National Voluntary Laboratory Accreditation Program

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

United Testing Sys. Canada, Ltd.
225 Bradwick Drive, #21
Concord Ontario L4K 1K7
CANADA
Mr. Arno M. Dickertmann
Phone: 905-669-5327 Fax: 905-738-5051
E-mail: arno@utscanada.com
URL: http://www.utscanada.com

CALIBRATION LABORATORIES **NVLAP LAB CODE 200311-0**

Scope Revised: 2008-04-01

NVLAP Code: 20/A01 ANSI/NCSL Z540-1-1994; Part 1 Compliant

DIMENSIONAL

NVLAP Code: 20/D05
Length

Range	***Best Uncertainty (±)*** [note 1]	***Remarks***
Laboratory and Field Service Calibration of Extensometers		
Extensometer Linear Calibrator		
0 in to 1.0 in	(0.000012 + 0.000036 L) in	ASTM E83
0 mm to 25.4 mm	(0.0003048 + 0.0009144 L) mm	ASTM E83
Extensometer Gage Length		
0.5 in	0.000019 in	ASTM 83
1.0 in	0.000039 in	ASTM 83
2.0 in	0.000077 in	ASTM 83
0 in to 4.0 in	0.00137 in	ASTM E83
0 mm to 101.6 mm	0.0348 mm	ASTM E83
0 in to 12.0 in	0.00177 in	ASTM E83
0 mm to 304.8 mm	0.0449 mm	ASTM E83

2008-04-01 through 2009-03-31

Effective dates

Sally S. Bruce

For the National Institute of Standards and Technology

CALIBRATION LABORATORIES **NVLAP LAB CODE 200311-0**

Scope Revised: 2008-04-01

Laboratory and Field Service Calibration

Crosshead / Actuator Travel / Position Transducer		
0.0 in to 24.0 in	0.00206 in	ASTM E2309
0.0 mm to 600.9 mm	0.0523 mm	ASTM E2309
0.0 in to 2.0 in	0.000101 in	ASTM E2309
0.0 mm to 50.8 mm	0.00256 mm	ASTM E2309
0.0 in to 12.0 in	0.00177 in	ASTM E2309
0.0 mm to 304.8 mm	0.0449 mm	ASTM E2309
0.0 in to 1.0 in	(0.000012 + 0.000036L) in	ASTM E2309
0.00 mm to 25.4 mm	(0.0003048 + 0.0009144L) mm	ASTM E2309
Crosshead Speed / Actuator Speed		
0 in/min to 40 in/min	0.00206 in	Displacement component using digital linear scale
0 mm/min to 1000 mm/min	0.0523 mm	Displacement component using digital linear scale
	125 ms	Time component by comparison to digital stopwatch

DC MV/V Voltage ratio measurement

Range in mV/V	***Best Uncertainty (±) in %*** [note 1]	***Remarks***
0 to 5	0.01	

MECHANICAL

NVLAP Code: 20/M06
Force

Range in lbs	***Best Uncertainty (±) in %*** [note 1]	***Remarks***
0.1 to 112 404	0.025	ASTM E74 [note 8]

2008-04-01 through 2009-03-31

Effective dates

For the National Institute of Standards and Technology

CALIBRATION LABORATORIES **NVLAP LAB CODE 200311-0**

Scope Revised: 2008-04-01

	0.1 to 300 000	0.05	ASTM E74 *note 8*
	0.1 to 1 000 000	0.25	ASTM E4
	Range in N·m	***Best Uncertainty (±) in % note 1***	***Remarks***
Torque	0.1 to 5000	0.05	DIN 51309
	Range in lb/in		
	To 50,000	0.05	DIN 51309

Field Service Calibration of:

Devices	***Range in lbs***	***Best Uncertainty (±) in % note 1***	***Remarks***
Tensile Testing Machines	to 1 000 000	0.25	ASTM E4
Compression Testers	to 1 000 000	0.25	ASTM E4

	Range in N·m	***Best Uncertainty (±) in % note 1***	***Remarks***
Torque	0.1 to 5000	0.25	DIN 51309

NVLAP Code: 20/M13
Field Service and Laboratory Calibration of Rockwell Hardness Testers - Indirect Hardness, ASTM E18, ISO 6508-2

	Range in Rockwell Units	***Best Uncertainty (±) in Rockwell Units notes 1,2***
HRA	20 to 60	0.22
	60 to 80	0.12
	80 to 88	0.11
HRBS	20 to 50	1.01
	40 to 60	0.73
	60 to 70	0.46
HRC	20 to 40	0.39
	40 to 60	0.32
	60 to 70	0.31

