



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

Red Ball Technical Gas Services
555 Craig Kennedy Way, Shreveport, LA 71107

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2005

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (as outlined by the joint ISO-ILAC-IAF Communiqué dated January 2009):

Calibration of Specialty Gases
(As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President/Operations Manager

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

Initial Accreditation Date:

July 3, 2008

Issue Date:

August 29, 2014

Expiration Date:

September 30, 2016

Accreditation No.:

62754

Certificate No.:

L14-246

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjllabs.com



Certificate of Accreditation: Supplement

Red Ball Technical Gas Services

55 Craig Kennedy Way, Shreveport, LA 71107
 Craig Harris Phone: 318-425-3211

Accreditation is granted to the facility to perform the following calibration:

Chemical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Electrolytic Moisture Analysis ^F	1.5 $\mu\text{mol/mol}$ to 100 $\mu\text{mol/mol}$	$(4.85 \times 10^{-1} + 1.02 \times 10^{-2}\text{C}) \mu\text{mol/mol}$	Electrolytic moisture analyzer
Total trace Hydrocarbon Analysis ^F	0.1 $\mu\text{mol/mol}$ to 30 $\mu\text{mol/mol}$	$(2.67 \times 10^{-2} + 1.34 \times 10^{-2}\text{C}) \mu\text{mol/mol}$	Flame Ionization Detector
Electrochemical Oxygen Analysis ^F	0.2 $\mu\text{mol/mol}$ to 1 000 000 $\mu\text{mol/mol}$	$(4.90 \times 10^{-2} + 1.50 \times 10^{-2}\text{C}) \mu\text{mol/mol}$	Electrochemical Oxygen Analyzer
Electrochemical Trace Oxygen Analysis ^F	0.4 $\mu\text{mol/mol}$ to 500 mmol/mol	$(1.15 \times 10^{-1} + 1.21 \times 10^{-2}\text{C}) \mu\text{mol/mol}$	Electrochemical Oxygen Analyzer
Paramagnetic Percent Oxygen Analysis ^F	20 mmol/mol to 250 mmol/mol	$(1.14 + 8.26 \times 10^{-3}\text{C}) \text{mmol/mol}$	Paramagnetic Oxygen Analyzer
Gas Mixture Chemical Analysis ^F	2.080 mmol/mol to 1 000 mmol/mol	$(6.60 \times 10^{-1} + 1.43 \times 10^{-2}\text{C}) \text{mmol/mol}$	GC with TCD
Gas Mixture Chemical Analysis ^F	0.286 mmol/mol to 1 000 mmol/mol	$(9.07 \times 10^{-2} + 1.49 \times 10^{-2}\text{C}) \text{mmol/mol}$	GC with FID
Gas Mixture Gravimetric Analysis ^F	1 $\mu\text{mol/mol}$ to 1 000 000 $\mu\text{mol/mol}$	0.3 $\mu\text{mol/mol}$	Gravimetric Scale Fill System
Nitric Oxide Concentration ^F	1.2 $\mu\text{mol/mol}$ to 100 $\mu\text{mol/mol}$	$(3.66 \times 10^{-1} + 1.13 \times 10^{-2}\text{C}) \mu\text{mol/mol}$	Chemiluminescent
Nitric Oxide concentration ^F	60 $\mu\text{mol/mol}$ to 1 500 $\mu\text{mol/mol}$	$(5.31 \times 10^{-1} + 1.10 \times 10^{-2}\text{C}) \mu\text{mol/mol}$	NDIR
Carbon Monoxide Concentration ^F	100 $\mu\text{mol/mol}$ to 5 000 $\mu\text{mol/mol}$	$(1.49 + 1.11 \times 10^{-2}\text{C}) \mu\text{mol/mol}$	Gas Correlation IR
Sulfur Dioxide Concentration ^F	100 $\mu\text{mol/mol}$ to 2 000 $\mu\text{mol/mol}$	$(1.22 + 1.09 \times 10^{-2}\text{C}) \mu\text{mol/mol}$	NDIR
Gas Mixture Analysis ^F	14 $\mu\text{mol/mol}$ to 250 000 $\mu\text{mol/mol}$	$(4.37 + 9.98 \times 10^{-3}\text{C}) \mu\text{mol/mol}$	FTIR

Electrical

MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)	CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED
Digi-Meter Welding Machine ^{FO}	6 V to 100 V	1.7 V	Clamp Meter and Load Bank
	9 A to 1 500 A	3 A	



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Craig Harris Phone: 318-425-3211

Accreditation is granted to the facility to perform the following calibration:

1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor k (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.
2. The laboratory's range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
3. The presence of a superscript F means that the laboratory performs calibration of the indicated parameter at its fixed location. Example: Outside Micrometer^F would mean that the laboratory performs this calibration at its fixed location.
4. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.
5. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.



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Testing of Specialty Gases
(As detailed in the supplement)

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Certificate of Accreditation: Supplement

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555 Craig Kennedy Way, Shreveport, LA 71107
Craig Harris Phone: 318-425-3211

Accreditation is granted to the facility to perform the following testing:

FIELD OF TEST	ITEMS, MATERIALS OR PRODUCTS TESTED	SPECIFIC TESTS OR PROPERTIES MEASURED	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED	RANGE (WHERE APPROPRIATE) AND DETECTION LIMIT
Chemical assay ^F	High pressure and cryogenic gases	Trace moisture concentration	Electrolytic moisture analyzer	1.5 µmol/mol to 100 µmol/mol (0.5 µmol/mol LoD)
		Trace hydrocarbon concentration	Flame Ionization Detector	0.1 µmol/mol to 30 µmol/mol (0.028 µmol/mol LoD)
		Oxygen concentration	Electrochemical Oxygen Analyzer	0.2 µmol/mol to 1 000 000 µmol/mol (0.052 µmol/mol LoD)
		Trace oxygen concentration	Electrochemical Oxygen Analyzer	0.4 µmol/mol to 50 µmol/mol (0.12 µmol/mol LoD)
		Percent oxygen concentration	Paramagnetic Oxygen Analyzer	20 mmol/mol to 250 mmol/mol (1.3 mmol/mol LoD)
		Gas mixture concentration	GC with TCD	2.08 mmol/mol to 1 000 mmol/mol (0.69 mmol/mol LoD)
		Gas mixture concentration	GC with FID	0.286 mmol/mol to 1 000 mmol/mol (0.095 mmol/mol LoD)
		Gas mixture concentration	Gravimetric Scale	1 µmol/mol to 1 000 000 µmol/mol (0.3 µmol/mol LoD)



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Chemical assay ^F	High pressure and cryogenic gases	Nitric Oxide concentration	Chemiluminescent	1.2 µmol/mol to 100 µmol/mol (0.38 µmol/mol LoD)
		Nitric Oxide concentration	NDIR	30 µmol/mol to 1 500 µmol/mol (0.86 µmol/mol LoD)
		Carbon Monoxide concentration	Gas Correlation IR	100 µmol/mol to 5 000 µmol/mol (2.6 µmol/mol LoD)
		Sulfur Dioxide concentration	NDIR	100 µmol/mol to 2 000 µmol/mol (2.3 µmol/mol LoD)
		Gas mixture concentration	FTIR	14 µmol/mol to 250 000 µmol/mol (4.5 µmol/mol LoD)

1. The presence of a superscript F means that the laboratory performs testing of the indicated parameter at its fixed location. Example: Outside Micrometer^F would mean that the laboratory performs this testing at its fixed location.