MASTERBLOCK®

The global standard for quality hardness test blocks

TEST BLOCKS & INDENTERS
2014

Edition:
MASTERBLOCK E-2014

Changes in products and/or product specifications can emerge due to new technologies and/or continuous development.

We reserve the right to change or modify specifications of products without prior notice.

We recommend you to contact our sales office for up-to-date information.

www.innovatest-europe.com

MASTERBLOCK®

The global standard for quality hardness test blocks

Hardness test blocks or hardness reference plates are comparison plates most commonly made of Steel or Aluminum but could also be made of Brass or custom materials.
They are used for the day to to day Indirect Verification and Calibration of hardness testing machines and instruments.
There are hardness test blocks for almost all hardness testing methods and scales. Verifying the display reading of a hardness tester against ISO/ASTM certified hardness test block values part of a normal quality assurance process.
Adjusting your hardness tester according to the value engraved in a hardness test block, as long as the adjustments are minor, can be done after assurance that a correct and undamaged indenter/penetrator is installed and the tester operates normally.

ISO & ASTM HARDNESS TEST BLOCKS (UKAS, Etc.)
Hardness test blocks MASTERBLOCK® branded are manufactured according to standards ISO (International) and ASTM (American). Such standards apply to the physical requirements as well to the method & the way the final value is found and confirmed. By adding a grid on the blocks they meet the requirements of NADCAP.

MASTERBLOCK® hardness test blocks are not ''just'' hardness test blocks. Our blocks are of excellent finish and have very low variation, excellent repeatability.

RAW MATERIALS USED
In order to manufacture good hardness test blocks, strict control over the quality of raw materials (Steel, Brass, Aluminum) is required. The entire block material needs to be homogenous, to assure low spread of readings and excellent repeatability.

HEAT TREATMENT
Distribution of the blocks in the hardening furnaces is of utmost importance, time, temperature and quench are all carefully controlled processes, to assure a top class product.

FINISHING
The next step in the process to ensure high quality 'blanks'' is the grinding, polishing and lapping of the block surfaces. Any concerns on the surface quality are eliminated due to thorough selection after inspection.

QUALITY CONTROL
Before proceeding with the ultimate verification and engraving of the block hardness, blocks are undergoing a full inspection to ensure that they meet the physical requirements of ISO and ASTM (thickness, flatness, parallelism, surface roughness).

The MASTERBLOCK® appointed Calibration Laboratory D. Ellis, is accredited to ISO / IEC 17025 by NVLAP*.
The National Voluntary Laboratory Accreditation Program (NVLAP) provides third-party accreditation to testing and calibration laboratories in response to legislative actions or requests from government agencies or private-sector organizations. NVLAP-accredited laboratories are assessed against the management and technical requirements published in the International Standard, ISO/IEC 17025:2005 (ISO: Organization for Standardization).
*NVLAP is affiliated to the National Institute of Standards and Technology, NIST.

The blocks are also compliant for the use by organizations or companies that are under the NADCAP Program. (National Aerospace and Defense Contractors Accreditation Program).
Nadcap compliant ''grid'' blocks, are available on request.

ILAC; GLOBAL RECOGNITION OF ACCREDITING BODIES
UKAS, NVLAP, DAkkS, Cofrac and many national accrediting bodies & laboratories are signatories (members) of ILAC.
ILAC- is an international cooperation of laboratory and inspection accreditation bodies. Accreditation bodies are established in many countries with the primary purpose of ensuring that conformity assessment bodies are subject to oversight by an authoritative body. A laboratory calibration performed under the scope of accreditation recognized by the ILAC agreement is considered to be an equivalent calibration to any other laboratory recognized by the ILAC agreement.
For a complete list of ILAC recognized accrediting bodies or ILAC members please refer to www.ilac.org.

- BE CERTAIN, USE MASTERBLOCK® -

MASTERBLOCK®

The global standard for quality hardness test blocks

ROCKWELL DIAMOND SCALES
ISO / ASTM

The MASTERBLOCK® hardness calibration laboratory is accredited to ISO 17025 by NVLAP, an ILAC member.

