MATERIAL SAFETY DATA SHEET

QUICK REFERENCE: **HYDRO-CLEEN**

H-O-H CHEMICALS, INC.
500 SOUTH VERMONT STREET
PALATINE, ILLINOIS 60067

EMERGENCY PHONE No's
708 - 358 - 7400 (H - O - H BUSINESS Hrs.)
800 - 424 - 9300 (CHEMTREC - 24 Hrs.)

HMIS:

4 = EXTREME
3 = SEVERE
2 = MODERATE
1 = SLIGHT
0 = INSIGNIFICANT

HEALTH	3
FLAMMABILITY	0
REACTIVITY	1

DOT:

HAZARD LABELING

IN DOT LISTED POLYETHYLENE CONTAINERS

PRODUCT IDENTIFICATION	PRODUCT NAME	CHEMICAL FAMILY	DATE	Rev. No.	SUPERSEDES		BY
	HYDRO-CLEEN	INHIBITED HYDROCHLORIC ACID	1 - 1 - 90	0	11 - 5 - 84		

HAZARDOUS COMPONENTS	CHEMICAL NAME	COMMON NAME	CAS No.	PERCENT	OSHA PEL	ACGIH - TLV	OTHER
	HYDROCHLORIC ACID	MURIATIC ACID (INHIBITED)	7647 - 01 - 0	31.0	5 ppm 7 mg/m^3	5 ppm 7 mg/m^3	NOT APPLICABLE

COMMENT

1. THIS PRODUCT IS TYPICALLY USED TO DISSOLVE WATER HARDNESS DERIVED MINERAL SCALE AS FOUND IN BOILERS, HEAT EXCHANGERS, AND WATER HEATERS. WHEN CLEANING SUCH EQUIPMENT, BE SURE TO PROVIDE ADEQUATE VENTILATION TO CONTROL VAPORS. THIS PRODUCT EVOLVES HYDROGEN CHLORIDE GAS WHICH IS IRRITATING TO EYE, NOSE, AND BRONCHIAL TISSUE. THIS PRODUCT ALSO REACTS WITH METALS SUCH AS IRON, STEEL, GALVANIZED METAL, AND ALUMINUM TO PRODUCE HIGHLY FLAMMABLE AND POSSIBLY EXPLOSIVE HYDROGEN GAS. NEVER SMOKE OR ALLOW AN OPEN FLAME NEAR EQUIPMENT BEING CLEANED.

2. BEFORE USING THIS PRODUCT, BE SURE TO HAVE SUFFICIENT SODA ASH (Sodium Carbonate), SODIUM BICARBONATE, OR OTHER SUITABLE ALKALINE NEUTRALIZING AGENT TO COMBAT SPILLS. THE REACTION OF THIS PRODUCT WITH CARBONATE BASED WATER SCALE CAN PRODUCE A VIOLENT REACTION WITH FOAMING AND FROTHING. THE USE OF A SUITABLE ANTI - FOAM AGENT IS STRONGLY RECOMENDED.

3. NOTE: TOTAL PLANT USE OF SUFFICIENT HYDROCHLORIC ACID MAY REQUIRE ANNUAL REPORTING UNDER **SARA TITLE III.**

PHYSICAL DATA						
BOILING POINT (Degrees Fahrenheit)	230°	SOLUBILITY (in water)	MISCIBLE	EVAPORATION RATE (water = 1.0)		< 1.0
VAPOR PRESSURE (in millimeters of Mercury)	28 mm	SPECIFIC GRAVITY (water = 1.0)	1.159			
VAPOR DENSITY (air = 1.0)	NA	PERCENT (%) VOLATILE (by volume)	NA			
APPEARANCE and ODOR	CLEAR, LIGHT AMBER SOLUTION WITH A STRONGLY IRRITATING, PUNGENT ODOR.					

FIRE AND EXPLOSION	FLASH POINT (Degrees Fahrenheit)	METHOD	FLAMMABLE LIMITS	LOWER EXPLOSIVE LIMIT	UPPER EXPLOSIVE LIMIT
	NONE	NA		NOT APPLICABLE	NOT APPLICABLE

EXTINGUISHING MEDIA	SPECIAL FIRE FIGHTING PROCEDURES	UNUSUAL FIRE AND EXPLOSION HAZARDS
WATER COOL CONTAINERS TO PREVENT RUPTURE AND SWELLING. CONTAIN ANY SPILLS TO AVOID REACTIONS THAT MAY GENERATE HEAT. THIS PRODUCT WILL NOT BURN OR DIRECTLY PROMOTE FIRE. ITS CORROSIVE NATURE WILL LEAD TO RAPID ATTACK OF METALS SUCH AS ALUMINUM, HYDROGEN GAS MAY BE PRODUCED.	**CONTAIN SPILLS** IF SPILLED, REACTIONS MAY OCCUR WITH METALS, CONCRETE, BUILDING MATERIALS OR VARIOUS STORED MATERIALS.	**SECONDARY REACTIONS** UNDER NORMAL CONDITIONS THIS PRODUCT WILL NOT SUPPORT COMBUSTION OR ACCELERATE A FIRE. IF CONTACT WITH BUILDING MATERIALS, OTHER CHEMICALS, OR LIVE ELECTRICAL SERVICES OCCURS DURING A FIRE, UNPREDICTABLE HEAT, HAZARDOUS GASES, OR ELECTRICAL ARCS MAY BE PRODUCED.

