solution.
 Waste Disposal Method: As prescribed for cyanides and heavy metals by local, state, and federal regulations. Do not flush to sewer or stream. (Cyanide may be oxidized by treatment with sodium hypochlorite at pH 8.5-10).

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in Handling and Storing: Do not ship or store next to acids or oxidizing agents. Keep containers tightly closed.
 Other Precautions: Avoid contact with eyes, skin or mucous membrane. Do not swallow. Keep solutions alkaline. Practice good personal hygiene.

SECTION X - TRANSPORTATION DATA:

Proper Shipping Name CYANIDE SOLUTION, N.O.S.	RD NA	Hazard Class POISON B	ID # (49CFR 172-101) UN 1935
Label Requirement	POISON (Brass Plating Concentrate)		
Special Information	None		

NA = NOT APPLICABLE NDA = NO DATA AVAILABLE < = LESS THAN > = MORE THAN
 The information herein is believed to be reliable. However, no warranty, express or implied, is made as to its accuracy or completeness, and none is made as to the fitness of this material for any purpose. The manufacturer shall not be liable for damages to person, or property resulting from its use. Nothing herein shall be construed as a recommendation for use in violation of any patent.

NEXT FRAMED

U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEETRequired under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)**SECTION I**

MANUFACTURER'S NAME Mitchell-Bradford Chemical Co.		EMERGENCY TELEPHONE NO. 1-203-878-0671
ADDRESS (Number, Street, City, State, and ZIP Code) P.O. Box 169 - Wampus Lane, Milford, Connecticut 06460		
CHEMICAL NAME AND SYNONYMS Alkali-Nitrate Mixture		
CHEMICAL FAMILY Alkali	FORMULA NaOH, NaNO ₃ , Na ₂ S ₂ O ₃	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)	
PIGMENTS	N.A.		BASE METAL	N.A.		
CATALYST	N.A.		ALLOYS	N.A.		
VEHICLE	N.A.		METALLIC COATINGS	N.A.		
SOLVENTS	N.A.		FILLER METAL PLUS COATING OR CORE FLUX	N.A.		
ADDITIVES	N.A.		OTHERS	N.A.		
OTHERS	N.A.					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES					%	TLV (Units)
N.A.						

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N.A.	SPECIFIC GRAVITY (H ₂ O=1)	2.5
VAPOR PRESSURE (mm Hg.)	N.A.	PERCENT VOLATILE BY VOLUME (%)	N.A.
VAPOR DENSITY (AIR=1)	N.A.	EVAPORATION RATE (_____ =1)	N.A.
SOLUBILITY IN WATER	Appreciable		
APPEARANCE AND ODOR	White to slightly colored dry chemical mixture - slight odor		

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N.A.	FLAMMABLE LIMITS	LM	UM
EXTINGUISHING MEDIA	N.A. Dry Granular Product.			
SPECIAL FIRE FIGHTING PROCEDURES				
UNUSUAL FIRE AND EXPLOSION HAZARDS				

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE 2 Mg/M³ (Dust) 1969EFFECTS OF OVEREXPOSURE
Caustic soda in mixture is destructive to tissues, producing severe burns. Dustinhalation can injure respiratory tract. When making solution, add slowly to surface
EMERGENCY AND FIRST AID PROCEDURES of solution to avoid violent spattering.In case of contact, immediately flush skin or eyes with plenty of water for at least
15 minutes. For eyes, get medical attention. Contaminated clothing should be washed
before re-use.

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
		STABLE	

INCOMPATIBILITY (Materials to avoid) Acids - May Evolve Sulfur Oxides

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
		WILL NOT OCCUR	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Spilled Black Magic SS salts may be shoveled up, followed by flushing with water.

Spilled solution of Black Magic SS salts and water should be flushed with water.

Dilute acetic acid can be used to neutralize final traces after flushing.

