FDLE

Florida Department of
Law Enforcement

Gerald M. Bailey
Commissioner

Alcohol Testing Program
P.O. Box 1489
Tallahassee, Florida 32302
(850) 617-1290
(850) 921-3787 Fax
http://www.fdle.state.fl.us/atp

MEMORANDUM

TO: Dry Gas Standard Manufacturers

VIA: Dry Gas Standard Distributors

FROM: Laura D. Barfield, Alcohol Testing Program Manager

DATE: March 20, 2009

SUBJECT: Source of Dry Gas Standard(s) for Florida

The Florida Department of Law Enforcement Alcohol Testing Program is currently seeking sources of dry gas standard for approval for use in Florida. Only the manufacturer of the dry gas standard may be approved. If you are interested in becoming a possible source of dry gas standard in Florida, please complete the following questions and supply the required documentation. This information can either be faxed, mailed or emailed to me.

Should you have any questions, please feel free to contact me at (850) 617-1290 or at laurabarfield@fdle.state.fl.us.

THE FOLLOWING INFORMATION MUST BE SUPPLIED FROM A MANUFACTURER OF DRY GAS STANDARD, ALSO KNOWN AS ETHANOL BREATH STANDARD:

REQUIREMENTS OF CHAPTER 11D-8, FLORIDA ADMINISTRATIVE CODE

11D-8.002 Definitions.
(20) Dry Gas Standard – a standard consisting of a mixture of alcohol and gas which produces a known alcohol vapor concentration used to verify the calibration of a breath test instrument.

11D-8.0036 Approval of Dry Gas Standards Source.
(1) The Department shall approve a source of dry gas standards for use by agencies in the State of Florida. The source approved by the Department shall be an entity that manufactures dry gas standards and meets the following requirements:
(a) The source must produce dry gas standards which are traceable to the National Institute of Standards and Technology.
(b) Each dry gas standard lot produced by the source must be certified by the source as to its contents and alcohol vapor concentration.

(c) The source must be capable of producing a minimum of 300 cylinders of dry gas standard during a thirty day period at an alcohol vapor concentration of 0.08 g/210L.
(d) The source must have performed and documented tests that demonstrate that the source's dry gas standards are reliable for at least two years from the date of manufacture.
(2) Dry gas standard cylinders produced by the approved source must not be used beyond the expiration date.

1. ARE YOU AN ENTITY THAT MANUFACTURES DRY GAS STANDARD?
   a. WHAT IS THE BUSINESS NAME OF THIS ENTITY?
   b. WHAT IS THE PHYSICAL ADDRESS, TELEPHONE NUMBER, FAX NUMBER AND CONTACT PERSON FOR THIS ENTITY?
   c. ALTHOUGH MANY VENDORS MAY SELL YOUR PRODUCT, DO YOU HAVE AN OFFICIAL DISTRIBUTOR FOR YOUR DRY GAS STANDARD?
   d. IF SO, WHAT IS THE NAME, PHYSICAL ADDRESS, TELEPHONE NUMBER, FAX NUMBER AND CONTACT PERSON FOR THIS DISTRIBUTOR?
2. DO YOU MANUFACTURE A 0.08 g/210L DRY GAS STANDARD?
3. IS YOUR DRY GAS STANDARD TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)?
   a. IS THIS TRACEABILITY DOCUMENTED FOR THE USER?
4. DO YOU PROVIDE A CERTIFICATE OF ANALYSIS FOR EACH LOT OF DRY GAS STANDARD PRODUCED?
   a. DO YOU PROVIDE A CERTIFICATE OF ANALYSIS FOR THE LOT WITH EACH BOTTLE OF DRY GAS STANDARD?
5. ARE YOU CAPABLE OF PRODUCING A MINIMUM OF 300 CYLINDERS OF DRY GAS STANDARD WITHIN A THIRTY DAY PERIOD?
   a. WHAT IS THE APPROXIMATE MAXIMUM AMOUNT OF DRY GAS STANDARD THAT CAN BE MANUFACTURERED IN A THIRTY DAY PERIOD?
   b. WHAT IS THE APPROXIMATE MAXIMUM AMOUNT OF DRY GAS STANDARD THAT CAN BE MANUFACTURED IN A 24 HOUR PERIOD?
6. DO YOU HAVE DOCUMENTATION THAT DEMONSTRATES YOUR PRODUCT IS RELIABLE FOR AT LEAST TWO YEARS FROM THE DATE OF MANUFACTURE?
7. DOES YOUR DRY GAS STANDARD HAVE AN EXPIRATION DATE?
   a. IS THIS EXPIRATION DATE LISTED ON THE CYLINDER OF DRY GAS STANDARD?
   b. IS THIS EXPIRATION DATE LISTED ON THE CERTIFICATE OF ANALYSIS FOR THE LOT OF DRY GAS STANDARD?
8. DOES YOUR DRY GAS STANDARD CONSIST OF A MIXTURE OF ALCOHOL AND GAS WHICH PRODUCES A KNOWN ALCOHOL VAPOR CONCENTRATION?
   a. WHAT IS THE NAME OF THE GAS (BALANCE GAS) THAT THE ALCOHOL IS MIXED WITH?
9. REQUIRED DOCUMENTATION TO BE PROVIDED:
   a. A COPY OF A SAMPLE CERTIFICATE OF ANALYSIS THAT IS USED WITH YOUR DRY GAS STANDARD.
   b. A COPY OF A SAMPLE LABEL FROM A BOTTLE OF THE DRY GAS STANDARD.
   c. A COPY OF YOUR PRODUCT RELIABILITY REPORT:
      i. INCLUDE INFORMATION FROM AT LEAST TEN (10) DIFFERENT LOTS AND ENSURE AT LEAST TWO OF THESE LOTS ARE FOR A 0.08 g/210l DRY GAS STANDARD.
   d. DOCUMENTATION SUPPORTING THE TRACEABILITY OF YOUR DRY GAS STANDARD TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (FOR EXAMPLE,

YOUR CERTIFICATE OF ANALYSIS, A COPY OF YOUR ANALYTICAL PROCEDURE, OR OTHER DOCUMENTATION THAT SUPPORTS THIS).

e. A COPY OF A SPECIFICATIONS SHEET FOR YOUR PRODUCT, IF AVAILABLE.
f. A COPY OF A SAMPLE WORK ORDER, IF AVAILABLE.

THE MANUFACTURING PROCESS

10. BRIEFLY DESCRIBE HOW YOUR DRY GAS STANDARD IS MANUFACTURED. INCLUDE ANY QUALITY ASSURANCE AND QUALITY CONTROL PROCESSES THAT ARE IMPLEMENTED IN THIS MANUFACTURING PROCESS.
    a. IF YOU PREPARE A MASTER CYLINDER:
        i. WHAT IS THE APPROXIMATE SIZE OF THE MASTER CYLINDER?
        ii. IS THIS MASTER CYLINDER CONDITIONED OR CLEANSED PRIOR TO USE?
        iii. DO YOU ENSURE THE MASTER CYLINDER IS EMPTY PRIOR TO FILLING?
        iv. HOW IS THE MASTER CYLINDER FILLED?
        v. WHAT IS THE PURITY OF THE ETHANOL AND BALANCE GAS USED FOR PREPARING THE MASTER CYLINDER?
        vi. DO YOU BEGIN WITH LIQUID ETHANOL AND LIQUID BALANCE GAS AND CONVERT THEM TO GASES WHILE BLENDING THE MASTER CYLINDER?
        vii. IS THERE A NAME FOR THE MASTER CYLINDER FILLING PROCESS?
        viii. IS THERE A 'REAL TIME' ANALYSIS OF THE GAS MIXTURE AS THE MASTER CYLINDER IS BEING FILLED?
        ix. HOW MANY MASTER CYLINDERS CAN BE FILLED AT ONE TIME?
        x. IS THERE A WAITING PERIOD AFTER FILLING THE MASTER CYLINDER PRIOR TO CONINUING WITH THE MANUFACTURING PROCESS? IF SO, HOW LONG IS THIS WAIT PERIOD?
        xi. IS THE MASTER CYLINDER ANALYZED FOR CONCENTRATION AND PRESENCE OF CONTAMINANTS? IF SO, WHAT ANALYTICAL METHOD IS USED AND ARE NIST TRACEABLE STANDARDS USED DURING THIS ANALYSIS?
    b. IN THE PREPARATION OF THE INDIVIDUAL DRY GAS CYLINDERS (OR LOT OF DRY GAS STANDARD CYLINDERS):
        i. DO YOU CONDITION OR CLEANSE THE CYLINDERS PRIOR TO USE?
        ii. DO YOU ENSURE THE CYLINDER IS EMPTY PRIOR TO FILLING?
        iii. HOW MANY CYLINDERS CAN BE FILLED DURING THIS PROCESS?
        iv. WHAT IS THE MAXIMUM NUMBER OF DRY GAS STANDARD CYLINDERS THE MAKE UP A LOT?
        v. IS THERE A WAITING PERIOD AFTER THE FILLING OF THE DRY GAS STANDARD BOTTLES? IF SO, HOW LONG IS THIS WAIT PERIOD?
        vi. IS EACH BOTTLE OF DRY GAS STANDARD FROM THE LOT ANALYZED FOR CONCENTRATION AND CONTAMINATION? IF SO, WHAT ANALYTICAL METHOD IS USED AND ARE NIST TRACEABLE STANDARDS USED DURING THIS ANALYSIS?
        vii. DO YOU MAINTAIN ANY CYLINDER(S) FROM A LOT FOR STABILITY AND/OR SHELF LIFE TESTING?

THE DRY GAS STANDARD PRODUCT

11. WHAT DO YOU CALL YOUR PRODUCT?

12. WHAT ARE THE SIZES AND TYPES OF DRY GAS STANDARD CYLINDERS YOU CAN PRODUCE (FOR EXAMPLE, 105 LITER, 28 LITER, 108 LITER; ALUMINUM OR STEEL CYLINDERS)?
13. IS THERE ANY SPECIAL STORAGE OR HANDLING CONSIDERATIONS?
    a. WHAT WILL HAPPEN IF THE PRODUCT IS STORED IN EXTREME HOT TEMPERATURES?
    b. WHAT WILL HAPPEN IF THE PRODUCT IS STORED IN EXTREME COLD TEMPERATURES?
    c. WHAT ARE THE SHIPPING REQUIREMENTS?
14. HOW ARE LOT NUMBERS ASSIGNED?
    a. IS THERE ANYTHING UNIQUE ABOUT THE LOT NUMBER THAT CAN BE USED TO IDENTIFY A MANUFACTURE DATE, AN EXPIRATION DATE OR SOMETHING REGARDING THE MANUFACTURING PROCESS?
15. IS THERE ANY QUALITY ASSURANCE OR QUALITY CONTROL REVIEW IMPLEMENTED IN THE LABELING OF THE CYLINDERS FOR A LOT OF DRY GAS STANDARD?
16. IS THERE ANY QUALITY ASSURANCE OR QUALITY CONTROL REVIEW IMPLEMENTED IN THE CREATION OF THE CERTIFICATE OF ANALYSIS FOR A LOT OF DRY GAS STANDARD?
17. IS YOUR DRY GAS STANDARD MANUFACTURED AT MORE THAN ONE FACILITY? IF SO, PLEASE IDENTIFY ALL LOCATIONS WHERE DRY GAS STANDARD IS MANUFACTURED.
18. HOW ARE THE DRY GAS STANDARDS ORDERED AND SHIPPED?
    a. DO CUSTOMERS PLACE ORDERS WITH THE MANUFACTURER OR THROUGH A DISTRIBUTOR?
    b. IS THE DRY GAS STANDARD SHIPPED FROM THE MANUFACTURER OR THE DISTRIBUTOR?
    c. HOW DO YOU SHIP YOUR DRY GAS STANDARD?

COST

19. WHAT IS THE *APPROXIMATE* COST OF A BOTTLE OF 0.08 g/210L DRY GAS STANDARD?
20. DOES THIS PRICE INCLUDE SHIPPING? IF NOT, WHAT IS THE *APPROXIMATE* ADDITIONAL COST OF SHIPPING THE PRODUCT?
21. WHAT METHOD(S) OF PAYMENT IS ACCEPTED?
    a. WHO RECEIVES PAYMENT, THE MANUFACTURER OR THE DISTRIBUTOR?

OTHER HELPFUL INFORMATION

22. DO YOU SUPPLY DRY GAS STANDARD TO ANY OTHER STATE(S) THAT USES EVIDENTIARY BREATH TEST INSTRUMENTATION FOR BREATH ALCOHOL ANALYSIS?
    a. IF SO, PLEASE LIST THESE STATES AND THE BREATH TEST INSTRUMENT(S) USED.
23. IS IT POSSIBLE FOR YOU TO PREPARE DRY GAS STANDARDS FOR THE FOLLOWING:
    a. 0.00 g/210L (BALANCE GAS ONLY)?
    b. 0.04 g/210L ETHANOL?
    c. 0.10 g/210L ETHANOL?
    d. 0.30 g/210L ETHANOL?
    e. 0.00 g/210L ETHANOL AND/OR 0.08 g/210L ETHANOL + 0.03 g/210L ACETONE?
24. IF POSSIBLE, PLEASE PROVIDE AN *APPROXIMATE* COST FOR THE DRY GAS STANDARDS LISTED IN QUESTION 23 (A THROUGH E).

Barfield, Laura

From: Hagan, Pam [pjhagan@alcoholtest.com]

Sent: Wednesday, April 08, 2009 1:53 PM

To: Barfield, Laura

Cc: Eicke, Sheila; Tryfonos, Andrew; Hall, Toby; Settles, Tom

Subject: Dry Gas

Attachments: DRY GAS STANDARD SOURCE APPROVAL QUESTIONAIRE 3-21-09 - F..pdf; CMI Brochure.pdf; cmi cert label 40709.pdf; Ethanol Job.pdf; Ethanol SOP - ISO cert.pdf; NMi 208.6ppm.jpg; NMi NIST.jpg; Calgaz Letterhead 01-06.pdf; cert of reg qsr 3-09 -3-10.pdf; NIST traceability and analysis of ethanol 06-27-07.pdf; NIST Traceable weights report.pdf; Ed Conde Data 1.xls; Ed Conde Data 2.xls; 2AL stability data.xls; 6D stability data.xls; Qualification Information for BrAC.xls; Qualification methods for BrAC SOP.pdf

Laura,

Attached, please find the information I have received from Air Liquide. Should you have any questions, please do not hesitate to contact me.

Pam

Pamela J. Hagan
Technical Sales Manager
CMI, Inc.
316 East Ninth Street
Owensboro, KY 42303
Toll Free: 866-829-9260
Office: 270-685-6294
Cell: 270-748-0805
Fax: 270-685-6678
Email: pjhagan@alcoholtest.com
Web: www.alcoholtest.com

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(a) The source must produce dry gas standards which are traceable to the National Institute of Standards and Technology.
(b) Each dry gas standard lot produced by the source must be certified by the source as to its contents and alcohol vapor concentration.
(c) The source must be capable of producing a minimum of 300 cylinders of dry gas standard during a thirty day period at an alcohol vapor concentration of 0.08 g/210L.
(d) The source must have performed and documented tests that demonstrate that the source's dry gas standards are reliable for at least two years from the date of manufacture.
(2) Dry gas standard cylinders produced by the approved source must not be used beyond the expiration date.

