#### **Polarisation filter** PHOTONI For split ring light Application: reflections

691

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### Application:

Hardness testing of solid materials G > 5 kg (G < 5 kg on stable base) such as steel, cast materials (e.g. grey iron, spheroidal graphite iron), aluminium cast alloys, brass, bronze, wrought copper alloys. Forged, rolled and cast materials.

### Portable recoil hardness tester D600 (ISO 16859-1)

Applications rebound hardness testing devices

### Includes impact mechanism type D

### Application:

For calculating and directly displaying hardness values in HL (Leeb), HB, HV, HRB (Rockwell B), HRC and HS (Shore). Suitable for large components made of steel, stainless steel, cast iron, aluminium alloys, brass, bronze and copper wrought alloys, from a mass of approx. 5 kg.

### Execution:

- Separate impact unit type D, HM ball diameter 3 mm
- Backlit LCD display (128 x 64 pixels)
- Individual value and mean value display, absolute range, no. of measurements
- Dynamic rebound method in line with ASTM A956 and DIN 50156
- 360° probe test direction
- Memory capacity: 48-600 groups, each with 1-32 measured values
- Measuring range 170-960 HDL

### Advantage:

- Integrated standard conversion tables divided into material groups
- Hardness values are immediately displayed according to a pre-defined hardness scale
- · Warning signal if the temperature exceeds the set upper and lower limit
- Battery capacity approx. 100 hrs (without backlight)
- Can take measurements at any angle (even upside down)

### Delivery:

Hardness tester, impact device D, cleaning brush, small support ring, operating instructions, USB cable, USB stick with software, case

### Notes:

Other impact devices such as DC, D+15, C and E are available on request!





#### 1 1 HL | 1 HB | 1 HV | 1 HS | 0.1 HRC |

Hardness revolu	tion	1 HL   1 HB   1 HV   1 HS   0.1 HRC   0.1 HRB		
Rechargeable ba	ttery/battery designation	1.2 V Mignon AA		
Length x width x	height			125 x 67 x 30 mm
Portable recoil hardness tester D600	42160		ldent. No.	125 ●
Accessories for recoil hard-	42160	Impact device DL – for measurements in tight, inaccessible places	ldent. No.	135 ●
ness testing equipment	42160	Impact device G – for heavy castings and forgings	Ident. No.	145 ●

Prod. Gr. 423



## **DRION** Mobile UCI UCI-3000 hardness tester (DIN 50159)

Separate manual sensor

### Application:

For determining and directly displaying hardness values in line with HB (Brinell), HV (Vickers), HRA (Rockwell A), HRB (Rockwell B), HRC (Rockwell), HS (Shore) on metallic materials. Ideal for fine-grain materials and alloys. The 50N standard sensor included in the scope of delivery allows e.g. hardness tests to be performed on nitride-hardened, case-hardened and high-frequency hardened parts, as well as coating tests (from 30 Micron with 10N probe). Suitable test attachments are optionally available for curved surfaces.

### Execution:

- Includes separate 50 N manual probe, Vickers 136° indenter
- Manual probe 145 mm long
- Colour LCD display, backlit
- Individual, min./max and mean value display, with graphic diagrams
- Applied Vickers method in line with ASTM A 1038 or DIN 50159

- Memory for 12,900 measurements divisible into 100 blocks
- USB interface
- Software LICI 3000
- Further manual probes 10 N and 98 N are available upon request

### Advantage:

- · For all test devices without correction value input Standard conversion tables integrated in the
- device Hardness values are immediately displayed according to a pre-defined hardness scale
- 3 freely selectable scales for individual material adjustments

### Deliverv:

Display unit, standard probe 50 N, rechargeable battery, charger, USB connecting cable, CD with software for data transmission and evaluation in Excel, transport case