WASTE DISPOSAL METHOD

Waste solution should not be discharged directly into sewers or streams. It should
be first neutralized with dilute acid and then well diluted with water.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION	LOCAL EXHAUST	SPECIAL
		Any dust from salt mixture or vapor should be exhausted

MECHANICAL (General)

PROTECTIVE GLOVES Rubber

EYE PROTECTION Close fitting safety goggles

OTHER PROTECTIVE EQUIPMENT Rubber boots, rubber aprons, safety shower and eye wash fountain

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Do not get in eyes, on skin, or clothing. Avoid breathing dust. Do not take

internally. Wear safety equipment when handling Black Magic SS salt mixture and
OTHER PRECAUTIONS solution

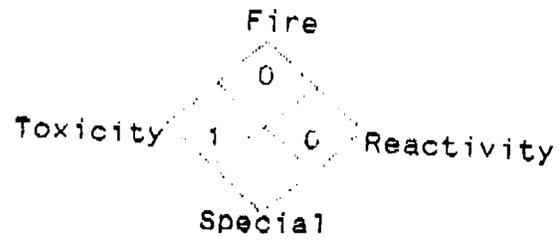
L-142-0008

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WITCO MATERIAL SAFETY DATA SHEET
SULFAMATE SN

PAGE 1
Product Code: 80001

NFPA HAZARD RATINGS
4 - Extreme
1 - High
0 - Moderate
0 - Slight
0 - Insignificant



DIVISION AND LOCATION---SECTION I

Division: ALLIED-RELITE
Location: NEW HUDSON, MI
29111 MILFORD RD., NEW HUDSON, MI, 48165
Emergency Telephone Number: (313) 437-8161
Transportation Emergency: CHEMTREC 1-(800) 424-9300 (U.S. and Canada)

CHEMICAL AND PHYSICAL PROPERTIES---SECTION II

Chemical Name:

Formula: Proprietary

Hazardous Decomposition Products:
none

Incompatibility (Keep away from):
alkalies and oxidizing agents, direct heat, direct sunlight.

Toxic and Hazardous Ingredients:
nickel sulfamate

CAS #
13770-89-3

Form: liquid
Appearance: clear
Specific Gravity (water=1): 1.25
Boiling Point: greater than 100°C (212°F)
Melting Point: not applicable
Solubility in water (by weight %): 100 at 25°C
Volatile (by weight %): approximately 70
Evaporation Rate: (water = 1) approximately 1
Vapor Pressure (mm Hg at 20°C): no data available
Vapor Density (air=1): no data available
pH (as is): 4.5
Stability: Product is stable under normal conditions
Viscosity SUS at 100°F: no data available

Odor: none
Color: green

(Continued on next page)

WITCO MATERIAL SAFETY DATA SHEET
SULFAMATE SN

PAGE 2
Product Code: 80001

FIRE AND EXPLOSION DATA---SECTION III

Special Fire Fighting Procedures:
none

Unusual Fire and Explosion Hazards:
none

Flashpoint: not applicable, water

Flammable limits %: not applicable

Extinguishing agents:

Closed containers exposed to fire may be cooled with water.

HEALTH HAZARD DATA---SECTION IV

Permissible concentrations (air):

nickel compounds (soluble): PEL 0.1mg(Ni)/m³ (OSHA); TLV 0.1 mg(Ni)/m³ (ACGIH)

Chronic effects of overexposure:

nickel compounds: dermatitis(nickel itch); pneumonitis, allergic asthma

Acute toxicological properties:

nickel sulfamate: ipr LDLO = 250 mg/kg (mouse) (NIOSH)

Emergency First Aid Procedures:

Eyes: Immediately flush with large quantities of water for at least 15 minutes and call a physician.

Skin Contact: Flush with large amounts of water for 15 minutes.

Inhalation: Remove victim to fresh air.

If Swallowed: Contact a physician immediately.

ROUTES OF ENTRY:

skin contact, eye contact, inhalation and swallow

SPECIAL PROTECTION INFORMATION---SECTION V

Ventilation Type Required (Local, mechanical, special):

Local if necessary to maintain allowable PEL(permissible exposure limit) or TLV(threshold limit value)

Respiratory Protection (Specify type):

If the TLV/PEL of the product or any component is exceeded, use a NIOSH/MSHA certified self contained breathing apparatus.

