

Safety Data Sheet
Calibration Gas Mixture: R448a
Section 1. Identification

Product identifier used on the label: Calibration Gas Mixture, R448a
 Other means of identification: Part # RBxxL-R448a/xxxx
 Product use: Calibration Standard
 Supplier's details: Calibration Technologies, Inc.
 920 N Trade Winds Parkway Columbia, MO 65240 1-866-394-5861
 Emergency telephone: 1-800-535-5053

Section 2. Hazards Identification

Classification: Compressed Gas

GHS label Elements

Signal word: Warning
 Hazard statements: Compressed gas under pressure. May explode if heated
 Hazard pictograms:



Storage: Protect from sunlight. Store in a well ventilated place
 Precautionary statement: Use valve rated for cylinder pressure.

Section 3. Composition/Information on ingredients

Substance/mixture: Mixture

Ingredient name	%	CAS number
Nitrogen	76.25-80.5	7727-37-9
Oxygen	19.5-23.5	7782-44-7
Difluoromethane	.0001-.002	75-10-5
Pentafluoroethane	.0001-.002	354-33-6
1,1,1,2-Tetrafluoroethane	.0001-.002	811-97-2
2,3,3,3-Tetrafluoroprop-1-ene	.0001-.002	754-12-1
trans-1,3,3,3-Tetrafluoroprop	.0001-.002	29118-24-9

Section 4. First-aid measures

Description of necessary measures subdivided below:

Inhalation: Immediately remove victim to fresh air.
 Eye Contact: Immediately flush with copious amounts of water for 15 minutes.
 Skin Contact: N/Ap
 Ingestion: N/Ap
 Most important symptoms/effects: N/Ap
 Immediate attention/special treatment needed: N/Ap

Section 5. Fire-fighting measures

Suitable extinguishing media: All
 Unsuitable extinguishing media: None
 Specific hazards arising from the chemical: N/Ap
 Special protective equipment/precautions for fire-fighters: Contains gas under pressure. If heated, pressure will increase and cylinder may burst.

Section 6. Accidental release measures

Personal precautions, protective equipment, emergency procedures: Ventilate area, shut off valve, and remove from heat.
 Methods and materials for containment/cleaning up: N/Ap

Section 7. Handling and storage

Precautions for safe handling: Use valve rated for cylinder pressure. Avoid breathing gas. Avoid contact with eyes
 Conditions for safe storage, including any incompatibilities: Store in well ventilated area. Protect from elevated temperatures.

Section 8. Exposure controls/Personal protection

Control parameters/Occupation exposure limits:

Ingredient name	Exposure limits
Difluormethane	AIHA TWA: 1,000ppm
Pentafluoroethane	AIHA TWA: 1,000ppm
1,1,1,2-Tetrafluoroethane	AIHA TWA: 1,000ppm
2,3,3,3-Tetrafluoroprop-1-ene	AIHA TWA: 500ppm
trans-1,3,3,3-Tetrafluoroprop-1-ene	AIHA TWA: 800ppm

Eye/Face protection: Safety glasses
 Skin protection: N/Ap
 Respiratory Protection: Avoid breathing gas
 Other protective equipment: N/Ap

Section 9. Physical and chemical properties

Appearance (physical state, color, etc):	Colorless
Odor:	Slightly pungent
Odor threshold:	N/Ap
pH:	N/Ap
Melting point/freezing point:	N/Ap
Initial boiling point and boiling range:	N/Ap
Flash Point:	N/Ap
Evaporation rate:	N/Ap
Flammability (solid, gas):	Not Flammable
Upper/lower flammability or explosive limits:	N/Ap
Vapor pressure:	N/Ap
Vapor density:	1
Relative density:	N/Ap
Solubility (ies):	N/Ap
Partition coefficient: n-octanol/water:	N/Ap
Auto-ignition temperature:	N/Ap
Decomposition temperature:	N/Ap
Viscosity:	N/Ap

Section 10. Stability and reactivity

Reactivity:	N/Ap
Chemical stability:	Stable
Possibility of hazardous reactions:	N/Ap
Conditions to avoid:	N/Ap
Incompatible materials:	N/Ap
Hazardous decomposition products:	N/Ap

Section 11. Toxicological information

Lethal concentration (LC50):	>520,000 ppm; Difluormethane; Rat 4hrs >769,000ppm; Pentafluoroethane; Rat 4hrs >500,000ppm; 1,1,1,2-Tetrafluoroethane; Rat 4hrs >400,000; 2,3,3,3-Tetrafluoroprop-1-ene; Rat 4hrs >207,000 trans-1,3,3,3-Tetrafluoroprop-1-ene; Rat 4hrs
Lethal dose 50 (LD50):	N/Ap
Teratogenicity:	N/Ap
Reproductive effects:	N/Ap
Mutagenicity:	N/Ap

Section 12. Ecological information

No adverse ecological effects are expected.

Section 13. Disposal considerations

Waste disposal method:	Non-refillable cylinder. Allow gas to vent slowly to atmosphere in an unconfined area until completely empty. Dispose of empty cylinder normally.
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Section 14. Transport information

UN Number:	1956
UN proper shipping name:	Compressed gases, n.o.s
Transport hazard class:	2.2 (nonflammable)
Identification number:	UN1956
Packing group:	II
Environmental hazards:	N/Ap
Transport in bulk:	N/Ap
Special precautions:	Must be shipped as Hazardous Materials.

Section 15. Regulatory information

Safety, health and environmental regulations specific for the product in question:	N/Ap
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Section 16. Other information

Date of preparation/last revision:	11/15/2016
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