2008-04-01 through 2009-03-31

Effective dates

Sally S. Bruce

For the National Institute of Standards and Technology

CALIBRATION LABORATORIES **NVLAP LAB CODE 200311-0**

Scope Revised: 2008-04-01

HRC *note 3*	26.18	0.18
	45.43	0.17
	64.54	0.17
HRD	40 to 55	0.19
	55 to 65	0.21
	65 to 77	0.14
HRES	50 to 80	0.56
	80 to 90	0.56
	90 to 100	0.55
HRFS	60 to 70	0.46
	70 to 85	0.46
	85 to 100	0.45
HRGS	27 to 80	0.71
	80 to 94	0.24
HRHS	80 to 95	0.60
	95 to 100	0.39
HRKS	40 to 85	0.66
	85 to 100	0.63
HRLS	100 to 120	0.35
	120 to 130	0.35
HRMS	80 to 110	0.52
	110 to 130	0.48
HRPS	58 to 100	0.84
	100 to 112	0.51
HRRS	100 to 120	0.32
	120 to 127	0.20
HRSS	100 to 120	0.65
	120 to 125	0.14
HRVS	100 to 110	0.48
	110 to 121	0.17
HR15N	70 to 80	0.41
	80 to 90	0.20
	90 to 94	0.20
HR30B	42 to 60	0.40

2008-04-01 through 2009-03-31

Effective dates

Sally S. Bruce

For the National Institute of Standards and Technology

	60 to 77.5	0.27
	77.5 to 86	0.27
HR45N	20 to 45	0.45
	45 to 66.5	0.45
	66.5 to 77	0.16
HR15TS	67 to 75	0.35
	75 to 85	0.35
	85 to 93	0.29
HR30TS	25 to 50	0.57
	50 to 70	0.72
	70 to 82	0.32
HR45TS	1 to 30	0.54
	30 to 50	0.67
	50 to 72	0.42
HR15WS	70 to 90	0.44
	90 to 100	0.54
HR30WS	60 to 80	0.80
	80 to 95	0.58
HR45WS	25 to 60	0.80
	60 to 95	0.94
HR15XS	80 to 90	0.56
	90 to 100	0.24
HR30XS	65 to 85	0.94
	85 to 100	0.14
HR45XS	50 to 85	0.70
	85 to 95	0.25
HR15YS	85 to 91	0.97
	91 to 96	0.96
	96 to 100	0.47
HR30YS	75 to 90	0.59
	90 to 100	0.32
HR45YS	65 to 85	0.68
	85 to 100	0.24

Tungsten Carbide Balls		
HRBW	20 to 50	0.96
	50 to 75	0.65
	75 to 105	0.55
HREW	50 to 80	0.45
	80 to 90	0.50
	90 to 100	0.70
HRFW	60 to 70	0.55
	70 to 85	0.54
	85 to 100	0.55
HRGW	27 to 80	0.68
	80 to 94	0.18
HRHW	80 to 95	0.52
	95 to 100	0.42
HRKW	40 to 85	0.54
	85 to 100	0.30
HRLW	100 to 120	0.17
	120 to 130	0.12
HRMW	80 to 110	0.53
	100 to 130	0.41
HRPW	58 to 100	0.56
	100 to 112	0.34
HRRW	100 to 120	0.28
	120 to 127	0.21
HRSW	100 to 120	0.78
	120 to 125	0.05
HRVW	100 to 110	0.25
	110 to 121	0.25
HR15TW	67 to 75	0.36
	75 to 85	0.24
	85 to 93	0.24
HR30TW	25 to 50	0.80
	50 to 70	0.47
	70 to 82	0.19

CALIBRATION LABORATORIES **NVLAP LAB CODE 200311-0**

Scope Revised: 2008-04-01

HR45TW	1 to 30	0.60
	30 to 50	0.36
	50 to 72	0.31
HR15WW	70 to 90	0.33
	90 to 100	0.33
HR30WW	60 to 95	0.40
HR45WW	25 to 60	0.75
	60 to 95	0.40
HR15XW	80 to 90	0.38
	90 to 100	0.10
HR30XW	65 to 85	0.83
	85 to 100	0.12
HR45XW	50 to 85	0.54
	85 to 95	0.11
HR15YW	85 to 91	0.32
	91 to 96	0.15
	96 to 100	0.15
HR30YW	80 to 100	0.22
HR45YW	65 to 100	0.45

Field Service and Laboratory Calibration of Rockwell Hardness Testers

	Range	***Best Uncertainty (±)*** [note 1]	***Remarks***
Force	3 kgf to 150 kgf	0.25 %	ASTM E4 Direct verification of Force is applicable to all Rockwell Testers.
Depth	0 mm to 12 mm	0.0002 mm	Direct verification of Depth is limited to United True Blue II model hardness testers.