Protective Gloves:

rubber

Eye Protection:

chemical safety goggles and full face shield

Other Protective Equipment:

rubber apron, rubber boots

(Continued on next page)

WITCO MATERIAL SAFETY DATA SHEET

SULFAMATE SN

PAGE 3

Product Code: 60001

HANDLING OF SPILLS OR LEAKS---SECTION VI

Procedures for Clean-Up:

Wear protective clothing and equipment during cleanup. Absorb spills on an inert material such as earth, sand or vermiculite; sweep up and dispose of in accordance with federal, state and local regulations.

Waste Disposal:

Dispose of in accordance with all applicable federal, state and local regulations.

SPECIAL PRECAUTIONS---SECTION VII

Precautions to be taken in handling and storage:

Wear protective clothing and equipment while handling. Do not store near strong oxidizing agents. Store away from direct heat or sunlight.

TRANSPORTATION DATA---SECTION VIII

D.O.T.: Not Regulated

Reportable Quantity: not applicable

Freight Classification: 70 Chemicals Liquid NOS

Special Transportation Notes:
none

ENVIRONMENTAL/SAFETY REGULATIONS---SECTION IX

Section 313 (Title III Superfund Amendment and Reauthorization Act):

This product contains the following toxic chemical(s) subject to the reporting of Section 313 of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:(The CAS No. is not required to be reported for certain metal compounds; the percent of the compound is included.)

Nickel Compound

25.6% Nickel Compound

(Continued on next page)

WITCO MATERIAL SAFETY DATA SHEET

SULFAMATE SN

PAGE 4

Product Code: 60001

COMMENTS

Do not swallow. Avoid eye and skin contact. Wash thoroughly after handling. Avoid contact with clothing. Wash clothing before reuse. Keep from feed or food products. Keep out of reach of children. Keep containers tightly closed when not in use.

Prepared by: C. Wilkie

Title: Development Chemist

Original Date:

Revision Date: 11/12/91

Supersedes: 01/24/91

Date Sent:

Sent to:

Charles Wilkie

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, express or implied, and we assume no responsibility for any loss, damage, or expense, direct or consequential, arising out of their use.



MATERIAL SAFETY DATA SHEET

DATE PREPARED 12/86 H-13-22

CP CHEMICALS, Inc.

Required under 29 CFR 1910, 1200

EMERGENCY HAZARD RATING	
N	4 - EXTREME
F	3 - HIGH
P	2 - MODERATE
A	1 - SLIGHT
	0 - INSIGNIFICANT

HEALTH: 2, 4
REACTIVITY: 3, 4
SPECIFIC HAZARD

Arbor Scientific, Sewaren, NJ 07077 • 201-636-4300 • CHEMTREC 800-424-9300

SECTION I - PRODUCTION INFORMATION: SINGLE SUBSTANCE MIXTURE

Chemical Name & CAS No. Cyanides of Copper, Sodium, and Zinc Oxide CAS # - See Section II

Trade Name & Synonyms BRASS PLATING COMPOUND

Chemical Family (Solubilized) Cyanide Salts Chemical Formula CuCN, ZnO, NaCN

SECTION II - HAZARDOUS INGREDIENTS AND/OR CHARACTERISTICS

Sodium Cyanide CAS # [143-33-9] - 60%

Copper Cyanide CAS # [544-92-3] - 31%

Zinc Oxide CAS # [1314-13-2] - 9%

SECTION III - PHYSICAL DATA

Melting Point (°F)	NDA	Specific Gravity (H ₂ O=1)	NDA
Boiling Point (°F)	NA	Percent Volatile by Volume (%)	NA
Bulk Density (LBS/Per Cu/Fl)	35	pH	Alkaline

Solubility in Water Appreciable

Appearance and Odor Off-white to yellowish powder, faint almond odor. POISONOUS

SECTION IV - REACTIVITY DATA

Stability	Unstable	Conditions to Avoid
	Stable X	

Incompatibility (Materials to Avoid) Acids and oxidizing materials.

Hazardous Decomposition Products Hydrogen Cyanide Gas (toxic and flammable).

