

## SECTION 1 CHEMICAL PRODUCTS &amp; COMPANY IDENTIFICATION

MATHESON GAS PRODUCTS  
30 SEAVIEW DRIVE  
SECAUCUS, NEW JERSEY 07096  
(201) 867-4100

EMERGENCY CONTACT:  
CHEMTREC 1-800-424-9300

CAS NUMBER: 1333-74-0  
RTECS NUMBER: MW8900000

SUBSTANCE: HYDROGEN

## TRADE NAMES/SYNONYMS:

HYDROGEN GAS; HYDROGEN COMPRESSED; HYDROGEN (H<sub>2</sub>); DIHYDROGEN; STCC  
4905746; UN 1049; H<sub>2</sub>; MAT11120

CHEMICAL FAMILY:  
INORGANIC GAS

CREATION DATE: 03/07/90

REVISION DATE: 06/30/94

## SECTION 2 COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT: HYDROGEN  
CAS NUMBER: 1333-74-0  
PERCENTAGE: 100.0

OTHER CONTAMINANTS: NONE.

## SECTION 3 HAZARDS IDENTIFICATION

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

## EMERGENCY OVERVIEW:

ODORLESS, COLORLESS, TASTELESS GAS.

MAY CAUSE CONVULSIONS. MAY AFFECT THE CENTRAL NERVOUS SYSTEM. REDUCES OXYGEN AVAILABLE FOR BREATHING. FLAMMABLE GAS. MAY CAUSE FLASH FIRE. KEEP AWAY FROM ALL IGNITION SOURCES. AVOID BREATHING GAS. AVOID CONTACT WITH EYES, SKIN, AND CLOTHING. DO NOT ENTER CONFINED SPACES UNLESS ADEQUATELY VENTILATED. DO NOT PUNCTURE CONTAINER. KEEP CONTAINER TIGHTLY CLOSED. WASH THOROUGHLY AFTER HANDLING. USE ONLY WITH ADEQUATE VENTILATION.

## POTENTIAL HEALTH EFFECTS:

## INHALATION:

SHORT TERM EFFECTS: MAY CAUSE NAUSEA, VOMITING, WEAKNESS, DIZZINESS, INCOORDINATION, TINGLING SENSATION, SUFFOCATION, CONVULSIONS, UNCONSCIOUSNESS AND COMA.

LONG TERM EFFECTS: NO INFORMATION AVAILABLE ON SIGNIFICANT ADVERSE EFFECTS.

SKIN CONTACT:

SHORT TERM EFFECTS: MAY CAUSE BLISTERS, FROSTBITE AND NUMBNESS.

LONG TERM EFFECTS: NO INFORMATION IS AVAILABLE.

EYE CONTACT:

SHORT TERM EFFECTS: MAY CAUSE FROSTBITE AND BLURRED VISION.

LONG TERM EFFECTS: NO INFORMATION IS AVAILABLE.

INGESTION:

SHORT TERM EFFECTS: MAY CAUSE FROSTBITE.

LONG TERM EFFECTS: NO INFORMATION IS AVAILABLE.

CARCINOGEN STATUS:

OSHA: N

NTP: N

IARC: N

SECTION 4 FIRST AID MEASURES

INHALATION:

FIRST AID - REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. PERFORM ARTIFICIAL RESPIRATION IF NECESSARY. MAINTAIN AIRWAY, BLOOD PRESSURE AND RESPIRATION. KEEP WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY. QUALIFIED MEDICAL PERSONNEL SHOULD CONSIDER ADMINISTERING OXYGEN.

SKIN CONTACT:

FIRST AID - IT IS UNLIKELY THAT EMERGENCY TREATMENT WILL BE REQUIRED. IF ADVERSE EFFECTS OCCUR, PROCEED WITH THE FOLLOWING: GET MEDICAL ATTENTION. IF FROSTBITE, FREEZING, OR CRYOGENIC BURNS OCCUR, PROCEED WITH THE FOLLOWING: WARM AFFECTED AREA IN WARM WATER AT A TEMPERATURE OF 107 F (41.7 C). IF THIS IS NOT AVAILABLE, PROCEED WITH THE FOLLOWING: GENTLY WRAP AFFECTED PARTS IN BLANKETS. ENCOURAGE PERSON TO EXERCISE AFFECTED PART WHILE IT IS BEING WARMED. ALLOW CIRCULATION TO RETURN NATURALLY. (BRAKER & MOSSMAN; MATHESON GAS DATA BOOK; 6TH ED.). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:

