

Aircheck Report and Certificate

From:
Trace Analytics, LLC
15768 Hamilton Pool Road
Austin, Texas 78738

800-247-1024 • 512-263-0000
Fax 512-263-0002
E-mail service@AirCheckLab.com

To:
University of Hawaii at Hilo
200 West Kawili Street
Hilo, HI 96720

TRACE Analytics LLC



Analysis Certificate

Report 18-30930, Sampled on

10/3/2018

Next Sample Due Quarterly, Approximately

1/3/2019

UNIVERSITY OF HAWAII AT HILO

IS IN COMPLIANCE WITH THE AIR/GAS QUALITY PORTION OF THE SPECIFICATION:

OXYGEN COMPATIBLE AIR-2003 (I)

AS ANALYZED AND REPORTED ON THIS CERTIFICATE

FOR THE SAMPLE DESCRIBED UNDER SECTION "SAMPLE & REPORT INFORMATION"



American Assn for Laboratory Accreditation
1991: Certificate No. 322.01 Chemical Field of Testing

Richard A. Smith

Richard A. Smith, Laboratory Director

Analytical Test Methods		Media Sampled	Estimate of Uncertainty
Gases & Vapors	CAT-A-01 Gas Chromatography/Mass Spectrometry	Source Bottle: 784819	The average analytical uncertainty (k=2) is 98.8±2.4% (relative) at the specification limit for the ten compounds normally reported. For uncertainty information for a specific compound, contact Trace Analytics.
Oil & Particulate	CAT-A-03 Analytical Gravimetry	Ambient Bottle: 430547	
Particle Size	CAT-A-04 Optical Microscopy	Source Filter: 4261	
Pressure Dew Point	CAT-A-07 Gas Detector Tube	Detector Tube: Draeger 5-a/P	

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Sample & Report Information

Results of Test: PASS

Sampled For	University of Hawaii at Hilo	Analytes	Source Results	Ambient Results	Specification ¹ Allowable Limits	PASS
Sampled By	Clint Collins	Oxygen, Volume %	21.3	22.0	20-22	
Sampled On	10/3/2018	Nitrogen, Volume %	77.8	77.1	N/A	
Received On	10/9/2018	Argon, Volume %	0.9	0.9	N/A	
Analyzed On	10/10/2018	Nitrogen Plus Argon, Volume %	78.7	N/A	N/A	
Sampled From	Compressor	Carbon Monoxide (CO), ppmv	<0.5	<0.5	2	
Make	Hypres	Carbon Dioxide (CO ₂), ppmv	267	397	1000	
Model	HPE4500-2	Water Content (H ₂ O), ppmv/Dewpoint, °F	18.0 / -69	N/A	N/A / N/A (W)	
Serial No.	2A080401	Atmospheric Dew Point, °F (DT)	-63	N/A	N/A	
		TVHC (including CH ₄), ppmv	1.8	1.8	25	
		Methane (CH ₄), ppmv	1.8	1.8	N/A	
		TVHC (excluding CH ₄), ppmv	<0.7	<0.7	N/A	
		Oil (condensed) & Particulate, mg/m ³	0.03	N/A	0.1	
Hours	864	Odor (provided by customer)	None/Slight	N/A	None/Slight	
Sample Phase	After Filter Change	Other	N/A	N/A	N/A	
Customer Comments		Other	N/A	N/A	N/A	
		Other	N/A	N/A	N/A	

(I) This specification for oxygen compatible air is taken from ANSI/CGA G-7.1 Grade E as modified by International Association of Nitrox and Technical Divers (IANTD) in their document Blending Standards, 2003.

(W) Dew point is expressed in °F at one atmosphere pressure absolute.

(DT) Dew point is calculated at 1 atmosphere pressure (14.7 psia) from the detector tube reading.