1. ARE YOU AN ENTITY THAT MANUFACTURES DRY GAS STANDARD? **Yes.**
   a. WHAT IS THE BUSINESS NAME OF THIS ENTITY?
      Calgaz division of Air Liquide Advanced Technologies US.
   b. WHAT IS THE PHYSICAL ADDRESS, TELEPHONE NUMBER, FAX NUMBER AND CONTACT PERSON FOR THIS ENTITY?
      821 Chesapeake Drive, Cambridge MD 21613. Andrew Tryfonos Director of Business Development, Tel: 732-975-9847 Fax: 732-975-9857
   c. ALTHOUGH MANY VENDORS MAY SELL YOUR PRODUCT, DO YOU HAVE AN OFFICIAL DISTRIBUTOR FOR YOUR DRY GAS STANDARD? **Yes**
   d. IF SO, WHAT IS THE NAME, PHYSICAL ADDRESS, TELEPHONE NUMBER, FAX NUMBER AND CONTACT PERSON FOR THIS DISTRIBUTOR?
      CMI Inc. 316 East 9th. Street, Owensboro, KY 42303, Pam Hagan 866-835-0690
2. DO YOU MANUFACTURE A 0.08 g/210L DRY GAS STANDARD? **Yes**
3. IS YOUR DRY GAS STANDARD TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)? **Yes.**
   a. IS THIS TRACEABILITY DOCUMENTED FOR THE USER? **Yes.**
4. DO YOU PROVIDE A CERTIFICATE OF ANALYSIS FOR EACH LOT OF DRY GAS STANDARD PRODUCED? **Yes.**
   a. DO YOU PROVIDE A CERTIFICATE OF ANALYSIS FOR THE LOT WITH EACH BOTTLE OF DRY GAS STANDARD? **Yes.**
5. ARE YOU CAPABLE OF PRODUCING A MINIMUM OF 300 CYLINDERS OF DRY GAS STANDARD WITHIN A THIRTY DAY PERIOD? **Yes.**

a. WHAT IS THE APPROXIMATE MAXIMUM AMOUNT OF DRY GAS STANDARD THAT CAN BE MANUFACTURERED IN A THIRTY DAY PERIOD? **Approximately 3000 cylinders.**
b. WHAT IS THE APPROXIMATE MAXIMUM AMOUNT OF DRY GAS STANDARD THAT CAN BE MANUFACTURED IN A 24 HOUR PERIOD? **Approximately 150 cylinders.**

6. DO YOU HAVE DOCUMENTATION THAT DEMONSTRATES YOUR PRODUCT IS RELIABLE FOR AT LEAST TWO YEARS FROM THE DATE OF MANUFACTURE? **Yes.**
7. DOES YOUR DRY GAS STANDARD HAVE AN EXPIRATION DATE? **Yes.**
   a. IS THIS EXPIRATION DATE LISTED ON THE CYLINDER OF DRY GAS STANDARD? **Yes.**
   b. IS THIS EXPIRATION DATE LISTED ON THE CERTIFICATE OF ANALYSIS FOR THE LOT OF DRY GAS STANDARD? **Yes.**
8. DOES YOUR DRY GAS STANDARD CONSIST OF A MIXTURE OF ALCOHOL AND GAS WHICH PRODUCES A KNOWN ALCOHOL VAPOR CONCENTRATION? **Yes.**
   a. WHAT IS THE NAME OF THE GAS (BALANCE GAS) THAT THE ALCOHOL IS MIXED WITH? **Nitrogen**
9. REQUIRED DOCUMENTATION TO BE PROVIDED:
   a. A COPY OF A SAMPLE CERTIFICATE OF ANALYSIS THAT IS USED WITH YOUR DRY GAS STANDARD. **Provided**
   b. A COPY OF A SAMPLE LABEL FROM A BOTTLE OF THE DRY GAS STANDARD. **Provided**
   c. A COPY OF YOUR PRODUCT RELIABILITY REPORT: **SOP for Qualification Methods for Ethanol Breath Standards and Cylinder preparation and syringe injection of low atmospheric vapor pressure hydrocarbons, provided.**
      i. INCLUDE INFORMATION FROM AT LEAST TEN (10) DIFFERENT LOTS AND ENSURE AT LEAST TWO OF THESE LOTS ARE FOR A 0.08 g/210l DRY GAS STANDARD. **Provided.**
   d. DOCUMENTATION SUPPORTING THE TRACEABILITY OF YOUR DRY GAS STANDARD TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (FOR EXAMPLE, YOUR CERTIFICATE OF ANALYSIS, A COPY OF YOUR ANALYTICAL PROCEDURE, OR OTHER DOCUMENTATION THAT SUPPORTS THIS). **Provided.**
   e. A COPY OF A SPECIFICATIONS SHEET FOR YOUR PRODUCT, IF AVAILABLE. **Provided.**
   f. A COPY OF A SAMPLE WORK ORDER, IF AVAILABLE. **Provided.**

<u>THE MANUFACTURING PROCESS</u>

10. BRIEFLY DESCRIBE HOW YOUR DRY GAS STANDARD IS MANUFACTURED. INCLUDE ANY QUALITY ASSURANCE AND QUALITY CONTROL PROCESSES THAT ARE IMPLEMENTED IN THIS MANUFACTURING PROCESS.
    a. IF YOU PREPARE A MASTER CYLINDER:

i. WHAT IS THE APPROXIMATE SIZE OF THE MASTER CYLINDER? **47AL 7052L at 2200psig.**
ii. IS THIS MASTER CYLINDER CONDITIONED OR CLEANSED PRIOR TO USE? **Yes.**
iii. DO YOU ENSURE THE MASTER CYLINDER IS EMPTY PRIOR TO FILLING? **Yes.**
iv. HOW IS THE MASTER CYLINDER FILLED? **Gravimetrically utilizing NIST traceable weights.**
v. WHAT IS THE PURITY OF THE ETHANOL AND BALANCE GAS USED FOR PREPARING THE MASTER CYLINDER? **Ethanol 99.5%, Nitrogen 99.9%**
vi. DO YOU BEGIN WITH LIQUID ETHANOL AND LIQUID BALANCE GAS AND CONVERT THEM TO GASES WHILE BLENDING THE MASTER CYLINDER? **Yes.**
vii. IS THERE A NAME FOR THE MASTER CYLINDER FILLING PROCESS? **No. Since our acquisition of Scott Specialty Gas we do have access to their FLXBlend system for filling cylinders. Questions viii through x refer to this proprietary system.**
viii. IS THERE A 'REAL TIME' ANALYSIS OF THE GAS MIXTURE AS THE MASTER CYLINDER IS BEING FILLED? **Yes.**
ix. HOW MANY MASTER CYLINDERS CAN BE FILLED AT ONE TIME? **Typically 1 to 5.**
x. IS THERE A WAITING PERIOD AFTER FILLING THE MASTER CYLINDER PRIOR TO CONINUING WITH THE MANUFACTURING PROCESS? IF SO, HOW LONG IS THIS WAIT PERIOD? **24 hours.**
xi. IS THE MASTER CYLINDER ANALYZED FOR CONCENTRATION AND PRESENCE OF CONTAMINANTS? IF SO, WHAT ANALYTICAL METHOD IS USED AND ARE NIST TRACEABLE STANDARDS USED DURING THIS ANALYSIS? **Yes. Varian Gas Chromatograph calibrated with NIST traceable Standard Reference Materials.**

b. IN THE PREPARATION OF THE INDIVIDUAL DRY GAS CYLINDERS (OR LOT OF DRY GAS STANDARD CYLINDERS):
i. DO YOU CONDITION OR CLEANSE THE CYLINDERS PRIOR TO USE? **Yes.**
ii. DO YOU ENSURE THE CYLINDER IS EMPTY PRIOR TO FILLING? **Yes.**
iii. HOW MANY CYLINDERS CAN BE FILLED DURING THIS PROCESS? **It depends on the size cylinder. We can fill 48 6D / 105L cylinders from 1 47AL master.**
iv. WHAT IS THE MAXIMUM NUMBER OF DRY GAS STANDARD CYLINDERS THE MAKE UP A LOT? **It depends on the cylinder size. For a 6D 105L cylinder 48 is the maximum lot size.**
v. IS THERE A WAITING PERIOD AFTER THE FILLING OF THE DRY GAS STANDARD BOTTLES? IF SO, HOW LONG IS THIS WAIT PERIOD? **No.**

vi. IS EACH BOTTLE OF DRY GAS STANDARD FROM THE LOT ANALYZED FOR CONCENTRATION AND CONTAMINATION? IF SO, WHAT ANALYTICAL METHOD IS USED AND ARE NIST TRACEABLE STANDARDS USED DURING THIS ANALYSIS? **We analyze 10% of the lot size with an IR unit calibrated with NIST traceable SRM's (Standard Reference Materials.)**

vii. DO YOU MAINTAIN ANY CYLINDER(S) FROM A LOT FOR STABILITY AND/OR SHELF LIFE TESTING? **No.**

THE DRY GAS STANDARD PRODUCT

11. WHAT DO YOU CALL YOUR PRODUCT? **DryGaz by Calgaz.**
12. WHAT ARE THE SIZES AND TYPES OF DRY GAS STANDARD CYLINDERS YOU CAN PRODUCE (FOR EXAMPLE, 105 LITER, 28 LITER, 108 LITER; ALUMINUM OR STEEL CYLINDERS)? **15L/Alum, 28L/Alum, 34L/Alum, 58L/Alum/Steel, 105L/Steel and 554L/Steel.**
13. IS THERE ANY SPECIAL STORAGE OR HANDLING CONSIDERATIONS? **Yes.**
    a. WHAT WILL HAPPEN IF THE PRODUCT IS STORED IN EXTREME HOT TEMPERATURES? **Cylinders should not be exposed to temperatures above 125 degrees F. This will activate the safety relief valve and release the contents.**
    b. WHAT WILL HAPPEN IF THE PRODUCT IS STORED IN EXTREME COLD TEMPERATURES? **At extreme low temperatures the ethanol may condense. The condensation of the ethanol will vary depending on the temperature and ethanol concentration.**
    c. WHAT ARE THE SHIPPING REQUIREMENTS? **DOT-39, Compressed Gas N.O.S. UN1956**
14. HOW ARE LOT NUMBERS ASSIGNED? **Automated System Generated.**
    a. IS THERE ANYTHING UNIQUE ABOUT THE LOT NUMBER THAT CAN BE USED TO IDENTIFY A MANUFACTURE DATE, AN EXPIRATION DATE OR SOMETHING REGARDING THE MANUFACTURING PROCESS? **Every lot number is unique and can be used to trace the original Master cylinder, manufacturing date, analytical instruments used actual analysis and the operators involved.**
15. IS THERE ANY QUALITY ASSURANCE OR QUALITY CONTROL REVIEW IMPLEMENTED IN THE LABELING OF THE CYLINDERS FOR A LOT OF DRY GAS STANDARD? **Yes.**
16. IS THERE ANY QUALITY ASSURANCE OR QUALITY CONTROL REVIEW IMPLEMENTED IN THE CREATION OF THE CERTIFICATE OF ANALYSIS FOR A LOT OF DRY GAS STANDARD? **Yes.**
17. IS YOUR DRY GAS STANDARD MANUFACTURED AT MORE THAN ONE FACILITY? IF SO, PLEASE IDENTIFY ALL LOCATIONS WHERE DRY GAS STANDARD IS MANUFACTURED. **No. Cambridge Maryland is the only facility that manufactures the Dry Gas mixtures in non refillable cylinders. The Cambridge manufacturing plant is an ISO 9001/2000 registered facility.**
18. HOW ARE THE DRY GAS STANDARDS ORDERED AND SHIPPED?

a. DO CUSTOMERS PLACE ORDERS WITH THE MANUFACTURER OR THROUGH A DISTRIBUTOR? **Orders are placed via CMI, the Original Equipment Manufacturer.**
b. IS THE DRY GAS STANDARD SHIPPED FROM THE MANUFACTURER OR THE DISTRIBUTOR? **It can be drop shipped for the OEM directly to the customer or from the OEM's facility.**
c. HOW DO YOU SHIP YOUR DRY GAS STANDARD? **It depends on the customers requirements. We can ship by air or road.**

COST

19. WHAT IS THE *APPROXIMATE* COST OF A BOTTLE OF 0.08 g/210L DRY GAS STANDARD? **Approximate Price - $95.00 each**
20. DOES THIS PRICE INCLUDE SHIPPING? IF NOT, WHAT IS THE *APPROXIMATE* ADDITIONAL COST OF SHIPPING THE PRODUCT? **The provided cylinder price includes ground transportation charges. Hazardous Material (Hazmat) surcharges are an additional charge. The approximate Hazardous Material surcharge for a cylinder shipment via ground transportation is $20.00.**
21. WHAT METHOD(S) OF PAYMENT IS ACCEPTED? **Master Card, Visa, American Express, Check**
    a. WHO RECEIVES PAYMENT, THE MANUFACTURER OR THE DISTRIBUTOR? **CMI, Inc., the original equipment manufacturer**

OTHER HELPFUL INFORMATION

22. DO YOU SUPPLY DRY GAS STANDARD TO ANY OTHER STATE(S) THAT USES EVIDENTIARY BREATH TEST INSTRUMENTATION FOR BREATH ALCOHOL ANALYSIS? **Yes.**
    a. IF SO, PLEASE LIST THESE STATES AND THE BREATH TEST INSTRUMENT(S) USED. **Montana (I-8000), Ohio (I-8000), Oklahoma (I-8000), Arizona (I-8000)**
23. IS IT POSSIBLE FOR YOU TO PREPARE DRY GAS STANDARDS FOR THE FOLLOWING:
    a. 0.00 g/210L (BALANCE GAS ONLY)? **Yes.**
    b. 0.04 g/210L ETHANOL? **Yes**
    c. 0.10 g/210L ETHANOL? **Yes**
    d. 0.30 g/210L ETHANOL? **Yes**
    e. 0.00 g/210L ETHANOL AND/OR 0.08 g/210L ETHANOL + 0.03 g/210L ACETONE? **Currently under review.**
24. IF POSSIBLE, PLEASE PROVIDE AN *APPROXIMATE* COST FOR THE DRY GAS STANDARDS LISTED IN QUESTION 23 (A THROUGH E). **Pricing based upon quantity of cylinders required. Please advise approximate cylinder quantity.**

CMI INC.

DryGaz by Calgaz

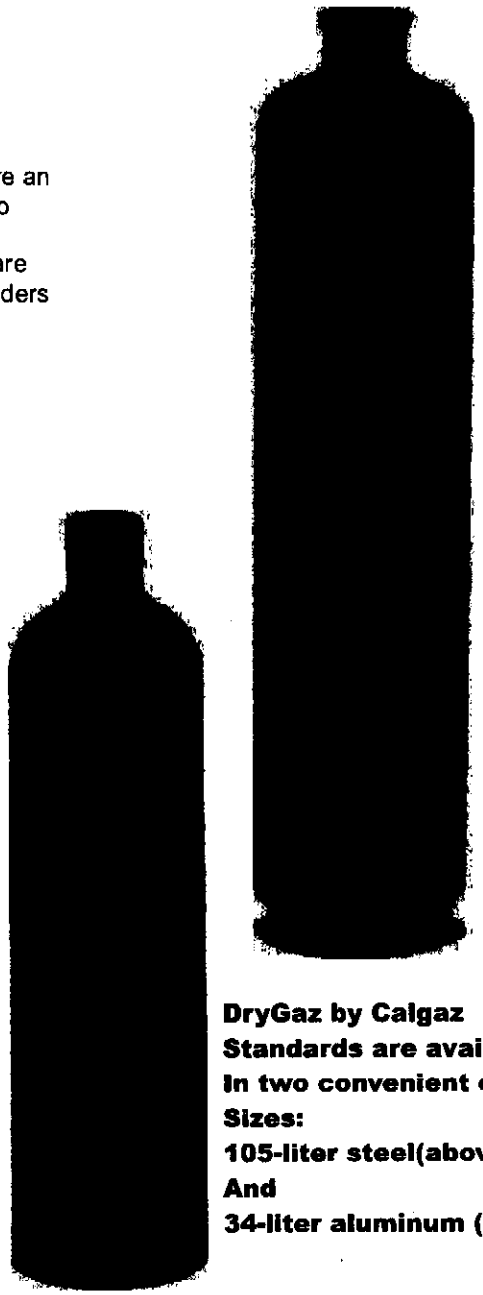
Dry Gas Standards for CMI Analyzers

DryGaz by Calgaz calibration gases are engineered to provide accurate calibration verification of CMI breath alcohol testing instruments. They are an integral design feature of CMI breath analyzers and used at the factory to ensure instrument performance prior to delivery. Prepared by Calgaz, a world leader in specialty gas technology, DryGaz by Calgaz products are manufactured in an ISO-9001:2000-certified production facility, and cylinders are individually analyzed and pressure checked to ensure quality.

Drygaz by Calgaz Features

- Guaranteed ±2% analytical accuracy (of nominal value) and 2-year shelf life provide accurate, dependable instrument calibration to help prevent faulty instrument readings
- Certificate of Analysis provided with each cylinder ensures product integrity and provides a detailed audit trail by unique cylinder number
- NHTSA APPROVED as listed on their Conforming Products List of Calibrating Units
- Direct traceability to National Institute of Standards & Technology (NIST) standards ensures reliable product accuracy
- Barcode and expiration date appearing on cylinder label are clearly visible when installed in the instrument

Available Gas Concentrations In Nitrogen Balance (Nominal Values)	
0.040 g/210L	104.2 ppm equivalent
0.045 g/210L	117.2 ppm equivalent
0.080 g/210	208.4 ppm equivalent
0.085 g/210L	221.4 ppm equivalent
0.100 g/210L	260.5 ppm equivalent
0.105 g/210L	273.5 ppm equivalent



DryGaz by Calgaz Standards are available In two convenient cylinder Sizes: 105-liter steel(above) And 34-liter aluminum (left).