Field Service and Calibration of Macro Vickers Hardness Testers, ASTM E384, ISO 6507-2, ASTM E92

Load	***Range in HV***	***Best Uncertainty (±) in HV*** [notes 1,5]	***Remarks***
1 kgf	263	7.5	
1 kgf	457	15.8	
1 kgf	717	25.0	
5 kgf	263	6.3	

2008-04-01 through 2009-03-31

Effective dates

Sally S. Bruce

For the National Institute of Standards and Technology

5 kgf	457	10.6
5 kgf	717	11.2
10 kgf	264	4.8
10 kgf	443	5.5
10 kgf	717	10.6
20 kgf	200	2.5
20 kgf	400	6.2
20 kgf	700	11
30 kgf	200	2
30 kgf	400	4.4
30 kgf	700	9.3
50 kgf	200	1.9
50 kgf	400	3.5
50 kgf	700	6.3

Field Service and Calibration of Macro Hardness Testers - Indirect Method
KNOOP SCALE ASTM E384, ISO 4545

Load	***Range in HK***	***Best Uncertainty (±) in HK*** *notes 1,6*	***Remarks***
100 gf	193	10.5	
100 gf	600	21.5	
200 gf	95	5.3	
200 gf	523	16.0	
300 gf	95	4.7	
300 gf	538	11.0	
500 gf	95	3.2	
500 gf	536	9.1	
1000 gf	528	9.6	

VICKERS SCALE ASTM E384 ISO 6507-2

Load	***Range in HV***	***Best Uncertainty (±) in HV*** *notes 1,6*	***Remarks***
25 gf	110	6.5	
50 gf	106	4.9	
100 gf	194	9.1	
100 gf	541	15.1	

2008-04-01 through 2009-03-31

Effective dates

Sally S. Bruce

For the National Institute of Standards and Technology

200 gf	95	5.3
200 gf	523	9.9
300 gf	193	5.2
300 gf	510	13.3
500 gf	193	5.2
500 gf	507	13.3
1000 gf	194	4.0
1000 gf	514	11.2

Indentation Measuring System

Range in mm	*Best Uncertainty (±) in mm*	*Remarks*
0 to 2	0.00005	E384, E92

Stage Micrometers

Range in mm	*Best Uncertainty (±) in mm* [note 1]	*Remarks*
0 to 7	0.0008	

Field Service and Laboratory Calibration of Brinell Hardness Testers, ASTM E10, ISO 6506-2

	Range in HBW	*Best Uncertainty (±) in HBW* [note 1]	*Remarks*
Force	to 3000 kgf	0.25 %	ASTM E4
Indentation Measuring System	0 mm to 7 mm	0.0008 mm	
Ball Measuring System	10 mm	0.0005 mm	

Field Service and Laboratory Calibration of Brinell Hardness Testers, ASTM E10, ISO 6506-2

Load	*Range in HBW*	*Best Uncertainty (±) in HBW* [notes 1,7]	*Remarks*
500 kgf	15.0 to 100.0	3.8	
500 kgf	100.0 to 158.0	4.1	
3000 kgf	100.0 to 200.0	3.8	
3000 kgf	200.0 to 400.0	5.3	
3000 kgf	400.0 to 600.0	5.3	

2008-04-01 through 2009-03-31

Effective dates

Sally S. Bruce

For the National Institute of Standards and Technology

CALIBRATION LABORATORIES **NVLAP LAB CODE 200311-0**

Scope Revised: 2008-04-01

1. Represents an expanded uncertainty using a coverage factor, k = 2, at an approximate level of confidence of 95 %.
2. The HRC standardized test blocks used for verification are calibrated at the David Ellis Company Inc. Hardness Calibration Laboratory in accordance with ASTM E18 section C using NIST Rockwell HRC Standard References Materials (SRM) 2810, 2811, and 2812. All other Rockwell Scales are traceable to David L. Ellis Co. Inc. hardness levels through laboratory standardizing machines. The standardizing machines are directly verified according to ASTM E18 using devices that are traceable to NIST.
3. Scale is Rockwell HRC SRM'S 2810, 2811, and 2812 purchased from NIST and maintained by UTS/DTS.
4. The standardized test blocks used for verification are calibrated at the David Ellis Company Inc. Hardness Calibration Laboratory in accordance with ASTM E18 Section C. Rockwell Scales are traceable to David L. Ellis Co. Inc. hardness levels through laboratory standardizing machines. The standardizing machines are directly verified according to ASTM E18 using devices that are traceable to NIST.
5. The standardized test blocks used for verification are calibrated in accordance with ASTM E92 using indenter / load combinations that are traceable to D. L. Ellis Co. hardness levels, through laboratory standardizing machines. The standardizing machines are directly verified according to ASTM E92 using devices that are traceable to NIST.
6. The standardized test blocks used for verification are calibrated in accordance with ASTM E384 using indenter / load combinations that are traceable to D. L. Ellis Co. hardness levels, through laboratory standardizing machines. The standardizing machines are directly verified according to ASTM E384 using devices that are traceable to NIST.
7. The standardized test blocks used for verification are calibrated in accordance with ASTM E10 using indenter / load combinations that are traceable to D. L. Ellis Co. hardness levels, through laboratory standardizing machines. The standardizing machines are directly verified according to ASTM E10 using devices to that are traceable NIST.
8. Different uncertainties are available depending upon which standards are used. Please contact the laboratory for more information.

2008-04-01 through 2009-03-31

Effective dates

Sally S. Bruce

For the National Institute of Standards and Technology