FIRST AID - IT IS UNLIKELY THAT EMERGENCY TREATMENT WILL BE REQUIRED FOR CONTACT WITH THE GAS FORM. IF CONTACT WITH LIQUEFIED OR COMPRESSED GAS OCCURS, WASH WITH LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:

FIRST AID - IT IS UNLIKELY THAT EMERGENCY TREATMENT WILL BE REQUIRED. IF ADVERSE EFFECTS OCCUR, PROCEED WITH THE FOLLOWING: TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION.

NOTE TO PHYSICIAN

ANTIDOTE:

NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

## SECTION 5 FIRE FIGHTING MEASURES

### FIRE AND EXPLOSION HAZARD:

DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

DANGEROUS EXPLOSION HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPOR-AIR MIXTURES ARE EXPLOSIVE.

CONTAINER MAY EXPLODE IN HEAT OF FIRE.

DUE TO LOW ELECTROCONDUCTIVITY OF THE SUBSTANCE, FLOW OR AGITATION MAY GENERATE ELECTROSTATIC CHARGES RESULTING IN SPARKS WITH POSSIBLE IGNITION.

### EXTINGUISHING MEDIA:

DRY CHEMICAL OR CARBON DIOXIDE

(1993 EMERGENCY RESPONSE GUIDEBOOK, RSPA P 5800.6).

FOR LARGER FIRES, USE WATER SPRAY OR FOG

(1993 EMERGENCY RESPONSE GUIDEBOOK, RSPA P 5800.6).

### FIREFIGHTING:

MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. LET TANK, TANK CAR OR TANK TRUCK BURN UNLESS LEAK CAN BE STOPPED; WITH SMALLER TANKS OR CYLINDERS, EXTINGUISHING/ISOLATE FROM OTHER FLAMMABLES. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1993 EMERGENCY RESPONSE GUIDEBOOK, RSPA P 5800.6, GUIDE PAGE 22).

EXTINGUISH ONLY IF GAS FLOW CAN BE STOPPED. USE FLOODING AMOUNTS OF WATER AS FOG. COOL CYLINDERS WITH FLOODING AMOUNTS OF WATER FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING VAPORS; KEEP UPWIND. IF FIRE IS UNCONTROLLABLE OR CYLINDERS ARE EXPOSED TO FIRE, EVACUATE FOR A RADIUS OF 1500 FEET. CONSIDER EVACUATION OF DOWNWIND AREA IF MATERIAL IS LEAKING.

STOP FLOW OF GAS (NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991).

FLASH POINT: NO DATA AVAILABLE

LOWER FLAMMABLE LIMIT: 4.0%

UPPER FLAMMABLE LIMIT: 75%

AUTOIGNITION: 932 F (500 C)

### HAZARDOUS COMBUSTION PRODUCTS:

NONE HAZARDOUS.

## SECTION 6 ACCIDENTAL RELEASE MEASURES

### OCCUPATIONAL SPILL:

SHUT OFF IGNITION SOURCES. DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. ISOLATE AREA UNTIL GAS HAS DISPERSED. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA! KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY. VENTILATE CLOSED SPACES BEFORE ENTERING.



## SECTION 7 HANDLING AND STORAGE

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING THIS SUBSTANCE. STORE IN ACCORDANCE WITH 29 CFR 1910.103. STORE IN A COOL, DRY, WELL-VENTILATED LOCATION. OUTSIDE OR DETACHED STORAGE IS PREFERRED. ISOLATE FROM OXYGEN, HALOGENS, OTHER OXIDIZING MATERIALS (NFPA 49, HAZARDOUS CHEMICALS DATA, 1991).

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY, WHICH MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

## SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

### EXPOSURE LIMITS:

NO OCCUPATIONAL EXPOSURE LIMITS ESTABLISHED BY OSHA, ACGIH, OR NIOSH.

### VENTILATION:

PROVIDE GENERAL DILUTION VENTILATION.