CMI INC.
316 East 9th Street, Owensboro, KY 42303 Toll Free: 1-866-835-0690
Fax: 270-685-6268 www.alcoholtest.com

Example
CalGaz
LOB

DRYGAZ™
by CALGAZ

CERTIFICATE OF ANALYSIS
EBS - ETHANOL BREATH STANDARD

CMI
316 EAST NINTH STREET
OWENSBORO, KY 42303

INVOICE#: 32672041
PO#: 373080
CMI ITEM #: 340129
DATE: 07 Apr 2009

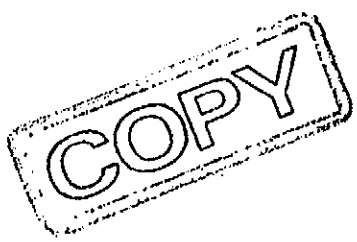
ANALYTICAL ACCURACY: +/- 2%
PRODUCT EXPIRATION: 07 Apr 2011

CALGAZ LOT#: 585711
ETHANOL IN NITROGEN

COMPONTENT	PPM	(BAC)
ETHANOL	208.4	(0.080)
NITROGEN	BAL	

REFERENCE STANDARD	CYLINDER	CONCENTRATION PPM
NIST TRACEABLE STANDARDS*	D751989	209.1

* CERTIFICATION TRACEABLE TO N.I.S.T. RGM ETHANOL STANDARDS



MANUFACTURED DATE: 07 Apr 2009

CALGAZ CYLINDER SIZE: 6D

APPROVED BY : _____

"We certify that all the cylinders for the Lot numbers identified herein are manufactured and tested within the requirements of CFR 49 part 178.65 and that physical and chemical test reportsare on file and copies will be furnished upon request."

CALGAZ, DIV. OF AL ADVANCED TECHNOLOGIES U.S. LLC
821 Chesapeake Drive, Cambridge, MD 21613-0149
Phone: (410)228-6400 Fax: (410)228-4251

96395 OTH-CAMBRIDGE MD

Jobs From 607214 To 607214
Sort By Job

ZZ Discrete Job Routing Sheet

OV

Job#: 607214

Example calgaz UDB (5 pages)

Job: 607214 Job Mass Loaded on 02-APR-2009 15:05:45 (ser
Sched Group: NH3/C2H5OH MANIFOLDS
Assembly: CZM2A740195 2AL 260.5PPM C2H5OH/N2

UOM: CYL
Build Sequence:
Bill Revision: 0 07-APR-09 00:00
Routing Revision: 0 07-APR-09 00:00
Completion Subinventory:

Start Quantity: 80.00
Line:
Locator:

Operations

Op Seq: 10
Op Code:
Department: Filling
Description: FILL PRESSURE 530 PSI

Scheduled Qty: 80.00

Quantity Completed: _____
Quantity Rejected: _____
Quantity Scrapped: _____
Date/Initials: _____

Comments:

Resources

Resource Seq	Schedule Seq	Resource	Usage Rate	UOM	Basis	Capacity	Activity
10	10	13200	0.01	HR	Item+	1.00	
20	10	13200L	0.01	HR	Item+	1.00	

Requirements

Component Item	Description	Supply: Subinventory	Supply: Locator	Supply: Lot Number	Date Required	Required Quantity
CZP0866	CYLINDER 2AL	Shop_Floor	RB1.-.-.-.-	CG100013	07-APR-09	80.000000
CZP1613	BRASS VALVES/VITON	Shop_Floor	RB1.-.-.-.-	CG100000	07-APR-09	80.000000
		Shop_Floor	RB1.-.-.-.-	13 600703 fx		
CZM47740274	47AL 264PPM C2H5OH/N2	Full_Mst			07-APR-09	~~4.560000~~ G 89.52
MSDS						

5.89560 - 00048

ZZ Discrete Job Routing Sheet

Jobs From 607214 To 607214
Sort By Job

Job#: 607214

Job: 607214 Job Mass Loaded on 02-APR-2009 15:05:45 (ser
Sched Group: NH3/C2H5OH MANIFOLDS
Assembly: CZM2A740195 2AL 260.5PPM C2H5OH/N2

UOM: CYL
Build Sequence:
Bill Revision: 0 07-APR-09 00:00
Routing Revision: 0 07-APR-09 00:00
Completion Subinventory:

Start Quantity: 80.00
Line:
Locator:

Operations

Op Seq: 20
Op Code:
Department: Filling
Description:

Scheduled Qty: 80.00

Comments:

Quantity Completed: 80
Quantity Rejected: —
Quantity Scrapped: —
Date/Initials: 4/9/09

Resources

Resource Seq	Schedule Seq	Resource	Usage Rate	UOM	Basis	Capacity	Activity
10	20	10000	0.02	HR	Item+	1.00	
20	20	10000L	0.02	HR	Item+	1.00	

Operations

Op Seq: 30
Op Code:
Department: Lab
Description:

Scheduled Qty: 80.00

Comments:

Quantity Completed: 8
Quantity Rejected: 8
Quantity Scrapped: →
Date/Initials: 4/7/09

Resources

Resource Seq	Schedule Seq	Resource	Usage Rate	UOM	Basis	Capacity	Activity
10	30	60000	0.25	HR	Lot	1.00	
20	30	60000L	0.25	HR	Lot	1.00	

ZZ Discrete Job Routing Sheet

Jobs From 607214 To 607214
Sort By Job

Job#: 607214

Job: 607214 Job Mass Loaded on 02-APR-2009 15:05:45 (ser
Sched Group: NH3/C2H5OH MANIFOLDS
Assembly: CZM2A740195 2AL 260.5PPM C2H5OH/N2

UOM: CYL
Build Sequence:
Bill Revision: 0 07-APR-09 00:00

Routing Revision: 0 07-APR-09 00:00
Completion Subinventory:

Start Quantity: 80.00
Line:
Locator:

Operations

Op Seq: 40
Op Code:
Department: Filling
Description:

Scheduled Qty: 80.00

Comments:

Quantity Completed: 80 77
Quantity Rejected: 3
Quantity Scrapped:
Date/Initials: 4.7.9

Resources

Resource Seq	Schedule Seq	Resource	Usage Rate	UOM	Basis	Capacity	Activity
10	40	31000	0.01	HR	Item+	1.00	
20	40	31000L	0.01	HR	Item+	1.00	

ZZ Discrete Job Routing Sheet

Jobs From 600700 To 600703
Sort By Job

Job#: 600703

Job: 600703
Sched Group: MIX ROOM
Assembly: CZM47740274 47AL 264PPM C2H5OH/N2

UOM: KG
Build Sequence:
Bill Revision: 0 16-MAR-09 11:51

Routing Revision: 0 16-MAR-09 11:51
Completion Subinventory: Full_Mst

Start Quantity: 7.99
Line:
Locator:

Operations

Op Seq: 10
Op Code:
Department: Filling
Description:

Scheduled Qty: 7.99

Quantity Completed: _____
Quantity Rejected: _____
Quantity Scrapped: _____
Date/Initials: _____

Comments:

25.50
3.479
-.000
3.479

Resources

Resource Seq	Schedule Seq	Resource	Usage Rate	UOM	Basis	Capacity	Activity
10	10	20000	0.05	HR	Item+	1.00	
20	10	20000L	0.05	HR	Item+	1.00	

Requirements

Component Item	Description	Supply: Subinventory	Supply: Locator	Supply: Lot Number	Date Required	Required Quantity
CZM49270269	49 5%HE/N2(SUPPLY)	Full_Mst		CG100014	16-MAR-09	0.153032
Comments: 44 PSI		Full_Mst		CG100013		
		Full_Mst		CG100004		
		Full_Mst		596788		
		Full_Mst		596787		
		Full_Mst		594099		
CZPL7400001	ETHANOL	Full_Mst		008	16-MAR-09	0.003474
Comments: 44 PSI		Full_Mst		007		
		Full_Mst		006		
CZPL3700009	NITROGEN BULK	Full_Mst		~~418~~ 420	16-MAR-09	7.830577
Comments: 2218 PSI		Full_Mst		~~417~~		

MSDS

ZZ Discrete Job Routing Sheet

Job#: 600703

Job: 600703
Sched Group: MIX ROOM
Assembly: CZM47740274 47AL 264PPM C2H5OH/N2

UOM: KG
Build Sequence:
Bill Revision: 0 16-MAR-09 11:51
Routing Revision: 0 16-MAR-09 11:51
Completion Subinventory: Full_Mst

Start Quantity: 7.99
Line:
Locator:

Operations

Op Seq: 20
Op Code:
Department: Lab
Description:

Scheduled Qty: 7.99

Quantity Completed: _____
Quantity Rejected: _____
Quantity Scrapped: _____
Date/Initials: _____

Comments:

Resources

Resource Seq	Schedule Seq	Resource	Usage Rate	UOM	Basis	Capacity	Activity
10	20	60000	0.03	HR	Item+	1.00	
20	20	60000L	0.03	HR	Item+	1.00	

CALGAZ, LLC **Standard Operating Procedure**	**Cylinder Preparation and Syringe Injection of Low Atmospheric Vapor Pressure Hydrocarbons**	NUMBER 08.05.01.015
		PAGE Page 1 of 3
		DATE 01/07/05
		SUPERSEDES 08.05.01.015 09/04/02
ORIGINATOR/APPROVED	DEPT. MANAGER REVIEWED/APPROVED BY	REVIEWED/APPROVED BY

1. **SCOPE** - The methods described in this procedure are intended for the cylinder preparation and syringe injection of low atmospheric vapor pressure hydrocarbons.

2. **SIGNIFICANCE AND USE** - To provide the necessary operating details to assure safe and effective preparation of low atmospheric vapor pressure hydrocarbons. Do not use this procedure for parts or equipment not listed in or referenced to in this SOP. Improper preparation may result in potential hazards to the operator or user. This procedure is to be carried out with the gravimetric preparation of nonreactive gas mixtures SOP.

3. **INTERFERENCE** - Proper operation of the scale is critical. Drafts and impurities in the syringe or starting components will render this method ineffective.

4. **EQUIPMENT**
   - 4.1. CGA adapter from 350 to ¼" Swagelok (with septum)
   - 4.2. Scale accurate to ±0.01 g and calibrated using weights traceable to the National Institute of Standards and Technology
   - 4.3. Master Cylinder Processing Oven
   - 4.4. Size 49 Master Cylinder (approximate capacity 285 cu. ft.)
   - 4.5. Crucible
   - 4.6. Glass Syringes
   - 4.7. Vacuum Grease

5. **REAGENTS AND MATERIALS** - All reagents and materials used will have been approved by incoming inspection, have a known purity and a lot number assigned.

6. **HAZARDS** - The operations outlined in this SOP present inherent hazards due to the equipment, pressures and gas/liquid employed. No person may perform any operations in this procedure unless they have been trained in the use and limitations of the equipment, the hazards associated with pressures and gas/liquid employed and are authorized in writing by his/her supervisor.
   - 6.1. All instructions in SOP 03.01.102 will be followed for all gas mixtures.

6.2. No mixture of flammable components (50% LFL or greater) and oxidizers will be made without written approval of mix by the supervisor.

6.3. All mixtures containing a flammable component will be analyzed prior to adding an oxidizer to assure the final mixture is below the LFL of the flammable component(s). Analysis of premixtures is permissible to meet this requirement.

7. SAMPLING, TEST SPECIMENS, AND TEST UNITS

7.1. An SPC log will be maintained prior to use on each scale.

7.2. All mixtures will be 100% analyzed.

7.3. No individual performing a task will be permitted to do a final inspection of that task.

7.4. All cylinders will undergo a prefill, fill and postfill inspection stated in the cylinder and container preparation section of the SOP manual.

8. PREPARATION OF EQUIPMENT

8.1. Follow the procedures in the instruction and operation manual for initial set up, cleaning and equipment maintenance.

8.2. Prior to placing the unit into operation perform the SPC checks of the equipment.

8.3. Prepare a size 49 cylinder in the master cylinder processing oven at 120°C.

8.4. Insure that the manifold nitrogen inlet valve is closed and that the vacuum valve (master valve to N_2 vacuum aspirator), and atmospheric vent/vacuum (blow-down) valves are open.

8.5. Slowly open the individual cylinder valve and allow the residual gas in the cylinder to vent/vacuum. When opening the individual cylinder valve, check for valve operation. If any valves are hard to open or close, remove the cylinder from service and mark it as having a bad valve and return it to cylinder maintenance. Close atmospheric vent/vacuum valve.

8.6. Slowly open the manifolds high vacuum valve and pull a manifold/cylinder vacuum below 100 millitorr. If vacuum cannot be obtained, check for leaks.

8.7. Slowly open the N_2 inlet valve and pressurize the cylinder to a minimum of 15 psig.

8.8. Close the N_2 inlet valve

8.9. Repeat steps 8.4, 8.5 and 8.6.

8.10. Shut cylinder off under vacuum, remove from oven and attach CGA adapter with septum in place.

9. PROCEDURE

9.1. Place the syringe on the scale and tare the scale to zero.

9.2. Pour the appropriate liquid into a clean and dry crucible.

9.3. See Mixture Specification Sheet for fill specification for low atmospheric vapor pressure component.

9.4. Draw the proper amount of liquid into the syringe.

9.5. Weigh the filled syringe. Record weight.

9.6. Inject the syringe needle into the septum of the adapter. Open the valve of the master cylinder slightly ahead of your injection of the liquid hydrocarbon.

9.7. Reweigh the syringe. Subtract mass of empty syringe from mass of filled syringe to calculate actual grams of liquid added. Record this value on the mixture work sheet.

9.8. Complete mix using the gravimetric preparation of nonreactive gas mixtures SOP 08.05.01.005 for remaining components.

10. REPORT

10.1. Complete the appropriate side of the Mixture Work Sheet and attach to cylinder.

10.2. Where a Custom Mixture Specification Sheet is issued for a single mixture attach the sheet to the Mixture Work Sheet.

Certificate of Registration

Calgaz
Div. of Air Liquide Advanced Technologies U.S., LLC
821 Chesapeake Drive
Cambridge, MD 21613

Is hereby granted the right and license to use the QSR® Registered Firm Symbol and to be listed in the Quality Systems Registrars, Inc. "Register of Certified Quality Systems" under the conditions specified in QSR®'s Contract and ISO 9001:2000 (ANSI/ISO/ASQ Q9001-2000) for the following scope:

Preparation of specialty gas and gas mixtures, packaging, analysis, and sales. The scope also applies to the associated gas handling hardware design, assembly, packaging and sales. This certificate also covers the activities at Unit 12 Waterloo Park Industrial Estate, Upper Brook Street, Stockport, SK1 3BP, UK.

Exclusions: 7.5.1 Control of production and service provision (item f, post-delivery activities only); 7.5.2 Validation of processes for production and service provision.

The period of registration is from March 8, 2009 to March 7, 2010.
Registered Firm Since March 8, 1994.

Certificate Number: QSR-217

Scott R. Kleckner
President

January 19, 2009
Date

MGMT. SYS.
RvA C 052

QUALITY SYSTEMS REGISTRARS, INC.
22375 Broderick Drive, Suite 260 • Sterling, Virginia 20166
Ph 703-478-0241 • Fx 703-478-0645
www.qsr.com

ANAB ACCREDITED

Nederlands Meetinstituut

CERTIFICATE

Number: 318492-02

Description:	Gaseous primary reference material (PRM), cylinder number M60295. The cylinder contains a mixture of ethanol in nitrogen.
Method of preparation:	Gravimetric preparation in accordance with International Standard ISO 6142: 2001 (Gas analysis - Preparation of calibration gas mixtures - Gravimetric method). After preparation (2004-06-09) the composition was verified.
Result:	Concentration ethanol : (208,6 ± 1,0) x 10^{-6} mol/mol.
Uncertainty:	The reported uncertainty of measurement is based on the standard uncertainty of measurement multiplied by a coverage factor $k = 2$, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with the Guide to the Expression of Uncertainty in Measurement (GUM).
Traceability:	The results of the calibration services of NMi VSL are traceable to primary and/or (internationally accepted measurement standards.
Stability:	The stability of similar gas mixtures in this type of cylinders is regularly checked and no evidence of significant change in composition has been observed over a period of two years, provided the cylinder pressure does not drop below 1 MPa.
Cylinder:	The PRM is contained in a passivated aluminium cylinder. The cylinder has a water volume of 5 L and is pressurized to 11,5 MPa. Cylinder outlet conforms to DIN 1 specifications.

Delft, 2004-08-11
NMi Van Swinden Laboratorium B.V.