Hazardous Polymerization	May Occur	Conditions to Avoid
	Will Not Occur	

SECTION V - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)	NA	Flammable Limits	NA	Let NA	Uet NA
---------------------------	----	------------------	----	--------	--------

Extinguishing Media Alkaline dry chemical, water fog. Avoid carbon dioxide or acidic extinguishers.

Special Fire Fighting Procedures Avoid flushing poisonous solution to sewer. Wear self-contained breathing apparatus and protective gear.

Unusual Fire and Explosion Hazards In contact with acids liberates poisonous and flammable hydrogen cyanide gas. Reacts vigorously with oxidizers.

DOT EMERGENCY RESPONSE GUIDANCE (55-suggested)

SECTION VI - HEALTH HAZARD DATA

Exposure Limits (ACGIH) Cyanide (as CN), skin: 5 mg/m³
 TLV: (ACGIH) 5 mg/m³ (skin) TWA: Ceiling: NDA 4-4
 Effects of Overexposure Dizziness, confusion, headache, vomiting, loss of consciousness,
 Acute: death after inhalation or swallowing.

DA

Medical Conditions aggravated by exposure
 Pre-existing skin diseases, cardiovascular and nervous disorders, those susceptible to effects of anoxia or anemia, and upper respiratory diseases.

Emergency First Aid Procedures Always have on hand fresh cyanide first aid kit.
 Eye Wash with copious amounts of water (under lids) for at least 15 minutes.
 Skin Get immediate medical attention.
 Wash with copious amounts of water, remove contaminated clothing. Start
 Inhalation treatment with *Cyanide First Aid Kit.
 Remove to fresh air. Start treatment immediately with Cyanide First Aid Kit.
 Ingestion Keep victim warm and get medical help.
 Same as inhalation. Contact nearest poison control center or physician.

OTHER HEALTH INFORMATION:
 LISTED: Carcinogen Teratogen Mutagen Other

SECTION VII - SPECIAL PROTECTION INFORMATION - PRODUCTION AND/OR MAINTENANCE OPERATIONS

Respiratory Protection (Specify Type) NIOSH-approved Respirator for cyanides.

Ventilation	Local Exhaust	Required	Special
	Mechanical (General)	Exhaust fan	Do not wear contact lenses
Protective Gloves	Rubber gauntlet	Eye Protection	Other *Fresh Cyanide first aid kit. Eli-Lilly Item #M76-NDC# 0002-238-501.
Other Protective Equipment	Rubber boots, apron.		Chemical safety glasses.

SECTION VIII - SPILL OR LEAK PROCEDURES

to be Taken in Case Material is Released or Spilled Cover with lime; pick up dry for disposal.
 Wash contaminated area with hypochlorite solution.
 Waste Disposal Method As prescribed for cyanides and heavy metals by local, state, and federal regulations. Do not flush to sewer or stream. (Cyanide may be oxidized by treatment with sodium hypochlorite at pH 10-11).

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in Handling and Storing
 Do not ship or store next to acids or oxidizing agents.
 Keep containers tightly closed.

Other Precautions Avoid contact with eyes, skin, or mucous membrane. Do not swallow.
 Keep solutions alkaline. Practice good personal hygiene.

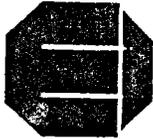
SECTION X - TRANSPORTATION DATA:

Proper Shipping Name CYANIDE MIXTURE, DRY	RD NA	Hazard Class POISON B	ID # (49CFR 172-101) UN 1588
Label Requirement POISON (Brass Plating Compound)			

Special Information Exposure to 150 ppm of Sodium Cyanide for 1/4 to 1 hr. may endanger life. Average fatal dose: 50-60 mg. Headache, vertigo, nausea & vomiting

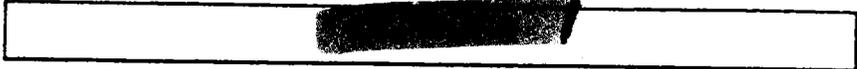
NA = NOT APPLICABLE NDA = NO DATA AVAILABLE < = LESS THAN > = MORE THAN MAY OCCUR.
 The information herein is believed to be reliable. However, no warranty, express or implied, is made as to its accuracy or completeness, and none is made as to the fitness of this material for any purpose. The manufacturer shall not be liable for damages to person or property resulting from its use. Nothing herein shall be construed as a recommendation for use in violation of any patent.
 6-2
 FORM NO 01 (4) 83





