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

November 3, 2010

Mr. Kris Luther
ILMO Products, Inc.
7 Eastgate Drive
Jacksonville, IL 62651

Subject: Approval of Source of Dry Gas Standards For the State of Florida

Dear Mr. Luther:

The information provided to the Florida Department of Law Enforcement by ILMO Products establishes the following:

- ILMO Products, hereafter referred to as ILMO, is a manufacturer of 0.08 g/210L ethanol dry gas standards.
- ILMO is the distributor of your dry gas standards.
- ILMO produces dry gas standards that are traceable to the National Institute of Standards and Technology.
- ILMO dry gas standards are certified as to content and alcohol vapor concentration. A Certificate of Analysis is provided with each cylinder of dry gas standard.
- ILMO is capable of producing a minimum of 300 cylinders of dry gas standard during a thirty day period at a vapor alcohol concentration of 0.08 g/210L.
- ILMO dry gas standards are reliable for at least two years from the date of manufacture.

Based on the information provided, effective November 3, 2010, ILMO Products, also known as ILMO, is an approved source of dry gas standards for use in the State of Florida.

If you have any questions, please feel free to contact me at (850) 617-1290.

Sincerely,

Laura D. Barfield

Laura D. Barfield
Alcohol Testing Program Manager

LDB/lb

Barfield, Laura

From: Kris Luther [kluther@ilmoproducts.com]
Sent: Friday, November 05, 2010 9:01 AM
To: Barfield, Laura
Subject: RE: Approval of ILMO Products as a Dry Gas Standard Source in Florida

Hi Laura,

Thank you for getting this done. We will be distributing through CMI.

CMI also has the 6 cylinder manifold that we discussed last time I had visited. I believe they have been working on the software to take samples.

Please let me know if I need to submit any paper work naming CMI as our Distributor.

Sincerely,

Kris Luther

314-308-2040

Kris Luther

Specialty Gas Program Manager

ILMO Specialty Gas Products

314-308-2040

ISO/IEC 17025:2005 Accredited Laboratory

From: Barfield, Laura [mailto:LauraBarfield@fdle.state.fl.us]
Sent: Wednesday, November 03, 2010 9:36 AM
To: Kris Luther
Subject: Approval of ILMO Products as a Dry Gas Standard Source in Florida
Importance: High

Kris,

Attached you will find the letter approving ILMO Products as a source of dry gas standard in Florida.

Is there any additional information on who the "Official Distributor" is? Will I still use ILMO as the distributor?

Thanks,

Laura

Barfield, Laura

From: Barfield, Laura
Sent: Tuesday, November 16, 2010 8:21 AM
To: 'Hagan, Pam'
Subject: Letter Approving Ilmo Products Dry Gas Standard
Attachments: ILMO DGS Approval Letter.doc

Pam,

Attached is the letter approving Ilmo Products as a source of dry gas standard in Florida. After sending the letter to Mr. Luther with Ilmo Products, it is now my understanding that CMI, Inc. will be the "official" distributor of this product.

Please let me know if you have any questions.

Thanks,

Laura

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: Agency Inspectors and Department Inspectors

FROM: Laura D. Barfield, Alcohol Testing Program Manager LDB

DATE: November 5, 2010

SUBJECT: Approved Source of Dry Gas Standard – ILMO Products

Effective November 3, 2010, the Alcohol Testing Program has approved ILMO Products as a source of dry gas standard for use in Florida.

Main Distributor :	CMI, Inc. 316 East Nineth Street Owensboro, KY 42303 (866) 835-0690 Fax: (270) 685-6678 ILMO Products dry gas standards may be available from other vendors in Florida.
Cylinder Size:	105 Liter Steel Cylinder or 110 Liter Aluminum Cylinder
Concentration:	0.08 g/210L
Label:	Each ILMO Products dry gas standard cylinder displays a label which notes the Lot Number, Ethanol Concentration, and Expiration Date. Do not use dry gas standard cylinders beyond their expiration date.
Certificate of Analysis:	Each ILMO Products dry gas standard cylinder is accompanied by a copy of the Certificate of Analysis for that lot. You need only retain one copy of the Certificate of Analysis for each lot used.
Handling and Disposal:	ILMO Products dry gas standard cylinders should not be exposed to temperatures which could activate the safety relief valve and release the contents. Dispose of dry gas standard cylinders in accordance with your local or county ordinances. Dry gas standard cylinders are considered hazardous materials for transport purposes. A hazardous material transport license is required to ship dry gas standard cylinders. **Always remove the dry gas standard cylinder prior to shipping an instrument.**

If you have any questions concerning this information, please feel free to contact me at (850) 617-1290.

LDB

Barfield, Laura

From: Kris Luther [kluther@ilmoproducts.com]
Sent: Thursday, March 04, 2010 8:09 AM
To: Barfield, Laura
Subject: ILMO Request for Distribution Letter
Attachments: Florida EBS distributer request letter.doc

Hello Laura,

Thank you for taking the time to meet with me yesterday.

As a follow up to our conversation please find attached a copy of our request for distribution of ethanol dry gas standards.

I have also contacted our lab and have started the process of filling some of the high ethanol concentrations. We have also contacted our engineer group regarding the manifold idea and hope to have some information to you soon.

Please let me know if I can do anything to help.

Sincerely,

Kris Luther
Specialty Gas Program Manager
ILMO Specialty Gas Products
314-308-2040

ISO/IEC 17025:2005 Accredited Laboratory

7 Eastgate Dr.
Jacksonville, IL
62650
217.479.0757
Fax 217.479.8430

2422 Benton Rd
Mt. Vernon, IL
62864
618.242.8716
Fax 618.242.7414

534 N. Jasper
Decatur, IL
62521
217.428.9332
Fax 217.428.1557

2070 Peoria Rd.
Springfield, IL
62702
217.525.1390
Fax 217.525.2199

ILMO
products company

400 Gardner Expwy
Quincy, IL
62301
217.222.0603
Fax 217.222.1312

213 N. 14th St.
Mattoon, IL
61938
217.235.5233
Fax 217.234.4933

830 Old Rt. 66 S.
Litchfield, IL
62056
217.324.2291
Fax 217.324.5911

909 W. Custer
Pontiac, IL
61764
815.844.4452
Fax 815.844.4622

Corporate Office: 7 Eastgate Dr. · Jacksonville, IL 62651-0790
217·245·2183 · Fax 217·243·7634 · www.illmo.com

FDLE
Florida Department of Law Enforcement
Laura Barfield
Program Manager
Alcohol Testing Program
Post Office Box 1489
Tallahassee, FL 32302-1489
850-617-1290
laurabarfield@fdle.state.fl.us

Dear Laura,

ILMO Products Company a producer of Ethanol Dry Gas Standards and listed on NHTSA's Conforming Product List ask to be added to Florida's approved Venders list for a distributer of Ethanol Dry Gas Standards.

ILMO Products Company have been manufacturing and distributing Ethanol Dry Gas Standards to the Alcohol Breath Testing Community for two years. ILMO Products Company now currently supplies the States of Illinois, Alabama, Iowa, Alaska, Montana and Michigan as well as many police programs, interlock companies and DOT pre hire screening laboratories.

All Ethanol Dry Gas Standards are manufactured and distributed from ILMO Products Company Specialty Gas Laboratory in Jacksonville IL.

We would appreciate your attention to this request at your earliest convenience and would like to begin offering Ethanol Dry Gas Standards to the State of Florida.

Thank you for your time.

Sincerely,

Kris Luther
Specialty Gas Program Manager
ILMO Products Company
7 Eastgate Drive
Jacksonville IL
314-308-2040
kluther@ilmoproducts.com

Barfield, Laura

From: Ted Pauley [tlpauley@guthlabs.com]
Sent: Wednesday, February 03, 2010 4:41 PM
To: Barfield, Laura
Cc: 'Kris Luther'; Guthlabs@aol.com
Subject: RE: Dry Gas Standards
Attachments: florida question update 2-3.DOC; FL appendix A.pdf; FL appendix B.pdf; FL Appendex C.xls; FL Appendix D1.pdf; FL Appendix D2.pdf; FL Appendix E.pdf; FL appendix f.pdf

Dear Laura,

Thank you for the opportunity to become an approved source for dry gas in Florida. I have attached the completed questioner along with the required supporting documents. Please let me know if you require any additional information.