R.M. Wessel
Project manager Mass & Chemistry

Nederlands Meetinstituut
Schoemakerstraat 97, Delft (NL)
P.O. Box 654, 2600 AR Delft (NL)
phone +31 15 2691500
fax +31 15 2612971
website www.nmi.nl
e-mail nmi@nmi.nl

NMi B.V.
(Chamber of Commerce no. 27.228.701)

Subsidiary Companies:
NMi Van Swinden Laboratorium B.V. (27.228.703)
NMi Certin B.V. (27.233.418)
Verispect B.V. (27.228.700)

DECLARATION OF EQUIVALENCE

Chemical Science and Technology Laboratory
National Institute of Standards and Technology - NIST
Gaithersburg, MD., United Stated of America

and

Nederlands Meetinstituut,
Van Swinden Laboratorium - NMi - VSL
Delft, The Netherlands

NIST and NMi declare that on July 1, 2003 the suites of primary standard gas mixtures developed and maintained in both the Institutes, comprising a range of analyte concentrations in the stated diluent gas as listed in Annex 1, can be considered as equivalent within the stated uncertainties. This declaration shall expire on July 1, 2004 at which time a new declaration shall take effect.

This declaration is based on the results of intercomparisons carried out between the two Institutes. A continuous program of intercomparisons has been agreed to in order to maintain this declaration and is outlined in a mutual Memorandum of Cooperation, effective July 1, 1999.

_____ _____

Willie E. May, Chief Date
Analytical Chemistry Division
Chemical Science and Technology Laboratory
National Institute of Standards and Technology
Gaithersburg, MD 20899 USA
01-301-975-3108

_____ _____

Ed W.B. de Leer Date
Scientific Director
Nederlands Meetinstituut
Van Swinden Laboratorium B.V.
Delft, The Netherlands
31 15 2691 500

CALGAZ

Please note that the NMi statement of equivalence with NIST is the current one as posted on the NMi website.

Please note that it is an "evergreen" statement "This declaration shall expire on July 1, 2005 **at which time a new declaration shall take effect.**"

NMi now goes by a different name please see the following website http://www.vsl.nl/news/nmi-van-swinden-laboratorium-will-be-known-as-vsl/302

NIST only supplies ethanol in liquid form. NMI supplies the ethanol dry gas standards.

CALGAZ, DIV. OF AL ADVANCED TECHNOLOGIES U.S. LLC
821 Chesapeake Drive, Cambridge, MD 21613-0149 U.S.A. • Phone (410)228-6400 • Fax (410)228-4251

Certificate of Registration

Calgaz
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821 Chesapeake Drive
Cambridge, MD 21613

Is hereby granted the right and license to use the QSR® Registered Firm Symbol and to be listed in the Quality Systems Registrars, Inc. "Register of Certified Quality Systems" under the conditions specified in QSR®'s Contract and ISO 9001:2000 (ANSI/ISO/ASQ Q9001-2000) for the following scope:

Preparation of specialty gas and gas mixtures, packaging, analysis, and sales. The scope also applies to the associated gas handling hardware design, assembly, packaging and sales. This certificate also covers the activities at Unit 12 Waterloo Park Industrial Estate, Upper Brook Street, Stockport, SK1 3BP, UK.

Exclusions: 7.5.1 Control of production and service provision (item f, post-delivery activities only); 7.5.2 Validation of processes for production and service provision.

The period of registration is from March 8, 2009 to March 7, 2010.
Registered Firm Since March 8, 1994.

Certificate Number: QSR-217

Scott R. Kleckner
President

January 19, 2009
Date

MGMT. SYS.
RvA C 052

QUALITY SYSTEMS REGISTRARS, INC.
22375 Broderick Drive, Suite 260 • Sterling, Virginia 20166
Ph 703-478-0241 • Fx 703-478-0645
www.qsr.com

ANAB ACCREDITED

CALGAZ

June 27, 2007

NIST Traceability and Analysis of Ethanol Mixtures

Our primary source of accuracy lies in the gravimetric method. Gas mixtures are prepared by means of weight calculations using scales that are certified against weights traceable to National Institute of Standards and Technology (NIST). The preparation method involves the precision measurement of liquid ethanol into the cylinder. The finished standard is then analyzed against Nmi/NIST Standard Reference Materials to assure accuracy. All instrumentation is calibrated prior to analysis and after every fifth sample or two hours which ever occurs first.

The primary instrument used for analysis is the Datamaster CDM. This is the same instrument utilized by the National Highway Traffic Safety Administration at the Volpe Center, Cambridge MA, to verify accuracy. The Datamaster's performance range is as follows:

Range 0.005-0.600 BrAC.

Accuracy, 0.002 or better BrAC

Precision, 0.002 or better BrAC

We also use a Varian 3800 series Gas Chromatograph as a secondary verification of accuracy. The gas chromatograph is used to compare the peak response of ethanol in a certified standard to the peak response of ethanol in the sample.

We analyze each sample five times and report the average value in order to avoid random error occurrences. Mix specialists are trained on all applicable procedures and training is documented to Calgaz training procedures.

A leak and pressure check, utilizing a Mass Spectrometer, is performed on 100% of the cylinders.

James Hogan

Quality Systems Manager

Calgaz, a division of ALATUS
821 Chesapeake Drive, Cambridge, MD 21613-0149
Phone: (410) 228-6400 - Fax: (410) 228-4251

Y.3

Maryland
Department of Agriculture

Office of Marketing, Animal Industries and Consumer Services

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Annapolis, Maryland 21401
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Internet www.mda.state.md.us

410.841.5700 Baltimore/Annapolis
301.261.8106 Washington, D.C.
410.841.5999 Fax
800.492.5590 Toll Free

WEIGHTS AND MEASURES SECTION
REPORT OF TEST

For: Eleven 20 kilogram cast iron field standard weights.

Weight Serial Nos.: 101 through 111

Submitted By: Carlton Scale
6697 Hobbs Road
Salisbury,MD 21804

Maker: Troemner

The measurements were determined by SOP No. 8 (March 2003), Recommended Standard Operations Procedure for Medium Accuracy Calibration of Mass Standards by Modified Substitution, NIST Interagency Report, Selected Laboratory and Measurement Practices, and Procedures to Support Basic Mass Calibrations, NISTIR 6969, (2003). Each item described above has been compared with Maryland Mass Standards (traceable to National Standards) and is accurate within the tolerances set forth in Table 2 through 5, NIST Handbook 105-1 (Revised 1990). Each item has the following value:

	Description		(Conventional Mass) Apparent Mass (vs 8.0 g/cc) AS LEFT	(Expanded k=2) Uncertainty
	(kilogram)		(kilogram)	(kilogram)
101	20	*	20.0006071	0.0000810
102	20	*	20.0005821	0.0000810
103	20	*	20.0006221	0.0000810
104	20	*	20.0006121	0.0000810
105	20	*	20.0006121	0.0000810
106	20	*	20.0005921	0.0000810
107	20	*	20.0006171	0.0000810
108	20	*	20.0006021	0.0000810
109	20	*	20.0006221	0.0000810
110	20	*	20.0005971	0.0000810
111	20	*	20.0005921	0.0000810

State Test No.: 13641
Test Completed: October 24, 2008
Expires: October 31, 2009
Observer: ZMW

Maryland
Department of Agriculture

Office of Marketing, Animal Industries
and Consumer Services

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4-3

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WEIGHTS AND MEASURES SECTION
REPORT OF TEST

State Test No.: 13641
Weight Serial Nos.: 101-111

	Description		(Conventional Mass) Apparent Mass (vs 8.0 g/cc) AS RECEIVED	(Expanded k=2) Uncertainty
	(kilogram)		(kilogram)	(kilogram)
101	20	*	20.0025771	0.0000810
102	20	*	20.0032171	0.0000810
103	20	*	20.0037121	0.0000810
104	20	*	20.0019171	0.0000810
105	20	*	20.0018971	0.0000810
106	20	*	20.0032471	0.0000810
107	20	*	20.0019621	0.0000810
108	20	*	20.0031771	0.0000810
109	20	*	20.0037321	0.0000810
110	20	*	20.0029521	0.0000810
111	20	*	20.0026871	0.0000810

* MASS STANDARD WAS ADJUSTED

Note: Report values indicate results at time of test.

Note: Results apply only to the items tested or calibrated.

I, Stephen A. Barry, Metrologist for the Weights and Measures Section, Maryland Department of Agriculture, a State Agency, certify that this is a true copy of a public record and that I am the official custodian of records of the State Primary Standards of Weights and Measures. I further certify that each item described above has been tested on October 24, 2008, to ensure its accuracy.

NVLAP®

Stephen A. Barry
Metrologist

NVLAP Laboratory Code 200494-0
This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Maryland
Department of Agriculture
Office of Marketing, Animal Industries and Consumer Services

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T-T

WEIGHTS AND MEASURES SECTION
REPORT OF TEST
Supplemental

For: Set of twenty-three field standard weights from 1 kilogram through 10 grams.

Kit Serial No.: 03610

Submitted By: Carlton Scale
6697 Hobbs Road
Salisbury, MD 21804

Maker: Troemner

The measurements were determined by SOP No. 8, Modified Substitution, Handbook 145, Handbook for the Quality Assurance of Metrological Measurements. Each item described above has been compared with Maryland Mass Standards (traceable to National Standards) and is accurate within the tolerances set forth in Table 2 through 5, NIST Handbook 105-1 (Revised 1990). Each item has the following value:

Description	(Conventional Mass) Apparent Mass (vs 8.0 g/cc) AS LEFT AND AS RECEIVED	Expanded k=2 Uncertainty
(kilogram)	(kilogram)	(kilogram)
1	1	1.0000205	0.0000090
2	1	1.0000345	0.0000090
3	1	1.0000395	0.0000090
4	1	1.0000535	0.0000090
5	1	1.0000555	0.0000090
6	1	1.0000145	0.0000090
7	1	1.0000175	0.0000090
8	1	1.0000725	0.0000090
9	1	1.0000395	0.0000090
10	1	1.0000385	0.0000090
11	1	1.0000770	0.0000090
12	1	1.0000320	0.0000090
13	1	1.0000185	0.0000090
14	1	1.0000325	0.0000090

State Test No.: 12618a
Test Completed: September 14, 2006
Expires: June 30, 2009 *State of Maryland Legal Traceability
Observer: JGH

T-5

Maryland
Department of Agriculture
Office of Marketing, Animal Industries and Consumer Services

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Anthony G. Brown, Lt. Governor
Roger L. Richardson, Secretary
Earl F. Hance, Deputy Secretary

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Agriculture | Maryland's Leading Industry

WEIGHTS AND MEASURES SECTION

REPORT OF TEST

Supplemental

State Test No.: 12618a
Kit Serial No.: 03610

Description	(Conventional Mass) Apparent Mass (vs 8.0 g/cc) AS LEFT AND AS RECEIVED	Expanded k=2 Uncertainty
	(gram)	(gram)
1 500	500.041052	0.006900
2 500	500.020052	0.006900
300	300.023684	0.006700
200	200.020780	0.000260
100	100.009394	0.000200
50	50.006267	0.000190
30	30.002069	0.000190
20	20.001732	0.000180
10	10.001264	0.000180

Note: Report values indicate results at time of test.

Note: Results apply only to the items tested or calibrated.

I, Stephen A. Barry, Metrologist for the Weights and Measures Section, Maryland Department of Agriculture, a State Agency, certify that this is a true copy of a public record and that I am the official custodian of records of the State Primary Standards of Weights and Measures. I further certify that each item described above has been tested on September 14, 2006 to ensure its accuracy.

Stephen A. Barry
Metrologist

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WEIGHTS AND MEASURES SECTION
REPORT OF TEST
Supplemental

For: Twenty 50 pound, two 30 pound, two 25 pound, one 20 pound, one 10 kilogram, and one 5 kilogram cast iron field standard weights.

Weight Serial No.: See description field

P.O. Number: 081820

Submitted By: Carlton Scale
6697 Hobbs Road
Salisbury, MD 21804

Maker: Toledo, Troemner, R.S. Co., and Unknown

The measurements were determined by SOP No. 8 (March 2003), Recommended Standard Operations Procedure for Medium Accuracy Calibration of Mass Standards by Modified Substitution, NIST Interagency Report, Selected Laboratory and Measurement Practices, and Procedures to Support Basic Mass Calibrations, NISTIR 6969, (2003). Each item described above has been compared with Maryland Mass Standards (traceable to National Standards) and is accurate within the tolerances set forth in Table 2 through 5, NIST Handbook 105-1 (Revised 1990). Each item has the following value:

Description	(Conventional Mass) Apparent Mass (vs 8.0 g/cc) AS LEFT AND AS RECEIVED	Expanded k=2 Uncertainty
(kilogram)	(kilogram)	(kilogram)
2 10	10.0001899	0.0000580
1 5	5.0000933	0.0000190
(pound)	(pound)	(pound)
1 50	49.99964244	0.00020000
2 50	50.00251948	0.00020000
3 50	49.99977472	0.00020000
4 50	49.99775749	0.00020000
5 50	49.99998416	0.00020000
6 50	49.99987393	0.00020000
7 50	50.00117466	0.00020000
8 50	49.99937789	0.00020000

State Test No.: 131818
Test Completed: September 25, 2007
Expires: June 30, 2009 'State of Maryland Legal Traceability
Observer: JGH

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WEIGHTS AND MEASURES SECTION
REPORT OF TEST
Supplemental

State Test No.: 13181a
Weight Serial No.: See description field

Description	(Conventional Mass) Apparent Mass (vs 8.0 g/cc) AS LEFT AND AS RECEIVED	Expanded k=2 Uncertainty
	(pound)	(pound)
9	50	49.99863934	0.00020000
10	50	49.99777954	0.00020000
11	50	50.00222185	0.00020000
12	50	50.00030363	0.00020000
13	50	49.99921254	0.00020000
14	50	50.00244231	0.00020000
15	50	50.00018258	0.00020000
16	50	50.00171479	0.00020000
17	50	50.00210060	0.00020000
18	50	49.99971961	0.00020000
19	50	50.00052429	0.00020000
20	50	50.00025974	0.00020000
94	30	29.99990459	0.00013000
RC2	30	30.00079746	0.00013000
96	25	25.00044795	0.00012000
97	25	25.00104320	0.00012000
RC1	20	20.00003139	0.00012000

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Note: Report values indicate results at time of test.

Note: Results apply only to the items tested or calibrated.

I, Stephen A. Barry, Metrologist for the Weights and Measures Section, Maryland Department of Agriculture, a State Agency, certify that this is a true copy of a public record and that I am the official custodian of records of the State Primary Standards of Weights and Measures. I further certify that each item described above has been tested on September 25, 2007 to ensure its accuracy.

Stephen A. Barry
Stephen A. Barry
Metrologist

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Office of Marketing, Animal Industries and Consumer Services

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WEIGHTS AND MEASURES SECTION
REPORT OF TEST
Supplemental

For: Set of twenty-five field standard weights from 2 pounds through 1/16 ounce.

Kit Serial No.: 05251

Submitted By: Carlton Scale
6697 Hobbs Road
Salisbury, MD 21804

Maker: Troemner

The measurements were determined by SOP No. 8, Modified Substitution, Handbook 145, Handbook for the Quality Assurance of Metrological Measurements. Each item described above has been compared with Maryland Mass Standards (traceable to National Standards) and is accurate within the tolerances set forth in Table 2 through 5, NIST Handbook 105-1 (Revised 1990). Each item has the following value:

	Description	(Conventional Mass) Apparent Mass (vs 8.0 g/cc) AS LEFT AND AS RECEIVED	Expanded k=2 Uncertainty
	(pound)	(pound)	(pound)
1	2	2.00005139	0.00002000
2	2	2.00007894	0.00002000
3	2	2.00012524	0.00002000
4	2	2.00009438	0.00002000
5	2	2.00014729	0.00002000
6	2	2.00008666	0.00002000
7	2	2.00013075	0.00002000
8	2	2.00011422	0.00002000
9	2	2.00011422	0.00002000
10	2	2.00013847	0.00002000
11	2	2.00012304	0.00002000
12	2	2.00009656	0.00002000
13	2	2.00011422	0.00002000
14	2	2.00014949	0.00002000

State Test No.: 12604a
Test Completed: September 6, 2006
Expires: June 30, 2009 *State of Maryland Legal Traceability
Observer: JGH

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WEIGHTS AND MEASURES SECTION
REPORT OF TEST
Supplemental

State Test No.: 12604a
Kit Serial No.: 05251

	Description	(Conventional Mass) Apparent Mass (vs 8.0 g/cc)	Expanded k=2 Uncertainty
		AS LEFT AND AS RECEIVED	
	(pound)	(pound)	(pound)
1	1	1.00009784	0.00001600
2	1	1.00008131	0.00001600
	0.5	0.50002297	0.00001500
	(ounce)	(ounce)	(ounce)
	4	3.9999489	0.0000140
	2	2.0001783	0.0000100
	1	1.0000499	0.0000082
	0.5	0.5000611	0.0000073
	0.25	0.2499836	0.0000066
	0.125	0.1250281	0.0000036
1	0.06250	0.0625216	0.0000036
2	0.06250	0.0625170	0.0000036

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Note: Results apply only to the items tested or calibrated.