ENTHONE
INCORPORATED

MATERIAL SAFETY DATA SHEET



P.O. BOX 1900
NEW HAVEN, CT 06508

EMERGENCY PHONE NUMBERS			PRODUCT CODE#: 2200	
PLANTS	203-934-8611	(8:30am-5pm EST)	DATE ISSUED:	10/2/89
	312-598-3210	(8:30am-5pm CST)	SUPERCEDES:	5/4/87
MFSA	313-644-5626	(24 hours)	PREPARER:	S.D. Koch
CHEMTREC	800-424-9300	(Transportation)		

II. HAZARDOUS INGREDIENTS

COMPONENT	COMMON NAME	CAS NO.	OSHA-PEL	ACGIH-TLV	%
[REDACTED]	Caustic soda	1310-73-2	2 mg/m3	2 mg/m3(1)	>75
[REDACTED]		1314-13-2	10 mg/m3(2)	10mg/m3(2)	>15
[REDACTED]		143-33-9	5 mg/m3(3)	5 mg/m3(3)	<5
[REDACTED]	copper cyanide	544-92-3	5 mg/m3(3)	5mg/m3(3)	<5
[REDACTED]	(3) Skin contact				

III. PHYSICAL PROPERTIES

SPECIFIC GRAVITY (WATER =1)	NI	BOILING POINT, °F	NA
EVAP.RATE (BUTYL ACETATE=1)	NA	MELTING POINT, °F	NI
VAPOR PRESSURE, mmHg	NA	SOLUBILITY IN WATER	essentially complete
VAPOR DENSITY (AIR=1)	NA	APPEARANCE	light grey powder
pH (AS IS)	NA	ODOR	caustic

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT, °F	NA	FLAMMABLE LIMITS (AIR)	NA	LEL	NA	UEL
EXTINGUISHING MEDIA						
<input checked="" type="checkbox"/> Not Combustible	<input checked="" type="checkbox"/> Water fog or spray	<input type="checkbox"/> Carbon Dioxide	<input type="checkbox"/> Dry Chemical	<input type="checkbox"/> Alcohol Foam	<input checked="" type="checkbox"/> Foam	<input type="checkbox"/> Sand or Earth
SPECIAL FIRE FIGHTING PROCEDURES						
Wear self-contained breathing apparatus (SCBA) and complete personal protective equipment when potential for exposure to vapors or products of combustion exists.						
UNUSUAL FIRE AND EXPLOSION HAZARDS						
In the presence of water, material may react with amphoteric metals (such as aluminum, zinc, or tin) generating hydrogen gas which will burn or explode if ignited.						

01-150-6194

V. HEALTH HAZARD DATA**EFFECTS OF ACUTE EXPOSURE:**

INHALATION: Inhalation of dust may be fatal and can cause severe burns to upper respiratory tract.

INGESTION: Small amounts can cause death.

SKIN: Absorption through skin may be fatal. May cause irritation, rash.

EYES: Causes severe burns with damage to eyes and possible blindness.

EFFECTS OF CHRONIC EXPOSURE:

Repeated exposure to moderately high concentrations of toluene vapor may cause a toxic encephalopathy. Signs and symptoms include euphoria, hallucinations, behavioral disturbances, double vision, ataxia, convulsions, and coma. Repeated skin contact may cause a fissured dermatitis and may aggravate an existing dermatitis. While there is no evidence that industrially acceptable levels of toluene vapors (e.g.: the TLV) have produced cardiac effects in humans, animal studies have shown that inhalation of high levels of toluene produced cardiac sensitization.

MUTAGENICITY: Not listed by NTP, IARC, OSHA

REFERENCE:

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Remove victim to fresh air. If victim is unconscious and not breathing, resuscitate and administer antidote as prescribed by your company First Aid procedure. If conscious, administer oxygen and if necessary antidote as prescribed by your company first aid procedure (see pg. 4 section IX). Keep victim quiet and warm. Seek immediate medical attention.

