AIRGAS INC -- LIQUIFIED NITROGEN (CRYOGENIC) -- 6830-00-616-9183

========== Product Identification ==========

Product ID:LIQUIFIED NITROGEN (CRYOGENIC)
MSDS Date:09/25/2000
FSC:6830
NIIN:00-616-9183
Status Code:A
MSDS Number: CLMXL
=== Responsible Party ===
Company Name:AIRGAS INC
Address:259 RADNOR-CHESTER RD SUITE 100
City:RADNOR
State:PA
ZIP:19087-5240
Country:US
Info Phone Num:610-687-5253
Emergency Pho
ne Num:1-800-949-7937
Resp. Party Other MSDS Num.:DOCUMENT NUMBER: 001040
CAGE:TO065
=== Contractor Identification ===
Company Name:AIRGAS INC
Address:259 RADNOR-CHESTER RD SUITE 100
Box:City:RADNOR
State:PA
ZIP:19087-5240
Country:US
Phone:610-687-5253
CAGE:TO065

========== Composition/Information on Ingredients ==========

Ingred Name:NITROGEN
CAS:7727-37-9
RTECS #:QW9700000
Fraction by Wt: 99.995%

Ingred Name:MAXIMUM IMPURITIES
< Wt:.1

========== Hazards Identificatio

n ==========

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO
Health Hazards Acute and Chronic:TARGET ORGANS: RESPIRATORY SYSTEM.
ACUTE: THE MOST SIGNIFICANT HAZARD ASSOCIATED WITH THIS GAS IS INHALATION OF OXYGEN-DEFICIENT ATMOSPHERES. SYMPTOMS OF OXYGEN DEFICIENCY INCLUDE RESPIRATORY DIFFICUL TY, HEADACHE, DIZZINESS AND NAUSEA. AT HIGH CONCENTRATIONS, UNCONSCIOUNESSS OR DEATH MAY OCCUR. CONTACT WITH CRYOGENIC LIQUID OR RAPIDLY EXPANDING GASES MAY CAUSE

FROSTBITE. CHRONIC: THERE ARE CURRENT LY NO KNOWN ADVERSE HEALTH EFFECTS ASSOCIATED WITH CHRONIC EXPOSURE TO NITROGEN.
Explanation of Carcinogenicity:NITROGEN IS NOT FOUND ON THE FOLLOWING LISTS: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC; THEREFORE IT IS NOT CONSIDERED TO BE, NOR SUSPECTED TO BE A CANCER-CAUSING AGENT BY THESE AGENCIES
Effects of Overexposure:INHALATION: HIGH CONCENTRATIONS OF THIS GAS CAN CAUSE AN OXYGEN-FEFICIENT ENVIRONMENT. INDIVIDUALS BREATHING SUCH A
N ATMOSPHERE MAY EXPERIENCE SYMPTOMS WHICH INCLUDE HEADACHES, RINGING IN EARS, DIZZIN ESS, DROWSINESS, UNCONSCIOUSNESS, NAUSEA, VOMITING, AND DEPRESSION OF ALL THE SENSES. THE SKIN OF A VICTIM MAY HAVE A BLUE COLOR. UNDER SOME CIRCUMSTANCES, DEATH MAY OCCUR. EXPOSURE TO DIFFERENT CONCE NTRATIONS OF NITROGEN MAY INCREASE HEART&PULSE RATE, EMOTIONAL UPSET,ABNORMAL FTIQYUW,DISTURBED RESPIRATION, NAUSEA&VOMITING,COLLAPSE OR LOSS OF CONSCIOSNESS, POSSIBLE RESPIRATORY COLL
APSE&DEATH,CONV USION MOVEMENTS&DISTURBED MUSCULAR COORD
Medical Cond Aggravated by Exposure:PRE-EXISTING RESPIRATORY CONDITIONS MAY BE AGGRAVATED BY OVEREXPOSURE TO NITROGEN.

========== First Aid Measures ==========

First Aid:RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO NITROGENWITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. AT A MINIMUM, SELF-CONTAINEDBREATHING APPARATUS AND PROTECTIVE CLOTHING SHOULD BE WORN.REMOVE VICTIM(S)
TO FRESH AIR, AS QUICKLY AS POSSIBLE. ADMINISTER OXYGEN AND/OR CARDIO-PULMONARY RESUSCITATION, IF NECESSARY. IN CASE OF FROSTBITE, PLACE THE FROSTBITTEN PART IN WARM WATER. DO NOT USE HOT WATER,IF NOT AVAILABLE WRAP THE AFFECTED PARTS GENTLY IN BLANKETS. SEEK MEDICAL ATTENTION.IF FINGERS OR HANDS ARE FROSTBITTEN PLACE AFFECTED AREA OF THE BODY IN THE ARMPIT. SEEK MEDICAL A TTENTION