Best Regards,

Ted L Pauley
President
Guth Laboratories, Inc.
590 North 57th Street
Harrisburg, PA 17111
800-233-2338 toll free
717-564-5470 phone
717-564-2555 fax
tlpauley@guthlabs.com email

From: Barfield, Laura [mailto:LauraBarfield@fdle.state.fl.us]
Sent: Thursday, January 21, 2010 1:57 PM
To: 'tlpauley@guthlabs.com'
Cc: 'Kris Luther'
Subject: RE: Dry Gas Standards
Importance: High

Mr. Pauley/Mr. Luther:
Please see the attached letter and questionnaire regarding becoming an approved source of dry gas standard in Florida.
Let me know if you have any questions.
Thanks,
Laura D Barfield
Alcohol Testing Program Manager

From: Ted Pauley [mailto:tlpauley@guthlabs.com]
Sent: Wednesday, January 20, 2010 11:53 AM
To: Barfield, Laura
Cc: 'Kris Luther'

Subject: Dry Gas Standards

Dear Laura,

It was god talking to you last month, I hope you had very Merry Christmas. We look forward to receiving your email regarding the next steps for obtaining Florida approval for our gas standards.

I have been talking with Kris Luther regarding producing a gas standard of .08 alcohol and acetone. Kris indicated that this would not be a problem all we need to know is the concentration of acetone you want in the standard. If you provide the concentration of acetone you want in the standard we will produce a sample for you to test and evaluate at no charge.

Looking forward to hearing from you.

Best Regards,

Ted L Pauley
President
Guth Laboratories, Inc.
590 North 57th Street
Harrisburg, PA 17111
800-233-2338 toll free
717-564-5470 phone
717-564-2555 fax
tlpauley@guthlabs.com email

Background Information Concerning Administrative Rule - 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.

ITEMS 1 THROUGH 9 MUST BE ANSWERED:

1. ARE YOU AN ENTITY THAT MANUFACTURES DRY GAS STANDARD?
   Yes
   a. WHAT IS THE BUSINESS NAME OF THIS ENTITY?
      ILMO PRODUCTS
   b. WHAT IS THE PHYSICAL ADDRESS, TELEPHONE NUMBER, FAX NUMBER AND CONTACT PERSON FOR THIS ENTITY?
      7 Eastgate Drive
      Jacksonville, IL 62651
      Phone: 217-245-2183
      Fax: 217-243-7634
      Contact: Kris Luther
   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?
      Guth Laboratories, Inc.
      590 North 67th Street
      Harrisburg, PA 17111
      Phone: 717-564-5470 Toll Free: 800-233-2338
      Fax: 717-564-2555
      Contact: Ted Pauley

← See additional letter from Ilmo dated (email) 3-4-10 LCB

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?

      2000

   b. WHAT IS THE APPROXIMATE MAXIMUM AMOUNT OF DRY GAS STANDARD THAT CAN BE MANUFACTURED IN A 24 HOUR PERIOD?

      300

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. DOCUMENTATION TO BE PROVIDED:

   a. A COPY OF A SAMPLE CERTIFICATE OF ANALYSIS THAT IS USED WITH YOUR DRY GAS STANDARD.

      Attached -FL appendix A

b. A COPY OF A SAMPLE LABEL FROM A BOTTLE OF THE DRY GAS STANDARD.
   Attached – FL appendix B
c. A COPY OF YOUR PRODUCT RELIABILITY REPORT:
   i. INCLUDE INFORMATION FROM MULTIPLE DRY GAS STANDARD LOTS.
      Attached - FL appendix C
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).
   Attached – Appendix FL D1 & D2
e. A COPY OF A SPECIFICATIONS SHEET FOR YOUR PRODUCT, IF AVAILABLE.
   Attached – Appendix E
f. A COPY OF A SAMPLE WORK ORDER, IF AVAILABLE.
   Attached - Appendix FL F

OTHER HELPFUL INFORMATION CONCERNING YOUR PRODUCT:

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?
          9000 liters
       ii. IS THIS MASTER CYLINDER CONDITIONED OR CLEANSED PRIOR TO USE?
          All cylinders used in ethanol breath standards go through a complete prefilled inspection that includes a purge and vacuum cycle.
       iii. DO YOU ENSURE THE MASTER CYLINDER IS EMPTY PRIOR TO FILLING?
          All cylinders are completely evacuated and vacuumed
       iv. HOW IS THE MASTER CYLINDER FILLED?
          Each cylinder is individually filled by gravimetric techniques using NIST weights and highly calibrated electronic scales.
       v. WHAT IS THE PURITY OF THE ETHANOL AND BALANCE GAS USED FOR PREPARING THE MASTER CYLINDER?
          200 proof USP ethanol in Ultra High Purity 99.999% Nitrogen
       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?
Mother Mixture

viii. IS THERE A 'REAL TIME' ANALYSIS OF THE GAS MIXTURE AS THE MASTER CYLINDER IS BEING FILLED?
No, ILMO products has the capabilities to do real time testing but believe to assure a total homogeneous mixture the mother mix should be inverted or rolled after filling has been completed.

ix. HOW MANY MASTER CYLINDERS CAN BE FILLED AT ONE TIME?
ILMO Products fills only one at a 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?
One week

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?
All Mother mixtures are analyzed by FTIR photo spectrometry which includes testing for all OMIL interferants. This test also analyzes for moisture levels.

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?
54

iv. WHAT IS THE MAXIMUM NUMBER OF DRY GAS STANDARD CYLINDERS THE MAKE UP A LOT?
300

v. IS THERE A WAITING PERIOD AFTER THE FILLING OF THE DRY GAS STANDARD BOTTLES? IF SO, HOW LONG IS THIS WAIT PERIOD?
Yes - 2 weeks

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?
Yes - NDIR and FID - all analyzers used in naming breath standards are calibrated with NIST NTRM Ethanol gas standards.

vii. DO YOU MAINTAIN ANY CYLINDER(S) FROM A LOT FOR STABILITY AND/OR SHELF LIFE TESTING?
ILMO Products has maintained a large section of cylinders produced for shelf life testing. ILMO Products only stores a few cylinders from

random lots produced today. Those cylinders stored today will only be added to the testing program when new cylinders lots are purchased from the cylinder manufacturer.

THE DRY GAS STANDARD PRODUCT

11. WHAT DO YOU CALL YOUR PRODUCT?

    Ethanol Breath Standard

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)?

    34 Liter Aluminum / 105 Liter Steel / 110 Liter Aluminum (refillable)

13. IS THERE ANY SPECIAL STORAGE OR HANDLING CONSIDERATIONS?
    a. WHAT WILL HAPPEN IF THE PRODUCT IS STORED IN EXTREME HOT TEMPERATURES?

       Cylinder pressure will be increased at any temperature above 70 degrees f basic gas laws apply.

    b. WHAT WILL HAPPEN IF THE PRODUCT IS STORED IN EXTREME COLD TEMPERATURES?

       Ethanol concentration will reach dew point at extreme cold temperatures. Manufacture recommends warming cylinder before releasing any gas.

    c. WHAT ARE THE SHIPPING REQUIREMENTS?

       All DOT regulations apply for compressed gas UN1956 non flammable gas mixture NOS ethanol in nitrogen.

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?

       All lot numbers have Julian date and individual cylinder number filled on that date. Expiration dates are assigned from Julian date.

15. IS THERE ANY QUALITY ASSURANCE OR QUALITY CONTROL REVIEW IMPLEMENTED IN THE LABELING OF THE CYLINDERS FOR A LOT OF DRY GAS STANDARD?

    ILMO Specialty Gas is a ISO 17025 accredited lab with special provision of the ISO 17025 scope dedicated to the manufacturing of ethanol breath standards.

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?

    ILMO Specialty Gas is a ISO 17025 accredited lab with special provision of the ISO 17025 scope dedicated to the manufacturing of ethanol breath standards.

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

18. HOW ARE THE DRY GAS STANDARDS ORDERED AND SHIPPED?

a. DO CUSTOMERS PLACE ORDERS WITH THE MANUFACTURER OR THROUGH A DISTRIBUTOR?

