



Safety Data Sheet

Calibration Gas Mixture: R438A

Section 1. Identification

Product identifier used on the label:	Calibration Gas Mixture, R438A
Other means of identification:	Part # RBxxL-R438A/xxxx
Product use:	Calibration Standard
Supplier's details:	Calibration Technologies, Inc. 920 N Trade Winds Parkway Columbia, MO 65201 1-866-394-5861 1-800-535-5053
Emergency telephone:	

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
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Ingredient name	%	CAS number
Nitrogen	78.86-79.06	7727-37-9
Oxygen	20.84-20.89	7782-44-7
Isopentane	.0001-.002	78-78-4
Butane	.0001-.002	106-97-8
Difluoromethane	.0001-.002	75-10-5
Pentafluoroethane	.0001-.002	354-33-6
1,1,1,2 - tetrafluoroethane	.0001-.002	811-97-2

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:	<table> <tr> <th>Ingredient name</th><th>Exposure limits</th></tr> <tr> <td>Tetrafluoroethane</td><td> AIHA WEEL TWA: 1000ppm 8 hours </td></tr> <tr> <td>Difluoromethne</td><td> AIHA WEEL TWA: 1000ppm 8 hours </td></tr> <tr> <td>Pentafluoroethane</td><td> AIHA WEEL TWA: 1000ppm 8 hours </td></tr> <tr> <td>Butane</td><td> NIOSH-REL TWA: 800ppm 8 hours STEL </td></tr> </table>	Ingredient name	Exposure limits	Tetrafluoroethane	AIHA WEEL TWA: 1000ppm 8 hours	Difluoromethne	AIHA WEEL TWA: 1000ppm 8 hours	Pentafluoroethane	AIHA WEEL TWA: 1000ppm 8 hours	Butane	NIOSH-REL TWA: 800ppm 8 hours STEL
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	Isopentane	1000ppm 8 hours ACGIH TWA: 1000ppm 8 hours
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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):	>567,000ppm (R134a ingredient), Rat 4hrs >800,000ppm (R125 ingredient), Rat 4 hrs >570,000ppm (Butane), Rat 15 min >20mg/l (Isopentane), Rat 4 hrs 520,000 ppm (R32ingredient), Rat 4 hrs
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:	3/12/2019
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