========== Fire Fighting Measures ==========

Autoignition Temp

:Autoignition Temp Text:NOT AP
Lower Limits:NOT APPLICAB
Upper Limits:NOT APPLICAB
Extinguishing Media:NON-FLAMMABLE, INERT GAS. USE EXTINGUISHING MEDIA APPROPRIATE FOR SURROUNDING FIRE.
Fire Fighting Procedures:STRUCTURAL FIRE-FIGHTERS MUST WEAR SELF CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE EQUIPMENT. MOVE FIRE-EXPOSED CYLINDERS IF IT CAN BE DONE WITHOUT RISK TO FIREFIGHTERS. OTHERWISE, COOL CONTAIN ERS WITH HOSE STREAM AND PROTECT PERSONNEL. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUNDS FROM VENTING SAFETY DEVICE.
Unusual Fire/Explosion Hazard:NIGROGEN DOES NOT BURN; HOWEVER, CONTAINERS, WHEN INVOLVED IN FIRE, MAY RUTPURE OR BURST IN THE HEAT OF THE FIRE.

========== Accidental Release Measures ==========

Spill Release Procedures:EVACUATE ALL PERSONNEL FROM RELEASE AREA. USE APPROPRIATE PROTECTIVE EQUIPMENT.LOCATE AND SEAL THE SOURCE OF THE LEAKING GAS.ALLOW THE GAS TO DISSIPATE.MONITOR THE AREA FOR SURROUNDING O XYGEN LEVELS.A TTEMPT TO CLOSE THE MAIN SOURCE VALVE PRIOR TO ENTERING THE AREA.IF THIS DOES NOT STOP THE RELEASE, ALLOW THE GAS TO RELEASE IN PLACE OR REMOVE TO A SAFE AREA AND ALLOW THE GAS TO BE RELEASED THERE.
Neutralizing Agent:NO INFORMATION GIVEN ON MSDS BY MFR.

========== Handling and Storage ==========

Handling and Storage Precautions:CYLINDERS SHOULD BE STORED IN DRY,WELL-VENTILATED AREAS AWAY FROM SOURCES OF HEAT.COMPRESS GASES CAN PRESEN T SIGNIFICANT SAFETY HAZARDS.STORE CONTAINERS AWAY FROM HEAVILY TRAFFICKED AREAS AND EMERGENC Y EXISTS.POST "NO SMOKING OR OPEN FLAMES" IN STORAGE OR USE AREAS.SEE OTHER PRECAUTION
Other Precautions:STORE AWAY FROM FLAMMABLE MATERIALS&CORROSIVE ATMOSPHERE.DO NOT ALLOW AREA WHERE CYLINDERS ARE STORED TO EXCEED 52C.PROTECT CYLINDERS AGAINST PHYSICAL DAMAGE.STORE AWAY FROM HEAT AND IGNITION SOURCES AND AWAY FROM DIRECT SUNLIGHT.DO NOT STORE CONTAINERS WHERE THEY MAY COME IN

CONTACT WITH MOISTURE.

========== Exposure Controls/Personal Protection ==========

Respiratory Protection:MAINTAIN OXYGEN LEVELS ABOVE 15.5% IN THE WORKPLACE. USE SUPPLIED AIR RESPIRATORY PROTECTION IF OXYGEN LEVELS ARE BELOW 19.5% OR DURING EMERGENCY RESPONSE TO A RELEASE OF NITROGEN. IF RESPIRATORY PROT ECTION IS REQUIRED, FOLLOW THE REQUIREMENTS OF THE FEDERAL OSHA RESPIRATORY PROTECTION STANDARD (29 CFR 1910.134) OR EQUIVALENT STATE STANDARDS.
Ventilation:USE W
ITH ADEQUATE VENTILATION TO MAINTAIN OXYGEN LEVELS ABOVE 19.5% IN THE WORKPLACE. LOCAL EXHAUST VENTILATION IS PREFERRED, BECAUSE IT PREVENTS NITROGEN
Protective Gloves:WEAR MECHANICALLY RESISTANT-GLOVES WHEN HANDLING CYLINDERS OF NITROGEN. USE LOW
Eye Protection:SPLASH GOGGLES, FACE SHIELDS OR SAFETY GLASSES. FACE SHIELDS MUST BE WORN WHEN
Other Protective Equipment:USE BODY PROTECTION APPROPRIATE FOR TASK. TRANSFER OF LARGE QUANTITIES UNDER PRESSURE MAY REQUIRE PROTECTIVE

EQUIPMENT TO PROTECT EMPLOYEES FROM SPLASHES OF LIQUIFIED PRODUCT, AS WELL PROVIDE SUFFICIENT
Work Hygienic Practices:NOT PROVIDED BY MFR
Supplemental Safety and Health
NOT PROVIDED BY MFR