Place order through Guth Laboratories, Inc.

b. IS THE DRY GAS STANDARD SHIPPED FROM THE MANUFACTURER OR THE DISTRIBUTOR?

Tanks normally ship from the manufacturers location in Jacksonville, IL

c. HOW DO YOU SHIP YOUR DRY GAS STANDARD?

Shipments are normally made via UPS or Federal Express

COST

19. WHAT IS THE *APPROXIMATE* COST OF A BOTTLE OF 0.08 g/210L DRY GAS STANDARD?

List prices are as follows 34 Liter – $108.00 / 105 Liter – $120.00 / 110 Liter – $125.00 discounts are available for state purchases

20. DOES THIS PRICE INCLUDE SHIPPING? IF NOT, WHAT IS THE *APPROXIMATE* ADDITIONAL COST OF SHIPPING THE PRODUCT?

Shipping destination or origin varies by state contract. Shipping cost for 1 tank from IL to Florida cost approximately $35.00

21. WHAT METHOD(S) OF PAYMENT IS ACCEPTED?

Master Card / Visa / Government credit card / open account net30 for approved customers

a. WHO RECEIVES PAYMENT, THE MANUFACTURER OR THE DISTRIBUTOR?

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?

Yes

a. IF SO, PLEASE LIST THESE STATES AND THE BREATH TEST INSTRUMENT(S) USED.

IL - ECIR Intoximeter
MI – National Patent DMT

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?

Yes all the above concentrations can be produced. Tank pressure for 0.30 g/210 Ethanol will be reduced. Samples available upon request.

24. IF POSSIBLE, PLEASE PROVIDE AN *APPROXIMATE* COST FOR THE DRY GAS STANDARDS LISTED IN QUESTION 23 (A THROUGH E).

$270.00 for 1 tank of ethanol with acetone, quantity discounts will be provided for multiple tank orders. Samples available upon request.

ILMO specialty gases

Corporate Office:
P.O. Box 790, 7 Eastgate Drive
Jacksonville, IL 62651
217-245-2183
Fax: 217-243-7634
www.ilmoproducts.com

ISO/IEC 17025:2005 Accredited Laboratory

Certificate of Analysis

Product Code: ***DG-U080-10***

0.080% BrAC

Lot Number	Component	Concentration	Accuracy	Analytical Method
01810080A1	Ethanol	208 ppm	+/- 0.002 BrAC	NDIR
	Nitrogen	Balance		

Balance Gas: Nitrogen

Expiration Date: 2/1/2013

Contents: 105 Liters @ 1025 PSIG

***NIST Standard Reference Material** Certification of NTRM Batch No. 091602
Nominal 210 µmol/mol Ethanol in Nitrogen
for ILMO Products Co., Jacksonville, IL

Specialty Gas Lab Manager
ILMO Products Company

Date

GUTH LABORATORIES, INC.
590 NORTH 67th STREET • HARRISBURG, PA 17111-4511 • TELEPHONE: 717-564-5470

SERVING THE ALCOHOL TEST INDUSTRY SINCE 1976

105 Liters

Ethanol Breath Standard

(Ethanol, Balance Nitrogen)

Ethanol content equivalent to **0.080% BrAC (G/210L) +/-2%**

(208 ppm Ethanol in Nitrogen Gas Mixture)

at sea level (pressure of 760 mm of HG) when used with Breath Alcohol Devices.

(see altitude chart for conversion)

Certification: Traceable to N.I.S.T. NTRM Ethanol Standards

CONTENTS: 105 LITERS @ 1025 psig 70 F

NON-REFILLABLE

Lot Number

01810080A1

Expiration Date

2/01/13

COMPRESSED GAS, N.O.S.
(ETHANOL, NITROGEN)
2.2 UN1956

CAUTION: HIGH PRESSURE GAS. CAN CAUSE RAPID SUFFOCATION. Store and use with adequate ventilation. Use equipment rated for cylinder pressure. Close valve after each Use and when empty. Use in accordance with the Material Safety Data Sheet (MSDS). **FIRST AID: IF INHALED,** remove to Fresh air . If not breathing, give artificial respiration. If breathing Is difficult give oxygen. Call a physician DO NOT REMOVE THIS PRODUCT LABEL.

Altitude correction factor chart: Approximate BrAC# listed below in 500 foot increments.

ISO/IEC 17025:2005 Accredited Laboratory

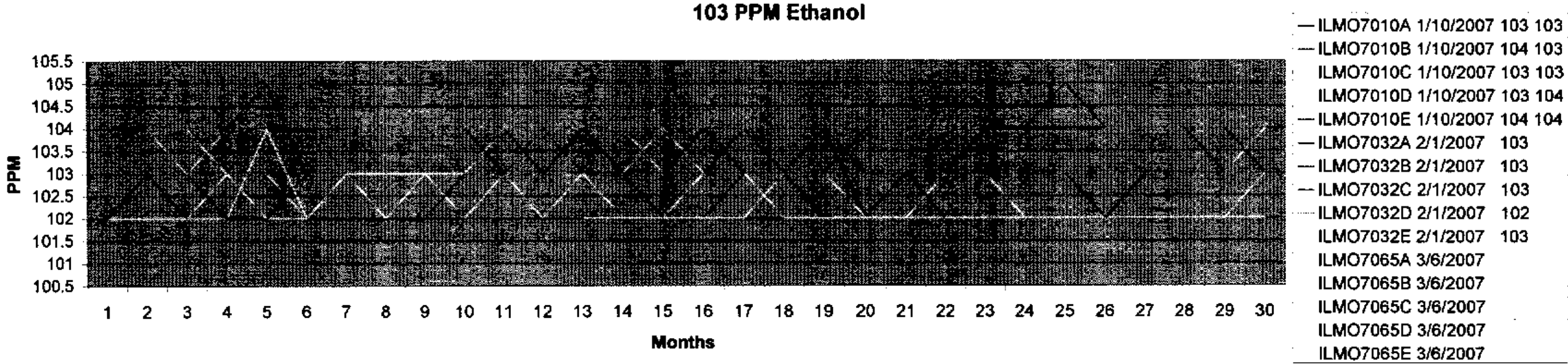
ALT	CORBrAC	ALT	CORBrAC	ALT	CORBrAC
0	0.080	3000	0.071	6000	0.063
500	0.078	3500	0.070	6500	0.062
1000	0.077	4000	0.068	7000	0.060
1500	0.075	4500	0.067	7500	0.059
2000	0.074	5000	0.066	8000	0.058
2500	0.073	5500	0.064		

To reorder contact: GUTH LABORATORIES, INC.
TOLL FREE 800-233-2338
WWW.GUTHLABS.COM

PART NUMBER **DG-U080-10**

Lot#	Date filled 12 CYL PER LOT	Months 1 LOT MEAN PPM	2 LOT MEAN PPM	3 LOT MEAN PPM	4 LOT MEAN PPM	5 LOT MEAN PPM	6 LOT MEAN PPM	7 LOT MEAN PPM	8 LOT MEAN PPM	9 LOT MEAN PPM	10 LOT MEAN PPM	11 LOT MEAN PPM	12 LOT MEAN PPM	13 LOT MEAN PPM	14 LOT MEAN PPM	15 LOT MEAN PPM	16 LOT MEAN PPM
ILMO7010A	1/10/2007	103	103	104	103	103	103	103	103	103	102	103	103	103	103	103	103
ILMO7010B	1/10/2007	104	103	103	104	104	104	105	103	103	103	104	104	104	104	104	104
ILMO7010C	1/10/2007	103	103	103	104	103	104	104	103	103	103	104	103	104	104	104	104
ILMO7010D	1/10/2007	103	104	104	103	103	102	103	103	103	104	103	103	103	103	103	103
ILMO7010E	1/10/2007	104	104	104	104	104	104	104	103	104	104	104	104	104	103	104	103
ILMO7032A	2/1/2007		103	103	104	104	103	103	103	104	104	104	104	103	103	103	103
ILMO7032B	2/1/2007		103	102	103	102	102	102	103	103	102	102	103	103	103	103	103
ILMO7032C	2/1/2007		103	103	103	103	102	102	102	103	102	102	102	103	102	103	103
ILMO7032D	2/1/2007		102	103	103	103	103	103	103	103	103	104	103	103	104	103	103
ILMO7032E	2/1/2007		103	102	102	102	103	102	102	103	102	103	103	103	102	103	102
ILMO7065A	3/6/2007			103	104	104	103	103	102	103	103	103	102	103	103	103	103
ILMO7065B	3/6/2007			103	102	102	102	104	102	103	103	103	102	103	103	102	102
ILMO7065C	3/6/2007			103	102	104	104	103	103	103	104	104	103	103	103	102	103
ILMO7065D	3/6/2007			103	104	104	104	104	103	104	104	104	104	104	104	104	104
ILMO7065E	3/6/2007			104	103	103	103	103	103	104	103	104	103	103	103	103	103