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Stephen A. Barry
Stephen A. Barry
Metrologist

Manufacturer: **Air Liquide CALGAZ 260.5 ppm**

Test		1	2	3	4	5	6	7	8	9	10	Mean	RSD	SE	Pass
(BrAC corrected for atmospheric pressure at time of test)															
1. Precision and Accuracy															
260.5 ppm 58 liter	{.1006	0.102	0.102	0.101	0.101	0.101	0.101	0.101	0.101	0.100	0.101	0.1008	0.4079	0.0002	YES
260.5 ppm 537 liter	{.1005	0.100	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.1006	0.1363	0.0001	YES
2. Temperature															
10 deg. C															
260.5 ppm 58 Liter	{.1006}	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.1007	0.1594	0.0001	YES
260.5 ppm 537 liter	{.1007}	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.1008	0.1544	0.0001	YES
30 deg. C															
260.5 ppm 58 Liter	{.1009}	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.1010	0.1598	0.0001	YES
260.5 ppm 537 liter	{.1007}	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.100	0.101	0.101	0.1008	0.2239	0.0001	YES
3. Power {0.080}															NA
4. Electrical Safety Insp.															NA

Units
BAC: gm alcohol/210L Air @34
SE:Syst. Error, Mean -target BA
SD:Standard Deviation
RSD: SD/ Mean, %
Date: November 2005

Requirements
SE: plus or minus 0.002 BrAC
RSD: < = 2%

Device is compressed gaseous ethanol in nitrogen at concentration prepared at factory

[redacted]				P & A							
					brac=ppmxmmhg/1978800						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.006333								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]	[redacted]	[redacted]	0.022667	-6.7E-05						
2	[redacted]	[redacted]	[redacted]	0.026667	-6.7E-05						
3	[redacted]	[redacted]	[redacted]	0.027667	-6.7E-05						
ref. 1	[redacted]	[redacted]	[redacted]	0.440667	0.085841	0.903589	0.90431415	ave f			
2	[redacted]	[redacted]	[redacted]	0.443667	0.085895	0.904159	0.00113491	stdev f			
3	[redacted]	[redacted]	[redacted]	0.444667	0.085913	0.904349	0.12549927	rsd f			
4	[redacted]	[redacted]	[redacted]	0.445667	0.08573	0.902418					
5	[redacted]	[redacted]	[redacted]	0.446667	0.085949	0.90473	abs/ave f				
test 1	[redacted]	[redacted]	[redacted]	0.475	0.091788		0.10150031				
2	[redacted]	[redacted]	[redacted]	0.477	0.091827		0.10154319				
3	[redacted]	[redacted]	[redacted]	0.475	0.091385		0.10105433				
4	[redacted]	[redacted]	[redacted]	0.473	0.090943		0.10056568				
5	[redacted]	[redacted]	[redacted]	0.474	0.090962		0.10058692				
6	[redacted]	[redacted]	[redacted]	0.475	0.091183		0.10083127				
7	[redacted]	[redacted]	[redacted]	0.473	0.090943		0.10056568				
8	[redacted]	[redacted]	[redacted]	0.475	0.090981		0.10060816				
9	[redacted]	[redacted]	[redacted]	0.474	0.09076		0.10036381				
10	[redacted]	[redacted]	[redacted]	0.475	0.090981		0.10060816				
ref 1	[redacted]	[redacted]	[redacted]	0.494667	0.094933	0.904128	0.10082275	mean			
2	[redacted]	[redacted]	[redacted]	0.496667	0.094974	0.904511	0.00041127	stdev			
3	[redacted]	[redacted]	[redacted]	0.498667	0.095216	0.906818	0.40791867	rsd			
4	[redacted]	[redacted]	[redacted]	0.498667	0.095014	0.904895	0.000193	se			
5	[redacted]	[redacted]	[redacted]	0.501667	0.094872	0.903545					
water 1	[redacted]	[redacted]	[redacted]	0.055667	0.000135						
2	[redacted]	[redacted]	[redacted]	0.057667	0.000135						
3	[redacted]	[redacted]	[redacted]	0.057667	-6.7E-05						
water 1	0.023	0.029	0.006								
2	0.027	0.033	0.006								
3	0.028	0.034	0.006								
water 1	0.055	0.062	0.007								
2	0.057	0.064	0.007								
3	0.058	0.064	0.006								
		v000-vai	0.006333								

[redacted]				P & A							
					brac=ppmxmmhg/197880						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.007167								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]			0.023833	-0.00023						
2				0.024833	-0.00023						
3				0.028833	-3.4E-05						
ref. 1				0.441833	0.085896	0.904164	0.90460702	ave f			
2				0.443833	0.086133	0.906664	0.00313943	stdev f			
3				0.446833	0.086187	0.907236	0.34704936	rsd f			
4				0.447833	0.086004	0.905306					
5				0.448833	0.086224	0.907618	abs/ave f				
test 1				0.473	0.091145		0.10075606				
2				0.472	0.090924		0.1005119				
3				0.473	0.091145		0.10075606				
4				0.474	0.091164		0.10077734				
5				0.473	0.090943		0.10053312				
6				0.475	0.091385		0.10102161				
7				0.475	0.091183		0.10079862				
8				0.474	0.090962		0.10055435				
9				0.476	0.091202		0.10081992				
10				0.476	0.091001		0.10059684				
ref 1				0.495833	0.094991	0.904672	0.10071258	mean			
2				0.497833	0.095233	0.906979	0.00016101	stdev			
3				0.496833	0.094809	0.90294	0.15986809	rsd			
4				0.495833	0.094183	0.896978	0.000149	se			
5				0.499833	0.094869	0.903514					
water 1				0.053833	0.000168						
2				0.055833	0.000169						
3				0.057833	0.000169						
water 1	0.025	0.031	0.006								
2	0.026	0.032	0.006								
3	0.029	0.036	0.007								
water 1	0.053	0.061	0.008								
2	0.055	0.063	0.008								
3	0.057	0.065	0.008								
		v000-vai	0.007167								

[redacted]

P & A

brac=ppmxmmhg/1978800

abs(wet)=ln(5-vair)/(5-v)

abs(dry)=ln(5-vair)/(5-vcorr)

abs=fbrac

v000=voltage from pure water and air carrier gas

v000-vair=voltage from pure water.

Cyl. not rolled after receiving

vcorr=v-(v000-vair)

v000-vai 0.005833

		brac	vair	v	vcorr	abs	f=abs/brac			
water	1	[redacted]			0.020167	3.35E-05				
	2				0.022167	-0.00017				
	3				0.024167	3.35E-05				
ref.	1				0.438167	0.085896	0.904173	0.90248282	ave f	
	2				0.441167	0.086152	0.906862	0.00430586	stdev f	
	3				0.443167	0.086188	0.907243	0.47711218	rsd f	
	4				0.444167	0.086206	0.907434			
	5				0.445167	0.086023	0.905504	abs/ave f		
test	1				0.471	0.091106		0.10095059		
	2				0.473	0.091346		0.10121663		
	3				0.473	0.091145		0.10099321		
	4				0.473	0.091145		0.10099321		
	5				0.474	0.091164		0.10101454		
	6				0.475	0.091385		0.10125939		
	7				0.474	0.090962		0.10079103		
	8				0.474	0.090962		0.10079103		
	9				0.476	0.091202		0.10105722		
	10				0.476	0.091001		0.10083362		
ref	1				0.494167	0.094621	0.901149	0.10099005	mean	
	2				0.495167	0.094439	0.899416	0.00016133	stdev	
	3				0.496167	0.094459	0.899607	0.15975318	rsd	
	4				0.495167	0.094035	0.895568	0.000057	se	
	5				0.497167	0.094277	0.897873			
water	1				0.054167	3.37E-05				
	2				0.056167	3.37E-05				
	3				0.056167	3.37E-05				

water	1	0.02	0.026	0.006
	2	0.023	0.028	0.005
	3	0.024	0.03	0.006
water	1	0.054	0.06	0.006
	2	0.056	0.062	0.006
	3	0.056	0.062	0.006
			v000-vai	0.005833

					P & A						
						brac=ppmxmmhg/1978800					
						abs(wet)=ln(5-vair)/(5-v)					
						abs(dry)=ln(5-vair)/(5-vcorr)					
						abs=fbrac					
						v000=voltage from pure water and air carrier gas					
Cyl. not rolled after receiving						v000-vair=voltage from pure water.					
		vcorr=v-(v000-vair)									
			v000-vai	0.007167							
		brac	vair	v	vcorr	abs	f=abs/brac				
water	1				0.024833	-3.4E-05					
	2				0.027833	-3.4E-05					
	3				0.031833	0.000168					
ref.	1				0.441833	0.086298	0.908401	0.90502978	ave f		
	2				0.444833	0.086353	0.908974	0.003451	stdev f		
	3				0.446833	0.086187	0.907236	0.38131322	rsd f		
	4				0.447833	0.086004	0.905306				
	5				0.446833	0.085784	0.902993	abs/ave f			
test	1				0.472	0.090924		0.10046494			
	2				0.474	0.091164		0.10073026			
	3				0.474	0.090962		0.10050738			
	4				0.475	0.090981		0.10052861			
	5				0.476	0.091202		0.10077282			
	6				0.478	0.091241		0.10081542			
	7				0.476	0.091001		0.10054985			
	8				0.477	0.09102		0.1005711			
	9				0.479	0.09126		0.10083673			
	10				0.479	0.091058		0.10061362			
ref	1				0.496833	0.094809	0.90294	0.10063907	mean		
	2				0.495833	0.094183	0.896978	0.00013722	stdev		
	3				0.500833	0.095091	0.905631	0.13634935	rsd		
	4				0.501833	0.095111	0.905823	0.000154	se		
	5				0.502833	0.095132	0.906015				
water	1				0.055833	-3.4E-05					
	2				0.057833	-3.4E-05					
	3				0.058833	-3.4E-05					
water	1	0.025	0.032	0.007							
	2	0.028	0.035	0.007							
	3	0.031	0.039	0.008							
water	1	0.056	0.063	0.007							
	2	0.058	0.065	0.007							
	3	0.059	0.066	0.007							
			v000-vai	0.007167							

[redacted]				P & A							
					brac=ppmxmmhg/1978800						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.006667								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]			0.024333	-0.00013						
2				0.025333	-0.00013						
3				0.026333	6.7E-05						
ref. 1				0.435333	0.085276	0.897637	0.8994307	ave f			
2				0.439333	0.085951	0.904748	0.00514177	stdev f			
3				0.441333	0.085987	0.905128	0.57166983	rsd f			
4				0.442333	0.086005	0.905318					
5				0.443333	0.086023	0.905509	abs/ave f				
test 1				0.467	0.090626		0.10075976				
2				0.47	0.090885		0.10104769				
3				0.47	0.090684		0.10082356				
4				0.469	0.090463		0.10057815				
5				0.47	0.090482		0.10059938				
6				0.472	0.090722		0.10086613				
7				0.471	0.090501		0.10062061				
8				0.472	0.09052		0.10064186				
9				0.474	0.09076		0.10090874				
10				0.474	0.090559		0.10068438				
ref 1				0.491333	0.094194	0.897084	0.10075303	mean			
2				0.492333	0.094012	0.895351	0.00015552	stdev			
3				0.493333	0.094032	0.895541	0.15435759	rsd			
4				0.494333	0.094052	0.895731	0.000071	se			
5				0.496333	0.093687	0.89226					
water 1				0.051333	6.74E-05						
2				0.052333	6.74E-05						
3				0.053333	6.74E-05						
water 1	0.025	0.031	0.006								
2	0.026	0.032	0.006								
3	0.026	0.033	0.007								
water 1	0.051	0.058	0.007								
2	0.052	0.059	0.007								
3	0.053	0.06	0.007								
		v000-vai	0.006667								

[redacted]				P & A							
					brac=ppmxmmhg/1978800						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.006333								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]			0.026667	-6.7E-05						
2				0.028667	-6.7E-05						
3				0.029667	0.000134						
ref. 1				0.442667	0.08628	0.908207	0.90508559	ave f			
2				0.445667	0.086334	0.90878	0.00340289	stdev f			
3				0.445667	0.086133	0.90666	0.37597438	rsd f			
4				0.447667	0.086169	0.907042					
5				0.448667	0.086389	0.909354	abs/ave f				
test 1				0.473	0.091346		0.10092556				
2				0.474	0.091164		0.10072405				
3				0.474	0.091164		0.10072405				
4				0.475	0.091385		0.10096819				
5				0.476	0.091404		0.10098952				
6				0.475	0.091183		0.10074533				
7				0.475	0.091385		0.10096819				
8				0.474	0.09076		0.10027827				
9				0.475	0.090981		0.10052241				
10				0.476	0.091202		0.10076661				
ref 1				0.495667	0.09455	0.900473	0.10076122	mean			
2				0.497667	0.094792	0.902779	0.00022562	stdev			
3				0.499667	0.095034	0.905086	0.22391104	rsd			
4				0.498667	0.09461	0.901046	0.000105	se			
5				0.500667	0.09465	0.901428					
water 1				0.056667	-6.7E-05						
2				0.057667	-6.7E-05						
3				0.058667	0.000135						
water 1	0.027	0.033	0.006								
2	0.029	0.035	0.006								
3	0.029	0.036	0.007								
water 1	0.057	0.063	0.006								
2	0.058	0.064	0.006								
3	0.058	0.065	0.007								
		v000-vai	0.006333								

Manufacturer: **Air Liquide CALGAZ**

Test		1	2	3	4	5	6	7	8	9	10	Mean	RSD	SE	Pass
(BrAC corrected for atmospheric pressure at time of test)															
1. Precision and Accuracy															
115 ppm 34 liter	{.0445}	0.044	0.045	0.045	0.045	0.045	0.044	0.044	0.044	0.044	0.044	0.0445	0.3059	0.0000	YES
115 ppm 103 liter	{.0446}	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.0448	0.5592	0.0002	YES
230 ppm 34 liter	{.0885}	0.090	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.089	0.0892	0.4082	0.0007	YES
230 ppm 103 liter	{.0895}	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.0900	0.2751	0.0005	YES
2. Temperature															
10 deg. C															
115 ppm 34 Liter	{.0446}	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.046	0.0453	0.5062	0.0007	YES
115 ppm 103 liter	{.0444}	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.0449	0.4123	0.0005	YES
230 ppm 34 liter	{.0889}	0.090	0.090	0.090	0.090	0.090	0.090	0.089	0.089	0.089	0.090	0.0895	0.3307	0.0006	YES
230 ppm 103 liter	{.0892}	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.0900	0.1951	0.0008	YES
30 deg. C															
115 ppm 34 Liter	{.0447}	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.044	0.0448	0.4260	0.0001	YES
115 ppm 103 liter	{.0444}	0.045	0.045	0.045	0.044	0.044	0.045	0.045	0.045	0.045	0.045	0.0448	0.5473	0.0004	YES
230 ppm 34 liter	{.0889}	0.090	0.089	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.0899	0.2038	0.0010	YES
230 ppm 103 liter	{.0891}	0.090	0.089	0.090	0.090	0.090	0.090	0.090	0.089	0.089	0.089	0.0897	0.5353	0.0006	YES
3. Power {0.080}															NA
4. Electrical Safety Insp.															NA

Units

BAC: gm alcohol/210L Air @34
SE:Syst. Error, Mean -target BA
SD:Standard Deviation
RSD: SD/ Mean, %
Date: November 2002

Requirements

SE: plus or minus 0.002 BrAC
RSD: < = 2%

Device is compressed gaseous ethanol in nitrogen at concentraion prepared at factory.

