

PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

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

***Metrocal, S.A. de C.V.
Paseo de las Fuentes # 5100 Col. Del Paseo Residencial
Monterrey, Nuevo León C.P. 64920***

(Hereinafter, 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 the following scope and the operation of a laboratory quality management system (as outlined by the joint ISO-ILAC-IAF Communiqué dated June 18, 2005):

***Calibration of Test and Measurement Equipment
(As detailed in the supplement)***

Such testing and/or calibration services shall only be offered at or from the address given above. 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:

The validity of this certificate is mandated through ongoing surveillance.

Accreditation Manager

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
26555 Evergreen, Suite 1325
Southfield, Michigan 48076

Issue Date:
January 31, 2007

Expiration Date:
January 30, 2009

Certificate No.:
L07-9

Page No.:
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Certificate of Accreditation: Supplement

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Accreditation is granted to this facility to perform the following calibrations:

CALIBRATION FIELD	MEASURED INSTRUMENT, QUANTITY OR GAUGE	RANGE (AND SPECIFICATION WHERE APPROPRIATE)	BEST MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (\pm)
Optical	ρ (λ) Spectral Reflectance	ρ (360nm to 740 nm): 0% to 100% X: 0.3 to 95.0 Y: 0.3 to 100.0 Z: 0.3 to 100.0 Color Values: CIE: L*: 0.0 to 100.0 CIE: a*: -28.0 to 36.0 CIE: b*: -26.0 to 73.0	2.5% 0.5 0.5 0.5 0.5 0.5 0.5
	Spectrophotometers		
	τ (λ) Transmittance	τ : 1.0% to 95%	0.10%
	α (λ) Absorbance	α (λ): 0.03 to 2.2	0.05%
	λ Wavelength	λ : 230 nm to 700 nm	0.07 nm
	ρ (e) *Gloss/Specular Reflectance	ρ (e): 20° to 92.1° ρ (e): 60° to 94.9° ρ (e): 85° to 99.8°	0.23 0.23 0.23
	E_v Illuminance	Illuminance: 0 lux to 6000 lux	1.21%
	* Ligth Color	Ligth Color: 10 K to 10 000 K	10 K
	E (v) Light Meters	0 lux to 6000 lux	2.0%
	Reflectance Density	0% DO to 2.3% DO	0.1%
Transmittance Density	0.25% DO to 4.0% DO	0.1%	
E (λ) Spectral Radiance	340/420 nm 0 W/m ² /nm to 2.0 W/m ² /nm	5%	
Physical	Mass Density	0 g/cm ³ to 100 g/cm ³	2%
	Hardness Shore A	28 DP to 91 DP	2 DP
	Weight	0 g to 100 g	0.001 g
		0 kg to 10 kg	0.01 g
		0 kg to 20 kg	2 g
	Mass Scales and Balances	0 g to 200 g	0.0005 g
		0 kg to 15 kg	1 g
		0 kg to 200 kg	0.02 kg
Force	0 N to 4900 N (0 kgf to 500 kgf)	0.1 N (0.01 kg)	
Pressure	-100 (vac) to 6894 kPa -14.5 psi (vac) to 1000 psi	1%	

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Physical	Frequency of Rotation	0 r/min to 24 000 r/min (RPM)	2 r/min (RPM)
	Viscosity	0.1 mPa · s to 30 000 mPa · s (100 cps to 30 000 cps)	2%
	Kinematic Viscosity	Ford 26 mm ² /s to 367 mm ² /s (Flow time 20 s to 100 s) Ford No. 2 mm ² /s = 1.44 (t-18.0) Ford No. 3 mm ² /s = 2.31 (t-6.58) Ford No. 4 mm ² /s = 3.85 (t-4.49) Ford No. 5 mm ² /s = 12.1 (t-2.0)	10%
		Zahn 20 mm ² /s to 1400 mm ² /s (Flow time 20 s to 80 s) Zahn No. 2 mm ² /s = 3.5 (t-14.0) Zahn No. 3 mm ² /s = 11.7 (t-7.5) Zahn No. 4 mm ² /s = 14.8 (t-5.0) Zahn No. 5 mm ² /s = 23 (t)	10%
		Volume	0 L to 20 L
Dimensional	Length Micrometers	0 mm to 101.6 mm (0 in to 4 in)	0.01 mm (0.0005 in)
	Length Calipers	0 mm to 304.8 mm (0 in to 12 in)	0.01 mm (0.0005 in)
	Length Measuring Tape	0 m to 5 m	1 mm
	Length Gage Block	0 mm to 25.4 mm (0 in to 1 in)	0.02 mm (0.0008 in)
		25.4 mm to 304.8 mm (1 in to 12 in)	0.1 mm (0.004 in)
	Thickness Gages	12.2 mm to 1016.0 mm	0.5 mm
	Wave Scans	Wa: 33.4 Wb: 47.8 Wc: 22.8 Wd: 19.1 We: 27.2 Lw: 10.1 Sw: 41.2 Du: 23.0	2.0 2.8 1.8 1.8 3.0 1.5 2.1 1.8

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Electrical	pH	0 s.u. to 14.0 s.u.	0.5%
	Conductivity	84 mS to 12880 mS	10 mS
Temperature	Glass Thermometers	0°C to 400°C	1°C
	Thermocouples	0°C to 400°C	1°C
	RTD PT-100	0°C to 400°C	0.5°C
	Temperature Controllers	35°C to 1200°C	1°C