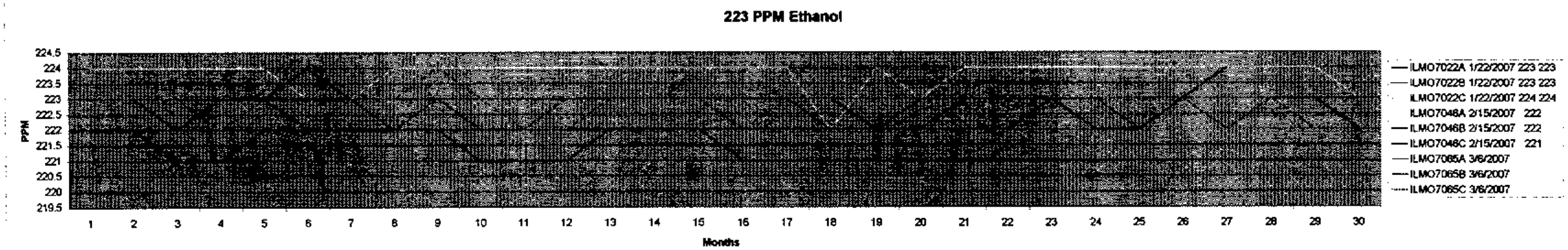
Lot#	17 LOT MEAN PPM	18 LOT MEAN PPM	19 LOT MEAN PPM	20 LOT MEAN PPM	21 LOT MEAN PPM	22 LOT MEAN PPM	23 LOT MEAN PPM	24 LOT MEAN PPM	25 LOT MEAN PPM	26 LOT MEAN PPM	27 LOT MEAN PPM	28 LOT MEAN PPM	29 LOT MEAN PPM	30 LOT MEAN PPM	31 LOT MEAN PPM	32 LOT MEAN PPM	MEAN	HIGH	LOW	PSI START	MEAN PSI END
ILMO7010A	103	104	103	103	103	103	103	103	103	103	103	102	103	103	103	104	103.03	104	102	1015	480
ILMO7010B	104	103	104	103	104	103	103	104	104	104	105	104	104	104	104	103	103.75	105	104	1015	510
ILMO7010C	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103.25	104	103	1015	340
ILMO7010D	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103.0625	103	102	1015	440
ILMO7010E	103	103	103	103	103	104	104	104	103	104	104	104	104	104	103	103	103.65625	104	103	1015	200
ILMO7032A	103	103	103	103	103	103	103	103	104	103	103	103	103	103	103	103	103.2258065	104	103	1015	340
ILMO7032B	102	102	103	103	104	102	103	102	102	102	102	102	102	102	102	102	102.4516129	103	102	1015	320
ILMO7032C	102	102	102	103	102	102	102	102	102	102	102	102	102	102	102	102	102.2903226	103	102	1015	200
ILMO7032D	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103.0322581	103	103	1015	280
ILMO7032E	102	102	102	103	103	102	102	102	102	102	102	102	102	102	102	103	102.3225806	103	102	1015	250
ILMO7065A	104	103	103	103	103	103	103	103	103	103	103	103	103	103	103	104	103.0666667	104	102	1015	310
ILMO7065B	102	103	103	102	102	102	102	103	103	102	102	102	102	102	102	102	102.4	103	102	1015	360
ILMO7065C	103	103	103	103	103	103	103	104	104	103	103	103	103	103	103	103	103.1333333	104	103	1015	300
ILMO7065D	104	104	104	104	104	104	104	104	103	104	103	104	104	104	104	104	103.6666667	104	103	1015	410
ILMO7065E	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103.1	104	103	1015	200



223 ppm

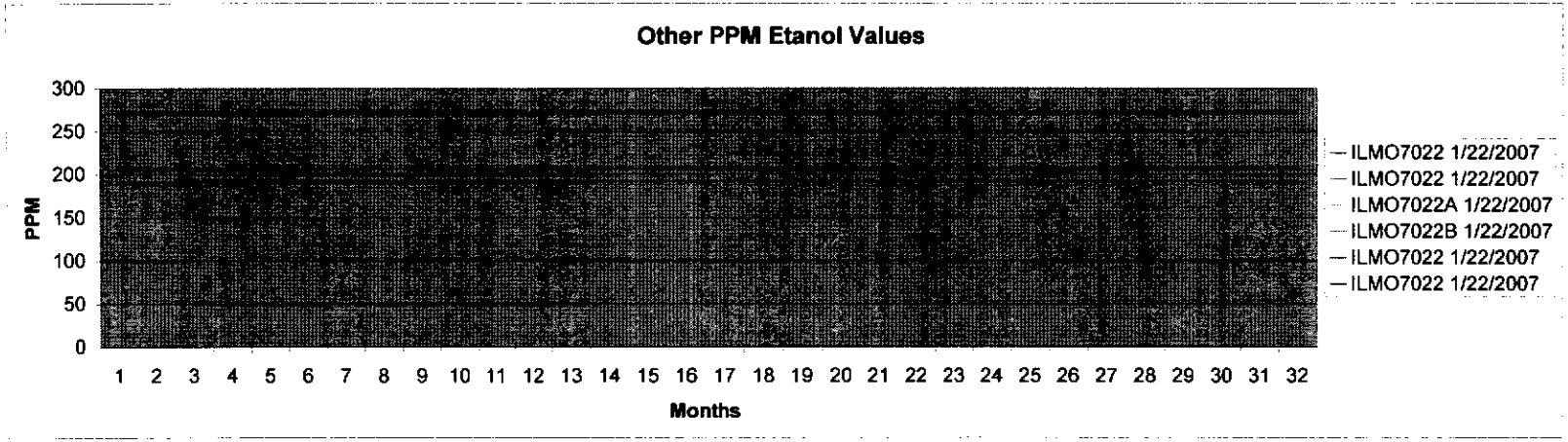
ILMO7022A	1/22/2007	223	223	223	223	223	223	223	224	223	223	224	223	223	223	223	223
ILMO7022B	1/22/2007	223	223	223	223	223	223	223	223	223	222	223	222	222	223	223	223
ILMO7022C	1/22/2007	224	224	224	224	224	224	224	223	223	224	224	224	224	224	224	224
ILMO7046A	2/15/2007		222	222	222	222	222	222	222	222	222	222	222	222	222	222	222
ILMO7046B	2/15/2007		222	223	223	222	223	223	222	223	223	223	223	223	223	223	223
ILMO7046C	2/15/2007		221	222	222	221	221	222	222	222	222	222	221	221	221	221	222
ILMO7065A	3/6/2007			223	223	223	223	223	223	223	223	223	223	223	223	223	223
ILMO7065B	3/6/2007			222	222	222	222	222	222	222	222	222	222	222	222	222	222
ILMO7065C	3/6/2007			223	223	223	222	223	222	223	223	224	223	222	222	223	223

