Fmi Calibration Laboratory

Fine Manufacturing Industries, B-7/12, MIDC Area, Dist. Sangli, Maharashtra, India - 416 410.☎: +919503874245

✉: response@finemanufacturing.com/www.finemanufacturing.com

CC-2374

Calibration Certificate for Vickers Hardness Reference Block

Date of calibration	Date of issue	Page	Certificate number
15 April 2022	18 April 2022	1 of 2	ULR-CC237421000100241F

Customer details:	Fine Manufacuring Industries, B-7/12, MIDC Aria, Miraj, District Sangli, Maharashtra, India. Pin code: 416410

Reference Hardness Block Serial No:	V2297/2021
Hardness of reference block:	242.66 HV 0.2
Make:	Fine Manufacturing Industries (FMI)
Type:	STEEL

Reference Hardness Block Scale: HV 0.2

Reference Hardness Block Thickness: 10.24 mm

Shape: Circular

Temperature: (22.9 ± 1)° C

Humidity: (55 ± 10)%

Standard used and traceability: The above Reference Hardness Block is calibrated on a standardising machine at FMI Calibration Laboratory. The standardising machine is directy calibrated as per the requirements of ISO 6507-3 and ASTM E92 annex A2. The standardising machine is calibrated using devices traceable to the SI system of units and/or units of measurement realised at NPL-India, NPL-UK, IMGC, NIST or PTB either directly or through NABL, UKAS, NVALP or DAkkS accredited laboratories.

Validity: ISO 6507-3 validity clause 11: The reference block is only valid for the scale for which it was calibrated. The calibration validity should be limited to a duration of five years. Attention is drawn to the fact that, for Al- and Cu-alloys, the calibration validity should be reduced to two to three years.

Calibration Method: FMICl/SOP/Vickers test blocks, based on IS 1501 (Part 3): 2020, ISO 6507-3:2018 and ASTM E92-17/ASTM E384-17.

Results

After the preliminary visual inspection of the test surface and supporting surface of the block, the hardness indentations were taken and measured at five different places uniformly distributed throughout the test surface of the block.

Indents	1	*2d1	*2d2	3	4	5
Diagonals in mm	0.038918	0.039156	0.039090	0.038839	0.039165	0.039444
Hardness value in HV 0.2	244.89	242.32		245.89	241.81	238.39
Hardness test parameters:	Applied test force:			1.961 N		
	Dwell time of test force:			14.0 s		

*Diagonals of reference indentation

Fmi Calibration Laboratory

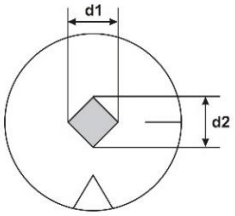
Fine Manufacturing Industries, B-7/12, MIDC Area, Dist. Sangli,
Maharashtra, India - 416 410.☎: +919503874245
✉: response@finemanufacturing.com/www.finemanufacturing.com

CC-2374

Calibration Certificate for Vickers Hardness Reference Block

Date of calibration	Date of issue	Page	Certificate number
15 April 2022	18 April 2022	2 of 2	ULR-CC237421000100241F

*Orientation of the reference indentation on the block:
(Only on FMI make blocks. On other make blocks, marked if customer has requested)



Mean value of the diagonals: 0.03910 mm

Non-uniformity of measured diagonals: 3.09% (HV) | 1.55% (d) | 0.6 µm

Alowed non-uniformity: IS 1501 (Part 3)/ISO 6507-3: 6% (HV)
ASTM E92 & E384: 4.0% (d) or 1.0 µm

Hardness of the reference block: 242.66 HV 0.2

Expanded uncertainty of measurment: ± 7.00% (HV) (k = 2.00)

Conformity Statement based on non-uniformity of the block	
As per IS 1501 (Part 3) & ISO 6507-3:	PASS
As per ASTM E92/ASTM E384:	PASS

Approved Signatory			
	A K Mirashi	K S Mirashi	R G Ponkshe

Note:

1) The reported expanded uncertainty of calibration of hardness block includes the standard uncertainty due to the non-uniformity of the reference block and the CMC of the standardising machine. The reported expanded uncertainty is based on combined standard uncertainty multiplied by a coverage factor k (as reported above), providing a level of confidence of approximately 95%
2) This calibration certificate shall not be reproduced, except in full, unless prior written permission from the CEO, FMICL.
3) This calibraation certificate is invalid without signature.

---End Of Report---