



SAFETY DATA SHEET

SECTION 1 – IDENTIFICATION

Chemical Name: RGA Calibration Gas
Chemical Formula: RGA Calibration Gas
Chemical Family: Flammable Gas Mixture
Hazard Classification: Compressed Gas, Flammable, N.O.S., UN1954, Red Label
Product Use Description: Analytical Standard and General Laboratory Applications
Company: MESA Specialty Gases & Equipment
2427 South Anne Street
Santa Ana, California 92704 USA
Phone Number for Information: Infotrac
Emergency Contact: 800-535-5053 (Int'l: 352-323-3500)

SECTION 2 – HAZARD(S) IDENTIFICATION

SIGNAL WORD - DANGER

HAZARD STATEMENTS: Flammable gas. Contains gas under pressure;
may explode if heated.
May cause suffocation by displacing oxygen in the air.
May form explosive mixtures with air.

PRECAUTIONARY STATEMENTS:

General: Use in accordance with Safety Data Sheets.
Do not ingest or inhale. Avoid contact with skin and clothing.
Prevention: Keep away from heat, hot surfaces, sparks, open flames,
and other ignition sources. No smoking.
Response: Leaking gas fire: Do not extinguish unless leak can be stopped safely.
In case of leakage, eliminate all ignition sources.
Do not open valve until prepared to use.
Always use a back flow preventative device in piping.
Storage: Protect from sunlight. Store in a well-ventilated place.

OTHER HAZARDS: High pressure gas. May cause rapid suffocation.
May cause dizziness, nausea, drowsiness, vomiting, excess
salivation, loss of mobility/consciousness.
May react explosively even in absence of air at elevated pres
and/or temperature.
Self-contained breathing apparatus (SCBA) may be required.



SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT	CAS NO.	CONCENTRATION
Hydrogen	1333-74-0	2.00 - 42.50 Mol%
Nitrogen	7727-37-9	2.00 - 78.00 Mol%
Argon	7440-37-1	0.01 - 2.00 Mol%
Carbon Monoxide	630-08-0	0.01 - 2.00 Mol%
Carbon Dioxide	124-38-9	0.01 - 4.00 Mol%
Methane	74-82-8	1.00 - 9.50 Mol%
Ethane	74-840	0.01 - 7.00 Mol%
Propane	74-98-6	0.01 - 8.00 Mol%
Cyclopropane	75-19-4	0.01 - 1.00 Mol%
Isobutane	75-28-5	3.50 - 6.50 Mol%
n-Butane	106-97-8	0.01 - 5.00 Mol%
Isopentane	78-78-4	0.01 - 2.50 Mol%
n-Pentane	109-66-0	0.01 - 2.00 Mol%
Hexane	110-54-3	0.01 - 1.50 Mol%
Ethylene	74-85-1	0.01 - 3.00 Mol%
Acetylene	74-86-2	0.01 - 3.00 Mol%
Propylene	115-07-1	1.00 - 4.00 Mol%
Propadiene	463-49-0	0.01 - 3.00 Mol%
1-Butene	106-98-9	0.01 - 3.00 Mol%
Cis-2-Butene	590-18-1	0.01 - 3.00 Mol%
Trans-2-Butene	624-64-6	0.01 - 4.00 Mol%
Isobutylene	115-11-7	0.01 - 3.00 Mol%
1,3-Butadiene	106-99-0	0.01 - 4.00 Mol%
1-Pentene	109-67-1	0.01 - 1.50 Mol%
Trans-2-Pentene	646-04-8	0.01 - 1.50 Mol%
Cis-2-Pentene	627-20-3	0.01 - 1.50 Mol%
2-Methyl-2-Butene	513-35-9	0.01 - 1.50 Mol%
3-Methyl-1-Butene	563-45-1	0.01 - 1.50 Mol%

SECTION 4 – FIRST AID MEASURES

ROUTE OF EXPOSURE:

Inhalation: Remove person to uncontaminated area. SCBA may be required to prevent asphyxiation of rescue workers. Keep warm and at rest. Lay victim face down with head and chest lower than hips to improve drainage from lungs. If breathing is labored, administer pure oxygen. If breathing has stopped, start artificial respiration. Get immediate medical attention for serious exposure.