ILMO7022A	223	223	223	223	223	223	223	223	223	223	223	223	224	224	224	223	223.15625	224	223	1015	225
ILMO7022B	223	223	223	222	222	223	223	223	223	223	223	223	222	223	223	223	222.8125	223	222	1015	280
ILMO7022C	224	224	224	222	224	223	224	224	224	224	224	224	224	224	224	223	223.8125	224	223	1015	310
ILMO7046A	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	215.0625	222	222	1015	260
ILMO7046B	223	223	223	223	222	222	223	223	223	223	223	223	223	223	223	223	215.875	223	222	1015	400
ILMO7046C	222	222	221	221	221	221	221	221	221	221	221	221	221	221	221	221	214.40625	222	221	1015	325
ILMO7065A	223	223	223	223	223	223	223	223	223	223	223	222	223	223	223	223	209.03125	223	223	1015	233
ILMO7065B	222	222	222	222	222	222	222	222	222	222	222	222	223	223	223	222	208.28125	222	222	1015	240
ILMO7065C	223	222	223	223	223	223	223	223	223	223	223	223	223	223	222	222	206.875	224	222	1015	180



other ppm

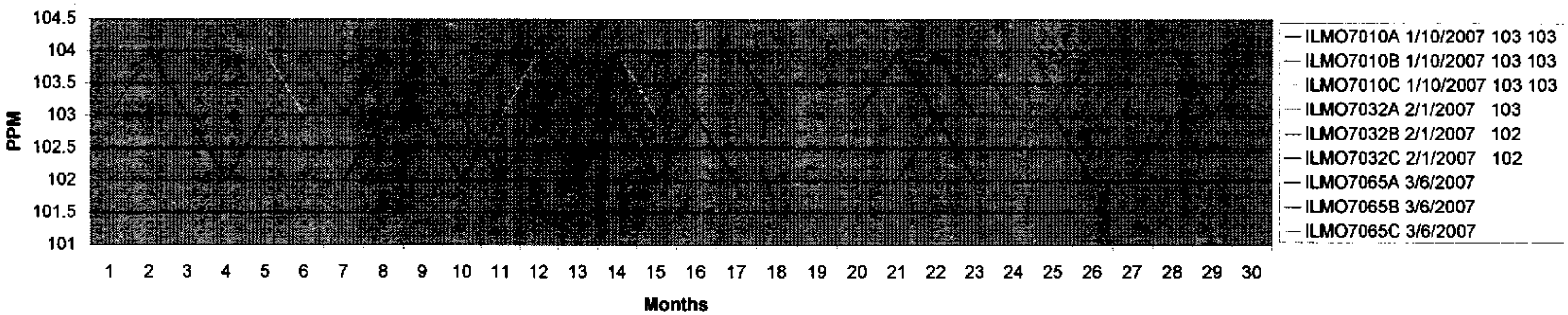
ILMO7022	1/22/2007	191	191	192	192	192	192	191	191	191	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	192	191.84375	192	191	1015	440
ILMO7022	1/22/2007	270	272	271	271	271	271	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270	270.1875	271	270	1015	350
ILMO7022A	1/22/2007	52	52	52	52	52	52	53	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	53	52	52	53	52	52	52	52	52	52.0625	53	52	1015	300
ILMO7022B	1/22/2007	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	53	53	53	53	53	53	53	52	52.21875	52	52	1015	325
ILMO7022	1/22/2007	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	207	1015	410
ILMO7022	1/22/2007	272	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	273	272	272	273	273	273.80625	273	272	1015	250



Lot#	Data / Date filled / 12 CYL PER LOT	Months 1 LOT MEAN PPM	2 LOT MEAN PPM	3 LOT MEAN PPM	4 LOT MEAN PPM	5 LOT MEAN PPM	6 LOT MEAN PPM	7 LOT MEAN PPM	8 LOT MEAN PPM	9 LOT MEAN PPM	10 LOT MEAN PPM	11 LOT MEAN PPM	12 LOT MEAN PPM	13 LOT MEAN PPM	14 LOT MEAN PPM	15 LOT MEAN PPM	16 LOT MEAN PPM
ILMO7010A	1/10/2007	103	103	103	103	103	104	103	103	103	104	103	103	102	103	104	103
ILMO7010B	1/10/2007	103	103	103	104	104	104	103	103	103	103	103	103	104	104	103	104
ILMO7010C	1/10/2007	103	103	103	103	103	104	104	103	103	103	104	104	103	104	104	104
ILMO7032A	2/1/2007		103	103	104	103	104	103	103	104	104	103	104	103	103	103	103
ILMO7032B	2/1/2007		102	102	102	102	102	102	102	102	102	102	102	102	103	102	104
ILMO7032C	2/1/2007		102	102	102	102	102	102	102	102	102	102	102	102	102	102	103
ILMO7065A	3/6/2007			103	103	103	102	103	103	103	103	103	102	103	103	103	103
ILMO7065B	3/6/2007			102	102	102	102	102	102	102	103	103	103	103	103	102	102
ILMO7065C	3/6/2007			103	104	103	103	103	104	103	103	104	103	103	103	103	103

Lot#	17 LOT MEAN PPM	18 LOT MEAN PPM	19 LOT MEAN PPM	20 LOT MEAN PPM	21 LOT MEAN PPM	22 LOT MEAN PPM	23 LOT MEAN PPM	24 LOT MEAN PPM	25 LOT MEAN PPM	26 LOT MEAN PPM	27 LOT MEAN PPM	28 LOT MEAN PPM	29 LOT MEAN PPM	30 LOT MEAN PPM	31 LOT MEAN PPM	32 LOT MEAN PPM	MEAN	HIGH	LOW	PSI START	PSI END
ILMO7010A	103	104	104	103	103	103	103	103	103	103	103	102	102	103	103	104	103.08	104	102	1250	550
ILMO7010B	104	103	103	103	103	103	103	104	103	103	103	104	104	104	103	103	103.3438	104	103	1250	545
ILMO7010C	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103.2188	104	103	1250	625
ILMO7032A	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103.1613	104	103	1250	625
ILMO7032B	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102.0968	103	102	1250	550
ILMO7032C	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102.0323	103	102	1250	500
ILMO7065A	104	103	103	103	103	103	104	103	103	103	103	103	103	103	103	104	103.0333	104	102	1250	600
ILMO7065B	102	103	102	102	102	102	102	103	102	102	102	102	102	102	102	102	102.2333	103	102	1250	560
ILMO7065C	103	103	103	103	103	103	103	104	104	103	103	103	103	103	103	103	103.1667	104	103	1250	560

103 PPM Ethanol

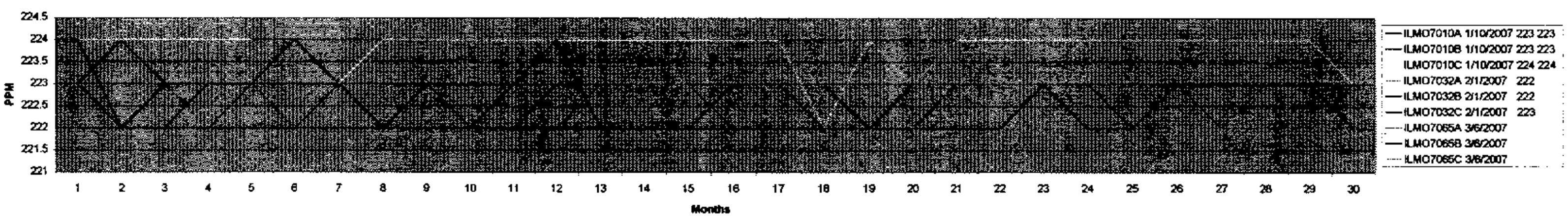


223 ppm

ILMO7010A	1/10/2007	223	223	223	224	223	223	223	224	223	223	224	223	223	223	223	223
ILMO7010B	1/10/2007	223	223	223	222	223	223	223	223	223	222	223	222	222	223	223	223
ILMO7010C	1/10/2007	224	224	224	224	224	224	224	223	223	224	224	224	224	224	224	224
ILMO7032A	2/1/2007		222	222	222	222	222	222	222	222	222	222	222	222	222	222	222
ILMO7032B	2/1/2007		222	224	222	222	223	223	222	223	223	223	223	223	223	223	223
ILMO7032C	2/1/2007		223	222	222	223	222	222	222	222	222	222	222	222	223	224	222
ILMO7065A	3/6/2007			223	223	223	223	223	223	223	223	223	223	223	223	223	223
ILMO7065B	3/6/2007			222	222	222	222	222	222	222	222	222	222	222	222	222	222
ILMO7065C	3/6/2007			223	223	223	222	223	222	223	223	224	223	222	222	223	223