Report Number 18-30930
Customer ID 3573
Date Reported 10/11/2018
Frequency Quarterly
Next Sample Due Approx. **1/3/2019**



15768 Hamilton Pool Road
 Austin, Texas 78738
 800-AIR-1024 or 512-263-0000 • Fax: 512-263-0002
 E-mail: ServiceTeam@AirCheckLab.com

Last Report No.: 18-30930
 Last Sample Date: 10/3/2018

SOME INFORMATION BELOW IS PREPRINTED FROM YOUR PREVIOUS AIR TEST. IF ANY OF THE INFORMATION HAS CHANGED OR IS INCORRECT, PLEASE MARK ONE LINE THROUGH IT AND CAREFULLY PRINT THE CORRECT INFORMATION.

1 Contact Information

Customer ID: 3573 Customer Name: University of Hawaii at Hilo Country: USA
 Contact: Mr. Ken Ikeda E-mail: keni@hawaii.edu Phone: (808) 933-3300 Fax: (808) 933-3301
 Alternate: Mr. Michael Pamatat E-mail: uhhdive@hawaii.edu Phone: Fax:
 Please check box to the left if you'd like the AirCheck Report sent to the person below (fill in information).
 Contact: E-mail:

2 Rush Analysis Request

IMPORTANT: PLEASE CALL 1-800-247-1024 (ext. 2) or 1-512-263-0000 (ext. 2) TO SCHEDULE

RUSH By marking this box, I understand that I am authorizing Same Day Analysis & Reporting for an additional \$100 per sample. Initial here:

3 Purchase Order Information (if applicable)

5 Customer Comments (use back if needed)

PO Number: PO Valid Thru:

4 System Information

6 Sampled By and Sample Date

System ID: 112422
 Sampled For: University of Hawaii at Hilo
 Testing Schedule:
 45 Days Bimonthly Random Sample V
 90 Days Monthly Semi-Annual
 120 Days Other Startup
 Annual Quarterly Verification
 Air Spec: Oxygen Compatible Air-2003 (I)
 If above is incorrect, indicate air spec below:
 OSHA 1910.134-Cylinders OSHA 1910.134-Compressor
 OSHA 1910.430-Com. Diving Fire - NFPA 1989
 CGA Grade D-SCBA CGA Grade D2-not SCBA
 Sport Diving - CGA Grade E Other
 CSA(>2216 psig) CSA(15-2216 psig) CSA<15 psig
 Make: Hypres
 Model: HPE4500-2
 Serial No: 2A080401
 Cylinder:
 Other ID:
 Pressure: High Pressure (1,000-6,000 psi) Low Pressure (less than 1,000 psi)
 Air used for: SCBA Airline Respirator SCUBA Other
 Purification: Molecular Sieve/Desiccant No Purification
 Refrigerated Dryer Unknown
 No Dryer
 Sampled From: Compressor Source Other
 Stored Air Outlet Not Provided
 Comp. & Storage Breather Box
 Comp. Hours:

SIGNATURE PRINT Name (Person taking the test sample)
 Date Sample Taken MONTH DAY YEAR

Submittal of this air sample authorizes Trace Analytics, LLC to provide services. If a purchase order number is required by your company, please attach it to this data sheet or write it in the spaces provided in section "3". I attest that all information provided on this datasheet is truthful and accurate to the best of my knowledge.

7 Sample Information

Is this sample a Retest taken within 30 days of a failed test? Yes No

A Source Bottle, Filter, and Data Sheet MUST BE RETURNED for a complete analysis.

Filter Number (red or green label)
 Flowrate (liters per minute)
 Sample Time (minimum of 10 min.)
 Detector Tube (OMIT data if sampling media does not include Detector Tube)
 Tube Reading (0 - 200) Total Minutes Sampled
 Source Bottle Number (blue label)
 Ambient Bottle Number (white label)

Odor is REQUIRED. It's determined by sniffing the air from the side port of the Bottle Holder. MARK ONLY ONE. None/Slight Pronounced

PLEASE NOTE:

Sample Shelf Life
 Once a sample is taken, it must be received by our laboratory within 60 days. NO EXCEPTIONS.

Shelf Life
 Sampling media must be used or returned for free replacement within 2 years of shipment date. See expiration date on return box.

