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IMPORTANT SAFETY INFORMATION -- DO NOT DISCARD.  
 PLEASE ROUTE TO COMPANY SAFETY OFFICER.

FISHER SCIENTIFIC HAS A  
 COMPLETE LINE OF SAFETY  
 PRODUCTS AND INFORMATION  
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 CONTACT YOUR LOCAL FISHER  
 BRANCH FOR FILMS, BRO-  
 CHURES, CATALOGS AND PRO-  
 DUCTS.

SYRACUSE CITY SCHOOL DIST  
 644 MADISON ST  
 SYRACUSE NY 13210

IF NAME AND/OR ADDRESS  
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 REPRESENTATIVE OR YOUR  
 LOCAL FISHER BRANCH.

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\*\*HYDROCHLORIC ACID SOLUTIONS, IN TO N PAGE 01 OF 05

\*\*HYDROCHLORIC ACID SOLUTIONS, IN TO N/1  
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MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC  
CHEMICAL DIVISION  
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FAIR LAWN NJ 07410  
(201) 796-7100

EMERGENCY CONTACTS  
GASTON L. PILLORI  
(201) 796-7100

DATE: 04/13/86  
PO NBR: N/A  
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INDEX: 25-8606-40098  
CAT NO: 5A601

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SUBSTANCE IDENTIFICATION

SUBSTANCE: \*\*HYDROCHLORIC ACID SOLUTIONS, IN TO N/100\*\*

TRADE NAMES/SYNONYMS: HYDROCHLORIC ACID 4%, WATER 96%; HYDROCHLORIC ACID 2%, WATER 98%; HYDROCHLORIC ACID 0.68%, WATER >99%; HYDROCHLORIC ACID 0.4%, WATER >99%; HYDROCHLORIC ACID 0.068%, WATER >99%; HYDROCHLORIC ACID 0.04%, WATER >99%; SO-A-50; SO-A-52; SO-A-54; SO-A-55; SO-A-60; SO-A-62

CHEMICAL FAMILY:  
INORGANIC ACID

MOLECULAR FORMULA: H-CL N H2O

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=0 PERSISTENCE=0  
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

PERCENT: 0.068-4 COMPONENT: HYDROCHLORIC ACID, CONCENTRATED  
CAS 7647-01-0

PERCENT: 96-99.932 COMPONENT: WATER

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:  
5 PPM OSHA CEILING; 5 PPM ACGIH CEILING

PHYSICAL DATA

DESCRIPTION: COLORLESS LIQUID BOILING POINT: 212 F (100 C)

MELTING POINT: 32 F (0 C) SPECIFIC GRAVITY: 1.0 - 1.2

VAPOR PRESSURE: 14 MMHG @ 20 C (H2O) EVAPORATION RATE: (EITHER=1) >1 (TTE)

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:

NEGIGIBLE FIRE AND EXPLOSION HAZARD WHEN EXPOSED TO HEAT OR FLAME.

HOWEVER THE MORE CONCENTRATED TYPES WILL REACT APPRECIABLY WITH COMMON METALS TO EMIT FLAMMABLE HYDROGEN GAS.

FLASH POINT: WILL NOT BURN

FIREFIGHTING MEDIA:

DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR FOAM  
(1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL FOAM  
(1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3).

FIREFIGHTING:

WEAR PERSONAL PROTECTIVE EQUIPMENT. MOVE CONTAINERS FROM FIRE AREA IF POSSIBLE. COOL CONTAINER EXPOSED TO FLAMES WITH WATER FROM SIDE UNTIL WELL AFTER FIRE IS OUT (1984 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.3).

EXTINGUISH USING AGENTS INDICATED; IF LARGE AMOUNTS OF COMBUSTIBLE MATERIALS ARE INVOLVED, USE WATER SPRAY OR FOG IN FLOODING AMOUNTS. USE WATER SPRAY TO ABSORB CORROSIVE VAPORS. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING CORROSIVE VAPORS; KEEP UPWIND (BUREAU OF EXPLOSIVES, EMERGENCY HANDLING OF HAZARDOUS MATERIALS IN IN SURFACE TRANSPORTATION, 1981).