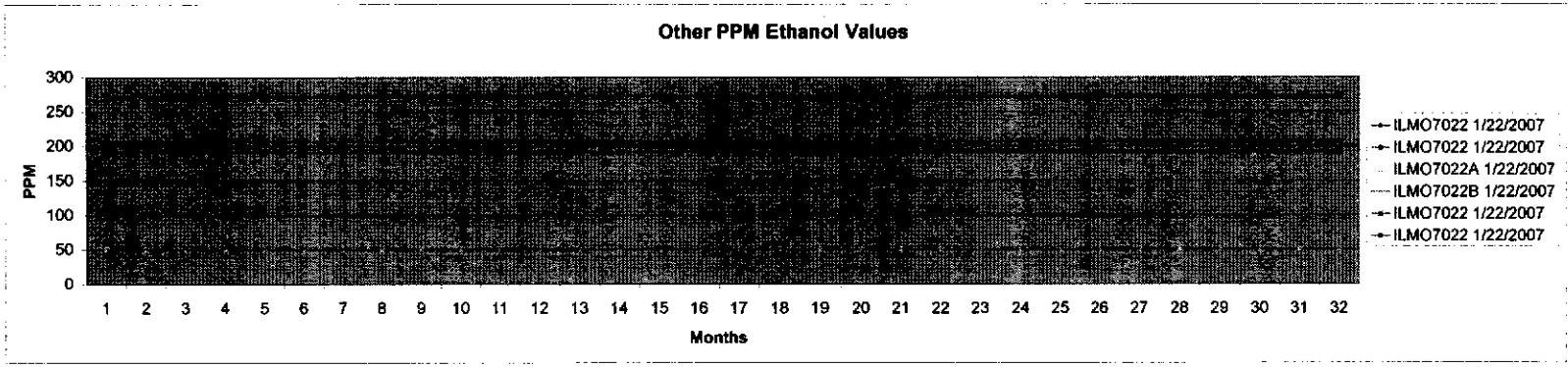
ILMO7010A	223	223	223	223	223	223	223	223	223	223	223	223	224	224	224	223	223.1675	224	223	1250	600
ILMO7010B	223	223	223	222	222	223	223	223	223	223	223	223	222	223	223	223	222.7613	223	222	1250	625
ILMO7010C	224	224	224	224	222	224	223	224	224	224	224	224	224	224	224	223	223.8125	224	223	1250	580
ILMO7032A	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	222	215.0625	222	222	1250	575
ILMO7032B	223	223	223	223	223	222	222	223	223	223	223	223	223	223	223	223	215.875	223	222	1250	600
ILMO7032C	222	222	223	223	222	222	223	223	223	223	223	223	223	223	223	223	215.625	223	222	1250	625
ILMO7065A	223	223	223	223	223	223	223	223	223	223	223	222	223	223	223	223	209.0313	223	223	1250	625
ILMO7065B	222	222	222	222	222	222	222	222	223	222	223	222	223	223	223	222	208.2813	222	222	1250	550
ILMO7065C	223	222	223	223	223	223	223	223	223	223	223	223	223	224	223	222	223	208.9375	224	222	1250	625

223 PPM Ethanol



other ppm

ILMO7022	1/22/2007	192	192	192	192	192	191	191	191	192	192	192	191	192	191	192	192	192	191	192	192	192	192	193	192	192	192	192	192	192	192	191.8125	192	191	1250	525
ILMO7022	1/22/2007	270	272	271	271	271	271	271	271	272	271	271	272	272	272	272	272	272	271	272	271	271	272	271	271	271	271	271	271	272	272	272	272	271.4063	272	271	1250	900
ILMO7022A	1/22/2007	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	53	52	52	52	52	52	52	52	52	52.03125	53	52	1250	625
ILMO7022B	1/22/2007	52	52	52	52	52	52	52	52	52	52	52	52	53	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	53	52	52	52	52.03125	52	52	1250	600
ILMO7022	1/22/2007	207	207	207	207	207	207	207	207	207	207	207	207	207	207	208	207	207	207	206	207	207	207	208	207	208	207	208	207	207	208	207	207	206.8125	207	207	1250	525
ILMO7022	1/22/2007	272	272	272	272	273	272	273	273	272	272	273	272	272	273	272	272	272	272	272	273	272	272	272	272	273	273	272	272	272	272	272	272	272.25	273	272	1250	650



U.S. Department of Commerce
National Institute of Standards and Technology
Chemical Science and Technology Laboratory
Analytical Chemistry Division
Gaithersburg, MD 20899

REPORT OF ANALYSIS

February 13, 2009

Certification of NTRM Batch No. 091601
Nominal 50 µmol/mol Ethanol in Nitrogen
for ILMO Products Co., Jacksonville, IL

Submitted to:

Mr. Kris Luther
ILMO Products Co.
7 Eastgate Drive
Jacksonville, IL 62650

Job No.: 9031

A National Institute of Standards and Technology Traceable Reference Material (NTRM) batch consisting of 20 cylinders of ethanol in nitrogen at a nominal value of 50 µmol/mol, was blended 07/11/2008 and analyzed by ILMO Products Co., Jacksonville, IL. They have submitted all necessary data to the National Institute of Standards and Technology (NIST) which has evaluated it and has chosen 3 cylinders from the batch for ethanol value assignment. Results obtained by both NIST and the producer are given in table 1. A listing of all of the cylinders in the NTRM batch along with the value assignments is given in table 2. The data show that the batch is slightly heterogeneous; the value and the uncertainty assigned to the batch are given below.

NIST Batch #	Content
091601	**(54.3 ± 1.3) µmol/mol EtOH in N_2**

The stated total expanded uncertainty was determined from the combined uncertainty of the standards used in the calibration of the analytical procedure and from the additional combined uncertainty resulting from the producer and NIST's analyses of the NTRMs. The uncertainty is expressed as an expanded uncertainty $U = ku_c$ with u_c estimated from the experimental standard deviations and the coverage factor k equal to 2. The true value for the NTRM is asserted to lie within the interval defined by the certified value ± U with a level of confidence of approximately 95 %.

The NIST concentration values were determined by means of a gas chromatograph equipped with a flame ionization detector; HP 5890 GC #1 (NIST # 546153); 10m × 0.53mm Poraplot U 20µm film thickness; 10 mL/min helium carrier flow; FID @ 250°C; 0.25 mL sample loop. Two primary standards, see below, of ethanol in nitrogen were used to analyze the samples.

Cylinder Number	Sample Number	Concentration µmol/mol	Type Standard	Expiration Date
ALM024319	na	54.95	NIST Primary	na
AAL20255	na	38.78	NIST Primary	na

Value Assignment for the Batch: The value for the NIST designated NTRM natch standard, table 1, was calculated to be 53.75 µmol/mol from the NIST data and was calculated to be 51.92 µmol/mol from the producer's data. A factor was determined to equate the value for the cylinder as determined from the producer's data with the value as determined from NIST data.

$$f = C_{NIST} / C_{Producer}$$

$$f = 1.0352$$

The producer's average concentration value for each cylinder in the NTRM batch was multiplied by this factor to obtain the assigned concentration, table 2. Even though individual concentration values are given for the cylinders, the average batch concentration is to be assigned to each cylinder in the batch.

All twenty of the samples from this NTRM batch, table 2, are certified until March 15, 2013.

References:

ISO; *Guide to the Expression of Uncertainty in Measurement;* ISBN 92-67-10188-9, 1st Ed. International Organization for Standardization: Geneva, Switzerland, (1993)
ETHANOL [327]; pp. 96-99
Folder 839.03-09-047

Prepared by:

William D. Dorko
Research Chemist

George C. Rhoderick
Research Chemist

Reviewed by:

Franklin R. Guenther, Ph.D.
Group Leader
Gas Metrology Group

cc: NTRM Folder

Table 1

Results of the NIST and Producer Analysis of Selected Samples
of NTRM Batch No. 091601

		Concentration EtOH, µmol/mol	
Cylinder Number	Sample Number	Producer	NIST
CC157629	09160102	52.47	53.42
CC157680 (BS)	09160119	51.92	53.75
CC46717	09160120	52.98	54.81
	avg =	52.46	53.99
	sd =	0.53	0.73
	% rsd =	1.01	1.35

Table 2

Ethanol in Nitrogen, Nominal 50 µmol/mol
NTRM Batch No. 091601 Submitted by ILMO Products Co., Jacksonville, IL

Cylinder Number	Sample Designation	[a]$C_{\mu mol/mol}$
CC157780	09160101	54.72
CC157629	09160102	54.29
CC157702	09160103	54.08
CC157789	09160104	54.11
CC157722	09160105	53.85
CC157692	09160106	54.42
CC157698	09160107	54.27
CC157706	09160108	54.54
CC157677	09160109	54.04
CC20324	09160110	54.69
CC157690	09160111	54.52
CC157708	09160112	53.96
CC157678	09160113	54.39
CC157688	09160114	54.78
CC157782	09160115	54.10
CC157712	09160116	54.05
CC157724	09160117	54.59
CC157696	09160118	54.34
[b]CC157680	09160119	53.74
CC46717	09160120	54.80
n = 20	avg =	54.31
	sd =	0.32
	% rsd =	0.58

[a] Values calculated by NIST by multiplying the producer's results of 10/23/2008 by factor f.