— For TRACE Use Only - CPPDS

DT Reading: Red / Gray

Receiving I.D.

Receiver's Initials

Next Sample Due Approx: 1/3/2019

Sampling Notes for Water Vapor Detector Tube

1: Break BOTH tips of detector tube before inserting. Arrow on tube points away from Fitting. 50 LPM for 10 minutes.

2: The DT is filled with yellow filler material that reacts to the presence of water by changing color from yellow to a grayish/reddish brown. At any time during the 10 minute test if color change reaches 200 mark, remove tube and note elapsed time on data sheet.

Reading the Detector Tube for High Pressure Air Used for SCBA

The purpose of providing a detector tube for onsite testing is to allow you the opportunity to correct a problem without having to wait for the complete report. To determine if your sample passes; identify the farthest color change on the tube between 0 and 200; locate that number on chart below; identify the flowrate you took your sample on the left hand side of chart between 40 and 60; where the two readings intersect is the approximate result in °F. For example: If tube showed color change to 50, and flowrate was 50 LPM, the result would be -49°F. The number between 0 and 200 should be written on the data sheet not the dew point from the chart below.



		Det. Tube Reading, mg/m ³															
		2.5	5	10	20	30	40	50	60	70	80	90	100	125	175	200	
Flowrate Reading	60	-93	-84	-75	-66	-60	-56	-52	-49	-47	-45	-43	-42	-38	-33	-31	
	55	-92	-83	-74	-65	-58	-54	-51	-48	-45	-44	-42	-40	-36	-31	-29	
	50	-90	-81	-72	-62	-56	-52	-49	-46	-44	-42	-40	-38	-34	-29	-27	
	45	-88	-79	-70	-60	-54	-50	-47	-44	-41	-39	-38	-36	-32	-26	-24	
	40	-86	-77	-68	-58	-52	-47	-44	-41	-39	-36	-35	-33	-29	-23	-21	
PASS								FAIL									

Above area marked "Pass" is for high pressure air used for SCBA; with a -65°F limit per CGA Grade D/NFPA 1989. See AirCheck Notebook Instructions for complete range of flowrates and further details.

If your detector tube reading indicates that you have a problem (anything outside of the PASS area in chart above); go through the following checklist; take corrective action; then retake your sample to see if the problem has been corrected. The 2nd test is free. Submit both samples for analysis to Trace's laboratory.

Troubleshooting Checklist

Purification filters/ Depressurized filters	High ambient air temperatures (above 70°F) affect the operating life of the cartridge. Chemicals used in purification filters begin to degrade as soon as they are installed. Is it time to change the filters?
Manual/auto drain or priority valve	If not working properly can be source for excess water and reduce filter life.
Remote fill or hose reel	Long lengths (>25 ft) of hose are notorious for accumulating and retaining water. A short 1-2 minute purge WILL NOT be sufficient. It is best to take sample from a short fill hose (5-10 ft) or directly from containment fill station. - View our resource videos at www.AirCheckLab.com
Recent hydrostat	Bottles must be properly dried after hydrostat and should be immediately pressurized with dry air.
Valves left open	Ambient air can easily have 10,000 - 50,000 ppm of water. Purge sufficiently to remove water accumulated from ambient air.
Sample taken from storage	Take sample from compressor to identify if compressor is producing dry air. If yes, storage banks may contain excess water. Drain and refill with dry air. This may require 2-3 fills to drive off water from inside cylinders. You can request extra detector tubes (\$10 ea) to do several checks for water without doing a complete air sample.
Detector tube cracked	Only the tips of the tube should be broken. If a crack runs down the main body of the tube, results will not be dependable.
Tube fitting wet	If multiple samples are taken consecutively, excess water may pool inside the fitting. Dry fitting between uses.
Other	Keep in mind that 1 milliliter (which is about 20 drops from an eyedropper) in a 1.7 cubic ft cylinder at 4500 psig would be 90 ppm of water vapor. It doesn't take much to fail.