TOXICITY

HYDROCHLORIC ACID: 1300 PPM/30 MINUTES INHALATION-HUMAN LCLO;

3124 PPM/1 HOUR INHALATION-RAT LC50; 1108 PPM/1 HOUR INHALATION-MOUSE LC50;  
900 MG/KG ORAL-RABBIT LD50; 40 MG/KG INTRAPERITONEAL-MOUSE LD50;

81 MG/KG UNKNOWN-NAN LDLO; MUTAGENIC DATA (CRITCS): CARCINOGEN STATUS: NONE.  
HYDROGEN CHLORIDE VAPOR IS A SEVERE EYE, MUCCOUS MEMBRANE, AND SKIN IRRITANT.

HEALTH EFFECTS AND FIRST AID

INHALATION:

CORROSIVE/TOXIC. 100 PPM (HCL) IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.

ACUTE EXPOSURE- EXPOSURE TO GAS OR FUMES CAUSES IMMEDIATE COUGHING,  
BURNING OF THE THROAT OR NOSE, CHOKING, DIZZINESS, WEAKNESS AND DIFFICULTY  
SWALLOWING. EXPOSURE ABOVE 5 PPM ARE FOLLOWED BY INFLAMMATION AND  
OCCASIONAL ULCERATION OF THE NOSE, THROAT OR LARYNX; LARYNGITIS, BRONCHI-  
TIS, PNEUMONIA, HEADACHE, PALPITATIONS, DENTAL EROSION, OR NASAL SEPTUM  
PERFORATION. CONCENTRATIONS ABOVE 50 PPM MAY BE FOLLOWED BY BLEEDING OF  
THE NOSE AND GUTS. FOLLOWING A 6-8 HOUR LATENCY PERIOD, LARYNGEAL SPASM OR  
PULMONARY EDEMA WITH TIGHTNESS IN THE CHEST, AIR HUNGER, DIZZINESS, FROTHY  
SPUTUM AND CYANOSIS MAY OCCUR. SHORINESS OF BREATH AND EXPECTORATION OF  
BLOOD MAY OCCUR FOR SEVERAL WEEKS FOLLOWING A SINGLE EXPOSURE. PYLORIC  
OBSTRUCTION MAY DEVELOP. SEVERE EXPOSURE CAUSES CIRCULATORY SHOCK,

CHRONIC EXPOSURE- CAUSES EROSION OF TEETH FOLLOWED BY JAW NECROSIS, BRONCHIAL IRRITATION WITH CHRONIC COUGH, FREQUENT ATTACKS OF BRONCHIAL PNEUMONIA, SKIN TENDERNES, GASTROINTESTINAL DISTURBANCES OR MUCOUS MEMBRANE IRRITATION WHICH MAY MIMIC VIRAL INFECTION OF THE UPPER RESPIRATORY TRACT CHARACTERIZED BY FEVER AND MUSCLE TENDERNES. SEE MUTAGENIC DATA REFERENCE IN TOXICITY SECTION.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP AFFECTED PERSON WARM AND AT REST. GET MEDICAL ATTENTION.

SKIN CONTACT:  
CORROSIVE.

ACUTE EXPOSURE- CAUSES SEVERE PAIN, YELLOWISH-BROWN STAINS, BURNS. ON SEVERE EXPOSURE, SHOCK SYMPTOMS OF RAPID PULSE, SWEATING AND COLLAPSE MAY OCCUR.

CHRONIC EXPOSURE- PROLONGED VAPOR CONTACT MAY CAUSE DERMATITIS.

FIRST AID- DIRECT A STREAM OF WATER UNDER CONTAMINATED CLOTHING AND SHOES WHILE REMOVING. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION.