					P & A						
						brac=ppmxmmhg/1978800					
						abs(wet)=ln(5-vair)/(5-v)					
						abs(dry)=ln(5-vair)/(5-vcorr)					
						abs=fbrac					
						v000=voltage from pure water and air carrier gas					
Cyl. not rolled after receiving						v000-vair=voltage from pure water.					
	vcorr=v-(v000-vair)										
		v000-vai	0.011167								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]	[redacted]	[redacted]	0.002833	-0.00103						
2	[redacted]	[redacted]	[redacted]	0.014833	-0.00043						
3	[redacted]	[redacted]	[redacted]	0.025833	-0.00044						
ref. 1	[redacted]	[redacted]	[redacted]	0.186833	0.031259	0.781487	0.78021	ave f			
2	[redacted]	[redacted]	[redacted]	0.192833	0.031298	0.782447	0.003239	stdev f			
3	[redacted]	[redacted]	[redacted]	0.193833	0.031506	0.787648	0.415081	rsd f			
4	[redacted]	[redacted]	[redacted]	0.195833	0.031115	0.777884					
5	[redacted]	[redacted]	[redacted]	0.198833	0.031135	0.778363	abs/ave f				
test 1	[redacted]	[redacted]	[redacted]	0.21	0.034674		0.044441				
2	[redacted]	[redacted]	[redacted]	0.207	0.034854		0.044672				
3	[redacted]	[redacted]	[redacted]	0.21	0.034875		0.0447				
4	[redacted]	[redacted]	[redacted]	0.208	0.034861		0.044682				
5	[redacted]	[redacted]	[redacted]	0.209	0.034868		0.044691				
6	[redacted]	[redacted]	[redacted]	0.21	0.034674		0.044441				
7	[redacted]	[redacted]	[redacted]	0.209	0.034667		0.044432				
8	[redacted]	[redacted]	[redacted]	0.21	0.034674		0.044441				
9	[redacted]	[redacted]	[redacted]	0.208	0.034659		0.044423				
10	[redacted]	[redacted]	[redacted]	0.211	0.034681		0.044451				
ref 1	[redacted]	[redacted]	[redacted]	0.242833	0.038927	0.778538	0.044538	mean			
2	[redacted]	[redacted]	[redacted]	0.246833	0.038959	0.779181	0.000128	stdev			
3	[redacted]	[redacted]	[redacted]	0.250833	0.038789	0.775774	0.288066	rsd			
4	[redacted]	[redacted]	[redacted]	0.253833	0.039015	0.780308	0.000038	se			
5	[redacted]	[redacted]	[redacted]	0.254833	0.039023	0.780469					
water 1	[redacted]	[redacted]	[redacted]	0.069833	0.000372						
2	[redacted]	[redacted]	[redacted]	0.069833	0.000777						
3	[redacted]	[redacted]	[redacted]	0.069833	0.000777						
water 1	0.008	0.014	0.006								
2	0.017	0.026	0.009								
3	0.028	0.037	0.009								
water 1	0.068	0.081	0.013								
2	0.066	0.081	0.015								
3	0.066	0.081	0.015								
		v000-vai	0.011167								

[redacted]				10deg. c test							
					brac=ppmxmmhg/1978800						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.011833								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]			0.010167	-0.00057						
2				0.016167	-0.00017						
3				0.022167	-0.00037						
ref. 1				0.181167	0.03129	0.782258	0.780546	ave f			
2				0.183167	0.031303	0.782578	0.003873	stdev f			
3				0.186167	0.031322	0.783058	0.496151	rsd f			
4				0.189167	0.031543	0.788574					
5				0.189167	0.03114	0.778502	abs/ave f				
test 1				0.208	0.035063		0.044921				
2				0.211	0.035487		0.045465				
3				0.212	0.035495		0.045474				
4				0.212	0.035293		0.045216				
5				0.216	0.035322		0.045253				
6				0.216	0.03512		0.044994				
7				0.218	0.035135		0.045013				
8				0.222	0.035366		0.045309				
9				0.224	0.03538		0.045327				
10				0.228	0.035611		0.045624				
ref 1				0.241167	0.038779	0.775576	0.045259	mean			
2				0.244167	0.039005	0.780101	0.00023	stdev			
3				0.239167	0.038965	0.779297	0.508047	rsd			
4				0.240167	0.038771	0.775416	0.000661	se			
5				0.244167	0.039005	0.780101					
water 1				0.060167	0.000439						
2				0.059167	0.000236						
3				0.059167	0.000438						
water 1	0.013	0.022	0.009								
2	0.017	0.028	0.011								
3	0.024	0.034	0.01								
water 1	0.058	0.072	0.014								
2	0.058	0.071	0.013								
3	0.057	0.071	0.014								
		v000-vai	0.011833								

				30deg. c test						
					brac=ppmxmmhg/1978800					
					abs(wet)=ln(5-vair)/(5-v)					
					abs(dry)=ln(5-vair)/(5-vcorr)					
					abs=fbrac					
					v000=voltage from pure water and air carrier gas					
Cyl. not rolled after receiving					v000-vair=voltage from pure water.					
	vcorr=v-(v000-vair)									
		v000-vai	0.011833							
	brac	vair	v	vcorr	abs	f=abs/brac				
water 1				0.013167	-0.00057					
2				0.019167	-0.00037					
3				0.025167	-0.00017					
ref. 1				0.177167	0.029656	0.741394	0.731374	ave f		
2				0.182167	0.029485	0.737114	0.011753	stdev f		
3				0.183167	0.029289	0.732225	1.606951	rsd f		
4				0.184167	0.029093	0.727333				
5				0.188167	0.029319	0.732975	abs/ave f			
test 1				0.203	0.03281		0.044861			
2				0.206	0.033032		0.045164			
3				0.207	0.032837		0.044898			
4				0.208	0.032844		0.044907			
5				0.21	0.032857		0.044925			
6				0.211	0.032864		0.044934			
7				0.215	0.032891		0.044971			
8				0.215	0.032689		0.044695			
9				0.218	0.032709		0.044722			
10				0.219	0.032513		0.044455			
ref 1				0.234167	0.035083	0.701658	0.044853	mean		
2				0.238167	0.036328	0.726553	0.000191	stdev		
3				0.241167	0.036755	0.735106	0.425804	rsd		
4				0.244167	0.037183	0.743667	0.000180	se		
5				0.245167	0.036786	0.735714				
water 1				0.066167	0.000236					
2				0.066167	0.000439					
3				0.065167	0.000439					
water 1	0.016	0.025	0.009							
2	0.021	0.031	0.01							
3	0.026	0.037	0.011							
water 1	0.065	0.078	0.013							
2	0.064	0.078	0.014							
3	0.063	0.077	0.014							
		v000-vai	0.011833							

[redacted]				P & A							
					brac=ppmxmmhg/1978800						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.012								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]			0.011	-0.0006						
2				0.018	-0.0004						
3				0.025	0.000201						
ref. 1				0.183	0.031269	0.781713	0.780658	ave f			
2				0.187	0.031093	0.777318	0.002755	stdev f			
3				0.188	0.031099	0.777477	0.352962	rsd f			
4				0.191	0.03132	0.782993					
5				0.192	0.031125	0.778114	abs/ave f				
test 1				0.212	0.035091		0.044951				
2				0.214	0.035106		0.044969				
3				0.217	0.035329		0.045256				
4				0.217	0.035127		0.044997				
5				0.218	0.034933		0.044748				
6				0.22	0.034745		0.044507				
7				0.221	0.034752		0.044516				
8				0.223	0.034766		0.044535				
9				0.225	0.034983		0.044812				
10				0.227	0.034997		0.044831				
ref 1				0.245	0.038978	0.77956	0.044812	mean			
2				0.247	0.038994	0.779882	0.000244	stdev			
3				0.249	0.03901	0.780204	0.544942	rsd			
4				0.251	0.039229	0.784576	0.000255	se			
5				0.252	0.039237	0.784738					
water 1				0.066	0.000405						
2				0.067	0.000203						
3				0.068	0.000203						
water 1	0.014	0.023	0.009								
2	0.02	0.03	0.01								
3	0.024	0.037	0.013								
water 1	0.064	0.078	0.014								
2	0.066	0.079	0.013								
3	0.067	0.08	0.013								
		v000-vai	0.012								

				10deg. c test							
					brac=ppmxmmhg/1978800						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.0115								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1				0.0075	-0.0005						
2				0.0145	-0.0001						
3				0.0185	-0.0005						
ref. 1				0.1745	0.031114	0.777846	0.7779	ave f			
2				0.1775	0.031133	0.778323	0.005454	stdev f			
3				0.1815	0.031359	0.783987	0.701148	rsd f			
4				0.1825	0.031165	0.779118					
5				0.1815	0.030555	0.763867	abs/ave f				
test 1				0.203	0.034624		0.04451				
2				0.207	0.034854		0.044805				
3				0.208	0.035063		0.045073				
4				0.208	0.034861		0.044914				
5				0.209	0.034868		0.044823				
6				0.212	0.035091		0.04511				
7				0.213	0.034897		0.04486				
8				0.216	0.03512		0.045147				
9				0.217	0.034925		0.044897				
10				0.219	0.03494		0.044916				
ref 1				0.2415	0.038849	0.776977	0.044896	mean			
2				0.2445	0.039075	0.781502	0.000186	stdev			
3				0.2445	0.038873	0.777458	0.414581	rsd			
4				0.2465	0.038889	0.777778	0.000512	se			
5				0.2485	0.039107	0.782148					
water 1				0.0635	0.000506						
2				0.0635	0.000304						
3				0.0665	0.000304						
water 1	0.01	0.019	0.009								
2	0.015	0.026	0.011								
3	0.021	0.03	0.009								
water 1	0.061	0.075	0.014								
2	0.062	0.075	0.013								
3	0.065	0.078	0.013								
		v000-vai	0.0115								

[redacted]				30deg. c test							
[redacted]					brac=ppmxmmhg/1978800						
[redacted]					abs(wet)=ln(5-vair)/(5-v)						
[redacted]					abs(dry)=ln(5-vair)/(5-vcorr)						
[redacted]					abs=fbrac						
[redacted]					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.011833								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]	[redacted]	[redacted]	0.010167	-0.00057						
2	[redacted]	[redacted]	[redacted]	0.017167	-0.00037						
3	[redacted]	[redacted]	[redacted]	0.025167	-0.00017						
ref. 1	[redacted]	[redacted]	[redacted]	0.181167	0.03129	0.782258	0.776684	ave f			
2	[redacted]	[redacted]	[redacted]	0.184167	0.030907	0.772673	0.005271	stdev f			
3	[redacted]	[redacted]	[redacted]	0.188167	0.031134	0.778343	0.678637	rsd f			
4	[redacted]	[redacted]	[redacted]	0.192167	0.031159	0.77898					
5	[redacted]	[redacted]	[redacted]	0.193167	0.030964	0.774098	abs/ave f				
test 1	[redacted]	[redacted]	[redacted]	0.211	0.034882		0.044912				
2	[redacted]	[redacted]	[redacted]	0.214	0.035106		0.0452				
3	[redacted]	[redacted]	[redacted]	0.21	0.034875		0.044903				
4	[redacted]	[redacted]	[redacted]	0.212	0.034486		0.044402				
5	[redacted]	[redacted]	[redacted]	0.214	0.034702		0.04468				
6	[redacted]	[redacted]	[redacted]	0.211	0.034882		0.044912				
7	[redacted]	[redacted]	[redacted]	0.213	0.034695		0.044671				
8	[redacted]	[redacted]	[redacted]	0.214	0.034702		0.04468				
9	[redacted]	[redacted]	[redacted]	0.212	0.03489		0.044921				
10	[redacted]	[redacted]	[redacted]	0.217	0.034925		0.044967				
ref 1	[redacted]	[redacted]	[redacted]	0.236167	0.039143	0.782853	0.044825	mean			
2	[redacted]	[redacted]	[redacted]	0.236167	0.038537	0.770738	0.00022	stdev			
3	[redacted]	[redacted]	[redacted]	0.238167	0.038351	0.767014	0.491034	rsd			
4	[redacted]	[redacted]	[redacted]	0.244167	0.039005	0.780101	0.000442	se			
5	[redacted]	[redacted]	[redacted]	0.242167	0.038989	0.779779					
water 1	[redacted]	[redacted]	[redacted]	0.060167	0.000439						
2	[redacted]	[redacted]	[redacted]	0.061167	0.000236						
3	[redacted]	[redacted]	[redacted]	0.062167	0.000439						
water 1	0.013	0.022	0.009								
2	0.019	0.029	0.01								
3	0.026	0.037	0.011								
water 1	0.058	0.072	0.014								
2	0.06	0.073	0.013								
3	0.06	0.074	0.014								
		v000-vai	0.011833								

[redacted]				30deg. c test							
					brac=ppmxmmhg/1978800						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.011833								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]	[redacted]	[redacted]	0.011167	-0.00057						
2	[redacted]	[redacted]	[redacted]	0.018167	-0.00037						
3	[redacted]	[redacted]	[redacted]	0.024167	3.35E-05						
ref. 1	[redacted]	[redacted]	[redacted]	0.346167	0.066332	0.780377	0.777668	ave f			
2	[redacted]	[redacted]	[redacted]	0.349167	0.065971	0.776129	0.001775	stdev f			
3	[redacted]	[redacted]	[redacted]	0.353167	0.066227	0.779145	0.228237	rsd f			
4	[redacted]	[redacted]	[redacted]	0.354167	0.065838	0.774566					
5	[redacted]	[redacted]	[redacted]	0.359167	0.066108	0.777747	abs/ave f				
test 1	[redacted]	[redacted]	[redacted]	0.379	0.069988		0.089997				
2	[redacted]	[redacted]	[redacted]	0.379	0.069584		0.089478				
3	[redacted]	[redacted]	[redacted]	0.379	0.069382		0.089218				
4	[redacted]	[redacted]	[redacted]	0.38	0.068993		0.088718				
5	[redacted]	[redacted]	[redacted]	0.384	0.069253		0.089052				
6	[redacted]	[redacted]	[redacted]	0.386	0.06908		0.088829				
7	[redacted]	[redacted]	[redacted]	0.39	0.06934		0.089164				
8	[redacted]	[redacted]	[redacted]	0.392	0.069369		0.089201				
9	[redacted]	[redacted]	[redacted]	0.393	0.069181		0.088959				
10	[redacted]	[redacted]	[redacted]	0.395	0.06921		0.088997				
ref 1	[redacted]	[redacted]	[redacted]	0.416167	0.073817	0.777022	0.089161	mean			
2	[redacted]	[redacted]	[redacted]	0.415167	0.073802	0.776858	0.000364	stdev			
3	[redacted]	[redacted]	[redacted]	0.415167	0.074004	0.778991	0.407926	rsd			
4	[redacted]	[redacted]	[redacted]	0.417167	0.074035	0.779318	0.000627	se			
5	[redacted]	[redacted]	[redacted]	0.413167	0.073771	0.776532					
water 1	[redacted]	[redacted]	[redacted]	0.066167	0.000439						
2	[redacted]	[redacted]	[redacted]	0.061167	3.37E-05						
3	[redacted]	[redacted]	[redacted]	0.062167	0.000439						
water 1	0.014	0.023	0.009								
2	0.02	0.03	0.01								
3	0.024	0.036	0.012								
water 1	0.064	0.078	0.014								
2	0.061	0.073	0.012								
3	0.06	0.074	0.014								
		v000-vai	0.011833								

[redacted]				10deg. c test							
[redacted]					brac=ppmxmmhg/1978800						
[redacted]					abs(wet)=ln(5-vair)/(5-v)						
[redacted]					abs(dry)=ln(5-vair)/(5-vcorr)						
[redacted]					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.012								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]	[redacted]	[redacted]	0.01	-0.0008						
2	[redacted]	[redacted]	[redacted]	0.016	-0.0002						
3	[redacted]	[redacted]	[redacted]	0.019	-0.0002						
ref. 1	[redacted]	[redacted]	[redacted]	0.34	0.065812	0.774257	0.777994	ave f			
2	[redacted]	[redacted]	[redacted]	0.345	0.066081	0.777428	0.001909	stdev f			
3	[redacted]	[redacted]	[redacted]	0.348	0.066324	0.78028	0.245368	rsd f			
4	[redacted]	[redacted]	[redacted]	0.35	0.06615	0.778237					
5	[redacted]	[redacted]	[redacted]	0.352	0.065976	0.776192	abs/ave f				
test 1	[redacted]	[redacted]	[redacted]	0.372	0.069886		0.089828				
2	[redacted]	[redacted]	[redacted]	0.377	0.069959		0.089922				
3	[redacted]	[redacted]	[redacted]	0.375	0.069728		0.089625				
4	[redacted]	[redacted]	[redacted]	0.379	0.069786		0.0897				
5	[redacted]	[redacted]	[redacted]	0.377	0.069757		0.089662				
6	[redacted]	[redacted]	[redacted]	0.375	0.069728		0.089625				
7	[redacted]	[redacted]	[redacted]	0.38	0.069599		0.089459				
8	[redacted]	[redacted]	[redacted]	0.378	0.069166		0.088903				
9	[redacted]	[redacted]	[redacted]	0.382	0.069426		0.089237				
10	[redacted]	[redacted]	[redacted]	0.385	0.069672		0.089553				
ref 1	[redacted]	[redacted]	[redacted]	0.404	0.073999	0.778939	0.089551	mean			
2	[redacted]	[redacted]	[redacted]	0.4	0.074139	0.780411	0.000296	stdev			
3	[redacted]	[redacted]	[redacted]	0.401	0.073953	0.778449	0.330158	rsd			
4	[redacted]	[redacted]	[redacted]	0.403	0.073782	0.776649	0.000611	se			
5	[redacted]	[redacted]	[redacted]	0.405	0.074015	0.779102					
water 1	[redacted]	[redacted]	[redacted]	0.052	0.000404						
2	[redacted]	[redacted]	[redacted]	0.048	0.000202						
3	[redacted]	[redacted]	[redacted]	0.046	0.000605						
water 1	0.014	0.022	0.008								
2	0.017	0.028	0.011								
3	0.02	0.031	0.011								
water 1	0.05	0.064	0.014								
2	0.047	0.06	0.013								
3	0.043	0.058	0.015								
		v000-vai	0.012								

