AMEREX CORPORATION

7595 Gadsden Highway
P. O. Box 81
Trussville, Alabama 35173-0081

HEALTH: 1
FLAMMABILITY: 0
REACTIVITY: 0

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I *What is the material and what do I need to know in an emergency?*

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED): **NITROGEN**

MANUFACTURER'S NAME: AMEREX CORPORATION
ADDRESS: P. O. BOX 81
Trussville, AL 35173-0081

EMERGENCY PHONE: 1-800-424-9300 (CHEMTREC)
BUSINESS PHONE: (205) 655-3271
DATE OF PREPARATION: August 24, 1995

2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% w	ACGIH TLV ppm	ACGIH STEL ppm	OSHA PEL ppm	OSHA STEL ppm	OSHA TWA ppm	OTHER
Nitrogen	7727-37-9	100	Nitrogen is classified as a "simple asphyxiant", without other significant physiological effects. A minimum oxygen concentration of 19.5% must be maintained in the work area.					EXPOSURE LIMITS in AIR

NE = Not Established See Section 16 for Definitions of Terms Used.

3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: This product is an odorless, colorless gas which mainly presents pressure hazards. Though the mixture is not flammable, if the product's cylinders are exposed to high temperatures, they may rupture violently and cause a high-pressure release of gas.

SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE: The most significant route of exposure for this product is inhalation.

INHALATION: Nitrogen is a simple asphyxiant which exerts no other physiological effect beyond oxygen deprivation. Symptoms of exposure to oxygen deficient environments include dizziness, headache, loss of consciousness, and under some circumstances, death.

CONTACT WITH SKIN or EYES: Contact with rapidly expanding gases may cause burns or frostbite. No other health effects are known from contact with Nitrogen.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms. This product poses low, acute health risks.

ACUTE: This gas presents a slight risk of causing acute health effects other than asphyxiation. The most severe acute effects would be harm to the skin or eyes when in contact with rapidly expanding gases. Death may occur in atmospheres containing high concentrations of this product.

CHRONIC: Nitrogen is not known to cause any chronic illnesses or diseases.

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

Rescuers should not attempt to retrieve victims of exposure to this product without adequate personal protective equipment. At a minimum, Self-Contained Breathing Apparatus should be worn during rescues.

Remove victims to fresh air, as quickly as possible. Trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Only trained personnel should administer supplemental oxygen.

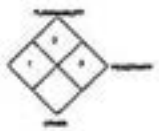
In case of frostbite, place the frostbitten part in warm water. If warm water is not available, or impractical to use, wrap the affected parts gently in blankets.

If exposure causes obvious distress, victim(s) and rescuers must be taken for medical attention. Take copy of label and MSDS to physician or health professional with victim.

5. FIRE-FIGHTING MEASURES

FLASH POINT °F (method): Not applicable.
AUTOIGNITION TEMPERATURE °F: Not applicable.
FLAMMABLE LIMITS (in air by volume, %): Lower (LEL): Not applicable.
Upper (UEL): Not applicable.

NFPA RANKING



FIRE EXTINGUISHING MATERIALS: Not normally ignitable. Use extinguishing media appropriate for surrounding material.

Water Spray: YES Carbon Dioxide: YES Foam: YES
Dry Chemical: YES Halon: YES Other: Any "B" Class

UNUSUAL FIRE AND EXPLOSION HAZARDS: When involved in a fire, this cylinder may rupture violently, causing a high pressure release of gases.

Explosion Sensitivity to Mechanical Impact: Not sensitive. Explosion Sensitivity to Static Discharge: Not sensitive.

SPECIAL FIRE-FIGHTING PROCEDURES: Keep unused cylinders cool using a water spray. Structural fire fighters must wear Self-Contained Breathing Apparatus and full protective equipment.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. In case of a release, clear the affected area, and protect people. At a minimum, Self-Contained Breathing apparatus and heavy gloves should be worn by responders. For uncontrolled releases, monitor the surrounding area for oxygen content. The atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self-Contained Breathing Apparatus. Care should be taken to avoid contact with rapidly expanding gases. Ventilate the affected area. Attempt to shut-off the release by tightening the main valve. If this does not stop the release (or it is not possible to reach the valve), allow the gas to release in place, or remove the container to a safe area and allow the gas to be released there.

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

WORK PRACTICES AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash hands after handling chemicals. Do not eat or drink while handling chemicals. Be aware of any signs of dizziness or fatigue; exposures to toxic concentrations of this product could occur without any significant warning symptoms.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Keep cylinders in dry, well-ventilated areas which are away from sources of heat. Do not exceed 48 °C storage temperature. Keep cylinders secure.