[b] Batch Standard

National Institute of Standards and Technology

Certificate of Traceability

NIST Traceable Reference Material (NTRM)
Gas Mixture Standard

Submitted to:	ILMO Products Co.
NTRM Batch Number:	091601
Mixture Contents:	Ethanol
Balance Gas:	Nitrogen
Certified Value:	(54.3 ± 1.3) µmol/mol
Date Certificate Issued:	02/13/2009
Certificate Expiration:	03/15/2013

This NTRM has been produced and certified using the procedures set forth in NIST Special Publication 260-126, "The NIST Traceable Reference Material Program for Gas Standards", issued July 1996. This program was established to allow NIST to respond to the increasing needs for high quality traceable reference materials. NIST recognizes gas mixtures certified as NTRMs to be traceable to NIST primary standards and therefore traceable to NIST.

This NTRM complies with the requirements of EPA for use in the certification of EPA protocol gas standards and for use in CFR mandated emission measurements in the automotive industry.

Uncertainty: The uncertainty of the certified value includes the estimated uncertainty of the gas standards used, the imprecision of measurements intercomparing the standards to the batch standard, and the producers imprecision of intercomparing the batch standard with each of the mixtures comprising this batch. The uncertainty is expressed as an expanded uncertainty $U = ku_c$, with u_c determined from experimental standard deviations and the coverage factor k equal to 2. Since the amount-of-substance fraction values of gaseous NTRMs are assumed to be normally distributed with an experimental standard deviation of u_c, the true value for the gas mixture amount-of-substance fraction (concentration) is asserted to lie in the interval defined by the certified value ± U with a level of confidence of approximately 95 % [1].

Expiration of Certification: This certification is valid for the period of time indicated above. This time period was determined through extensive experience with similar NIST gas SRMs. The producer is responsible for extending this certification by submitting data to NIST for evaluation. Please contact the producer for information.

Stability: This NTRM is considered to be stable over the certification period. The producer is encouraged to perform periodic analyses of the batch standard to monitor the stability of the batch. If significant changes are observed in the certified value, the purchaser will be notified by the producer identified above.

Information: This NTRM was certified under the coordination of William D. Dorko of the Analytical Chemistry Division. The Gas Metrology group of the Analytical Chemistry Division performed the NIST analytical measurements leading to the certification of this NTRM. More information about the NTRM program can be found on the Internet at http://gases.nist.gov/ntrm.htm. If there is a problem with this NTRM cylinder that is not addressed by the producer, please contact NIST by Email at gasNTRM@nist.gov or by phone at 301-975-3108.

References: [1]Guide to the Expression of Uncertainty in Measurement, ISBN 92-67-10188-9, 1st Ed. ISO, Geneva, Switzerland (1993); see also Taylor, B.N. and Kuyatt, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results", NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

Stephen A. Wise, Chief
Analytical Chemistry Division

Franklin R. Guenther, Group Leader
Gas Metrology Group

U.S. Department of Commerce
National Institute of Standards and Technology
Chemical Science and Technology Laboratory
Analytical Chemistry Division
Gaithersburg, MD 20899

REPORT OF ANALYSIS

February 13, 2009

Certification of NTRM Batch No. 091602
Nominal 210 µmol/mol Ethanol in Nitrogen
for ILMO Products Co., Jacksonville, IL

Submitted to:

Mr. Kris Luther
ILMO Products Co.
7 Eastgate Drive
Jacksonville, IL 62650

Job No.: 9032

A National Institute of Standards and Technology Traceable Reference Material (NTRM) batch consisting of 20 cylinders of ethanol in nitrogen at a nominal value of 210 µmol/mol, was blended 06/27/2008 and analyzed by ILMO Products Co., Jacksonville, IL. They have submitted all necessary data to the National Institute of Standards and Technology (NIST) which has evaluated it and has chosen 3 cylinders from the batch for ethanol value assignment. Results obtained by both NIST and the producer are given in table 1. A listing of all of the cylinders in the NTRM batch along with the value assignments is given in table 2. The data show that the batch is slightly heterogeneous; the value and the uncertainty assigned to the batch are given below.

NIST Batch #	Content
091602	**(212.8 ± 4.6) µmol/mol EtOH in N_2**

The stated total expanded uncertainty was determined from the combined uncertainty of the standards used in the calibration of the analytical procedure and from the additional combined uncertainty resulting from the producer's and NIST analyses of the NTRMs. The uncertainty is expressed as an expanded uncertainty $U = ku_c$ with u_c estimated from the experimental standard deviations and the coverage factor k equal to 2. The true value for the NTRM is asserted to lie within the interval defined by the certified value ± U with a level of confidence of approximately 95 %.

The NIST concentration values were determined by means of a gas chromatograph equipped with a flame ionization detector; HP 5890 GC # 1 (NIST # 546153); 10m × 0.53mm Poraplot U 20µm film thickness; 10 mL/min helium carrier flow; FID @ 250°C; 0.25 mL sample loop. Two primary standards, see below, of ethanol in nitrogen were used to analyze the samples.

Cylinder Number	Sample Number	Concentration µmol/mol	Type Standard	Expiration Date
ALM040280	na	198.9	NIST Primary	na
AAL20240	na	216.2	NIST Primary	na

Value Assignment for the Batch: The value for the NIST designated NTRM batch standard, table 1, was calculated to be 212.6 µmol/mol from the NIST data and was calculated to be 209.5 µmol/mol from the producer's data. A factor was determined to equate the value for the cylinder as determined from the producer's data with the value as determined from NIST data.

$$f = C_{NIST} / C_{Producer}$$

$$f = 1.0158$$

The producer's average concentration value for each cylinder in the NTRM batch was multiplied by this factor to obtain the assigned concentration, table 2. Even though individual concentration values are given for the cylinders, the average batch concentration is to be assigned to each cylinder in the batch.

All twenty of the samples from this NTRM batch, table 2, are certified until March 15, 2013.

References:

ISO; *Guide to the Expression of Uncertainty in Measurement;* ISBN 92-67-10188-9, 1st Ed. International Organization for Standardization: Geneva, Switzerland, (1993)
ETHANOL [327]; pp. 93-95
Folder 839.03-09-048

Prepared by:

William D. Dorko
Research Chemist

George C. Rhoderick
Research Chemist

Reviewed by:

Franklin R. Guenther, Ph.D.
Group Leader
Gas Metrology Group

cc: NTRM Folder

Table 1

Results of the NIST and Producer Analysis of Selected Samples
of NTRM Batch No. 091602

		Concentration EtOH, µmol/mol	
Cylinder Number	Sample Number	Producer	NIST
CC157436	09160207	211.0	214.3
CC103723	09160212	208.2	211.4
CC157798 (BS)	09160219	209.5	212.6
	avg =	209.6	212.8
	sd =	1.4	1.5
	% rsd =	0.67	0.68

Table 2.