				30deg. c test						
					brac=ppmxmmhg/1978800					
					abs(wet)=ln(5-vair)/(5-v)					
					abs(dry)=ln(5-vair)/(5-vcorr)					
					abs=fbrac					
					v000=voltage from pure water and air carrier gas					
Cyl. not rolled after receiving					v000-vair=voltage from pure water.					
	vcorr=v-(v000-vair)									
		v000-vai	0.011833							
	brac	vair	v	vcorr	abs	f=abs/brac				
water 1				0.001167	-0.00057					
2				0.010167	-0.00017					
3				0.015167	3.34E-05					
ref. 1				0.342167	0.066679	0.784455	0.778987	ave f		
2				0.346167	0.066533	0.782742	0.003808	stdev f		
3				0.349167	0.066575	0.783231	0.488889	rsd f		
4				0.349167	0.065971	0.776129				
5				0.351167	0.065797	0.774082	abs/ave f			
test 1				0.373	0.0699		0.089732			
2				0.373	0.069699		0.089473			
3				0.376	0.070146		0.090047			
4				0.377	0.069959		0.089807			
5				0.379	0.069988		0.089845			
6				0.378	0.069973		0.089826			
7				0.38	0.070002		0.089863			
8				0.381	0.070017		0.089882			
9				0.382	0.070234		0.09016			
10				0.384	0.070061		0.089939			
ref 1				0.405167	0.073647	0.775228	0.089857	mean		
2				0.402167	0.073802	0.776867	0.000183	stdev		
3				0.405167	0.074051	0.779484	0.203797	rsd		
4				0.409167	0.073709	0.775879	0.000986	se		
5				0.406167	0.074269	0.781775				
water 1				0.052167	0.000438					
2				0.049167	0.000236					
3				0.049167	3.37E-05					
water 1	0.004	0.013	0.009							
2	0.011	0.022	0.011							
3	0.015	0.027	0.012							
water 1	0.05	0.064	0.014							
2	0.048	0.061	0.013							
3	0.049	0.061	0.012							
		v000-vai	0.011833							

[redacted]				P & A test							
					brac=ppmxmmhg/1978800						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
[redacted]					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.010833								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]			0.005167	-0.00057						
2				0.010167	-0.00037						
3				0.019167	-0.00017						
ref. 1				0.343167	0.066291	0.77989	0.778423	ave f			
2				0.352167	0.066415	0.781351	0.001938	stdev f			
3				0.350167	0.066186	0.778658	0.248948	rsd f			
4				0.354167	0.06604	0.776937					
5				0.358167	0.066296	0.779957	abs/ave f				
test 1				0.378	0.070377		0.090409				
2				0.375	0.070131		0.090094				
3				0.376	0.070146		0.090113				
4				0.378	0.069771		0.089632				
5				0.377	0.069757		0.089613				
6				0.381	0.070219		0.090207				
7				0.383	0.070046		0.089985				
8				0.386	0.07009		0.090042				
9				0.375	0.069929		0.089835				
10				0.377	0.069959		0.089872				
ref 1				0.401167	0.073989	0.77883	0.08998	mean			
2				0.403167	0.07402	0.779157	0.000249	stdev			
3				0.404167	0.073631	0.775066	0.276843	rsd			
4				0.409167	0.073709	0.775879	0.000516	se			
5				0.412167	0.073957	0.7785					
water 1				0.064167	0.000439						
2				0.064167	0.000236						
3				0.062167	0.000439						
water 1	0.008	0.016	0.008								
2	0.012	0.021	0.009								
3	0.02	0.03	0.01								
water 1	0.062	0.075	0.013								
2	0.063	0.075	0.012								
3	0.06	0.073	0.013								
		v000-vai	0.010833								

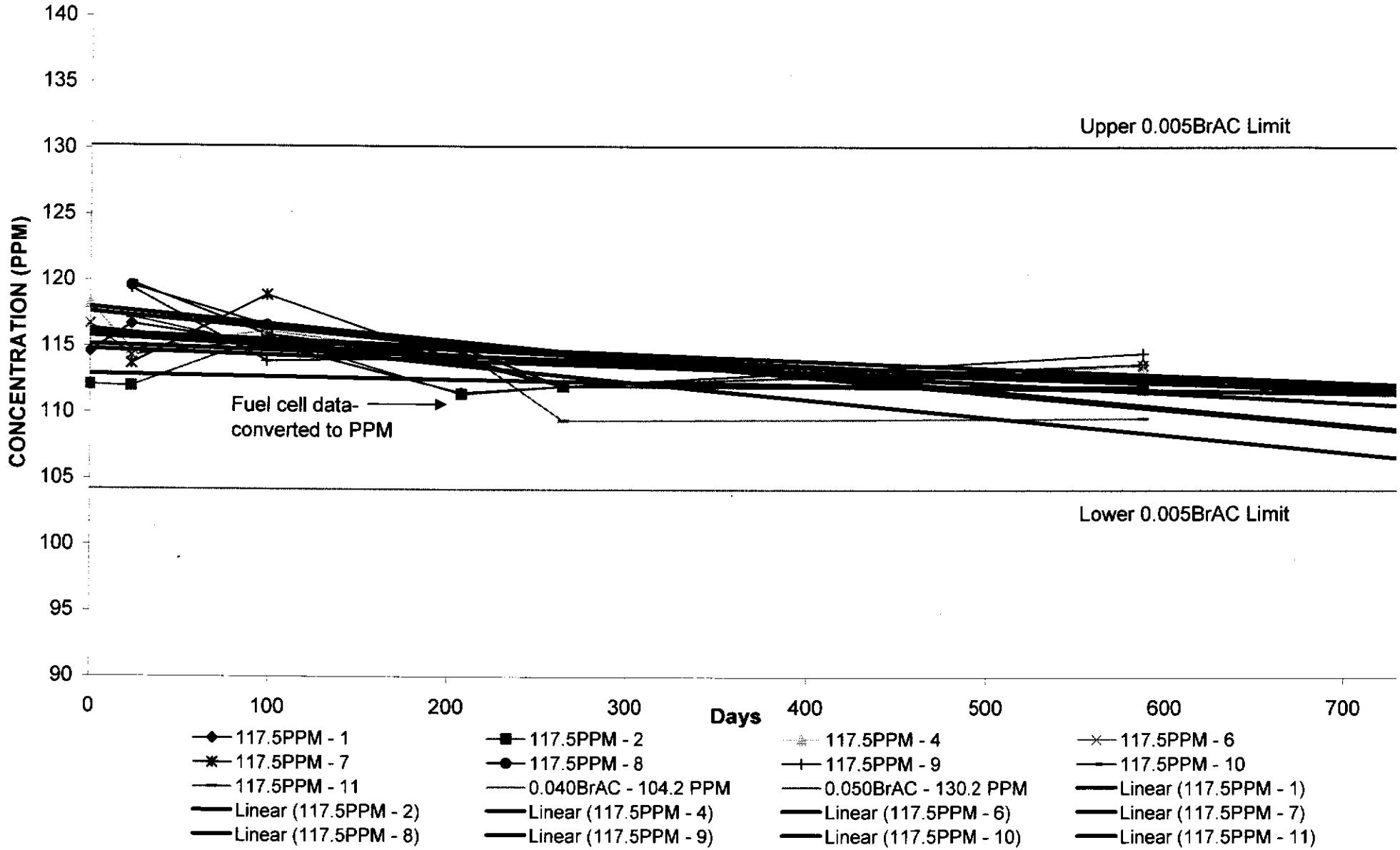
[redacted]				10deg. c test							
					brac=ppmxmmhg/1978800						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.011833								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]			0.010167	-0.00057						
2				0.014167	-0.00037						
3				0.021167	-0.00017						
ref. 1				0.344167	0.066304	0.780052	0.77848	ave f			
2				0.346167	0.06593	0.775644	0.001582	stdev f			
3				0.350167	0.066186	0.778658	0.2032	rsd f			
4				0.354167	0.066241	0.779307					
5				0.354167	0.066241	0.779307	abs/ave f				
test 1				0.376	0.070347		0.090365				
2				0.378	0.070175		0.090143				
3				0.373	0.0699		0.089791				
4				0.378	0.069973		0.089884				
5				0.382	0.070032		0.08996				
6				0.386	0.07009		0.090035				
7				0.39	0.070149		0.09011				
8				0.387	0.069903		0.089794				
9				0.39	0.070149		0.09011				
10				0.388	0.07012		0.090073				
ref 1				0.410167	0.073926	0.778173	0.090027	mean			
2				0.413167	0.073973	0.778663	0.000176	stdev			
3				0.420167	0.074082	0.77981	0.195481	rsd			
4				0.418167	0.074051	0.779482	0.000853	se			
5				0.421167	0.073692	0.775704					
water 1				0.075167	0.00044						
2				0.076167	0.000237						
3				0.081167	0.00044						
water 1	0.013	0.022	0.009								
2	0.016	0.026	0.01								
3	0.022	0.033	0.011								
water 1	0.073	0.087	0.014								
2	0.075	0.088	0.013								
3	0.079	0.093	0.014								
		v000-vai	0.011833								

				30deg. c test							
					brac=ppmxmmhg/1978800						
					abs(wet)=ln(5-vair)/(5-v)						
					abs(dry)=ln(5-vair)/(5-vcorr)						
					abs=fbrac						
					v000=voltage from pure water and air carrier gas						
Cyl. not rolled after receiving					v000-vair=voltage from pure water.						
	vcorr=v-(v000-vair)										
		v000-vai	0.0115								
	brac	vair	v	vcorr	abs	f=abs/brac					
water 1	[redacted]	[redacted]	[redacted]	0.0105	-0.0007						
2	[redacted]	[redacted]	[redacted]	0.0195	-0.0003						
3	[redacted]	[redacted]	[redacted]	0.0255	-0.0001						
ref. 1	[redacted]	[redacted]	[redacted]	0.3525	0.066487	0.782195	0.778489	ave f			
2	[redacted]	[redacted]	[redacted]	0.3535	0.065896	0.775249	0.002394	stdev f			
3	[redacted]	[redacted]	[redacted]	0.3545	0.06591	0.77541	0.307462	rsd f			
4	[redacted]	[redacted]	[redacted]	0.3585	0.066167	0.77843					
5	[redacted]	[redacted]	[redacted]	0.3605	0.066194	0.778754	abs/ave f				
test 1	[redacted]	[redacted]	[redacted]	0.381	0.070219		0.090199				
2	[redacted]	[redacted]	[redacted]	0.38	0.069599		0.089402				
3	[redacted]	[redacted]	[redacted]	0.38	0.070002		0.089921				
4	[redacted]	[redacted]	[redacted]	0.375	0.070131		0.090086				
5	[redacted]	[redacted]	[redacted]	0.376	0.069944		0.089846				
6	[redacted]	[redacted]	[redacted]	0.377	0.07016		0.090124				
7	[redacted]	[redacted]	[redacted]	0.375	0.069929		0.089827				
8	[redacted]	[redacted]	[redacted]	0.377	0.069353		0.089087				
9	[redacted]	[redacted]	[redacted]	0.378	0.069166		0.088846				
10	[redacted]	[redacted]	[redacted]	0.384	0.069455		0.089218				
ref 1	[redacted]	[redacted]	[redacted]	0.4075	0.073952	0.778447	0.089656	mean			
2	[redacted]	[redacted]	[redacted]	0.4085	0.073766	0.776481	0.00048	stdev			
3	[redacted]	[redacted]	[redacted]	0.4155	0.074279	0.781888	0.534861	rsd			
4	[redacted]	[redacted]	[redacted]	0.4165	0.074092	0.77992	0.000575	se			
5	[redacted]	[redacted]	[redacted]	0.4185	0.073921	0.778114					
water 1	[redacted]	[redacted]	[redacted]	0.0655	0.000304						
2	[redacted]	[redacted]	[redacted]	0.0615	-0.0001						
3	[redacted]	[redacted]	[redacted]	0.0685	0.000912						
water 1	0.014	0.022	0.008								
2	0.021	0.031	0.01								
3	0.026	0.037	0.011								
water 1	0.064	0.077	0.013								
2	0.062	0.073	0.011								
3	0.064	0.08	0.016								
		v000-vai	0.0115								

AIR LIQUIDE

CONFIDENTIAL

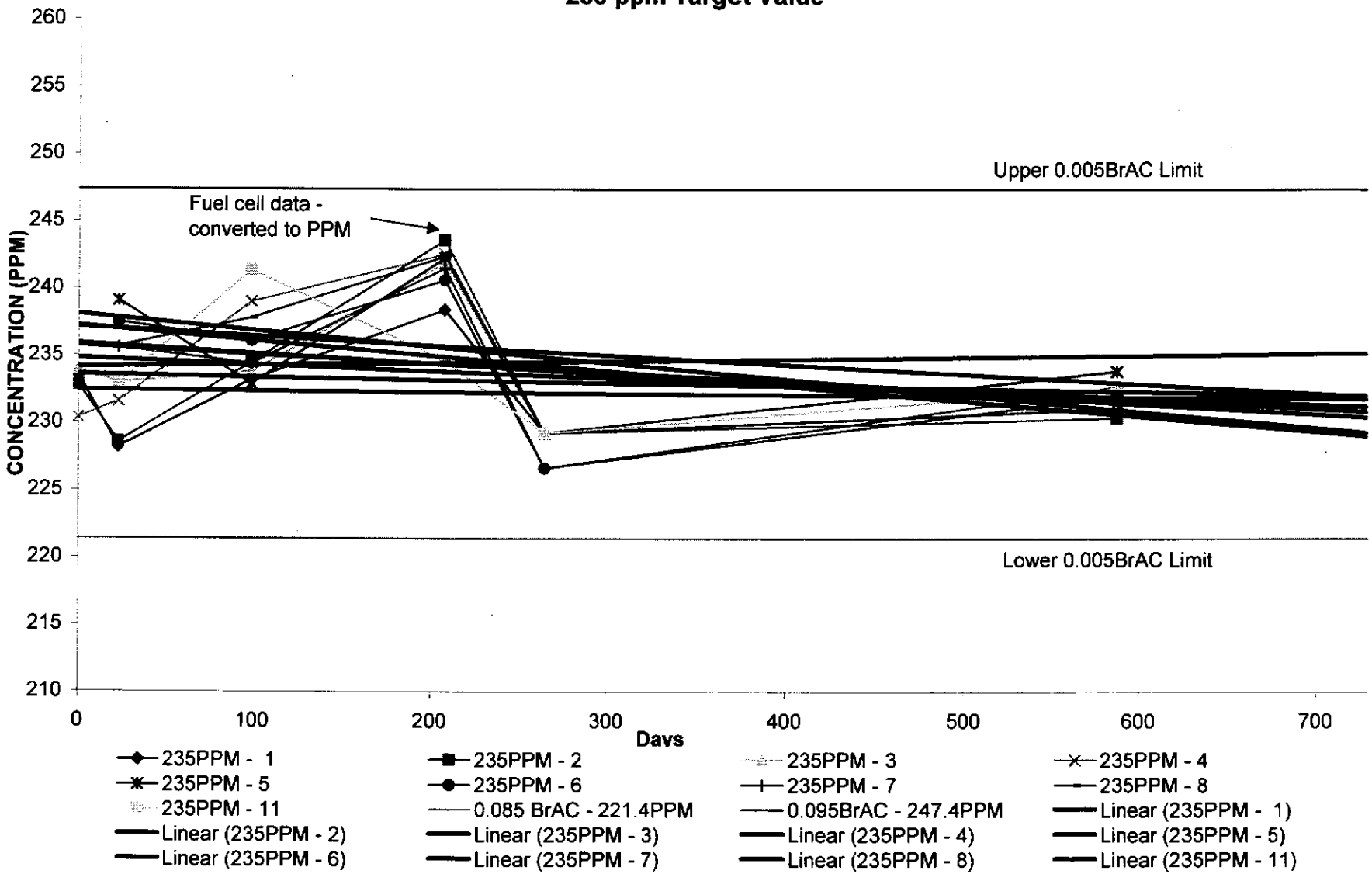
ETHANOL in NITROGEN STABILITY - 2AL Cylinders
117.5 ppm Target Value



