



Micro IRHD Laser revolution

Micro-IRHD Hardness tester with laser centering device and rotating sample holder for the automatic serial measuring of O-rings and small rubber parts

The instrument is supplied with laser centring device and motor-controlled sample holding disk for the displacement of the parts to be measured.

The sample holding disk moves each test piece under the laser centring tool and then places the optimal test point of the part under the micro-IRHD testing unit.

The positioning and hardness measuring operations are performed automatically for all the parts placed on the sample holding disk across the laser reading line without intervention of the operator.

Reference Standards

The instrument is conforming to ISO 48, ASTM 1415, DIN 53 519-1/2 standards.

Calibration

The instrument is available with AC-CREDIA calibration certificate. The certificate is issued by Gibitre ISO 17025 Accredited laboratory

Applications of the instrument

The instrument permits to perform the serial measure of micro-IRHD hardness of O-rings and small parts eliminating the human influence in the sample positioning.

The instrument is useful for:

- Product approval or Quality Control tests which require the repeating of the tests on statistical basis
- Mold approval tests
- Process capability analysis
- Testing of small parts difficult to be centered manually

O-rings or small parts with a thickness between 1 and 20 mm can be tested.

The laser testing process can be stopped to perform tests with standard samples.

Use of the Instrument

To perform the test you simply need to:

- place the parts to be tested across the test line of the sample holding disk
- insert the identification of the

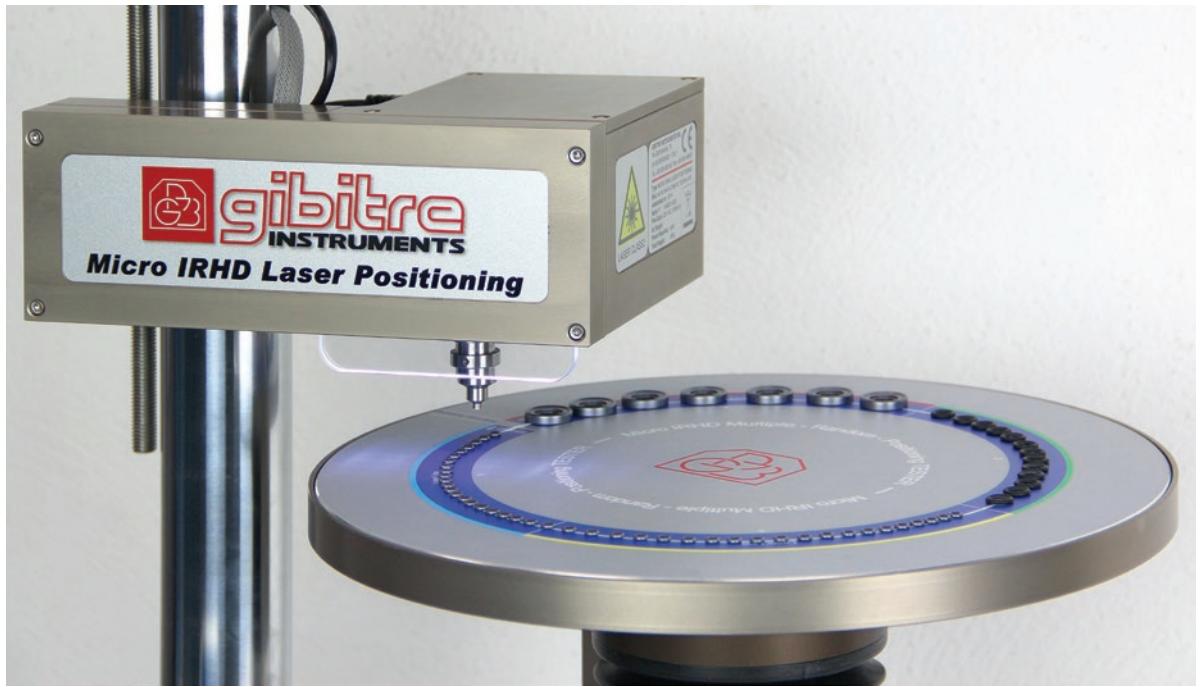
product

- press start
- print the test report and save the test results when the complete rotation of the disk has been performed and all the samples have been tested.