- **Before Use:** Move cylinders with suitable hand-truck. Secure cylinders firmly. Leave the valve protection cap in place until cylinder is ready for use.
- **During Use:** Use designated regulators, CGA fittings, and other support equipment. Do not use adapters. Do not use oil or grease on gas handling fittings or equipment. All equipment must be properly grounded and bonded.
- **After Use:** Close main cylinder valve. Replace valve protection cap. Mark empty cylinders "EMPTY".

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain application equipment is locked and tagged-out safely. Always use this product in areas where adequate ventilation is provided.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Use a mechanical fan or vent area to outside.
RESPIRATORY PROTECTION: None normally required for use. Use supplied air respiratory protection if oxygen levels are below 19.5%.
EYE PROTECTION: Safety glasses.
HAND PROTECTION: Mechanically resistant gloves should be worn when moving cylinders.
BODY PROTECTION: Use body protection appropriate for task.

SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: Protect cylinders against physical damage. Store in cool, dry, well-ventilated area, away from direct sunlight. Do not allow area where cylinders are stored to exceed 51.7° C (125° F). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Use only DOT or ASME code containers. Close valve after each use and when empty. Nitrogen cylinders must not be recharged except by or with the consent of Amerex Corporation. For additional information refer to the Compressed Gas Association Pamphlet P-1, *Safe Handling of Compressed Gases in Containers*.

9. PHYSICAL and CHEMICAL PROPERTIES

GAS DENSITY (STP): 1.153 kg/m³
SPECIFIC GRAVITY (water): 1.38
SOLUBILITY IN WATER: 0.023 cm^3 / cm^3 water
VAPOR PRESSURE: mm Hg @ 20 °C: Not applicable.
EVAPORATION RATE (n-BuAc=1): Not applicable.
MELTING POINT or RANGE: -209 °C
BOILING POINT: -195.8°C
pH (1% solution): Not applicable.

Internal pressure in a cylinder will depend upon the volume of gas present in the cylinder. Determine internal pressure with a pressure gauge.

APPEARANCE AND COLOR: This product is an odorless, compressed gas.
HOW TO DETECT THIS SUBSTANCE (warning properties): This product does not have any specific warning properties.

10. STABILITY and REACTIVITY

STABILITY: Stable.
DECOMPOSITION PRODUCTS: Not applicable.
MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Nitrogen is non-corrosive and inert, and may be contained in systems constructed of any common metals and designed to safely withstand the pressures involved.
HAZARDOUS POLYMERIZATION: Will not occur.
CONDITIONS TO AVOID: Elevated temperatures.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: Nitrogen is a simple asphyxiant gas, and as such, has no specific inherent toxicological or physiological hazards.

SUSPECTED CANCER AGENT: Nitrogen is not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, IARC.

IRRITANCY OF PRODUCT: Contact with expanding gases may cause skin and eye irritancy.

SENSITIZATION TO THE PRODUCT: This product is not known to cause sensitization.

REPRODUCTIVE TOXICITY INFORMATION: Listed below is information concerning the effects of this product and its components on the human reproductive system.

Mutagenicity: Nitrogen is not known to cause mutagenic effects.
Teratogenicity: Nitrogen is not known to cause teratogenic effects.
Reproductive Toxicity: Nitrogen is not known to cause reproductive toxicity effects.

A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.
RECOMMENDATIONS TO PHYSICIANS: Treat patient symptoms. Administer oxygen, as necessary.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL STABILITY: No adverse environmental consequences are expected. Nitrogen occurs naturally in the environment. The gas will dissipate rapidly in well ventilated areas.
EFFECT OF MATERIAL ON PLANTS or ANIMALS: None currently known.
EFFECT OF CHEMICAL ON AQUATIC LIFE: Not expected to harm aquatic life.

13. DISPOSAL CONSIDERATIONS

PREPARING WASTES FOR DISPOSAL: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Do not puncture or incinerate cylinder.
EPA WASTE NUMBER: Not applicable.

14. TRANSPORTATION INFORMATION

THIS MATERIAL IS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

PROPER SHIPPING NAME:	Nitrogen, Compressed.
HAZARD CLASS NUMBER and DESCRIPTION:	2.2 (Non-flammable gas)
UN IDENTIFICATION NUMBER:	UN 1066.
PACKING GROUP:	Not applicable.
DOT LABEL(S) REQUIRED:	Nonflammable Gas.
EMERGENCY RESPONSE GUIDE NUMBER:	12

MARINE POLLUTANT: Not applicable.