Min./max. HV measuring range		240-940 HV			
Min./max. HRC measuring range		20-70 HRC			
Min./max. HB measuring range	90-460 HB				
DIN		50159			
Hardness accuracy		HB 4%   HV 3%   HRC 1.5%			
Memory (measurements) (PCS)		12900			
Hardness revolution	1 HB   1 HV   0.1 HRC   0.5 HRC   1 HRC				
Hardness revolution	0.1 HRB   0.5 HRB   1 HRB				
Testing method		Vickers			
Vickers pyramid (Degree)		136			
Min./max. working temperature		-10 to 40 °C			
Display type		Colour LCD display			
Backlight		Yes			
Data transmission type		USB			
Number of rechargeable batteries/batteries (PC	S)	1			
Rechargeable battery/battery designation		9 V block; 6LR61; 6AM6			
42170	Idant No	610			
42170	ident. No.	•			

Prod. Gr. 423

# NewSonic Mobile UCI SonoDur3 hardness tester (DIN 50159)

#### Application:

to determine, convert and direct display the hardness values as per HB (Brinell), HK (Knoop), HV (Vickers), HRA, HRB, HRC (Rockwell), HRF, HRD, HR45, HS (Shore) and MPa according to EN ISO 18265 and ASTM E 140. ideal for fine-grain materials and alloys. main areas of application are test tasks to series parts after heat treatment or after surface treatment as well as for weld seam testing or layer hardness measurement.

### Execution:

- Colour, capacitive 5 inch touchscreen display, break-resistant glass
- Impact-resistant housing according to MIL-STD-810G
- Degree of protection IP65 dust and splash-proof
- Android 7.0 operating system
- Interfaces USB, micro SD, WiFi 802.11 a/b/g/n and Bluetooth 4.0
- applied Vickers method in line with ASTM A 1038 or DIN 50159

- 4 GB internal memory, expandable up to 32 GB via SD card
- Carry strap for wrist or Belt
- Software for data transmission to an external PC

### Advantage:

- material table already stored according to EN ISO 18265
- standardised in accordance with ASTM A 1038 and DIN 50159-1-2
- · Graphical representation of measured values and statistics
- all important information at a glance
- hardness values are immediately displayed according to a pre-defined hardness scale

### Deliverv:

UCI display unit, case, certificates, USB cable, mains charger

### Notes:

probes are not included in the scope of delivery!





Fig.: Hardness test on a rail by means of a manual probe with integrated probe guide and prism attachment



1066

Min./max. HV m	easuring range			10-1999 HV				
Min./max. HRB r	measuring range		41-105 HRB					
Min./max. HRC ı	measuring range	20.3-68 HRC						
Min./max. HB m	easuring range	76-618 HB						
Min./max. HRD	measuring range	40.3-76.9 HRD						
Min./max. HRE r	measuring range			70-108.5 HRE				
Min./max. HRF r	measuring range	82.6-115.1 HRF						
DIN				50159				
Min./max. tensil	e strength		225-2180 N/mm <sup>2</sup>					
Hardness accura	су	< 4% (HV5, HV10)						
				ASTM E-140-12b (2013)   EN ISO				
weasured value				18265:2014				
Testing method				Vickers				
Vickers pyramid				136				
Data transmissio	on type			WLAN/Bluetooth				
Rechargeable ba	ttery/battery designation			3.7 V lithium ion battery				
Mobile UCI								
SonoDur3	42170		Ident No	320				
hardness			luciit. No.	•				
tester								
Accessories for		Mains charger for SonoDur3 mobile UCI		325				
UCI hardness	42170	hardness tester	Ident. No.	0				
testers								

Prod. Gr. 486

# NewSonic standard handheld measuring probes For mobile UCI hardness tester SonoDur

#### Application:

Ident. No. 700: Hand-held measuring probe 10 N (1 kgf) for mobile UCI hardness tester SonoDur2. Ideal for e.g. welding seam testing, soft spots, nitrided and hard surfaces.

Ident. No. 710: Hand-held measuring probe 50 N (5 kgf) for mobile UCI hardness tester SonoDur2. Universal standard probe for many areas of application, especially for recording edge hardness and nitrided layers on components.

Ident. No. 715: Hand-held measuring probe 98 N (10 kgf) for mobile UCI hardness tester SonoDur2. Ideally suited for EN ISO 1090, structural steel, cast and forged parts, fasteners.

Execution: Stainless steel housing

Delivery:

Hand-held measuring probe without connection cable

Notes:

Other special designs available on request.