REACTIVITY DATA			
STABILITY STABLE [X] UNSTABLE [ ]	CONDITIONS TO AVOID	NOT APPLICABLE	
INCOMPATABILITY (Materials to Avoid)	METALS (ESPECIALLY ALUMINUM), ORGANICS, SULFITES, SULFIDES, CHLORATES, HYPOCHLORITE OR CHLORINE RELEASE COMPOUNDS, CARBIDES, PICRATES, BROMIDES, AND BROMINE RELEASE AGENTS.		
HAZARDOUS DECOMPOSITION PRODUCTS	HYDROCHLORIC ACID EVOLVES HYDROGEN CHLORIDE GAS. THIS PROCESS IS ACCELERATED BY HEAT.		
HAZARDOUS POLYMERIZATION WILL OCCUR [ ] WON'T OCCUR [X]	CONDITIONS TO AVOID	NOT APPLICABLE	

SPECIAL PRECAUTIONS

STORAGE AND HANDLING	OTHER
1. PROTECT CONTAINERS AGAINST PHYSICAL DAMAGE. 2. STORE IN A COOL, DARK, WELL-VENTILATED LOCATION AWAY FROM DIRECT SUNLIGHT AND OTHER SOURCES OF RADIANT HEAT. 3. KEEP CONTAINERS TIGHTLY CLOSED WHEN NOT IN USE. NEVER MOVE AN OPEN OR LOOSELY CLOSED CHEMICAL CONTAINER. 4. WEAR HAND AND FOOT PROTECTION WHEN MOVING HEAVY CONTAINERS.	1. NOT TO BE TAKEN INTERNALLY. 2. NOT TO BE USED FOR OTHER THAN SPECIFIED PURPOSE. 3. KEEP AWAY FROM CHILDREN. 4. NEVER MIX THIS MATERIAL WITH ANY OTHER CHEMICAL UNLESS AT THE SPECIFIC DIRECTION OF H - O - H PERSONNEL. 5. TRIPLE RINSE EMPTY CONTAINERS BEFORE OFFERING FOR DISPOSAL OR SALVAGE. NEVER REUSE EMPTY CONTAINERS.

HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	5 ppm (7 mg/m^3 AS A CEILING VALUE).

ACUTE HEALTH HAZARDS	CHRONIC HEALTH HAZARDS
TISSUE BURNS	NONE BURNS CAN BE SLOW TO HEAL, BUT NO CHRONIC HEALTH HAZARDS ARE INVOLVED.

EFFECTS OF EXPOSURE

	SKIN AND EYES / TARGET ORGAN	INHALATION / TARGET ORGAN	INGESTION / TARGET ORGAN
EFFECTS OF EXPOSURE	BURNS CAUSES SEVERE EYE ULCERATION AND CONJUNCTIVITIS. PERMANENT EYE DAMAGE OR BLINDNESS MAY RESULT. CAUSES SEVERE SKIN IRRITATION. MAY CAUSE BLISTERS AND PROFOUND DAMAGE TO TISSUE.	IF A MIST OR SPRAY OF CONCENTRATED PRODUCT IS DRAWN INTO THE BREATHING TRACT, OR IF CONCENTRATED VAPOR IS INHALED, SEVERE IRRITATION OF RESPIRATORY TRACT, INCREASED RESPIRATION RATE, PULMONARY EDEMA, PULMONARY FAILURE, OR DEATH MAY OCCUR. NASAL, MUCOUS, AND BRONCHIAL TISSUE MAY BE BURNED AND / OR PERMANENTLY DAMAGED.	CAUSES ULCERATION, BLEEDING, AND SCARRING OF THE DIGESTIVE TRACT. SHOCK, CONVULSIONS, COMA, AND DEATH MAY RESULT DEPENDING ON THE AMOUNT INGESTED. COFFEE - GROUND - LIKE MATERIAL PRODUCED WITH VOMITING INDICATES DIGESTIVE BLEEDING.
CONDITIONS AGGRAVATED	DERMATITIS, BLISTERS, BURNS,OR ANY PRE-EXISTING SKIN IRRITATION IF CONTACT OCCURS.	ASTHMA, BRONCHITIS, COLD SYMPTIOMS, PNEUMONIA, OR ANY OTHER BREATHING DISORDER.	IN NORMAL USE, INGESTION SHOULD NOT OCCUR. INGESTION WILL PRODUCE IMMEDIATE TRAUMA.