========== Physical/Chemical Properties ==========

HCC:G3
Boiling Pt:=-195.6C, -320.4F
B.P. Text:@ 1 ATM
Melt/Freeze Pt:=-210.C, -346.F
Vapor Density:1.153KG/M3
Spec Gravity:0.967 (AIR=1)
Solubility in Water:1.49% (V/V)
Appearance and Odor:NITROGEN IS A COLORLESS,ODORLESS GAS OR A COL
ORLESS
& ODORLESS CRYOGENIC LIQUID

========== Stability and Reactivity Data ==========

TITANIUM, NEODYNMIUM, LITHIUM, ZIRCONIUM AND OZONE REACT WITH NITROGEN. CALCIUM, STRONTIUM, AND BARIUM WILL REACT WITH RED HEAT TO FORM NITRIDES. HYDROGEN REACTS ON SPARKING TO FORM AMMONIA. LIQUID NITROGEN IN CRYOGENIC GRI
Stability Condition to Avoid:NORMALLY STABLE IN GASEOUS STATE. WITH CRYOGENIC LIQUID, WHEN EXPOSED TO AIR, OXYGEN IN THE AIR MAY CONDENSE INTO THE

LIQUID NITROGEN.
Hazardous Decomposition Products:NO HAZARDOUS DECOMPOSITION,
HOWEVER,LIQUID NITROGEN CONTAMINATED WITH OXYGEN MAY PRESENT THE SAME HAZARDS AS LIQUID OXYGEN AND COULD REACT VIOLENTLY WITH ORGANIC MATERIALS SUCH AS OIL AND GREASE
Conditions to Avoid Polymerization:WILL NOT OCCUR

========== Toxicological Information ==========

Toxicological Information:CONTACT WITH RAPIDLY EXPANDING GAS CAN CAUSE FROSTBITE AND DAMAGE TO EXPOSED SKIN AND EYES. NI
TROGEN IS NOT A
SENSITIZER UPON PROLONGED OR REPEATED CONTACT.NITROGEN IS NOT CONSIDERED TO BE CANCER CAUS ING AGENT.MUTAGENICITY; NITROGEN IS NOT EXPECTED TO CAUSE MUTAGENIC EFFECTS IN HUMANS. EMBRYOTOXICITY;NITROGEN IS NOT EXPECTED TO CAUSE EMBYOTOXIC EFFECTS IN HUMANS.TERATOGENICITY;NITROGEN IS NOT EXPE CTED TO CAUSE TERATOGENIC EFFECTS IN HUMANS.REPRODUCTIVE TOXICITY;NITROGEN IS NOT EXPECTED TO CAUSE ADVERSE REPRODUCTIVE EFFECTS IN HUMANS.

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Ecological Information ==========

Ecological:NITROGEN OCCURS NATURALLY IN THE ATMOSPHERE, ANY ADVERSE EFFECTS ON ANIMALS WOULD BE RELATED TO OXYGEN DEFICIENT ENVIRONMENT. NO ADVERSE EFFECT IS ANTICIPATED TO OCCUR TO PLANT LIFE, EXCEPT FOR FROST PRODUCED IN THE PRESENCE OF RAPIDLY EXPANDING GASES.

========== Disposal Considerations ==========

Waste Disposal Methods:WASTE DISPOSAL MUST BE IN ACCORDANCE WITH APPROPRIATE FEDERAL, STATE AND LO
CAL REGULATIONS. RETURN CYLINDERS
WITH ANY RESIDUAL PRODUCT TO AIRGAS INC. DO NOT DISPOSE OF LOCALLY.

========== MSDS Transport Information ==========

Transport Information:THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.01 BY THE US DEPARTMENT OF TRANSPORTATION. PROPER SHIPPING NAME; NITORGEN REFREGERATED LIQUID. HAZARD CLASS NUMBER 2.2 (NONE FLAMMABLE GAS). UN ID ENTIFICATION NUMBER; UN 1977. DOT LABEL; NONE FLAMMABLE GAS. NITROGEN IS NOT CLASSIF

IED BY THE DOT AS A MARINE POLLUTANT. TRANSPORT CANADA; THIS MATERIAL IS CONSIDERED AS DANGEROUS GOODS.

========== Regulatory Information ==========

SARA Title III Information:NITRGOEN IS NOT SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 302,304, AND 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT. U.S. SARA THRESHOLD PLANNING QUANTITY:NOT APPLICABLE .
Federal Regulatory Information:U.S. CERCLA REPORTABLE QUANTITY (RQ): NO
T APPLICABLE. U.S. TSCA INVENTORY STATUS: NITROGEN IS ON THE TSCA INVENTORY.
State Regulatory Information:NITROGEN IS COVERED UNDER THE FOLLOWING SPECIFIC STATE REGULATIONS; ALASKA, CALIFORNIA, FLORIDA, KANSAS, MASSACHUSETTS, MICHIGAN, MINNESOTA, MISSOURI, NEW JERSEY, NORTH DAKOTA, PENNSYLVANIA, RHODE ISL AND, TEXAS, WISCONSIN