

ISO/IEC 17025
CERTIFIED REFERENCE TOOLS
FOR HARDNESS TESTERS

HARDNESS
REFERENCE BLOCKS
& INDENTERS



© UPI Laboratories Europe BV

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.

© All rights reserved C24CATPRI/02/EN UPI Laboratories Europe BV, ISO/IEC 17025 RvA accredited laboratory providing DIN EN ISO / ASTM dual certified test blocks and indenters.

The **RvA**, like **UKAS**, **Dakks**, **COFRAC**, **NVLAP**, **A2LA** are ILAC (International Laboratory Accreditation Cooperation) members. Certificates issued by UPI Laboratories for test blocks and indenters meet or exceed the relevant ISO/ASTM requirements for hardness testing and comply with the requirements for NADCAP accredited/certified organizations.

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. Indenters are available for almost all scales with viability of micro and macro diamond indenters and carbide or available in the different sizes by the different methods.

ISO & ASTM HARDNESS TEST BLOCKS and INDENTERS (RvA)

Hardness test blocks UPI Laboratories Europe BV 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." UPI Laboratories BV hardness test blocks and indenters 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. UPI Laboratories Europe BV performs supplier audits to assure this.

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.

UPI Laboratories Europe BV performs supplier audits to assure this.

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. UPI Laboratories Europe BV performs supplier audits to assure this.

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, magnetism and uniformity).



TRACEABILITY

UPI hardness calibration blocks and indenters are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 6506, ISO 6507, ISO 6508, ISO 4545, ASTM E18, ASTM E92 and ASTM E10.

www.rva.nl/alle-geaccrediteerden/k182







ROCKWELL REFERENCE BLOCKS



ROCKWELL DIAMOND SCALES

UPI Rockwell cone hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 6508/3 & ASTM-E18 A4.

ROCKWELL CARBIDE BALL SCALES





UPI Rockwell ball hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 6508/3 & ASTM-E18 A4.

ROUND (dia. 60mm X 10mm thickness) All mentioned hardness values are nominal, the actual calibrated values may vary.													
NAV ID					DE	SCRI	PTIC	N					
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		44	48	51	55	59	63	67	71	75			
HR15N		71	74	76	79	82	85	88	90	92			
HR30N		46	50	55	59	64	68	72	77	81			
HR45N		25	31	37	43	49	55	60	66	72			
Deviating scales or hardness can be ordered by custom request. Blocks can be supplied with NADCAP compliant grid.													

NAV ID					DES	CRIF	PTION						
HRB	10	20	30	40	50	60	65	70	75	80	85	90	95
HRE (alu)			75	81	87	93	100						
HRF (alu)**			74	80	86	91	97						
HRM*	85	110											
HRR*	105			125									
HR15T			70	73	77	80	83	85	86	88	90	91	
HR30T			36	43	49	56	63	66	69	73	76	80	
HR45T				12	22	32	43	48	53	58	63	68	

^{*} The scales of the 1/4" and 1/2" ball indenter are only ASTM E18, not ISO 6508.

TEST BLOCKS RANGE

25 MM BLOCK	60 MM BLOCK	65 MM BLOCK	90 MM BLOCK
9	9	9	9

^{**} Scales are outside the scope of accreditation.



VICKERS REFERENCE BLOCKS



MACRO VICKERS SCALES

UPI Macro Vickers hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 6507/3 & ASTM-E92 A4.





Standard high grade polishing

ROUND (dia. All mentioned						ctual c	alibrate	ed value	es may	vary.							
NAV ID						DE:	SCRIP	TION									
HV0.1	40	70	100	150	200	250	300	350	400	450	500*	550*	600*	650*	700*	750*	800*
HV0.2	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV0.3	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV0.5	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV1	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV2	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV3	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV5	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV10	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV20	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV30	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV50	40*	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HV100	40*	70*	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
* Hardness valu Deviating sca								ue to in	dentati	ions sm	naller tha	an 0,020	mm.				



MICRO VICKERS SCALES

UPI Micro Vickers hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 6507/3 & ASTM-E92 A4.





