

DAVID L. ELLIS COMPANY, INC.

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Certificate of Calibration and Conformance

for

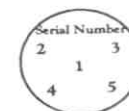
Certificate No.

Microindentation Knoop Test Block

90

Hardness	517	HK Ave	Date Cal	3/7/08	Temp	23 C	Magnif.
Serial No.	90		Code	P	Humidity	40%	500X
g force	300		Force N	2.9421	Tol+/-HK	21.3	
Unc mach	9.5	HK	Method	E384-08	Ave/Stdev μ m	90.9	0.66
Unc block	17.7	HK	Operator	RAE	Tol+/- μ m	1.8	

Indent Map



Group 1	
μ m	HK
91.5	510
90.2	525
90.4	522
90.2	525
91.8	507

Group 2	
μ m	HK
90.5	521
92.3	501
90.8	518
90.6	520
91.3	512

Group 3	
μ m	HK
90.2	525
90.2	525
90.2	525
90.2	525
91.9	505

Group 4	
μ m	HK
90.2	525
90.6	520
91.7	508
91.3	512
91.9	505

Group 5	
μ m	HK
90.8	518
90.4	522
90.5	521
91.1	514
90.9	517

Group	Hardness	HK	Stdev	μ m
Group 1	518	8.7	90.8	
Group 2	514	8.3	91.1	
Group 3	521	8.6	90.5	
Group 4	514	8.2	91.1	
Group 5	518	3.3	90.7	

Hardness	517	HK	0.3	Uncertainty	+/-	17.7 HK	K=2
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The above calibration was verified with the following equipment, which is traceable to NIST or PTB.

Chatillon Digital Remote Gauge
Serial No.: 226

Stage Micrometer in mm
N.I.S.T. Test No.: NIST 5588

Mitutoyo Micro Hardness Tester MVK-H1
Serial Number 60594

N.I.S.T. SRM #1895 S/N B0456

The standardized test blocks are calibrated in accordance with ASTM E384 using NIST standard reference material (SRM) #1895 and standards from PTB. All other indenter/loads combinations are traceable to Ellis hardness levels through laboratory standardizing machines. The standardizing machines are directly verified according to ASTM E384 using devices that are traceable to NIST either directly or through an A2LA or NVLAP approved laboratory.

Expanded uncertainty uses coverage factor K=2, providing a confidence level of approximately 95%.

This test report is not to be used to claim product endorsement by the David L. Ellis Company Inc., A2LA, NVLAP or any government agency.

This block is calibrated according to A.S.T.M. E-384 standards, ANSI (NCSL) Z540-1, (ISO) 10012, ISO/IEC 17025, by David L Ellis Co., Inc. A2LA certificate number 1310.01 Calibration and NVLAP 200127.

Representative

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Accredited 1310.01
Calibration

SAMPLE ONLY



Lab Code: 200127-0
Calibration Laboratories