Measure of micro-IRHD hardness on pieces with non-symmetrical shape

The software for the control of the instrument includes a 'Scan' function which permits to record the laser reading of the profile of a piece





and to define the position where the test has to be made.

The test setup for each product is stored and is automatically re-used when the same product is tested again.

Execution of tests on different products

The sample-holding disk is divided in 4 sectors.

According to your needs, you can use all the sectors to test the same product or you can place different kind of pieces in each sector.

At the beginning of the test you can enter the identification for the products placed in each sector. In this way each result will be saved or printed with correct identification.

Test results produced

The instrument calculates automatically:

- Micro-IRHD Hardness
- Thickness of the sample in the test point
- Angle coefficient of the hardness relaxation curve
- Hysteresis curve
- Corrected hardness (the hardness of test pieces with non-standard thickness is corrected according to the method described in NWIP ISO 48:2010 to estimate the expected hardness of a sample with 2 mm thickness)

ISO 48:2010 to estimate the expected hardness of a sample with 2 mm thickness)

Comparison with Tolerance limits and statistic analysis

The software for the control of the instrument permits to set tolerance limits for each product. The conformity of each result is automatically checked at the end of each test.

The statistic analysis of the ongoing tests includes: X-Chart, Gaussian Distribution , Max, Min, Mean, Standard Deviation, Cp and Cpk.

Storage and traceability of test results

The software permits to store all test results in a database with SQL structure.

For each test the following information is stored: Order, Lot, batch, sample, Customer, Product, ageing treatment, executor of the test, date, hour, serial number of the instrument, test procedure, numerical test results, test curve, conformity with tolerance limits.

The database management program permits to select the results in order to make comparisons, statistics and

to produce customized test reports.

Test Report

The test report can be produced in one of the languages installed.

The report includes the test results and the test identification information. In addition it may include the test curves, tolerance limits, statistic analysis, a legend with the description of the calculated results, the signature of the software user and eventual notes.

Software Characteristics and connection to the PC

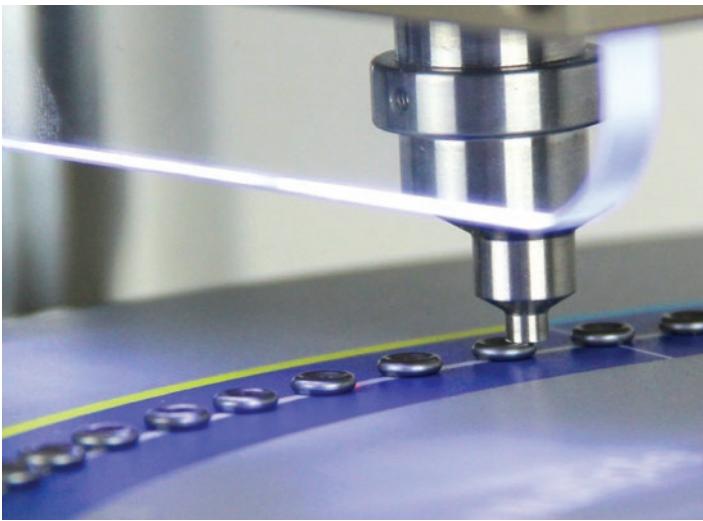
The software is compatible with Windows 7 and 8 (32 and 64 bits).

The connection of the instrument to the pc is made via USB cable (supplied with the instrument)

More instruments can be connected to the same PC and used at the same time.

Technology of Micro-IRHD device

The micro-irhd testing units produced by Gibtre measure the force applied to the sample using a load cell. This technology, widely used for the hardness testers for metals, permits to eliminate the effect of friction in the application of the force and improves the test repeatability.