Extreme mirror polishing

ROUND (dia.				•		ctual ca	librate	d values	s may va	nry.							
NAV ID						DES	CRIPT	ION							'	'	'
HMV2	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HMV1	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HMV0.5	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HMV0.3	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HMV0.2	40	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HMV0.1	40	70	100	150	200	250	300	350	400	450	500*	550*	600*	650*	700*	750*	800*
HMV0.05	40	70	100	150	200	250*	300*	350*	400*	450*	500*	550*	600*	650*	700*	750*	800*
HMV0.025	40	70	100	150*	200*	250*	300*	350*	400*	450*	500*	550*	600*	650*	700*	750*	800*
HMV0.02	40	70	100*	150*	200*	250*	300*	350*	400*	450*	500*	550*	600*	650*	700*	750*	800*
HMV0.015	40	70	100*	150*	200*	250*	300*	350*	400*	450*	500*	550*	600*	650*	700*	750*	800*
HMV0.010	40	70*	100*	150*	200*	250*	300*	350*	400*	450*	500*	550*	600*	650*	700*	750*	800*
* Hardness value Deviating scale								indentat	ions sma	ller thar	n 0,020m	nm.					







BRINELL REFERENCE BLOCKS



KNOOP SCALES

UPI Knoop hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 4545/3 & ASTM-E92 A4.





ROUND (dia					al the ac	tual cali	ibrated	values n	nav varv								
NAV ID	- Carran				, tire ut		ESCRIF		iay vaiy								
HK0.01**	40**	70**	100**	150**	200**	250**	300**	350**	400*	450*	500*	550*	600*	650*	700*	750*	800*
HK0.015**	40**	70**	100**	150**	200**	250**	300**	350**	400**	450**	500**	550*	600*	650*	700*	750*	800*
HK0.02**	40**	70**	100**	150**	200**	250**	300**	350**	400**	450**	500**	550**	600**	650**	700**	750*	800*
HK0.025**	40**	70**	100**	150**	200**	250**	300**	350**	400**	450**	500**	550**	600**	650**	700**	750**	800**
HK0.05**	40**	70**	100**	150**	200**	250**	300**	350**	400**	450**	500**	550**	600**	650**	700**	750**	800**
HK0.1	40**	70	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HK0.2	40**	70**	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HK0.3	40**	70**	100**	150	200	250	300	350	400	450	500	550	600	650	700	750	800
HK0.5	40**	70**	100**	150**	200	250	300	350	400	450	500	550	600	650	700	750	800
HK1	40**	70**	100**	150**	200**	250**	300**	350	400	450	500	550	600	650	700	750	800
HK2	40**	70**	100**	150**	200**	250**	300**	350**	400**	450**	500**	550**	600**	650**	700**	750	800
Deviating sca	les or h	ardnes	s can be	ordered	on custo	m reque	st.										

 $^{{\}rm *Hardness\,value\,is\,outside\,the\,scope\,of\,the\,ISO/ASTM\,standards\,due\,to\,indentations\,smaller\,than\,0,020mm}$

^{**} Scales are outside the scope of accreditation.



BRINELL SCALES

UPI Brinell hardness calibration blocks are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 6506/3 & ASTM-E10 A4.





ROUND (dia. 90) All mentioned ha				•	actual	calibrate	ed value	es may v	ary.						
NAV ID					DES	CRIPT	ION								
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	40	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*
HBW 5/125	40	70	100	150*	170*	200*	250*	300*	350*	400*	450*	500*	550*	600*	650*
Deviating scales or Blocks can be sup						uest.									

 $[\]mbox{\ensuremath{^{\ast}}}$ Hardness value is outside the scope of the ISO/ASTM standards

NAV ID					DES	CRIPT	ION								
HBW 2.5/187.5	40*	70*	100	150	170	200	250	300	350	400	450	500	550	600	650
HBW 2.5/62.5	40	70	100	150	170	200	250*	300*	350*	400*	450*	500*	550*	600*	650*
HBW 2.5/31.25	40	70	100	150*	170*	200*	250*	300*	350*	400*	450*	500*	550*	600*	650*
HBW 1/30	40*	70*	100	150	170	200	250	300	350	400	450	500	550	600	650
HBW 1/10	40	70	100	150	170	200	250*	300*	350*	400*	450*	500*	550*	600*	650*
HBW 1/5	40	70	100	150*	170*	200*	250*	300*	350*	400*	450*	500*	550*	600*	650*
Deviating scales or	hardness	s can be	ordered	on cust	om real	ıest									

^{*} Hardness value is outside the scope of the ISO/ASTM standards

Blocks can be supplied with NADCAP compliant grid.





ROCKWELL INDENTERS

ROCKWELL DIAMOND & BALL INDENTERS

UPI Rockwell Indenters are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 6508/2 & ASTM-E18 A3.