### EYE PROTECTION:

FOR THE GAS FORM EYE PROTECTION IS NOT REQUIRED BUT RECOMMENDED. WHERE THERE IS ANY POSSIBILITY OF CONTACT WITH THE LIQUID FORM, EMPLOYEE MUST WEAR SPLASH PROOF SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE. CONTACT LENSES SHOULD NOT BE WORN.

### EMERGENCY WASH FACILITIES:

WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THE LIQUID FORM OF THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

### CLOTHING:

FOR THE GAS FORM, PROTECTIVE CLOTHING NOT REQUIRED. IF CONTACT WITH THE LIQUID FORM IS POSSIBLE, EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE CLOTHING AND EQUIPMENT TO PREVENT SKIN FROM FREEZING.

### GLOVES:

WEAR FULL PROTECTIVE, COLD INSULATING GLOVES.

### RESPIRATOR:

THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE PHYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.

THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST BE BASED ON THE SPECIFIC OPERATION, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND MUST BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ANY SUPPLIED-AIR RESPIRATOR OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ANY SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:  
ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS  
OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A  
PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN  
AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR  
OTHER POSITIVE-PRESSURE MODE.

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

DESCRIPTION: ODORLESS, COLORLESS, TASTELESS GAS.  
MOLECULAR WEIGHT: 2.0  
MOLECULAR FORMULA: H<sub>2</sub>  
BOILING POINT: 423 F (253 C)  
FREEZING POINT: 434 F (259 C)  
VAPOR PRESSURE: 760 MMHG @ 253 C  
VAPOR DENSITY: 0.07  
SPECIFIC GRAVITY: 0.08987 G/L @ 0 C  
WATER SOLUBILITY: 1.82% @ 20 C  
PH: NOT APPLICABLE  
ODOR THRESHOLD: NO DATA AVAILABLE  
EVAPORATION RATE: NOT APPLICABLE  
SOLVENT SOLUBILITY: SLIGHTLY SOLUBLE IN ALCOHOL AND ETHER.  
VISCOSITY: 0.008957 CP @ 26.8 C

## SECTION 10 STABILITY AND REACTIVITY

REACTIVITY:  
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

CONDITIONS TO AVOID:  
AVOID CONTACT WITH HEAT, SPARKS, FLAMES OR OTHER IGNITION SOURCES. VAPORS MAY  
BE EXPLOSIVE. DO NOT ALLOW CONTACT WITH SKIN; MATERIAL MAY CAUSE FROSTBITE.  
CONTENTS ARE UNDER PRESSURE; CONTAINERS MAY RUPTURE VIOLENTLY AND TRAVEL A  
CONSIDERABLE DISTANCE.

### INCOMPATIBILITIES:

HYDROGEN:  
ALKALINE METALS: IGNITION AT ELEVATED TEMPERATURES.  
CALCIUM CARBONATE + MAGNESIUM (POWDER): EXPLOSION ON HEATING.  
CHLORINE DIOXIDE: DETONATES WHEN SPARKED OR ON CONTACT WITH PLATINUM SPONGE.  
COPPER (II) OXIDE: VIOLENT EXPLOSION WHEN HEATED.  
DICHLORINE OXIDE: DETONATES ON IGNITION.  
DIFLUORODIAZENE: EXPLOSIVE REACTION ABOVE 90 C.  
DINITROGEN OXIDE: SENSITIZES HYDROGEN-OXYGEN MIXTURES.  
DINITROGEN TETRAOXIDE: SENSITIZES HYDROGEN-OXYGEN MIXTURES.  
DIOXANE + NICKEL (CATALYST): EXPLOSIVE REACTION ABOVE 200 C.  
FLUORINE PERCHLORATE: IGNITION.  
HALOGENS: IGNITION OR EXPLOSIVE REACTION.  
INTERHALOGENS: IGNITION OR EXPLOSIVE REACTION.  
ISOPROPYL ALCOHOL + PALLADIUM: IGNITION.  
NITROANISOLE + NICKEL (CATALYST): EXPLOSION.  
NITROGEN (LIQUID) + ALKENES: MAY FORM EXPLOSIVE PRODUCTS.  
NITROGEN OXIDE: SENSITIZES HYDROGEN-OXYGEN MIXTURES.