Eye contact: Immediately flush eyes with plenty of water.

Skin contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately

Ingestion: Do not induce vomiting unless instructed to do so by medical personnel.

SYMPTOMS: Mixture is a simple asphyxiant which will displace oxygen in air necessary for life. Exposure to oxygen deficient atmosphere may cause dizziness, nausea, drowsiness, vomiting, excess salivation, loss of mobility/consciousness. Excessive exposure may cause skin discoloration (blue) or dermatitis. Eye contact will cause irritation. Exposure to Carbon Monoxide is harmful in relatively low concentrations. Severe over-exposure can cause headaches, nausea, collapse and death. N-Pentane may cause damage to the following organs: blood, kidneys, liver, upper respiratory tract, skin, and eyes. Trans-2-Pentene can cause irritation to eyes, skin, and respiratory tract. Cis-2-Pentene can cause irritation to eyes, skin, and respiratory tract.

SECTION 5 – FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use appropriate media for surrounding fire such as CO2 foam extinguishers

UNUSUAL FIRE AND EXPLOSION HAZARDS: Gas cylinders may rupture violently when exposed to fire. Continue to cool fire exposed cylinders until flames are extinguished. Cylinder valve is equipped with a pressure relief device to safely vent the cylinder if it is exposed to elevated pressure in a fire.

In presence of oxidizing materials, reducing materials, or combustible materials, or organic materials, mixture will be extremely flammable.

SPECIAL FIRE FIGHTING PROCEDURES: Wear NIOSH/MSHA approved SCBA and full protective equipment. Stop flow of gas if this can be done safely. Use water spray to keep cylinders cool.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, AND EMERGENCY PROCEDURES: Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Monitor oxygen level. Shut off gas supply if this can be done safely. Isolate and ventilate the area until gas has dispersed.

ENVIRONMENTAL PRECAUTIONS: Prevent spreading of vapors through sewers, ventilation systems, and confined areas. Do not discharge materials into any place where their accumulation could be dangerous.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP: Stop the flow of gas or remove cylinder to outdoor location if this can be done without risk. Ventilate enclosed areas. Move leaking cylinder to fume hood or safe outdoor area. Use monitoring equipment if hazardous conditions are suspected or likely to occur.

SECTION 7 – HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Only experienced and properly instructed persons should handle compressed gases. Person is to know and understand the properties and hazards of the product before use. Do not remove or deface labels provided by the supplier for the identification of the product.

Do not ingest. Avoid contact with eyes, skin, and clothing. May cause dizziness and fatigue without warning symptoms.

Protect cylinders from physical damage to prevent valve damage or leakage. Move cylinders properly; do not drag, slide, or drop cylinders when transporting. Use adjustable strap wrench to remove tight/rusted caps. Ensure the complete gas system has been checked for leaks before use. Never insert any object into valve cap openings; doing so may damage valve causing leakage.

Gas or liquefied gas are to be used with the appropriate pressure regulating control and high pressure equipment. Suck-back into cylinder may cause rupture. Always use a back flow preventative device in piping. Never lift cylinder by its valve protection cap. Use only in ventilated areas.

Do not attempt to repair or modify cylinders containing gas mixture. Contact supplier for any operational issues.

CONDITIONS FOR SAFE STORAGE: Cylinders should be secured with mounting brackets away from heavily traveled areas. Use oldest cylinders in stock first to prevent full cylinders from being stored for excessive periods of time. Full and empty cylinders should be segregated. Keep cylinder in dry, cool, well ventilated area away from heat, flame, sparks or corrosive chemicals. Cylinders should be moved by suitable hand trucks. Close valve after each use and when empty. Cylinder valve guards or caps should be in place. Keep cylinder at room temperature (21°C/ 70°F). Store containers in location free from fire risk and away from any sources of heat and ignition. Keep cylinder at least 20 feet away from combustible material, oxidizers, and Oxygen. Use equipment rated for cylinder pressure.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