INGESTION: Never give anything by mouth to an unconscious person. Give victim suitable antidotes while administering oxygen. Follow company procedures concerning administration of antidotes, or water, and inducing vomiting. Seek immediate medical attention.

SKIN: Wash skin to remove cyanide while removing all contaminated clothing, including shoes. Do not delay. Skin absorption can occur from cyanide dust, solutions, or HCN vapor. Seek immediate medical attention.

EYES: Immediately flush eyes with plenty of water for at least 15 minutes holding lids apart to ensure flushing of entire surface. Washing eyes within several seconds of exposure is essential to minimize damage. Seek immediate medical attention.

VI. PRECAUTIONS FOR SAFE HANDLING AND USE**SPILL PROCEDURES:**

Do not inhale dust. Avoid contact with skin, eyes and clothing. Wear protective equipment. Sweep or shovel into clean container and cover. Flush spill area with dilute solution of sodium or calcium hypochlorite. Dispose of according to Local, State and Federal regulations.

STORAGE AND HANDLING PRECAUTIONS:

Store in a cool, dry place. Keep away from acids and oxidizers. Loosen cover cautiously when opening.

ADDITIONAL INFORMATION:

Wash thoroughly after handling. Decontaminate clothing before disposal.

VII. CONTROL MEASURES

VENTILATION: Local exhaust recommended.

RESPIRATOR: Use NIOSH approved respirator when air concentration is greater than the TLV or PEL.
Self-contained respirator is preferred.

EYE PROTECTION: Safety glasses Chemical safety goggles Face shield

PROTECTIVE GLOVES: Neoprene Natural rubber Other: Butyl rubber

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Chemically resistant coveralls, hat, and shoes or boots.

WORK/HYGENIC PRACTICES:

Do not consume, handle or store food, beverages or tobacco in areas where this product is present. Emergency eye wash and safety shower should be available. Wash thoroughly after handling.

ADDITIONAL INFORMATION:

For waste disposal of operating solutions consult Enthone Waste Disposal Procedures. For major spills consult Enthone for disposal assistance. Dispose of in accordance with Local, State, and Federal regulations.

CAS = Chemical Abstract Service

NI = No relevant information available

NA = Not applicable

Trade Secret = Claimed as allowed under 29 CFR 1910.1200

PEL = OSHA Permissible Exposure Limit

TLV = ACGIH Threshold Limit Value

NTP = National Toxicology Program

IARC = Intl Agency for Research on Cancer

VIII. REACTIVITY DATA

<input checked="" type="checkbox"/>	Stable	CONDITIONS TO AVOID: Moisture, heat.	
<input type="checkbox"/>	Unstable		
COMPATABILITY (Materials to avoid): Acids, amphoteric metals (such as aluminum, zinc), organic compounds, heated water.			
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic and flammable hydrogen cyanide			
HAZARDOUS POLYMERIZATION	<input type="checkbox"/>	May occur	CONDITIONS TO AVOID: NA
	<input checked="" type="checkbox"/>	Will not occur	

IX. ADDITIONAL INFORMATION

It is highly recommended that procedures be established by your company's physician, concerning First Aid and Medical Treatment to be used in case of cyanide poisoning. Such procedures may include the administration of antidotes such as amyl nitrite, sodium thiosulfate, sodium nitrite, methylene blue and the like by qualified personnel.

This product contains one or more chemicals which are subject to the reporting requirements of SARA, TITLE III, Section 313 (40CFR372). The chemical(s) are listed in Section II, HAZARDOUS INGREDIENTS, along with the CAS # and the ingredient concentration which will be within 5% of the figure stated. This notice must be included in any subsequent copy of this MSDS.

This Material Safety Data Sheet may be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Enthone, Inc. furnishes the data contained herein in good faith at customer's request without liability or legal responsibility for same whatsoever, and no warranty or guarantee, express or implied, is made with respect to such data; nor does Enthone, Inc. grant permission, recommendation, or inducement to infringe any patent whether owned by Enthone or others. The data is offered solely for your information and consideration. Since conditions of use are beyond Enthone's control, user assumes all responsibility and risk.