NITROGEN TRIFLUORIDE: EXPLOSIVE REACTION ON IGNITION.  
NITROSYL CHLORIDE: CAUSES IGNITION IN HYDROGEN-OXYGEN MIXTURES.  
NITRYL FLUORIDE: EXPLOSION @ 200-300 C.  
OXIDIZERS: IGNITION OR EXPLOSION.  
OXYGEN: FLAMMABLE, EXPLOSIVE MIXTURES, PARTICULARLY IN THE PRESENCE OF A CATALYST.  
OXYGEN DIFLUORIDE: EXPLODES IF IGNITED.  
OZONE (SOLID): HIGHLY EXPLOSIVE MIXTURES WITH LIQUID HYDROGEN.  
PALLADIUM (II) OXIDE: INCANDESCES ON CONTACT.  
PALLADIUM TRIFLUORIDE: REDUCES WITH INCANDESCENCE.  
1-PENTOL: EXPLOSIVE REACTION ON HEATING.  
POLY(CARBON MONOFLUORIDE): DEFLAGRATION ABOVE 400 C.  
1,1,1-TRIS(AZIDOMETHYL)ETHANE + CATALYST: POSSIBLE EXPLOSION.  
1,1,1-TRIS(HYDROXYMETHYL)NITROMETHANE + CATALYST: POSSIBLE EXPLOSION.  
UNSATURATED HYDROCARBONS: HYDROGENATION OF UNSATURATED HYDROCARBONS IN THE PRESENCE OF A CATALYST MAY PROCEED WITH EXPLOSIVE VIOLENCE IF CONDITIONS ARE NOT PROPERLY CONTROLLED.  
XENON HEXAFLUORIDE: VIOLENT REACTION.

HAZARDOUS DECOMPOSITION:  
NONE HAZARDOUS.

POLYMERIZATION:  
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

## SECTION 11 TOXICOLOGY INFORMATION

HYDROGEN:  
CARCINOGEN STATUS: NONE.  
ACUTE TOXICITY LEVEL: NO DATA AVAILABLE.  
TARGET EFFECTS: SIMPLE ASPHYXIAN.

HEALTH EFFECTS  
INHALATION:  
HYDROGEN:  
SIMPLE ASPHYXIAN.  
SEE INFORMATION ON SIMPLE ASPHYXIANTS.

SIMPLE ASPHYXIANTS:  
ACUTE EXPOSURE - THE SYMPTOMS OF ASPHYXIA DEPEND ON THE RAPIDITY WITH WHICH THE OXYGEN DEFICIENCY DEVELOPS AND HOW LONG IT CONTINUES. IN SUDDEN ACUTE ASPHYXIA, UNCONSCIOUSNESS MAY BE IMMEDIATE. WITH SLOW DEVELOPMENT THERE MAY BE RAPID RESPIRATION AND PULSE, AIR HUNGER, DIZZINESS, REDUCED AWARENESS, TIGHTNESS IN THE HEAD, TINGLING SENSATIONS, INCOORDINATION, FAULTY JUDGEMENT, EMOTIONAL INSTABILITY, AND RAPID FATIGUE. AS THE ASPHYXIA PROGRESSES, NAUSEA, VOMITING, COLLAPSE, UNCONSCIOUSNESS, CONVULSIONS, DEEP COMA AND DEATH ARE POSSIBLE.  
CHRONIC EXPOSURE - NO DATA AVAILABLE.



## SKIN CONTACT:

### HYDROGEN:

ACUTE EXPOSURE <sup>100</sup> NO ADVERSE EFFECTS HAVE BEEN REPORTED FROM THE GAS. DUE TO RAPID EVAPORATION, THE LIQUID MAY CAUSE FROSTBITE WITH REDNESS, TINGLING AND PAIN OR NUMBNESS. IN MORE SEVERE CASES, THE SKIN MAY BECOME HARD AND WHITE AND DEVELOP BLISTERS.

CHRONIC EXPOSURE <sup>100</sup> NO DATA AVAILABLE.

## EYE CONTACT:

### HYDROGEN:

ACUTE EXPOSURE <sup>100</sup> NO ADVERSE EFFECTS HAVE BEEN REPORTED FROM THE GAS. DUE TO RAPID EVAPORATION, THE LIQUID MAY CAUSE FROSTBITE WITH REDNESS, PAIN AND BLURRED VISION.

