The UCI Measuring Principle

The UCI (Ultrasonic Contact Impedance) method uses the same pyramid-shaped diamond as a conventional Vickers hardness tester. Unlike Vickers testing, no optical evaluation of the indentation is required, enabling fast and portable measurements. The UCI method excites a rod into an ultrasonic oscillation. The test load is applied by a spring and typically ranges from 1 to 5 kg of force (HV1 – HV5). As the diamond is forced into the material, the frequency of the rod oscillation changes in response to the contact area between the diamond and the material under test. The instrument detects the shift in frequency, converts it to a hardness value which is immediately displayed on the screen.

Adjustable test load

With this unique and patented feature a wide range of applications can be covered offering test loads ranging from HV1 to HV5, eliminating the need to purchase more than one UCI probe.

Quick & Reliable Measurements

User guidance enables reliable and accurate hardness readings to be obtained quickly and easily.

Unique Software Features

Additional features such as the profile view and industry specific settings allow for a very smooth workflow.

Broad Hardness Scales Coverage

Measurements in HV with automatic integrated conversions to HB, HRA, HRB, HRC and many more common scales in compliance to ASTM E140 and ISO 18265.

Standards

- ASTM A1038
- DIN 50159

Conversion Standards

- ASTM E140
- ISO 18265

Guidelines

- DGZIP Guideline MC 1
- VDI / VDE Guideline 2616 Paper 1
- ASME CRTD-91

The Most Flexible and Convenient
Ultrasonic Hardness Tester

One-Step Calibration

Adjustable test load

With this unique and patented feature a wide range of applications can be covered offering test loads ranging from HV1 to HV5, eliminating the need to purchase more than one UCI probe.

Quick & Reliable Measurements

User guidance enables reliable and accurate hardness readings to be obtained quickly and easily.

Unique Software Features

Additional features such as the profile view and industry specific settings allow for a very smooth workflow.

Broad Hardness Scales Coverage

Measurements in HV with automatic integrated conversions to HB, HRA, HRB, HRC and many more common scales in compliance to ASTM E140 and ISO 18265.

The UCI Measuring Principle

The UCI (Ultrasonic Contact Impedance) method uses the same pyramid-shaped diamond as a conventional Vickers hardness tester. Unlike Vickers testing, no optical evaluation of the indentation is required, enabling fast and portable measurements. The UCI method excites a rod into an ultrasonic oscillation. The test load is applied by a spring and typically ranges from 1 to 5 kg of force (HV1 – HV5). As the diamond is forced into the material, the frequency of the rod oscillation changes in response to the contact area between the diamond and the material under test. The instrument detects the shift in frequency, converts it to a hardness value which is immediately displayed on the screen.

Swiss Precision since 1954
Equotip® UCI Probe and Accessory

Measuring range | 20 – 2000 HV
Resolution | 1 HV (UCI), 0.1 HRC
Measuring accuracy | ± 2 % (150 – 950 HV)
Test loads (in 10 N steps) | Selectable: HV1, HV2, HV3, HV4, HV5
Diamond indenter | Vickers diamond according to ISO 6507-2
Dimensions | 155 x ø 40 mm (6.1 x ø 1.57 inches) without foot

Adjustable test load
The required test load can be selected by the user in the settings menu. For each measurement series, the force can be chosen from five levels between HV1 and HV5 (~10 N and ~50 N), to fit a wide range of applications. The minimum required mass for reliable UCI measurements is 0.3 kg (0.66 lbs), and a thickness of at least 5 mm (0.2 inch).

Examples:

| HV1 | Precision parts, thin coatings, hardened layers |
| HV5 | Large components, HAZ, forging parts |

Special Foot
The optionally available special foot increases the measurement repeatability. It can be used for flat or curved surfaces. For curved surfaces there are two different apertures, one for diameters from 5 to 25 mm and one for larger diameters from 20 to 70 mm.