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MATERIAL SAFETY DATA SHEET

No. 145

PRODUCT NAME 5% Sulfur Hexafluoride in Nitrogen	**CAS #** Nitrogen = 7727-37-9 Sulfur Hexafluoride = 2551-62-4
TRADE NAME AND SYNONYMS Compressed gas, n.o.s. (D.O.T.)	**DOT I.D. No.:** UN 1956
CHEMICAL NAME AND SYNONYMS 5 Molar % Sulfur Hexafluoride in Nitrogen	**DOT Hazard Class:** Division 2.2
ISSUE DATES AND REVISIONS Revised January 1995	**Formula** 5 Molar % SF_6 in N_2 **Chemical Family:** Gas Mixture

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT

SF6 = 1,000 Molar PPM; nitrogen is a simple asphyxiant (ACGIH 1994-1995). OSHA 1993 PEI (8 Hr. TWA) for SF6 = 1,000 Molar PPM with no listing for nitrogen (Continued on Page 4)

SYMPTOMS OF EXPOSURE

Effects of exposure to high concentrations so as to displace the oxygen in the air necessary for life are headache, dizziness, labored breathing and eventual unconsciousness.

TOXICOLOGICAL PROPERTIES

Mixture is nontoxic, but the liberation of a large amount in a confined area could displace the amount of oxygen in air necessary to support life.

Neither sulfur hexafluoride or nitrogen are listed in the IARC, NTP or by OSHA as a carcinogen or potential carcinogen.

Persons in ill health where such illness would be aggravated by exposure to this mixture should not be allowed to work with or handle this product.

RECOMMENDED FIRST AID TREATMENT

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO THIS MIXTURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted respiration and supplemental oxygen. Further treatment should be symptomatic and supportive

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

None

PHYSICAL DATA

BOILING POINT SF_6 Sublimation Point = -82.8ºF (-63.8ºC) N_2 = -320.5ºF (-195.8ºC)	**LIQUID DENSITY AT BOILING POINT** See Page 4
VAPOR PRESSURE See page 4	**GAS DENSITY AT 70°F. 1 atm** See Page 4
SOLUBILITY IN WATER Slightly	**FREEZING POINT** See Page 4
EVAPORATION RATE N/A (Gas)	**SPECIFIC GRAVITY (AIR=1)** @ 70ºF (21.1ºC) SF_6 = 5.13 N_2 =0.97
APPEARANCE AND ODOR Colorless, odorless gas	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	**AUTO IGNITION TEMPERATURE** N/A	**FLAMMABLE LIMITS % BY VOLUME (See Page 4)** LEL N/A UEL N/A
EXTINGUISHING MEDIA Nonflammable gas mixture		**ELECTRICAL CLASSIFICATION** Nonhazardous
SPECIAL FIRE FIGHTING PROCEDURES If cylinders are involved in a fire, safely relocate or keep cool with water spray		
UNUSUAL FIRE AND EXPLOSION HAZARDS None		

REACTIVITY DATA

STABILITY Unstable		**CONDITIONS TO AVOID** None
Stable	X	
INCOMPATIBILITY (Materials to avoid) See Hazardous Decomposition Products		
HAZARDOUS DECOMPOSITION PRODUCTS See Page 4		
HAZARDOUS POLYMERIZATION May Occur		**CONDITIONS TO AVOID** None
Will Not Occur	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in container or container valve, contact your closest supplier location or call the emergency telephone number listed herein.

WASTE DISPOSAL METHOD

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to your supplier for proper disposal. For emergency disposal, contact your closest supplier location or call the emergency telephone number listed herein.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Positive pressure air line with mask or self-containedbreathing apparatus should be available for emergency use.		
VENTILATION See local exhaust	**LOCAL EXHAUST** To prevent accumulation above the TWA for SF_6	**SPECIAL** N/A
	MECHANICAL (Gen.) N/A	**OTHER** N/A
PROTECTIVE GLOVES Any Material		
EYE PROTECTION Safety goggles or glasses		
OTHER PROTECTIVE EQUIPMENT Safety shoes		

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION

DOT Shipping Name:	Compressed acts, n.o.s.	DOT Hazard Class:	Division 2.2
DOT Shipping Label:	Nonflammable Gas	I.D. No.:	UN 1956

SPECIAL HANDLING RECOMMENDATIONS

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<3,000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

For additional handling recommendations, consult Compressed Gas Association's Pamphlets P-1, P-14, and Safety Bulletin SB-2.

SPECIAL STORAGE RECOMMENDATIONS

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125ºF (52ºC). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time.

For additional storage recommendations, consult Compressed Gas Association's Pamphlets P-1, P-14, and Safety Bulletin SB-2.

SPECIAL PACKAGING RECOMMENDATIONS

This gas mixture should be able to be handled in any common structural material. See hazardous decomposition products for handling this mixture at elevated temperatures.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Compressed gas cylinders should not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

(Continued on Page 4)

*Various Government Agencies (i.e. Department of Transportation, Occupational Safety and Health Administration, Food and Drug Administration and others) may have specific regulations concerning the transportation, handling, storage or use of this product which will not be reflected in this data sheet. The customer should review these regulations to ensure that he is in full compliance.

HEALTH HAZARD DATA

TIME WEIGHTED AVERAGE EXPOSURE LIMIT: (Continued)

Oxygen levels should be maintained at greater than 18 molar % at normal atmospheric

pressure (pO_2>135 torr). -

PHYSICAL DATA
LIQUID DENSITY AT BOILING POINT

SF_6 @ 59ºF (15ºC) = 89.83 lb/ft³ (1439 kg/m³)

N_2 @ Boiling Point = 50.46 lb/ft³ (808.3 kg/m³)

VAPOR PRESSURE:

SF_6 @ 70ºF (21.1ºC) = 319.1 psia(2200 kPa)

N_2 @ 70ºF (21.1ºC) = Above the critical temperature of -232.6ºF (-147ºC)

GAS DENSITY AT 70ºF, 1 atm:

SF_6 = .384 lb/ft³ (6.15 kg/m³) N_2 = .0725 lb/ft³ (1.161 kg/m³)

FREEZING POINT:

SF_6 = -59.4ºF (-50.8ºC) N_2 = -345.9ºF (-209.9ºC)

REACTIVITY DATA

HAZARDOUS DECOMPOSITION PRODUCTS:

Sulfur hexafluoride is stable at room temperatures when in contact with any common structural materials. Above 400ºF (200ºC) it remains stable if handled in aluminum, stainless steel, copper, brasses, and silver. It decomposes slowly in the presence of carbon steel above 400ºF (200ºC) to SF_2, S_2F_2, SF_4, and S_2F_{10} (sulfur pentafluoride).

Sulfur hexafluoride is thermally stable to approximately 1475ºF (800ºC).

SPECIAL PRECAUTIONS

OTHER RECOMMENDATIONS OR PRECAUTIONS: (Continued)

Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pick-up type vehicles.

Reporting under SARA, Title III, Section 313 not required.

NFPA 704 No. for this mixture = 1 0 0