NAV ID		DESCRIPTION
UPI/6003	8	Rockwell diamond indenter ø3mm, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/6004	0	Rockwell diamond indenter ø3mm, L=12mm, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/6005	Con the second	Rockwell diamond indenter ø6.35mm, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7503	8	1/16" Embedded carbide ball indenter ø3mm, with 1 ball, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7603	6	1/8" Embedded carbide ball indenter ø3mm, with 1 ball, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7703	6	1/4" Embedded carbide ball indenter ø3mm, with 1 ball, acc. to ASTM-E18 A3
UPI/7506	0	1/16" Carbide ball indenter ø6.35mm, with 1 ball, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7606	OF.	1/8" Carbide ball indenter ø6.35mm, with 1 ball, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/7706	5	1/4" Carbide ball indenter ø6.35mm, with 1 ball, acc. to ASTM-E18 A3
UPI/7806	00	1/2" Carbide ball indenter ø6.35mm, with 1 ball, acc. to ASTM-E18 A3
UPI/7808	00	1/2" Embedded carbide ball indenter ø3mm, with 1 ball, acc. to ASTM-E18 A3
UPI/2507	0	1/16" Carbide ball, for Rockwell ball indenter, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/2509	0	1/8" Carbide ball, for Rockwell ball indenter, acc. to ISO 6508/2 & ASTM-E18 A3
UPI/2514	0	1/4" Carbide ball, for Rockwell ball indenter, acc. to ASTM-E18 A3
UPI/2519	0	1/2" Carbide ball, for Rockwell ball indenter, acc. to ASTM-E18 A3



VICKERS & KNOOP INDENTERS



BRINELL BALL INDENTERS

UPI Brinell Indenters are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 6506/2 & ASTM-E10 A3.





NAV ID		DESCRIPTION
UPI/8010	2	Vickers indenter ø6.35mm, acc. to ISO 6507/2 & ASTM-E92 A3
UPI/8105	8	Vickers indenter ø3mm, acc. to ISO 6507/2 & ASTM-E92 A3

NAV ID		DESCRIPTION
UPI/8205	8	Knoop indenter ø3mm, acc. to ISO 4545/2 & ASTM-E92 A3
UPI/8220		Knoop indenter ø6.35mm, acc. to ISO 4545/2 & ASTM-E92 A3
UPI/8221	Carrie of the Ca	Knoop indenter ø6.35mm, acc. to ISO 4545/2 & ASTM-E92 A3 Indenter is rotated 90°

 \emptyset = shaft diameter for machine mounting.



MACRO & MICRO VICKERS INDENTERS

UPI (Micro) Vickers Indenters are calibrated & DUAL-certified by UPI Laboratories traceable to National/International standards according to ISO 6507/2 & ASTM-E92 A3.

KNOOP INDENTERS





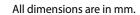


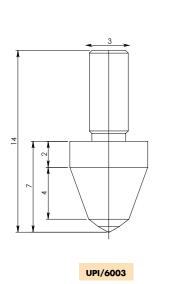
NAV ID		DESCRIPTION
UPI/7001	18	1mm Embedded carbide ball indenter ø3mm, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7006	8	2.5mm Embedded carbide ball indenter ø3mm, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7011	6	5mm Embedded carbide ball indenter ø3mm, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7000	1	1mm Carbide ball indenter ø6.35mm, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7005	6	2.5mm Carbide ball indenter ø6.35mm, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7010	60	5mm Carbide ball indenter ø6.35mm, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/7015	807	10mm Carbide ball indenter ø6.35mm, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/2005	0	1.0mm Carbide ball, for ø6.35mm indenters, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/2010	0	2.5mm Carbide ball, for ø6.35mm indenters, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/2015	0	5.0mm Carbide ball, for ø6.35mm indenters, acc. to ISO 6506/2 & ASTM-E10 A3
UPI/2020	0	10.0mm Carbide ball, for ø6.35mm indenters, acc. to ISO 6506/2 & ASTM-E10 A3