EYE CONTACT:  
CORROSIVE.

ACUTE EXPOSURE- MAY CAUSE PAIN, TEARING, REDNESS, OR BLURRED VISION. EYE CONTACT CAUSES IRREVERSIBLE CORNEAL INJURY IF NOT IMMEDIATELY WASHED. CONTACT WITH HIGH CONCENTRATIONS CAUSES CONJUNCTIVAL EDEMA, CORNEAL DESRUCTION OR LOSS OF VISION.

CHRONIC EXPOSURE- PROLONGED CONTACT MAY CAUSE REDNESS AND IRRITATION AND MAY RESULT IN IMPAIRMENT OR LOSS OF VISION.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROX. 15-20 MIN.). IN PRESENCE OF BURNS, APPLY STERILE BANDAGES LOOSELY WITHOUT MEDICATION. GET MEDICAL ATTENTION.

INGESTION:  
CORROSIVE/TOXIC.

ACUTE EXPOSURE- CAUSES BURNS OF MOUTH, ESOPHAGUS, AND STOMACH WITH CONSEQUENT PAIN, NAUSEA, SALIVATION, VOMITING, CHILLS, SHOCK AND THIRST. CAUSES ULCERATION OF ALL MEMBRANES AND TISSUES WHICH THE ACID CONTACTS. ASPHYXIA OR NEPHRITIS MAY OCCUR. AFTER INITIAL RECOVERY, FEVER MAY INDICATE PERFORATION OF THE ESOPHAGUS OR STOMACH. IN SEVERE CASES, CIRCULATORY COLLAPSE OCCURS WHICH, IF NOT CORRECTED, MAY LEAD TO RENAL, LIVER OR HEART FAILURE.

FIRST AID- IF VICTIM IS CONSCIOUS, GIVE HIM LARGE QUANTITIES OF WATER IMMEDIATELY TO DILUTE THE ACID. DO NOT INDUCE VOMITING. GIVE PATIENT 1 OUNCE (30 ML) OF MILK OF MAGNESIA. GET MEDICAL ATTENTION IMMEDIATELY.

REACTIVITY

REACTIVITY:  
STABLE UNDER NORMAL PRESSURES UP TO THE BOILING POINT, 100 C.  
INCOMPATIBILITIES:  
METALS AND WATER-REACTIVE MATERIALS EXAMPLES FOLLOW:

HYDROCHLORIC ACID

ALCOHOLIC HYDROGEN CYANIDE: EXPLOSIVE REACTION.  
TETRASELENIUM TETRANITRIDE: EXPLOSIVE REACTION.  
SODIUM: EXPLOSIVE REACTION.  
POTASSIUM PERMANGANATE: EXPLOSIVE REACTION.  
SULFURIC ACID: EXPLOSIVE REACTION.  
PERCHLORIC ACID: VIOLENT REACTION.  
ACETIC ANHYDRIDE, 2-AMINOETHANOL, 28% AMMONIA, CHLOROSULFONIC ACID, ETHYLENE-DIAMINE, ETHYLENEIMINE, OLEUM, PROPIONLACTONE (BETA-), PROPYLENE OXIDE,  
SODIUM HYDROXIDE OR VINYL ACETATE: INCREASED TEMPERATURE AND PRESSURE IN A CLOSED CONTAINER.

FLUORINE: IGNITES.

CESIUM CARBIDE: IGNITES.

CESIUM ACETYLIDE: IGNITES.

RUBIDIUM CARBIDE: IGNITES.

RUBIDIUM ACETYLIDE: IGNITES.

URANIUM DICARBIDE: IGNITES.

OXYGEN + PLATINUM: IGNITES.

LITHIUM SILICIDE: INCANDESCENCE.

ALUMINUM: VIGOROUS EXOTHERMIC REACTION.

