

MATERIAL SAFETY DATA SHEET
29 CFR 1910.1200 OSHA Hazard
Communication Rule Format
Chem-Tel 24 Hour Emergency # 1-800-255-3924

MINE SAFETY APPLIANCES COMPANY
1000 Cranberry Woods Drive
Cranberry Township, PA 16066
PHONE (724) 776-8900

This product contains nitrogen, a substance subject to the Pennsylvania Worker and Community Right-To-Know Act.

PRODUCT IDENTITY

LABEL IDENTITY - MSA P/N 10077765 Calibration Check Gas, 100 ppm R-404A in Nitrogen

CHEMICAL NAME - R-404A, Hydrofluorocarbon blend.
1,1,1,2-tetrafluoroethane/pentafluoroethane/1,1,1-trifluoroethane

ADDITIONAL IDENTITIES - MSA P/10077765, Calibration Check Gas, 100 ppm R-404A in Nitrogen

FORMULA - $\text{CF}_3\text{CH}_2\text{F}$ / CF_3CHF_2 / CF_3CH_3 in N_2

APPLICABLE CHEMICAL CONTENTS

		<u>%</u>	<u>TWA</u>
1,1,1-trifluoroethane(HFC-143a)	(CAS 420-46-2)	0.052	1000 ppm (WEEL-AIHA)
Pentafluoroethane (HFC-125)	(CAS 354-33-6)	0.044	1000 ppm (WEEL-AIHA)
1,1,1,2-tetrafluoroethane (HFC-134a)	(CAS 811-97-2)	0.004	1000 ppm (WEEL-AIHA)
Nitrogen	(CAS 7727-37-9)	Balance	None

NOTE: Gas Under Pressure, 1000 PSIG at 70°F, Approx. 100 Liters Gas at Atmospheric Pressure
Contains fluorinated greenhouse gas covered by Kyoto Protocol.

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR - Colorless, with a faint ether like odor.

Following information is for Nitrogen the main component of this gas mixture

BOILING POINT - -320.4°F (-195.8 ° C) SPECIFIC GRAVITY (air = 1) @70°F (21.1 °C): 0.906

VAPOR PRESSURE @70°F (21.1 °C): N/A* PERCENT VOLATILE BY VOLUME - N/A*

GAS DENSITY @32°F (0 °C) and 1 atm: 0.072 lbs/ft³ (1.153 kg/ m³)

SOLUBILITY IN WATER - R-404a-negligible
Nitrogen - 2.3 cm³/100 ml (0°C)

N/A - Not Applicable

PHYSICAL HAZARD INFORMATION

PHYSICAL HAZARD - Compressed Gas, 1000 PSIG at 70°F

CONDITIONS OR MATERIALS TO AVOID - Avoid bases. Avoid powdered active metals such as aluminum, alkali metals or alkaline earth metals.

FLASH POINT - N/A

EXTINGUISHING MEDIA - This calibration gas mixture is not flammable

SPECIAL FIRE FIGHTING PROCEDURES- Thermal decomposition may yield toxic halogen compounds. Use self-contained pressure demand type breathing apparatus with full face piece.

UNUSUAL FIRE AND EXPLOSION HAZARDS - Gas under pressure, 1000 PSIG at 70°F. Do not exceed 120°F.

HEALTH HAZARDS

HEALTH HAZARDS - No TWA has been established for R-404a. A manufacturer suggests 1000 ppm TWA. A manufacturer reports that inhalation of very high concentrations may cause temporary alteration of the heart's electrical activity with irregular pulse, palpitations or inadequate circulation. Nitrogen is an asphyxiant.

SIGNS AND SYMPTOMS OF EXPOSURE: Nitrogen is an asphyxiant. Significant dilution of ambient air by asphyxiants causes air hunger, increased breathing frequency, drowsiness, weakness, and ringing in ears.

PRIMARY ROUTES OF ENTRY - Inhalation

TARGET ORGANS - Lungs

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE - No Information

EXPOSURE LIMITS - Not established for R- 404A

CARCINOGENICITY DATA - Neither Nitrogen nor R 404A is listed by NIOSH, RTECS, IARC, NTP or OSHA.

EMERGENCY AND FIRST AID PROCEDURES - Remove victim from exposure. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

SAFE HANDLING AND USE

HYGIENIC PRACTICES - Avoid breathing gas

PROTECTIVE MEASURES DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT - N/A

PROCEDURES FOR SPILL OR LEAK CLEANUP - Ventilate area

WASTE DISPOSAL - Do not puncture or incinerate cylinder. Before discarding cylinder, slowly release contents to a safe exhaust. Dispose of cylinder in accordance with local, state and federal regulations

STORAGE - Store in a cool, dry, well-ventilated area. Do not exceed 120°F.

CONTROL MEASURES

PERSONAL PROTECTIVE EQUIPMENT - Due to the limited amount of gas in the cylinder, and the low release rate employed in instrument calibration, respiratory protection is not indicated under conditions of intended use.

ENGINEERING CONTROLS - Mechanical ventilation is suitable.

WORK PRACTICES - Avoid breathing gas. Use in well-ventilated areas. Follow the calibration procedure detailed in the MSA instruction manual provided with the instrument under calibration.

DATE OF PREPARATION - Rev. 1, March 2013

WARNING: This is a hazardous chemical product. By following the directions and warnings provided with this product, the hazards associated with the use of this product can be greatly reduced but never entirely eliminated. Mine Safety Appliances Company makes no warranties, expressed or implied, with respect to this product and EXPRESSLY DISCLAIMS THE WARRANTY OF MERCHANTABILITY AND ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. Users assume all risks in handling, using or storing this product.