EMERGENCY PROCEDURES

SKIN AND EYES	INHALATION	INGESTION
EYES FLUSH EYES WITH WATER FOR AT LEAST 20 MINUTES HOLDING EYELIDS OPEN. GET IMMEADIATE MEDICAL ATTENTION. SKIN FLUSH WITH WATER FOR 15 MINUTES. TREAT FOR BURNS. OBTAIN MEDICAL ADVICE. REMOVE EXPOSED CLOTHING AND WASH WELL BEFORE REUSE.	REMOVE SUBJECT TO FRESH AIR IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. GIVE OXYGEN BY PROPERLY TRAINED PERSONNEL IF BREATHING IS DIFFICULT. KEEP SUBJECT WARM AND AT REST. OBTAIN EMERGENCY MEDICAL ATTENTION.	DO NOT INDUCE VOMITING IF CONSCIOUS, DILUTE INGESTED MATERIAL WITH 2 OR MORE GLASSES OF WATER OR MILK. OBTAIN EMERGENCY MEDICAL ATTENTION. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. INDUCED VOMITING IS NOT RECOMMENDED DUE TO POSSIBLE BRONCHIAL OR PULMONARY INGESTION. EMERGENCY MEDICAL ATTENTION IS REQUIRED TO REMOVE ANY INGESTED ACID AND MINIMIZE INTERNAL BURNS AND TISSUE DAMAGE.

CARCINOGEN LISTING

NATIONAL TOXICOLOGY PROGRAM (NTP)	I A R C MONOGRAPHS	O S H A REGULATED
NO	NO	NO

SPILL OR LEAK PROCCEDURES

SPILLS AND RELEASES	WASTE DISPOSAL METHODS
REMOVE ALL IGNITION SOURCES. VENTILATE THE AREA. NOTIFY THE APPROPRIATE POLLUTION CONTROL (ESDA) AUTHORITIES IF LEAKAGE ENTERS A SEWER OR IN ANY OTHER WAY IS ESCAPING FROM THE PREMISES. COLLECT SPILLED MATERIAL INTO SUITABLE CONTAINERS FOR RECLAIM OR DISPOSAL. NEUTRALIZE WITH LIMESTONE CHIPS, SODIUM BICARBONATE (Soda Ash), SODIUM BICARBONATE, LIME, OR DILUTE SODIUM HYDROXIDE (Caustic Soda).	CONSULT FEDERAL, STATE, AND LOCAL REGULATIONS PRETAINING TO WASTE DISPOSAL.

CONTROL MEASURES

EYE PROTECTION	TIGHT - FITTING CHEMICAL GOGGLES AND FACE SHIELD.		
RESPIRATORY PROTECTION	AIR PURIFING, SELF-CONTAINED RESPIRATOR DESIGNED TO ABSORB ACIDIC VAPORS SHOULD BE USED IN CONFINED SPACES OR OR WHEREVER VENTILATION OR FORCED EXHAUST IS INSUFFICIENT TO REMOVE PUNGENT VAPORS.		
OTHER PROTECTIVE EQUIPMENT	IMPERMEABLE CLOTHING. SAFETY SHOWERS AND EYEWASH FOUNTAINS SHOULD BE INSTALLED IN STORAGE AND HANDLING AREAS. IF EYEWASH AND SHOWER EQUIPMENT IS NOT PRESENT AT CLEANING SITE, USE PORTABLE EQUIVALENTS.		
LOCAL EXHAUST	YES	SPECIAL VENTILATION	NOT REQUIRED FOR NORMAL USE.
MECHANICAL VENTILATION	MAY BE REQUIRED TO CONTROL VAPOR OR GAS EVOLUTION.	OTHER VENTILATION	NOT REQUIRED FOR NORMAL USE.
PROTECTIVE GLOVES	NON - SLIP VINYL OR RUBBER GLOVES.	PROTECTIVE CLOTHING	RUBBER OR VINYL APRON.

REFERENCES

1. *Threshold Limit Values For Chemical Substances And Physical Agents In The Work Environment;* A C G I H, 1989.
2. *O S H A Safety and Health Standards:* 29CFR 1900 to 1910, July 1, 1988
3. *Fourth Annual Report on Carcinogens;* U. S. Dept. of Health and Human Services, National Toxicology Program, 85-002, 1985.
4. M. Sittig, *Handbook of Toxic & Hazardous Chemicals,* (Noyes Publications, Park Ridge, N. J., 1981).
5. *Community Right - To - Know Manual,* (Thompson Publishing Group, Washington, D. C., 1989).
6. *Right - To - Know / Chemical Manual* (ILLINOIS MANUFACTURES ASSOCIATION; Rooks, Pitts, and Poust, 1989).
7. *Toxic and Hazardous Industrial Chemicals Safety Manual.* (THE INTERNATIONAL TECHNICAL INFORMATION INSTITUTE, 1975).
8. M. J. Lefevre, S. A. Conibear, *First Aid Manual for Chemical Accidents, 2nd ed.* (Van Nostrand Reinhold, New York, 1989).