



813-A Woodcrest Drive · Houston, Texas · 77018-2127
 (713)695-1939 · Fax: (713)695-3001
<http://www.thermotemp.com>

Certificate Of Calibration

Calibrated for :P & B Testing
 6645 West Tidwell
 Houston Texas,77092

Report No:	10205	Calibration Interval:	1 Year
PO. No.:	85082	Calibration Date:	11/06/2019
Company No:	TI02	Calibration Due Date:	11/06/2020
Description:	Brinell Portable	Serial No:	TI02
Model No:	Portable	Manufacturer:	King
Temperature:	75°F	Humidity :	62.00 %RH
Cal. Procedure:	FCP-5		

The standards used in this certification have measurement traceability to the International System of Units (SI). The certifications were performed I.A.W Thermo-Temp, Inc. Quality Manual. The work instruction used for this calibration is indicated above. The certification was performed in accordance with one or more of the following specifications: ASTM E10-08, ASTM E103, ASTM E110. All uncertainties calculated in accordance with ASTM E10-08 are only a reference for the customer, and not considered an Accredited report. The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor K = 2, providing a level of confidence of approximately 95 %. The results of this certification apply to only the equipment listed on this report, and do not carry any implication regarding long-term stability of the instrument.

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Asset Requirements: 0

STANDARDS USED FOR CALIBRATION

Manufacturer	Serial Number	Model Number	Calibration Due	Report Number
Sun-Tec	181023-6	HBW		821/273476-06
Sun-Tec	19026-20	HBW		821/273476-06
Sun-Tec	20121459	SBS-20	08/13/2020	81121
Morehouse Instrument	70281 / HD115	3000 KGF	07/30/2021	79843
Starrett	UFK012	10MM	12/10/2023	73192

NOTES:

CALIBRATION RESULTS AS FOUND/AS LEFT CONDITION

INDIRECT METHOD - TESTBLOCK 1									
Test Block				ACTUAL READINGS(mm)					AVERAGE
HBW	BALL	FORCE	INDENTATION						
212.00	10.00	3000.00	4.15	4.13	4.14	4.13			4.13
REPEATABILITY(mm)				TEST BLOCK	4.15	ERROR			-0.02
0.01				TOLERANCE			6.36		
Tolerance		6.40		ACTUAL READINGS(HBW)					AVERAGE
UNCERTAINTIES				213.94	212.86	213.94			213.58
mm		HBW		TEST BLOCK		212.00	ERROR		-1.58
0.0155		1.7017							

INDIRECT METHOD - TESTBLOCK 2									
Test Block				ACTUAL READINGS(mm)				AVERAGE	
HBW	BALL	FORCE	INDENTATION						
401.00	10.00	3000.00	3.05	3.04	3.04	3.04			3.04
REPEATABILITY(mm)			TEST BLOCK		3.05		ERROR		-0.01
0.00							TOLERANCE		12.03
Tolerance		12.00		ACTUAL READINGS(HBW)				AVERAGE	
UNCERTAINTIES			403.54		403.54		403.54		403.54
mm		HBW		TEST BLOCK		401.00		ERROR	
0.0140		3.8750						-2.54	

DIRECT METHOD							
APPLIED LOAD IN KGF		INDENTER BALL SIZE IN mm		ACTUAL READINGS IN mm			AVERAGE
3000.000		10.00		0.3390	0.3390	0.3390	0.339
= 0.341				Proving Ring		0.3410	Error
							-0.002

INDENTER BALL VERIFICATION (Batch ID#083012-RB)						
INDENTER BALL SIZE IN mm	ACTUAL READINGS IN mm					AVERAGE
10.0000	9.9970	9.9970	9.9970			9.9970

Calibration Performed By:			Certificate Authorized By:		
Jeromy Holman	Technician		Kevin Green	11/11/2019	
Name	Title	Signature	Field Services Manager	Date	Signature