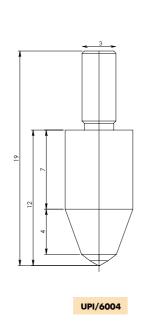


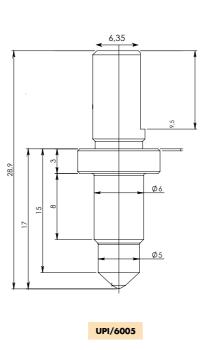


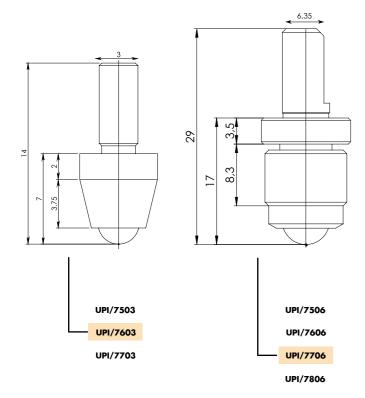
UPI/8105

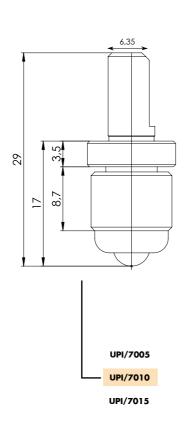




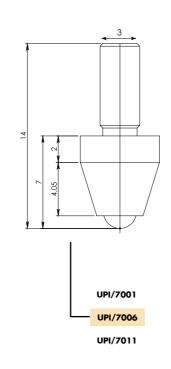


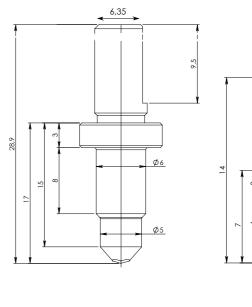


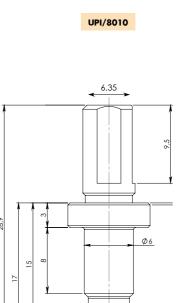


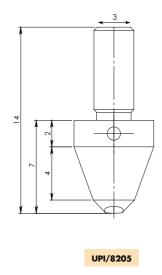












UPI/8221

GENERAL SALES & SUPPLY CONDITIONS

GENERAL SALES & SUPPLY CONDITIONS

PRICES

Are in EURO, excluding VAT, EX WORKS Maastricht, The Netherlands.

Subject to changes without prior notice.

Check our order confirmation for actual prices.

Our order confirmations are binding.

Quotes for transportation or transportation charges on account or invoice are for administration purpose only, the delivery condition remains EX WORKS.

ORDERS

Confirmed orders can only be cancelled after our written consent.

DELIVERY TIME

All deliveries are from stock Maastricht. In those cases where a delivery time is indicated, these indications are for reference only and can change without prior notice.

It is explicitly stated that UPI Laboratories Europe BV accepts no liability nor penalties in case of late deliveries.

DELIVERY

Special instructions are only accepted if stated in writing on your order and are subject to the approval of UPI Laboratories Europe BV and reconfirmed in writing. All shipments travel for the full risk of Buyer regardless of the party that has instructed the forwarder.

UPI Laboratories Europe BV is explicitly not liable for loss or damage of any goods.

ADDITIONAL CHARGES

The following charges apply for orders less than net:

Euro 250,- costs Euro 25,-

Euro 100,- costs Euro 30,-

Euro 50,- costs Euro 35,-

SHIPMENTS

We reserve the right to send partial or combined shipments for each individual order.

PAYMENTS

Unless otherwise agreed, payments to be made in advance.

A discount of 2% applies for advance payments. In case of an agreed open account, payments within 30 days of invoice date unless agreed otherwise in writing.

Late payments are subjected to an interest rate 3% a month. Goods delivered remain the unconditional property of UPI Laboratories Europe BV until they are fully paid for.

In addition to the general terms of sales & supply conditions applicable to commercial transactions, concerning the delivery of certified indenters and reference hardness blocks, as per the scope of UPI Laboratories the following applies:

When determining the approval of certified indenters, no consideration is given to measurement uncertainty. Regarding the recalibration period, a recommendation is provided by the respective indenters, as advised by the relevant standards for indenters. Concerning the validity of the calibrated reference hardness block, a recommendation is provided in the calibration certificate, as advised by the applicable standards for reference hardness blocks. When determining the approval of reference hardness blocks, no consideration is given to measurement uncertainty regarding the general requirements. The standards applied in the certificates are recorded, including the year. If there is a change in standards, it is implemented within six months of publication.

CONFIDENTIALITY:

Unless otherwise provided by law, the Contractor is obligated to maintain confidentiality regarding information obtained during the execution of the contract or of which they know or reasonably suspect that confidentiality is necessary. If, in the Contractor's opinion, misunderstandings among third parties are imminent or there is a risk to persons or public health based on the results of an investigation, this releases the Contractor from their obligation of confidentiality towards the involved individuals or relevant authorities. The Contractor shall inform the Client of such disclosure.