THIS MATERIAL IS DEFINED AS HAZARDOUS BY TRANSPORT CANADA "TRANSPORTATION OF DANGEROUS GOODS" REGULATIONS. Refer to above information for Canadian Shipments.

15. REGULATORY INFORMATION

SARA REPORTING REQUIREMENTS: Nitrogen is not subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act.
SARA Threshold Planning Quantity: Not applicable.
TSCA INVENTORY STATUS: Nitrogen is listed on the TSCA inventory.
CERCLA REPORTABLE QUANTITY (RQ): Not applicable.
OTHER FEDERAL REGULATIONS: Not applicable.
STATE REGULATORY INFORMATION: Chemicals in this product are covered under specific State regulations, as denoted below:

Alaska - Designated Toxic and Hazardous Substances: None
California - Permissible Exposure Limits for Chemical Contaminants: Nitrogen
Florida - Substance List: None
Illinois - Toxic Substance List: None
Kansas - Section 302/313 List: None
Massachusetts - Substance List: None
Minnesota - List of Hazardous Substances: Nitrogen
Missouri - Employer Information/Toxic Substance List: None
New Jersey - Right to Know Hazardous Substance List: Nitrogen
North Dakota - List of Hazardous Chemicals, Reportable Quantities: None.
Pennsylvania - Hazardous Substance List: Nitrogen
Rhode Island - Hazardous Substance List: Nitrogen
Texas - Hazardous Substance List: None.
West Virginia - Hazardous Substance List: None.
Wisconsin - Toxic and Hazardous Substances: None.

CALIFORNIA PROPOSITION 65: Nitrogen is not on the California Proposition 65 lists.
LABELING (Precautionary Statements): WARNING! Compressed gas under pressure. May cause frostbite burns. Exposure may cause headaches, dizziness, eye irritation. Use only in well-ventilated area. Store in a cool, dry location. Use only in a closed system which is designed to handle the cylinder pressure.

TARGET ORGANS: Respiratory system, skin, eyes.
WHMIS SYMBOLS:

16. OTHER INFORMATION

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
9163 Chesapeake Drive, San Diego, CA 92123-1002
619/565-0302

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. ANSPEX Corporation assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, ANSPEX Corporation assumes no responsibility for injury to vendee or third persons proximately caused by extraordinary use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in the use of the material.

DEFINITIONS OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these which are commonly used include the following:

CAS #: This is the Chemical Abstract Service Number which precisely identifies each constituent. It is used for computer-related searching.

EXPOSURE LIMITS IN ARE

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

TLV - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (TWA), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level. Skin absorption effects must also be considered.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - this exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The IDLH - Immediately Dangerous to Life and Health level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. The SPD - MAK is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. NIOSH is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (OSHA). NIOSH issues exposure guidelines called Recommended Exposure Levels (RELs). When no exposure guidelines are established, an entry of ME is made for reference.

FLAMMABILITY LIMITS IN ARE Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA).

LEL - the lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

UEL - the highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.

TOXICOLOGICAL INFORMATION

Possible health hazards are derived from human data, animal studies, or from the results of studies with similar components are presented. Definitions of some terms used in this section are: LD_{50} - Lethal Dose (solids & liquids) which kills 50% of the exposed animals; LC_{50} - Lethal Concentration (gases) which kills 50% of the exposed animals; ppm concentration expressed in parts of material per million parts of air or water; mg/m³ concentration expressed in weight of substance per volume of air; mg/kg quantity of material, by weight, administered to a test subject, based on their body weight in kg. Data from several sources are used to evaluate the carcinogenic potential of the materials. The sources are IARC - the International Agency for Research on Cancer; NTP - the National Toxicology Program; RTECS - the Registry of Toxic Effects of Chemical Substances; OSHA and CAL/OSHA. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. Other measures of toxicity include TDLo, the lowest dose to cause a symptom; TDo, LDLo, and LDo, the lowest dose to cause death.

REGULATORY INFORMATION

This section explains the impact of various laws and regulations on the material. EPA is the U.S. Environmental Protection Agency. WHMIS is the Canadian Workplace Hazard Information System. DOT and CTC are the U.S. Department of Transportation and the Canadian Transportation Commission, respectively. These are Superfund Amendments and Reauthorization Act (SARA); the Toxic Substances Control Act (TSCA); Marine Pollutant status according to the DOT; California's Safe Drinking Water Act (Proposition 65); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund); and various state regulations. This section also includes information on the precautionary warnings which appear on the materials package label.