Ethanol in Nitrogen, Nominal 210 µmol/mol
NTRM Batch No. 091602 Submitted by ILMO Products Co., Jacksonville, IL

Cylinder Number	Sample Designation	[a]$C_{\mu mol/mol}$
CC157768	09160201	212.1
CC14290	09160202	211.8
CC121388	09160203	212.6
CC109276	09160204	212.1
SA15944	09160205	211.5
SA4107	09160206	212.2
CC157456	09160207	214.1
CC157784	09160208	213.3
CC157783	09160209	213.7
CC88421	09160210	212.0
CC157570	09160211	213.9
CC103723	09160212	211.3
CC157532	09160213	213.4
EB0005203	09160214	212.5
CC157795	09160215	213.0
CC109387	09160216	212.7
CC157416	09160217	213.8
CC157528	09160218	213.6
[b]CC157798	09160219	212.6
CC157526	09160220	214.0
n = 20	avg =	212.8
	sd =	0.9
	% rsd =	0.42

[a] Values calculated by NIST by multiplying the producer's results of 10/23/2008 by factor f.

[b]Batch Standard

National Institute of Standards and Technology

Certificate of Traceability

NIST Traceable Reference Material (NTRM)
Gas Mixture Standard

Submitted to:	ILMO Products Co.
NTRM Batch Number:	091602
Mixture Contents:	Ethanol
Balance Gas:	Nitrogen
Certified Value:	(212.8 ± 4.6) µmol/mol
Date Certificate Issued:	02/13/2009
Certificate Expiration:	03/15/2013

This NTRM has been produced and certified using the procedures set forth in NIST Special Publication 260-126, "The NIST Traceable Reference Material Program for Gas Standards", issued July 1996. This program was established to allow NIST to respond to the increasing needs for high quality traceable reference materials. NIST recognizes gas mixtures certified as NTRMs to be traceable to NIST primary standards and therefore traceable to NIST.

This NTRM complies with the requirements of EPA for use in the certification of EPA protocol gas standards and for use in CFR mandated emission measurements in the automotive industry.

Uncertainty: The uncertainty of the certified value includes the estimated uncertainty of the gas standards used, the imprecision of measurements intercomparing the standards to the batch standard, and the producers imprecision of intercomparing the batch standard with each of the mixtures comprising this batch. The uncertainty is expressed as an expanded uncertainty $U = ku_c$, with u_c determined from experimental standard deviations and the coverage factor k equal to 2. Since the amount-of-substance fraction values of gaseous NTRMs are assumed to be normally distributed with an experimental standard deviation of u_c, the true value for the gas mixture amount-of-substance fraction (concentration) is asserted to lie in the interval defined by the certified value ± U with a level of confidence of approximately 95 % [1].

Expiration of Certification: This certification is valid for the period of time indicated above. This time period was determined through extensive experience with similar NIST gas SRMs. The producer is responsible for extending this certification by submitting data to NIST for evaluation. Please contact the producer for information.

Stability: This NTRM is considered to be stable over the certification period. The producer is encouraged to perform periodic analyses of the batch standard to monitor the stability of the batch. If significant changes are observed in the certified value, the purchaser will be notified by the producer identified above.

Information: This NTRM was certified under the coordination of William D. Dorko of the Analytical Chemistry Division. The Gas Metrology group of the Analytical Chemistry Division performed the NIST analytical measurements leading to the certification of this NTRM. More information about the NTRM program can be found on the Internet at http://gases.nist.gov/ntrm.htm. If there is a problem with this NTRM cylinder that is not addressed by the producer, please contact NIST by Email at gasNTRM@nist.gov or by phone at 301-975-3108.

References: [1]Guide to the Expression of Uncertainty in Measurement, ISBN 92-67-10188-9, 1st Ed. ISO, Geneva, Switzerland, (1993); see also Taylor, B.N. and Kuyatt, C.E., "Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results", NIST Technical Note 1297, U.S. Government Printing Office, Washington, D.C. (1994).

Stephen A. Wise, Chief
Analytical Chemistry Division

Franklin R. Guenther, Group Leader
Gas Metrology Group

GUTH LABORATORIES, INC.
590 NORTH 67th STREET • HARRISBURG, PA 17111-4511 • TELEPHONE: 717-564-5470

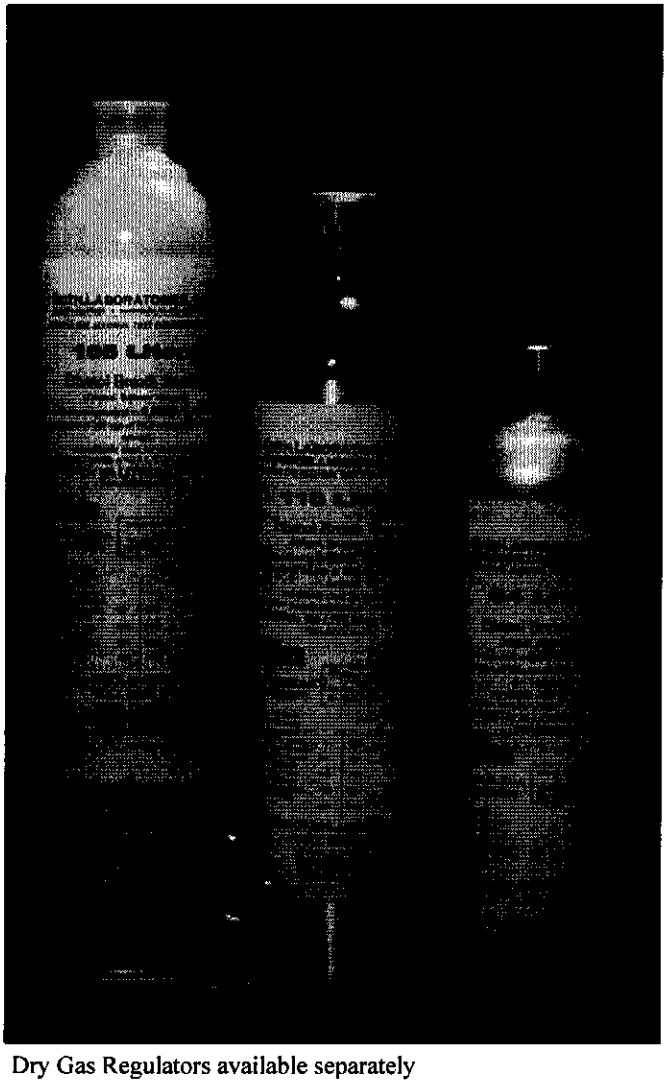
Dry Gas Ethanol Breath Standards

Guth Laboratories and ILMO Products Company have partnered together to offer the industry an exceptional dry gas standard . With Guth Laboratories 30 plus years of experience in the breath testing field and the expertise of ILMO Products in the specialty gas market we are able to offer an exceptional product manufactured in an ISO 17025 accredited gas production facility. All standards are NIST traceable and approved by NHTSA.

We offer a 110Liter **refillable** cylinder that can assist in meeting your stay green environmental program.

Gas mixtures are available to support all alcohol breath testers. Visit our web site for assistance in choosing the correct product for your application.

- NIST National Institute of Standards and Technology NTRM traceable
- NHTSA approved
- Refillable cylinders available to assist with meeting your environmental program needs.
- Available in the following stocked concentrations .038, .040, .080, .082, .100, Inquire for custom concentrations.
- 2 Year expiration date
- +/- 2% accuracy



Dry Gas Regulators available separately

Cylinder size	Height	Diameter	Weight	Number of tests	List Price	Industry standard valve used	Refillable
105 Liter	13.75 inches	3.25 inches	3.5 lbs	300	$120.00	Yes	No
110 Liter	12.75 inches	3.125 inches	2.75 lbs	315	$125.00	Yes	Yes
34 Liter	10.25 inches	2.75 inches	1 lb	100	$108.00	Yes	No

FOR MORE INFORMATION
CALL TOLL FREE 800-233-2338
OR VISIT OUR WEB SITE WWW.GUTHLABS.COM

ILMO Specialty Gases
Work Order

Work Order Number	Date Ordered	Date Completed	Date Shipped
257	1/26/2010		

Part Number	Cylinder Size	Quantity
BACG34L038I	105L	6

Description	
DISPOSABLE, 34L AL	BAC 0.038% INTOX (103.5 PPM)

Expiration Date	Shelf Life	Lot Number
	0	

Account Number	Customer
26804	GUTH LABORATORIES INC

Address	Address
590 N 67TH ST	

City	State	Zip
HARRISBURG	PA	171114511

Notes:
* USE KAHNTACT Label