Technical data:

Test body diameter: 25 mm Manual probe length: 176 mm

Test force (N	)	10	50	98
42170	ldent. No.	700	710	715
42170		0	•	0

Prod. Gr. 486

# NewSonic handheld measuring probe with surface-adapted special base Accessories for UCI hardness tester SonoDur

#### Application:

Ident. No. 740: Handheld measuring probe 10 N (1kgf) with integrated probe guidance. Ideal for the controlled testing of welding seams, soft spots, nitrated and hard surfaces.

Ident. No. 745: Handheld measuring probe 50 N (5 kgf) with integrated probe guidance. Universal use in many application areas, in particular detecting edge hardness and nitrite layers on components.

Ident. No. 750: Handheld measuring probe 98 N (10 kgf) with integrated probe guidance. Ideal for EN ISO 1090, structural steel, cast iron and forged parts, mounting elements.

### Execution:

Stainless steel housing

### Advantage:

- Innovative integrated probe guidance for well-controlled test processes
- Specially shaped special base protects the Vickers diamond against direct material contact impacts during positioning

#### Deliverv:

Handheld measuring probe without connection cable





Including 5 probe attachments: Prism (Ø 1.5-10mm, Ø10-100mm, Ø50-300mm, flat and standard attachment)



Prod. Gr. 486



## **ATORN**<sup>®</sup> SHORE hardness tester (ISO 868) Shore A for soft materials and Shore D for hard materials

### Application:

Ident. No. 100: For determining Shore A hardness in line with DIN ISO 7619-1, ISO 7619-1, ISO 868 and ASTM D 2240. Suitable for e.g. soft rubber, elastomers, natural rubber, neoprene, polyester, casting resins etc.

Ident. No. 110: For determining Shore D hardness in line with DIN ISO 7619-1, ISO 7619-1, ISO 868 and ASTM D 2240. Suitable for e.g. hard rubber, acrylic glass, stiff thermoplastics, Formica, vinyl sheets, cellulose/acetate, hard rubber materials etc.

### Execution:

- Trailing pointer
- Large glare-free display rotates through 360°
- Accurate to 0.5 hardness units

#### Advantage:

Ergonomic handles for excellent handling

#### Notes:

The devices can be used as hand-held devices or for series testing using ATORN test stands.

Model		HD-3000 Shore A	HD-3000 Shore D
Scale value	e, Shore	1	1
Shore erro	r limit	± 0.5	± 0.5
Meter Ø (n	าm)	57	57
Trailing poi	nter	Yes	Yes
Contact for (N)	rce (DIN 53505)	12.5	50
42105	Ident No	100	110
42175	iuciii. No.	-	-

Prod. Gr. 426

## ATORN<sup>®</sup> Digital SHORE hardness testers

Shore OO for very soft, Shore A for soft and Shore D for hard materials

### Application:

**Ident. No. 200:** For determining Shore A hardness in line with DIN ISO 7619-1, ISO 7619-1, ISO 868 and ASTM D 2240. Suitable for e.g. soft rubber, elastomers, natural rubber, neoprene, polyester, casting resins etc.

Ident. No. 210: For determining Shore D hardness in line with DIN ISO 7619-1, ISO 7619-1, ISO 868 and ASTM D 2240. Suitable for e.g. hard rubber, acrylic glass, stiff thermoplastics, Formica, vinyl sheets, cellulose/acetate, hard rubber materials etc.

Ident. No. 220: For determining Shore OO hardness in line with ASTM D 2240. Suitable for e.g. foams, cellular and micro cellular rubber, etc.

### Execution:

### Large, high-contrast LCD display

- Data output OPTO-RS 232
- Accurate to 0.5 hardness units

### Advantage:

- Ergonomic handles for excellent handling
- Large, clear display
- Optional accessories for serial measurements

### Notes:

The devices can be used as hand-held devices or for series testing using ATORN test stands.