AIR LIQUIDE

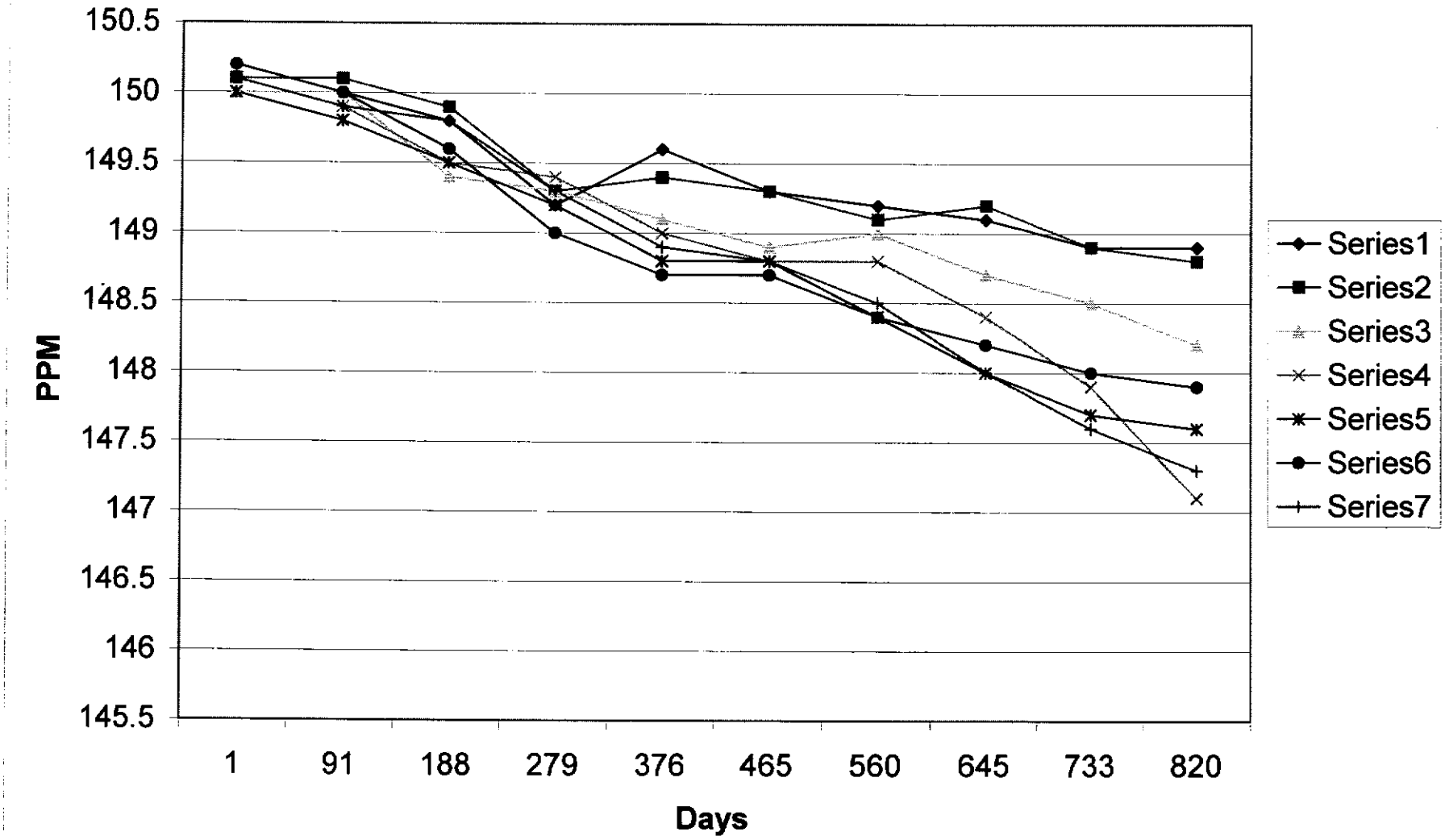
CONFIDENTIAL

ETHANOL in NITROGEN STABILITY- 2AL Cylinders
235 ppm Target Value



Stability Test Sample Cylinders Lot 1
Target value 150 ppm
Cylinder 6D
High Valvue 153ppm
Low Value 147ppm

Days	1	91	188	279	376	465	560	645	733	820
1	150.2	150	149.8	149.2	149.6	149.3	149.2	149.1	148.9	148.9
2	150.1	150.1	149.9	149.3	149.4	149.3	149.1	149.2	148.9	148.8
3	150	150	149.4	149.3	149.1	148.9	149	148.7	148.5	148.2
4	150.1	149.9	149.5	149.4	149	148.8	148.8	148.4	147.9	147.1
5	150	149.8	149.5	149.2	148.8	148.8	148.4	148	147.7	147.6
6	150.2	150	149.6	149	148.7	148.7	148.4	148.2	148	147.9
7	150.1	149.9	149.8	149.3	148.9	148.8	148.5	148	147.6	147.3


150ppm C2H5OH/N2 Stability 6D
150.5
150
149.5
149
148.5
148
147.5
147
146.5
146
145.5
PPM
1
91
188
279
376
465
560
645
733
820
Days
Series1
Series2
Series3
Series4
Series5
Series6
Series7

QUALIFICATION INFORMATION FOR ETHANOL BREATH STANDARDS

Lot Number	Cyl Number	Mix Description		Standard	Pressure	Ambient	Analytical Results		Date			Cylinder Size
		Calculated Value	k Calculat	*Used*	*(Standard)*	Temp	Gas Chron	Infrared	Filled	Initials	Date Analyzed	
103325	1	260.5	264.8	211		69		263.5	5/6/2008	MR	5/6/2008	6D
103325	2	260.5	264.8	211		69		263.7	5/6/2008	MR	5/6/2008	
103325	3	260.5	264.8	211		69		264.6	5/6/2008	MR	5/6/2008	
103325	4	260.5	264.8	211		69		265.4	5/6/2008	MR	5/6/2008	
103325	5	260.5	264.8	211		69		262.7	5/6/2008	MR	5/6/2008	
104271A	1	260.5	263.8	211		81		262.9	6/12/2008	MR	6/12/2008	6D
104271A	2	260.5	263.8	211		81		262.7	6/12/2008	MR	6/12/2008	
104873A	1	208.4	211	211		77.9		210.2	7/17/2008	DM	7/17/2008	6D
105128	1	208.4	211.9	211		76.9		207.5	7/29/2008	DM	7/29/2008	6D
581914	1	208.4		211		72		209.8	2/12/2009	wz	02/12/09	6D
	2							210.7				
	3							210.7				
	4							210.9				
	9							211.7				
590855	1	260.5		211		73		266	2/20/2009	WZ	2/20/2009	6D
	2							265.4				
	3							265.4				
	4							266				
590854	1	260.5		211		73		264.3	2/20/2009	WZ	2/20/2009	6D
	2							264.8				
	3							266.8				
	4							265.5				
591980	9	260.5		211		72		263.4	9-Mar	wz	3/9/2009	6D
	1							264.6				
	11							265.1				
	8							264.9				
	12							263.3				

593673	1	208.4		211		72		210	3/11/2009	wz	3/11/2009	6D
	6							209.8				
	8							210.5				
	7							210.6				
	4							210.2				
604251	2	260.5		211		72		263	4/1/2009	wz	4/1/2009	6D
	3							262.5				
	1							260.3				
	4							263.5				
	5							262.6				

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	Qualification Methods For Ethanol Breath Standards	PAGE 1 of 4
Standard Operating Procedures		DATE
		SUPERSEDES
ORIGINATOR/APPROVED	DEPT. MANAGER REVIEWED/APPROVED BY	REVIEWED/APPROVED BY

1 **SCOPE** - This document specifies the qualification criteria and method to be used for analysis and acceptance of Ethanol Breath Standards.

2 **QUALIFICATION CRITERIA FOR ETHANOL BREATH STANDARDS**

2.1 **APPROVAL** - Found to meet all applicable requirements of the National Highway Traffic Safety Administration (NHTSA) Model Specifications for calibrating units for breath alcohol testers.

2.2 **TRACEABILITY**

2.2.1 Gas mixtures manufactured with balances calibrated using National Institute of Standards and Technology (NIST) traceable weights.

2.2.2 Gas mixtures are qualified against a standard that was certified using a National Highway Traffic Safety Administration (NHTSA) approved method and an NIST traceable standard.

2.3 **COMPONENT LIMITS** - Back calculations must be ± 2% of target concentration.

2.4 **SAMPLE SIZE** - Ten percent of a transfilled lot will be sampled.

2.5 **PERFORMANCE MEASUREMENTS**

2.5.1 Systematic Error (SE): ± 0.002 BrAC (± 2% at a BrAC of 0.10 g / 210 L or a BAC of 0.10%).

2.5.2 Relative Standard Deviation (RSD): <=2%.

2.6 **CERTIFICATION** - Ethanol Breath Standards should be certified and labeled with their average analytical value.

2.7 **LEAK TESTING** - One tenth of a percent of helium is added to the mixture in order to properly leak test each cylinder.

3 **ASSAY FOR ETHANOL**

3.1 The following assay method is used for qualifying Ethanol:

3.1.1 Gas Chromatograph: The gas chromatograph is used to compare the peak response of ethanol in a certified standard to the peak response of ethanol in the sample.

4 **GAS CHROMATOGRAPH**

4.1 **ANALYZER STATEMENT**

4.1.1 This section establishes the procedure for calibrating the Varian 3600 Gas Chromatograph and testing a sample to meet Ethanol Breath Standard Requirements.

4.1.2 INSTRUMENT Varian 3600
Serial Number 2266

Detector	FID
Column Type	DB-1
Column Dimensions	60m x 0.320mm
Carrier Gas Type	Helium
Injection Method	Gas Sampling Valve: 0.25cc loop
Computing Device	Varian Star GC Workstation Ver 5.51

NOTE: The operations outlined in this SOP present inherent hazards due to the pressures and gases employed. No person may perform any operations in this procedure unless they have been trained in the use and limitations of the equipment, the hazards associated with pressures and gas employed and are authorized in writing by his/her supervisor. Personal protective equipment is required for any operation to be performed. Unless otherwise stated, standard personal protective equipment will be worn when operations in this sop are carried out.

4.2 GENERAL INFORMATION

4.2.1 Follow the procedures in the instruction and operation manual for initial set up, cleaning and equipment maintenance.

4.2.2 Instrument must be on for 12 hours prior to use.

4.2.3 Before connecting the calibration or sample gas to the instrument, pressure must be regulated using a gas regulator. The regulated pressure must be the same for each of these gases. Regulators will be connected to the cylinder, purged and connected to the instrument per laboratory regulator setup and purge SOP.

4.2.4 No individual performing a task will be permitted to do a final inspection of that task.

4.3 GAS REQUIREMENTS

4.3.1 Calibration gas - Use an approved gas standard with an analytical value of the component of interest in the mixture within a factor of five of the value of the component to be analyzed.

4.4 PREPARATION OF EQUIPMENT / ACTIVATION OF SAMPLE LIST

4.4.1 Select Varian 3600 AGZ316 from the Instrument menu.

4.4.2 Choose to open sample list (Ethanol Breath Standard). Look in: (Star) (Sample Lists).

4.4.3 Specify the data file (Ethanol Breath Standard). This is the default setting and should not be changed.

4.4.4 Specify the recalc list. Be certain that "Overwrite the Recalc list each time the sample list begins" is not selected. Select the option "Create and update a new recalc list." Determine Recalc List name as follows:

a *For an Ethanol Master*: Enter the lot number in the appropriate area of the file name followed by an 'M' for Master.
Ex: (c:\star\recalcs\ethanol breath standard recalcs\69999M.rcl)

b *For the first transfill*: Enter the lot number in the appropriate area of the file name.

Ex: (c:\star\recalcs\ethanol breath standard recalcs\69999.rcl)

c *For subsequent transfills*: Enter the lot number with suffix in the file name. Ex: (c:\star\recalcs\ethanol breath standard recalcs\69999A.rcl)

d *For reanalysis*: Enter the lot number in the file name (with suffix if necessary) followed by an "R".
Ex: (c:\star\recalcs\ethanol breath standard recalcs\69999AR.rcl)

e *For subsequent reanalysis*: Enter the lot number in the file name for a reanalysis including the number whether it is the first, second, etc. reanalysis. Ex: (c:\star\recalcs\ethanol breath standard recalcs\69999AR1.rcl)

4.4.5 Enter information about the samples and injections you will perform. The sample list will begin with a "New Calibration Block" followed by five replicate injections of the standard. Five samples of the mix will be run following the standard. After the fifth sample a "Verification" run of the standard should be performed. If the standard deviates from its certified value the new calibration should be incorporated into the data set. Be sure NOT to clear the coefficients when calibrating. The process of five samples and a standard verification should be continued until ten percent of the lot has been analyzed.

4.4.6 Press the "Begin" button to start the sample list. You will be prompted for the method to use.

4.4.7 Browse for the method file. Look in: (Star) (Varian 3600). Choose the method (C2H5OH). This will download appropriate instrument parameters. You will be prompted when the instrument is "Waiting" for injection.

4.5 CALIBRATION PROCEDURE

4.5.1 Ensure instrument parameters are accurately downloaded.

4.5.2 The analyzer will be calibrated prior to use and after every 5th sample and/or every two hours whichever occurs first. (This is setup on sample list.)

4.5.3 Calibrate by introducing the standard gas into the machine and analyzing it as listed in the procedure.

4.5.4 Follow the prompts in the sample list.

4.6 SAMPLE TEST PROCEDURE

4.6.1 Introduce the gas sample into the gas chromatograph by means of a gas sampling valve. Start the run by pushing the "Start" button on the front of the GC.

4.6.2 After the instrument / data handling system has completed the analysis, check the results to be sure that the peaks have been properly identified and quantified.

NOTE: It is important to properly purge each cylinder before analysis.

4.7 CALCULATIONS

4.7.1 Calculate the results utilizing the following equation to determine the concentration of the sample(s):

$$\text{Concentration of sample} = \frac{\text{mean area of sample x concentration of standard}}{\text{mean area of standard}}$$

4.7.2 The data may be calculated manually or via the use of a listed computing device.

4.7.3 If it is determined after the calculations are performed that the samples are out of specification it will be necessary to assure that the calibration has not shifted. Perform this by returning to the steps listed above. Compare the new calibration standard gas mean area to the first calibration standard gas mean area. They should agree within the analytical accuracy of the instrument. (See the instrument qualification procedure for this information) If this is not the case, contact the supervisor immediately.

4.7.4 Analytical results will be obtained in part per million values. Calculate the BrAC (g/210L) utilizing the following conversion factor:

$$\frac{\text{Part Per Million}}{2605} = \frac{\text{grams}}{210\text{L}}$$

4.8 REPORT

4.8.1 On the active desktop open the icon 'Summary Report'.

4.8.2 From the menu select: Star: Summary Report: Process Recalc List.

4.8.3 Select the appropriate Recalc list. Look in: (Star) (Recalcs) (Ethanol Breath Standard Recalcs).

4.8.4 Save and print the summary report. Move the summary report (both ELG and ESL files) from the Ethanol Breath Standard Recalcs folder to the Ethanol Breath Standard Summary Folder.

4.8.5 After completing the analysis the result will be reported in the unit of concentration required and to the number of significant digits of the product tolerance with the least number of significant digits.

4.8.6 Fill out the *Master Cylinder Laboratory Check* for master cylinders, the *Transfilled Cylinder Laboratory Check* and the lot card for transfilled cylinders, or *Laboratory Analysis Sheet* for special requests.

4.8.7 Enter the data in the laboratory database.

4.8.8 Store all data with cylinder(s) just analyzed.

4.8.9 The description section of the lot card will be completed using the following – (ACCEPTED) for acceptable lots and (REJECTED) for rejected lots.