CALCIUM PHOSPHIDE: VIGOROUS EXOTHERMIC REACTION.

URANIUM PHOSPHIDE: PRODUCES EXPLOSIVE OR FLAMMABLE PHOSPHINE.

SILVER PERCHLORATE + CARBON TETRACHLORIDE: PRODUCES EXPLOSIVE OR FLAMMABLE TRICHLOROMETHYL PERCHLORATE.

METALS: PRODUCES EXPLOSIVE OR FLAMMABLE HYDROGEN GAS.

MAGNESIUM BORIDE: PRODUCES EXPLOSIVE OR FLAMMABLE PRODUCT.

DOMICIL 100: DECOMPOSES DOMICIL 100.

SULPHIDES: REACTS TO FORM CHLORIDES AND HYDROGEN SULPHIDE.

METALLIC HYDRIDES: RELEASES HYDROGEN.

DECOMPOSITION:

HEATING INCREASES THE RATE OF RELEASE OF CORROSIVE HYDROGEN CHLORIDE.

POLYMERIZATION:

WILL NOT OCCUR.

CONDITIONS TO AVOID

FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN TANKS AND HOPPER CARS. AVOID HEATING TO THE POINT WHERE AN UNACCEPTABLE AMOUNT OF HYDROGEN CHLORIDE IS EVOLVED. AVOID CONTACT WITH OR STORAGE WITH INCOMPATIBLE MATERIALS, INCLUDING THOSE LISTED IN THE REACTIVITY SECTION.

SPIII AND LEAK PROCEDURES

OCCUPATIONAL SPILL:  
PROVIDE VENTILATION. WEAR PERSONAL PROTECTIVE EQUIPMENT. COVER WITH SODA ASH.

\*HYDROCHLORIC ACID SOLUTIONS, IN TO N PAGE 05 OF 05  
SCOOP UP AND PLACE IN A SUITABLE NONMETALLIC CONTAINER, CLOSE TIGHTLY AND  
LABEL 'CORROSIVE'. KEEP OUT OF SEWERS AND WATER SOURCES.

PROTECTIVE EQUIPMENT

VENTILATION: EXHAUST VENTILATION SYSTEM TO MEET PERMISSABLE EXPOSURE LIMIT  
PROVIDE LOCAL EQUIPMENT MUST BE RESISTANT TO CORROSION BY ACIDS.  
REQUIREMENTS.

RESPIRATOR:  
EXPOSURE LIMIT TO 50 PPM-

CHEMICAL CARTRIDGE RESPIRATOR WITH ACID GAS CARTRIDGE(S).  
SUPPLIED-AIR RESPIRATOR  
SELF-CONTAINED BREATHING APPARATUS.

>50 PPM, INCLUDING THE IDLH LEVEL, 100 PPM  
SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE  
OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE  
OR USE EQUIVALENT RESPIRATOR.

FIREFIGHTING- SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE  
OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

CLOTHING:  
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE CLOTHING AND EQUIPMENT TO PREVENT  
ANY POSSIBILITY OF SKIN CONTACT WITH THIS SOLUTION.

GLOVES:  
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS  
SOLUTION. PREFERRED MATERIALS: POLYETHYLENE, VITON, AND SARANEX (BASED ON  
LIMITED DATA).

EYE PROTECTION:  
EMPLOYEE MUST WEAR SPLASH-PROOF SAFETY GOGGLES AND A FACESHIELD TO PREVENT  
ANY POSSIBILITY OF CONTACT WITH THIS SOLUTION. DO NOT WEAR CONTACT LENSES  
WHEN WORKING WITH CHEMICALS.

WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO  
THIS SOLUTION, THE EMPLOYER SHALL PROVIDE AN EYE-WASH FOUNTAIN WITHIN THE  
IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - ALLIED FISHER SCIENTIFIC  
CREATION DATE: 10/29/85 REVISION DATE: 11/14/85

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