Ident. No. 100



Ident. No. 200

Shore error limit			± 0.5	± 0.5	± 0.5	
Contact force (D	IN 53505) (N)			12.5	50	3.924
	42195	ATORN Shore A	Ident. No.	200 ●	-	-
hardness	42195	ATORN Shore D	Ident. No.	-	210 ●	-
lesters	42195	ATORN Shore 00	Ident. No.	-	-	220 ●
Test stand set for ATORN Shore hardness tester	42195	ATORN test stand OS-2 for SHORE A and D	ldent. No. Price∕unit, €	<b>120</b> (1310.00)	<b>120</b> (1310.00)	-
Accessories for	42195	ATORN adapter for test stands for OS2 and OS2-OO	ldent. No.	<b>230</b> O	<b>230</b> O	<b>230</b> O
hardness tester	42195	ATORN loading weight Shore D	ldent. No.	-	130 o	-
Test stand set for ATORN Shore hardness tester	42195	ATORN test stand OS-2-OO for SHORE OO	ldent. No. Price∕unit, €	-	-	<b>240</b> (1310.00)
Software for ATORN Shore hardness testers	42195	Measurement and analysis software HiMeasure	ldent. No.	<b>260</b> O	260 O	<b>260</b> O

Prod. Gr. 426





1068

D

### ATORN® Test sample set for Shore hardness testers

### Application:

For checking Shore hardness testers

### Execution:



• Ident. No. 140-150: Incl. factory calibration certificate

Ident. No. 250: including factory calibration certificate







Ident. No. 140

Ident. No. 250

Number of test samples (PCS)			7	3	3
Shore hardness range			30   40   50   60   70   80   90	60   75   85	30   70   80
42195	ATORN test sample set Shore A	Ident. No.	140 ●	-	-
42195	ATORN test sample set Shore D	Ident. No.	-	150 ●	-
42195	ATORN test sample set Shore OO	Ident. No.	-	-	<b>250</b> O

Ident. No. 150

Prod. Gr. 426

#### Test stand

For ATORN Shore hardness testers with digital or manual measurement display

### Application:

For mounting ATORN SHORE hardness testers. Ideal for accurate and reproducible individual and series measurements.

- Execution:
- Robust aluminium test unit



Shore A and Shore D test stands

• Ident. No. 120: Height adjustable Ident. No. 240: Height-adjustable

Advantage: Tilt lever for shock-free and constant test force





Ident. No. 240

Ident. No. 120 Test stand with SHORE A hardness tester

Overhang (mm)	115			
Test table Ø (mm)	98			
Max. sample thickness (mm)		180		
Test unit material	Alu construction			
42105	ATOPN test stand OS 2 for SHOPE A and D	Ident. No.	120	
42195	ATORN LEST STATIL US-2 TOF SHORE A AND D	Price/unit, €	(1310.00)	
42105	ATOPN tost stand OS 2 00 for SHOPE 00	Ident. No.	240	
42170	ATORN LEST STOLE OF 2-00 101 SHORE 00	Price/unit, €	(1310.00)	

Prod. Gr. 426

#### Shore D loading weight ATORN For ATORN test stand 42195120

Loading weight (g)			4000
Load weight material			Stainless steel A2, 1.4305
42105	ATORN loading weight Shore	Idant No	130
42195	D	ident. No.	0
Prod. Gr. 426			



www.iconridge.com



### **ATORN®** Measurement and analysis software HiMeasure For ATORN digital Shore hardness testers



## Hardness comparison plates

### Periodic testing of hardness testing devices

Periodic testing is an important part of monitoring hardness testing devices in terms of the quality management system and must be performed with calibrated and certified hardness reference plates in accordance with ISO 6506-3:2015 (Brinell, part 1 appendix), ISO 6507-3:2005 (Vickers part 1 appendix), ISO 4545-3 (Knoop), ISO 6508-3:2015 (Rockwell part 1 appendix), ASTM E10-14 (Brinell), ASTM E18-15 (Rockwell) and ASTM E384-11 (Vickers and Knoop), and must be documented accordingly.

To avoid a potential systematic measurement error, the test parameters must be derived from the associated certificate. Without a certificate, hardness reference plates are practically useless.

This check is required each time the machine settings are changed, e.g. after switching the test procedure or the indenter. In addition, at least 1 or 2 test impressions are required per (working) day, per hardness range and hardness scale. Documentation is normatively prescribed or at the very least strongly recommended, as an audit usually includes a review of the documentation of the results of periodic testing. Please consult the corresponding currently applicable standards for further information.