DUAL CERTIFIED according to ISO 6508-3 & ASTM-E18

Other ILAC members are **DAkkS, UKAS, A2LA, Cofrac** (for more info see: www.ilac.com), **NADCAP compliant**

Rockwell Diamond

Round *All mentioned hardness values are nominal values, the actual calibrated values may vary.*

HRC	20	25	30	35	40	45	50	55	60	63	65	67	
HRA Soft	22	26	31	35	40	45	47	50	53	55	59	62	
HRA Hard	60	63	65	68	70	73	76	78	81	83	84	85	
HRD	40	44	48	52	56	60	64	67	71	73	74	77	
HR15N	69	72	75	78	81	83	85	88	90	91	92	93	
HR30N	41	46	50	55	59	64	68	73	77	80	82	83	
HR45N	19	25	31	37	43	49	55	61	66	70	72	74	

Block size: ø61mm x 12mm thickness

Blocks can be supplied with NADCAP compliant grid.

Rockwell Diamond

Square *All mentioned hardness values are nominal values, the actual calibrated values may vary.*

HRC	20	25	30	35	40	45	50	55	60	63	65	67	
HRA Soft	22	26	31	35	40	45	47	50	53	55	59	62	
HRA Hard	60	63	65	68	70	73	76	78	81	83	84	85	
HRD	40	44	48	52	56	60	64	67	71	73	74	77	
HR15N	69	72	75	78	81	83	85	88	90	91	92	93	
HR30N	41	46	50	55	59	64	68	73	77	80	82	83	
HR45N	19	25	31	37	43	49	55	61	66	70	72	74	

Block size: 51mm x 51mm, 7mm thickness

Blocks can be supplied with NADCAP compliant grid.

MASTERBLOCK®

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ROCKWELL STEEL BALL SCALES
ISO / ASTM

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Rockwell Steel Ball

Round — *All mentioned hardness values are nominal values, the actual calibrated values may vary.*

HRB	20	30	40	50	60	70	75	80	85	90	95	100	
HRE		75	81	87	93	100							
HRF		74	80	86	91	97	100						
HRG				3	18	33	41	49	58	66	74	83	
HRH	94	98											
HRK	38	47	56	65	73	81	86	91	95	99			
HR15T	67	70	73	77	80	83	85	86	88	90	91	93	
HR30T	29	36	43	49	56	63	66	69	73	76	80	83	
HR45T		2	12	22	32	43	48	53	58	63	68	73	

Block size: ø61mm x 12mm thickness — ***Blocks can be supplied with NADCAP compliant grid.***

Rockwell Steel Ball

Square* — *All mentioned hardness values are nominal values, the actual calibrated values may vary.*

HRB	20	30	40	50	60	70	75	80	85	90	95	100	
HRE		75	81	87	93	100							
HRF		74	80	86	91	97	100						
HRG				3	18	33	41	49	58	66	74	83	
HRH	94	98											
HRK	38	47	56	65	73	81	86	91	95	99			
HR15T	67	70	73	77	80	83	85	86	88	90	91	93	
HR30T	29	36	43	49	56	63	66	69	73	76	80	83	
HR45T		2	12	22	32	43	48	53	58	63	68	73	

Block size: 51mm x 51mm, 7mm thickness — ***Blocks can be supplied with NADCAP compliant grid.***

**Test blocks are available made out of aluminum "B", "E", "F", "G", "H", "K" Scales, but ranges are more limited.*

MASTERBLOCK®

The global standard for quality hardness test blocks

ROCKWELL CARBIDE BALL SCALES
ISO / ASTM

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Rockwell Carbide Ball

Round*

All mentioned hardness values are nominal values, the actual calibrated values may vary.

HRB (W)	20	30	40	50	60	70	75	80	85	90	95	100	
HRE (W)		75	81	87	93	100							
HRF (W)		74	80	86	91	97	100						
HRG (W)				3	18	33	41	49	58	66	74	83	
HRH (W)	94	98											
HRK (W)	38	47	56	65	73	81	86	91	95	99			
HR15T (W)	67	70	73	77	80	83	85	86	88	90	91	93	
HR30T (W)	29	36	43	49	56	63	66	69	73	76	80	83	
HR45T (W)		2	12	22	32	43	48	53	58	63	68	73	

Block size: ø61mm x 12mm thickness

Blocks can be supplied with NADCAP compliant grid.