CHRONIC EXPOSURE <sup>100</sup> NO DATA AVAILABLE.

## INGESTION:

### HYDROGEN:

ACUTE EXPOSURE <sup>100</sup> INGESTION OF A GAS IS UNLIKELY. IF LIQUID IS SWALLOWED, FROSTBITE DAMAGE TO THE LIPS, MOUTH AND MUCOUS MEMBRANES MAY OCCUR.

CHRONIC EXPOSURE <sup>100</sup> NO DATA AVAILABLE.

## SECTION 12 ECOLOGICAL INFORMATION

ENVIRONMENTAL IMPACT RATING (0-4): NO DATA AVAILABLE

ACUTE AQUATIC TOXICITY: NO DATA AVAILABLE

DEGRADABILITY: NO DATA AVAILABLE

LOG BIOCONCENTRATION FACTOR (BCF): NO DATA AVAILABLE

LOG OCTANOL/WATER PARTITION COEFFICIENT: NO DATA AVAILABLE

## SECTION 13 DISPOSAL INFORMATION

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN DISPOSING OF THIS SUBSTANCE.

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001.

100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

## SECTION 14 TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME<sup>100</sup> ID NUMBER, 49 CFR 172.101:  
HYDROGEN, COMPRESSED<sup>100</sup> UN 1049

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:  
2.1 <sup>100</sup> FLAMMABLE GAS

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND  
SUBPART E:  
FLAMMABLE GAS

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:  
EXCEPTIONS: 49 CFR 173.306  
NON-BULK PACKAGING: 49 CFR 173.302  
BULK PACKAGING: 49 CFR 173.302

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:  
PASSENGER AIRCRAFT OR RAILCAR: FORBIDDEN  
CARGO AIRCRAFT ONLY: 150 KG

#### SECTION 15 REGULATORY INFORMATION

TSCA STATUS: Y

CERCLA SECTION 103 (40CFR302.4): N  
SARA SECTION 302 (40CFR355.30): N  
SARA SECTION 304 (40CFR355.40): N

SARA SECTION 313 (40CFR372.65): N  
OSHA PROCESS SAFETY (29CFR1910.119): N  
CALIFORNIA PROPOSITION 65: N

SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40 CFR 370.21)

ACUTE HAZARD: Y  
CHRONIC HAZARD: N  
FIRE HAZARD: Y  
REACTIVITY HAZARD: N  
SUDDEN RELEASE HAZARD: Y

#### SECTION 16 OTHER

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"ISSUED BY SARGENT-WELCH 08/03/96"



MASTER SAFETY DATA SHEET

MANUFACTURER:

FORM #4

ELECTRO-TECHNIC PRODUCTS, INC.  
4642 N. RAVENSWOOD AVE.  
CHICAGO, IL 60640-4592

PHONE: (312) 561-2349 EMERGENCY PHONE: SAME

FAX #: (312) 561-3130

DATE PREPARED: 8/7/89

VENDOR # 01711

NON-HAZARDOUS

WLS68755-30F

SECTION I

IDENTITY: SPECTRUM TUBE, HELIUM  
(ETP PRODUCT NO. 20402)

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

HAZARDOUS COMPONENT: NONE

OSHA PEL:

ACGIH TLV:

OTHER LIMITS:

% (OPT):

SECTION III - PHYSICAL AND CHEMICAL CHARACTERISTICS

BOILING POINT (DEG C): -268.934 DEGREES C

SPECIFIC VOLUME (0 C, 1 ATM): 0.1785 G/1

VAPOR PRESSURE (TORR): N/A

MELTING POINT (DEG C): -272.2 DEGREES C (26 ATM)

VAPOR DENSITY (AIR=1): N/A

EVAPORATION RATE (BUTYL ACETATE=1): N/A

SOLUBILITY IN WATER: N/A

APPEARANCE AND ODOR: COLORLESS, ODORLESS GAS

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT (METHOD USED): DOES NOT APPLY, NONFLAMMABLE

FLAMABLE LIMITS:

LEL:

UEL:

EXTINGUISHING MEDIA: DOES NOT APPLY

SPECIAL FIRE FIGHTING PROCEDURES: NONE

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

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