Characteristics of the laser centering device and of the sample-positioning system

The laser sensor used is class 2 type and has 0.002 mm reading resolution.

The sample positioning disk permits to set the position of the test piece with 0.005 mm accuracy.

The combination of accurate measuring and sample positioning devices ensures a very high repeatability of the results obtained even when very small parts are tested.

Modular Construction

The main parts of the instrument are: the measuring unit, the sample displacement system and the

electronic card.

Those parts have been developed to permit quick and independent replacement in case of failure. This characteristic ensures short recovery time and low maintenance cost.

Safety devices

The instrument includes safety devices to eliminate potential risks during the automatic working.

- Test stops in case of incorrect sample centring
- Test stops in case of overload of the indentor
- Test stops in case of missing laser reading or sample positioning reading

Standards the instrument complies with	ISO 48; ASTM D 1415; DIN 53 519
Unit of measure	IRHD-M (micro)
Resolution	0.1 irhd point
Instrument Control	With Gibitre-Hardness software
Test modality	Serial automatic testing of the parts placed across the test line of the sample holding disk
Calculated Results	<p>Micro-IRHD Hardness</p> <ul style="list-style-type: none"> • Thickness of the sample at the test point • Angle coefficient of the hardness relaxation curve • Hysteresis curve • Corrected hardness (the measured hardness is corrected according to the method described in NWIP ISO 48:2010 to estimate the expected hardness of a sample with 2 mm thickness)
Data analysis	Mean, std. Dev., min, max, Cp, Cpk of test results. X-Chart and Gaussian distribution
Graphs	Rubber Relaxation curve (hardness versus test time) in linear and logarithmic axes
Tolerance verification	Comparison of test results with the tolerance limits set for the product
Results storage	Saving of results and curves in standard database
Laser Device	Class 2 laser sensor Resolution: 0.002 mm
Sample thickness	Between 1 and 20 mm
Calibration	Electronic calibration Report with traceability to primary references ACCREDIA calibration Certificate (optional)
Personal computer	Minimum Configuration: Intel Core i3 2 GB RAM Compatible operating Systems: 7 and 8 (64 bits) Connection to the instrument via USB cable (included)
Software usage Languages	Italian, English, French, Spanish, German, Portuguese, Russian, Chinese, Japanese, Turkish, Polish
Power supply	110÷240 VAC ±10%, 50÷60 Hz ±3, 4 A, Single Phase 40 W
Dimensions	(W x D x H) 470 x 350 x 600 mm
Weight	37 Kg



ACCREDIA Calibration

Gibtre Instruments' metrological laboratory is official ACCREDIA calibration laboratory for the calibration of Shore A, Shore D, IRHD Micro, IRHD-Normal, IRHD-Hard, and IRHD-Low hardness testers.

Gibtre Laboratory is accredited since March 2005 and provides official calibration for hardness testers of the most known brands.

ACREDIA is a member of EA (European Cooperation for Accreditation), the organization which coordinates the national calibration services in numerous countries within Europe and beyond through mutual recognition agreements. Through these agreements, each signee recognizes the operational procedures of accreditation used in the metrological laboratories of the other nations.



LAT N° 182

Signatory of EA, IAF and ILAC Mutual Recognition Agreements

Membro degli accordi di Mutuo Riconoscimento EA, IAF e ILAC



Certified rubber samples

The use of certified samples permits to perform periodical verification of the conformity of the reading of your instrument in the period between two calibrations.

Periodical verifications are useful considering the importance of hardness as a testing parameter. Characteristics of the product The hardness of elastomeric products is strongly influenced by the temperature. For this reason the

samples produced by Gibtre have a shape that permits easy handling without transmitting the heat of the hand to the testing area.

The samples are provided with a calibration Certificate with traceability to the certified hardness tester used for the measurements.

The samples are provided with an insulated protection case that ensures protection of the samples from temperature variations and from the light.



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