COMPONENT	OSHA PEL	ACGIH TLV
Hydrogen	None	None
Nitrogen	None	None
Argon	None	None
Carbon Monoxide	50 ppm	25 ppm
Carbon Dioxide	5000 ppm	5000 ppm
Methane	None	1000 ppm
Ethane	None	1000 ppm
Propane	1000 ppm	1000 ppm
Cyclopropane	None	None
Isobutane	800 ppm	None
n-Butane	800 ppm	1000 ppm
Isopentane	1000 ppm	600 ppm
n-Pentane	None	None
Hexane	500 ppm	50 ppm
Ethylene	None	200 ppm
Acetylene	5000 ppm	5000 ppm
Propylene	None	500 ppm
Propadiene	None	None
1-Butene	None	None
Cis-2-Butene	None	None
Trans-2-Butene	None	None
Isobutylene	None	None
1,3-Butadiene	1000 ppm	2, A2 (Suspected Human Carcinogen)
1-Pentene	None	None
Trans-2-Pentene	None	None
Cis-2-Pentene	None	None
2-Methyl-2-Butene	None	None
3-Methyl-1-Butene	None	None
APPROPRIATE ENGINEERING CONTROLS: Ventilation: Enclosed area must be provided with general or local exhaust ventilation to avoid hazardous conditions. Oxygen monitoring equipments should be installed for use in poorly ventilated areas.		
INDIVIDUAL PROTECTIVE MEASURES: Safety glasses, work gloves, and safety shoes should be worn when handling high pressure cylinders or hazardous materials. Respiratory Protection (Specify Type): Use self-contained breathing apparatus in emergency or rescue situations.		

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless	Upper/lower flammability/explosive limits: No data available
Odor: Moldy, sweet, garlicky, aromatic	Vapor Pressure: N/A
Odor threshold: No data available	Vapor Density (Air=1): Varies
pH: N/A	Relative Density (Water=1): Varies
Melting point/range: N/A	Solubility (in water): N/A
Boiling point/range: N/A	Partition coefficient (n-octanol/water): N/A
Flash Point: N/A	Auto-ignition temperature: No data available
Evaporation Rate (Butyl Acetate=1): N/A	Decomposition temperature: No data available
Flammability (solid, gas): No data available	Viscosity: N/A

SECTION 10 – STABILITY AND REACTIVITY DATA

Reactivity: Highly reactive	Conditions to avoid: Flame, excessive heat
Chemical Stability: Stable	Incompatible materials: Oxidizing agents, combustible agents, and reducing agents.
Possibility of hazardous reactions: No data available	Hazardous Decomposition or Byproducts: None

SECTION 11 – TOXICOLOGICAL INFORMATION

LIKELY ROUTES OF EXPOSURE:

Inhalation: May cause suffocation by displacing oxygen in the air.

Ingestion: Ingestion is not considered a potential route of exposure.

Skin: Moderately irritating to the skin. Contact with rapidly expanding gas may cause burns or frostbite. Excessive exposure may cause skin discoloration (blue) or dermatitis.

Eye contact: Moderately irritating to eyes. Contact with rapidly expanding gas may cause burns or frostbite.

SYMPTOMS/EFFECTS FROM EXPOSURE: May cause frostbite. Exposure to oxygen deficient atmosphere may cause dizziness, nausea, drowsiness, vomiting, excess salivation, loss of mobility/consciousness, rapid suffocation, increase respiration and heart rate. N-Pentane may cause damage to the following organs: blood, kidneys, liver, upper respiratory tract, skin, and eyes. Trans-2-Pentene can cause irritation to eyes, skin, and respiratory tract. Cis-2-Pentene can cause irritation to eyes, skin, and respiratory tract. This is a customized mixtures of liquids and/or gases. No data is available on the final product itself. Refer to Sections 2 and 3 for hazards related to specific components of the combined mixture.

ACUTE/CHRONIC TOXICITY: Exposure to Carbon Monoxide is harmful in relatively low concentrations. Severe over-exposure can cause headaches, nausea, collapse and death. This is a customized mixtures of liquids and/or gases. No data is available on the final product itself. Refer to Sections 2 and 3 for hazards related to specific components of the combined mixture.