Rockwell Carbide Ball

Square*

All mentioned hardness values are nominal values, the actual calibrated values may vary.

HRB (W)	20	30	40	50	60	70	75	80	85	90	95	100	
HRE (W)		75	81	87	93	100							
HRF (W)		74	80	86	91	97	100						
HRG (W)				3	18	33	41	49	58	66	74	83	
HRH (W)	94	98											
HRK (W)	38	47	56	65	73	81	86	91	95	99			
HR15T (W)	67	70	73	77	80	83	85	86	88	90	91	93	
HR30T (W)	29	36	43	49	56	63	66	69	73	76	80	83	
HR45T (W)		2	12	22	32	43	48	53	58	63	68	73	

Block size: 51mm x 51mm, 7mm thickness

Blocks can be supplied with NADCAP compliant grid.

**Test blocks are available made out of aluminum "B", "E", "F", "G", "H", "K" Scales, but ranges are more limited.*

MASTERBLOCK®

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MACRO VICKERS SCALES
ISO / ASTM

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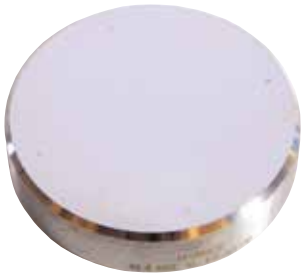
DUAL CERTIFIED acording to ISO 6507-3 & ASTM E384-10e1

Other ILAC members are **DAkkS, UKAS, A2LA, Cofrac** (for more info see: www.ilac.com), **NADCAP compliant**

Macro Vickers

Round*	*All mentioned hardness values are nominal values, the actual calibrated values may vary.*										
HV2	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV3	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV5	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV10	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV20	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV30	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV50	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV100	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
Block size: ø61mm x 12mm thickness											***Blocks can be supplied with NADCAP compliant grid.***



**Limited range also available in Brass*

MASTERBLOCK®

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MICRO VICKERS SCALES
ISO / ASTM

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DUAL CERTIFIED acording to ISO 6507-3 & ASTM E384-10e1

Other ILAC members are **DAkkS, UKAS, A2LA, Cofrac** (for more info see: www.ilac.com), **NADCAP compliant**

Micro Vickers

Round*	*All mentioned hardness values are nominal values, the actual calibrated values may vary.*										
HV1	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.5	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.3	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.2	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.1	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.050	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.025	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.010	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
Block size: ø37mm x 12mm thickness											***Unparalleled quality, mirror polished surface!***

**Limited range also available in Brass*

MASTERBLOCK®

The global standard for quality hardness test blocks

KNOOP SCALES
ISO / ASTM

The MASTERBLOCK® hardness calibration laboratory is accredited to ISO 17025 by NVLAP, an ILAC member.

DUAL CERTIFIED according to ISO 4545-3 & ASTM E384

Other ILAC members are **DAkkS, UKAS, A2LA, Cofrac** (for more info see: www.ilac.com), **NADCAP compliant**

Knoop

Round*	*All mentioned hardness values are nominal values, the actual calibrated values may vary.*										
HV1	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.5	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.3	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.2	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.1	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.050	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.025	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	
HV0.010	40	70	100	150	200	250	300	350	400	450	
	500	550	600	650	700	750	800	850	900	950	

Block size: ø37mm x 12mm thickness

Unparalleled quality, mirror polished surface!

**Limited range also available in Brass*

BRINELL SCALES
ISO / ASTM

The MASTERBLOCK® hardness calibration laboratory is accredited to ISO 17025 by NVLAP, an ILAC member.

DUAL CERTIFIED according to ISO 6506-3 & ASTM-E10-01

ILAC members are **DAkkS, UKAS, A2LA, Cofrac** (for more info see: www.ilac.com), **NADCAP compliant**

Brinell

All mentioned hardness values are nominal values, the actual calibrated values may vary.