### Hardness reference plates (ISO DIN EN ISO 6506-3)

### test procedure HBW

### Application:

For indirect and periodic checking of functionality and measurement inaccuracy of hardness testers in line with the HBW test method.

### Execution:

- Fine-grained, homogeneous steel
- DAkkS certificate

### Notes:

Technical data: - ISO: DIN EN ISO 6506-3

HBW 2.5, triangular, 70 x 70 x 6 mm, HBW 5/HBW 10 with hardness value 150, rectangular, 150 x 100 x 16 mm, HBW 5/HBW 10 from hardness value 200, square, 100 x 100 x 16 mm



Ident, No. 002-014



Ident. No. 020-054

	HBW 2.5/187.5	HBW 5/750	HBW 10/3000	
Testing method	HBŴ	HBŴ	HBŴ	
Ball Ø (mm)	2.5	5.0	10.0	
Test force (N)	1838.74	7355	29420	
Hardness value	42365	42365	42365	
	Ident. No.	Ident. No.	Ident. No.	
150	002 •	020 0	040 0	
200	004 •	022 •	042 •	
250	006	024 •	044 •	
300	• 800	026 0	046	
350	010	028 0	048 0	
400	012 •	030 0	050 •	
450	014 0		052 0	
500			054 0	

Prod. Gr. 424





## Hardness reference plates (ISO DIN EN ISO 6507-3)

test procedure HV

### Application:

For indirect and periodic checking of functionality and measurement inaccuracy of hardness testers in line with the HV test method.

### Execution:

- · Fine-grained, homogeneous steel
- DAkkS certificate

### Notes:

HV 1 to HV 10, triangular, 35 x 35 x 35 x 6 mm, HV 30, triangular, 70 x 70 x 70 x 6 mm

### Technical data:

ISO: DIN EN ISO 6507-3







Ident.	No.	198-210
iuciii.		170 210

		HV 1		HV 3		HV 5		HV 10		HV 30
Testing method		HV 1		HV 3		HV 5		HV 10		HV 30
Hardness value	4236	5	4236	5	4236	5	4236	5	4236	5
	Ident.	No.	Ident.	No.	Ident.	No.	Ident.	No.	Ident.	No.
240	138	0	-	-	168	0	184	•	198	•
300	140	•	-	-	170	0	186	•	200	•
400	142	0	158	0	172	•	188	•	202	•
540	144	•	160	0	174	•	190	•	204	•
620	146	•	-	-	176	0	192	•	206	0
720	148	•	164	•	178	•	194	•	208	•
840	150	•	166	0	-	-	196	•	210	0

Prod. Gr. 424

### Hardness reference plates (ISO DIN EN ISO 6508-3)

### **Test procedure HRA**

### Application:

For indirect and periodic checking of functionality and measurement inaccuracy of hardness testers in line with the HRA test method.

• Square, 60 x 60 x 16 mm DAkkS certificate

Technical data: - ISO: DIN EN ISO 6508-3

### Execution:

· Fine-grained, homogeneous steel

### Hardness value

Hardness value				60	70	80
		Testing method				
42365	HRA	HRA	ldent. No.	<b>302</b> O	<b>304</b> O	306 ●

Prod. Gr. 424

### Hardness reference plates (ISO DIN EN ISO 6508-3)

### **Test procedure HRB**

#### Application:

For indirect and periodic checking of functionality and measurement inaccuracy of hardness testers in line with the HRB-W test method.

Square, 60 x 60 x 16 mm

DAkkS certificate

### Technical data:

ISO: DIN EN ISO 6508-3

### Execution:

Fine-grained, homogeneous steel

Hardness v	/alue		60	90	100	
		Testing method				
42365	HRB	HRB-W	Ident. No.	312 ●	316 ●	318 0



### Hardness reference plates (ISO DIN EN ISO 6508-3)

### **Test procedure HRC**

### Application:

For indirect and periodic checking of functionality and measurement inaccuracy of hardness testers in line with the HRC test method.

- Execution:
- · Fine-grained, homogeneous steel
- Square, 60 x 60 x 16 mm
- DAkkS certificate





WARA NEW SHOERINGIN