CARCINOGENICITY: May cause cancer depending on duration and level of exposure.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity (aquatic and terrestrial): Aquatic toxicity: 100-200 mg/l/no time specified/various organisms/fresh water.

Waterfowl toxicity: Inhalation 5-8%, no effect. Additionally, frost produced in the presence of rapidly expanding gases may adversely affect plant life. 1,4 and 11 Butadiene: Toxic to water organisms.

Persistence and degradability: No data available

Bioaccumulative potential: No data available

Mobility in soil: No data available

Other Effects: The mixture does not contain any class I or Class II ozone depleting chemicals.

SECTION 13 – DISPOSAL CONSIDERATIONS

Disposal: Waste disposal must be in accordance with appropriate National, Federal, State, and local regulations. Do not dispose or discharge into the environment. Do not discharge into enclosed environment. Contact supplier if additional guidance is required.

SECTION 14 – TRANSPORTATION INFORMATION

DOT Classification:

Proper Shipping Name: Compressed Gas, Flammable, N.O.S.
Class: 2.1
UN/ID No.: UN1954
Label: Flammable Gas, Red Label

IATA Classification:

Proper Shipping Name: Compressed Gas, Flammable, N.O.S.
Class: 2.1
UN/ID No.: UN1954
Label: Flammable Gas, Red Label

Environment hazard: No

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code: N/A

SPECIAL PRECAUTIONS FOR USER: Avoid transport on vehicles where the load space is not separated from driver's compartment. Ensure that transporter is aware of the potential hazards of the load and knows what to do in event of an emergency. Contact supplier for complete transportation information.

SECTION 15 – REGULATORY INFORMATION

U.S. SARA REPORTING REQUIREMENTS: The components of this gas mixture are subject to the reporting requirements of Sections 302, 304 and 313 of Title III of the Superfund Amendments and Reauthorization Act, as follows.

CHEMICAL NAME SARA 302
(40 CFR 355, Appendix A) SARA 304
(40 CFR Table 302.4) SARA 313
(40 CFR 372.65)
HEXANE NO YES YES

U.S. SARA THRESHOLD PLANNING QUANTITY: Not applicable.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable.

CANADIAN DSL/NDL INVENTORY STATUS: The components of this gas mixture are on the DSL Inventory.

U.S. TSCA INVENTORY STATUS: The components of this gas mixture are on the TSCA Inventory.

LABELING (For Compressed Gas):

DANGER: FLAMMABLE GAS. CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED. MAY CAUSE RAPID SUFFOCATION BY DISPLACING OXYGEN IN THE AIR. MAY FORM EXPLOSIVE MIXTURES WITH AIR. May cause dizziness, nausea, drowsiness, vomiting, excess salivation, and loss of mobility/consciousness. May react explosively even in absence of air at elevated pressure and/or temperature. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources—No smoking. Use and store in well-ventilated areas. Leaking gas fire: Do not extinguish unless leak can be stopped safely. In case of leakage, eliminate all ignition sources. Do not open valve until prepared to use. Always use a backflow preventative device in piping. Use only with equipment rated for cylinder pressure. Close valve after each use and when empty. Cylinder temperature should not exceed 52°C (125°F). Use in accordance with Safety Data Sheet. **FIRST AID: IF INHALED**, remove to fresh air. If breathing is difficult, give Oxygen. Call a physician. **IN CASE OF FROSTBITE**, obtain immediate medical attention. **DO NOT REMOVE THIS LABEL.**

SECTION 16 – OTHER INFORMATION

Information contained in this data sheet is offered without charge for use by technically qualified personnel at their discretion and risk. All statements, technical information and recommendations contained herein are based on tests and data which we believe to be reliable. But the accuracy and completeness thereof, is not guaranteed and no warranty of any kind, either expressed or implied, is made with respect thereto. Since MESA Specialty Gases and Equipment Division of MESA International Technologies, Inc. shall have no control over the use of the product described herein, we assume no liability for loss or damage incurred from the proper or improper use of such product.

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