HBW 10/3000	**70**	100	150	170	200	250	300	350	400	450	500	550	600	650
HBW 10/1500	70	100	150	170	200	250	300	**350**	**400**	**450**	**500**	**550**	**600**	**650**
HBW 10/1000	70	100	150	170	200	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**
HBW 10/500	70	100	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**
HBW 10/250	**70**	**100**	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**
HBW 5/750	**70**	100	150	170	200	250	300	350	400	450	500	550	600	650
HBW 5/250	70	100	150	170	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**	**650**

Block size: 150mm x 50mm x 20mm thickness

**** Also available in aluminun***

Remark XXX Outside the ranges specified in ISO and ASTM standards.

All mentioned hardness values are nominal values, the actual calibrated values may vary.

HBW 10/100	**40**	**70**	**100**	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 5/125	40	70	100	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 5/62.5	40	**70**	**100**	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 5/25	**40**	**70**	**100**	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 2.5/187.5	**40**	**70**	100	150	170	200	250	300	350	400	450	500	550	600
HBW 2.5/62.5	40	70	100	150	170	200	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 2.5/31.25	40	70	100	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 2.5/15.625	40	**70**	**100**	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 2.5/6.25	**40**	**70**	**100**	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 1/30	**40**	**70**	100	150	170	200	250	300	350	400	450	500	550	600
HBW 1/10	40	70	100	150	170	200	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 1/5	40	70	100	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 1/2.5	40	**70**	**100**	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**
HBW 1/1	**40**	**70**	**100**	**150**	**170**	**200**	**250**	**300**	**350**	**400**	**450**	**500**	**550**	**600**

Block size: ø64mm x 15mm thickness

Remark XXX Outside the ranges specified in ISO and ASTM standards.

MASTERBLOCK®

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ROCKWELL DIAMOND SCALES
ISO DAkkS

The MASTERBLOCK® hardness calibration laboratory is accredited to ISO 17025.

Blocks CERTIFIED according to ISO 6508-3

Other ILAC members are **NVLAP, UKAS, A2LA, Cofrac** (for more info see: www.ilac.com)

Rockwell Diamond

Square													*All mentioned hardness values are nominal values, the actual calibrated values may vary.*
HRC	20	25	30	35	40	45	50	55	60	62	63	65	
HRA Soft	40	49	55										
HRA Hard	60	62	65	67	70	73	75	78	81	82	83		
HRD	40	44	48	51	55	59	63	67	71	73	75		
HR15N	68	71	74	76	79	82	85	88	90	90,8	92		
HR30N	41	46	50	55	59	64	68	72	77	79	81		
HR45N	19	25	31	37	43	49	55	60	66	69	72		

Block size: 60mm x 60mm x 16mm thickness

Blocks can be supplied with NADCAP compliant grid.

Rockwell

Square													*All mentioned hardness values are nominal values, the actual calibrated values may vary.*
HRB	60	75	90	100									
HRE	95												
HRF	90	95											
HRG	62	81	87	94									
HRH													
HRK	76	97											
HR15T	80	87	91	92									
HR30T	56	69	77	82									
HR45T	33	53	65	72									

Block size: 60mm x 60mm x 16mm thickness

Blocks can be supplied with NADCAP compliant grid.

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ILAC members are **NVLAP, UKAS, A2LA, Cofrac** (for more info see: www.ilac.com)

Rockwell

Square													*All mentioned hardness values are nominal values, the actual calibrated values may vary.*
HRB (W)	60	75	90	100									
HRE (W)	95												
HRF (W)	90	95											
HRG (W)	62	81	87	94									
HRH (W)													
HRK (W)	76	97											
HR15T (W)	80	87	91	92									
HR30T (W)	56	69	77	82									
HR45T (W)	33	53	65	72									

Block size: 60mm x 60mm x 16mm thickness

Blocks can be supplied with NADCAP compliant grid.

Square													*All mentioned hardness values are nominal values, the actual calibrated values may vary.*
HR 62.5	58	61	64	66	69	72	75	78	80	82	83		

Additional loads available on request

Block size: 60mm x 60mm x 16mm thickness

Blocks can be supplied with NADCAP compliant grid.