

Verification of essential factors on the hardness testing procedure VLRH

Extensive series of measurements on silicone samples of different hardness for the determination of the hardness values acc. to VLRH have resulted in following factors:

- Shape, dimensions and tolerances in dimensions of the indenter
- Kind and tolerance of the total force which is working on the indenter
- Impact duration of the total force on the indenter
- Measuring accuracy of the depth measuring system

Requirement for the higher accuracy of the hardness measuring procedure is the longer impact duration of the total force compared with the procedures Shore A and Shore 00.

Testing device digi test in connection with the measuring device VLRH

This measuring device VLRH can be used with the testing device digi test without any problems as well as all other measuring devices. An optimal supplement for your quality assurance.

UP TO DATE

Training:

Training on topic
Hardness test on rubber and
Plastic materials



Target group:

Constructing engineers, quality inspectors and operators of hardness testers

DKD

Calibration Body of the
German Calibration Services



Calibration laboratory K 16501 for mechanical measurands within the range HARDNESS accredited by the body of accreditation of DKD

Management:

Demands of the
C.O.C.P. procedure
and ISO 9001:2000
are fulfilled



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Bareiss develops a new hardness measuring procedure

for very soft elastomers,
silicones and foam rubber.



VLRH (VERY LOW RUBBER HARDNESS)

At last it's a standard!
DIN ISO 27588



Future orientated research work

Soft and very soft elastomers, especially silicones and foam rubber are more and more used in techniques and medicine. In order to make sure that the material is working reliably, hardness of silicone or foam rubber is an important parameter besides other material properties.

For the hardness test on soft elastomers there are the procedures Shore A (acc. to DIN 53505) and Shore 00 (only standardised in ASTM D 2240).

For both procedures the differentiation of the hardness values within the range of low hardness values is insufficient.

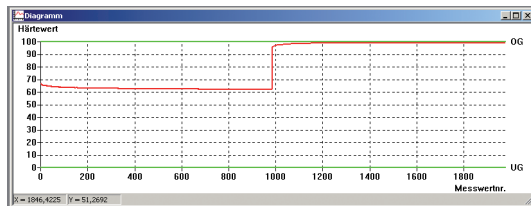
Successful development

Bareiss has faced this topic and has developed a new measuring device for testing the hardness of very soft elastomers.

This instrument is designed in this way that a charge and discharge curve can be charted in addition to the hardness value. This chart informs about the resilience or the aging process of the material.

The related hardness measuring procedure is called VLRH acc. to DIN ISO 27588.

Evaluation software HARDTEST
 Screen: Hysteresis measurement
 Charging time: 99 s = 990 measured values
 Discharging time: 99 s = 990 measured values



Definition of the hardness measuring procedure VLRH

The procedure VLRH defines hardness like the already existing standardised hardness testing procedures acc. to Shore and IRHD via an indentation depth of an indenter into the test specimen below an applied constant force.

In comparison with the IRHD procedure acc. to DIN 53519 or ISO 48 the dimensions of the indenter and the force which is working on the indenter have been modified for VLRH so that there is a spreading of the measured values within the range of very low hardness values.

Photo: Testing device digi test with measuring device VLRH



Studies on hardness testing procedure VLRH

Correlations between VLRH and Shore A and Shore 00

For the established procedures Shore A acc. to DIN 53505 and Shore 00 acc. to ASTM D 2240 a material thickness of 6 mm is prescribed for the hardness measurement.

With the new procedure VLRH you can make a reliable hardness test from a material thickness of 1 mm on.

Measurements on silicone samples of different hardness have pointed out that the procedure Shore A (< 65 VLRH) only delivers hardness values of 0 without differentiation whereby you get measuring results of a good differentiation with the procedure VLRH.

In comparison with Shore 00 values, too, you get a much better differentiation by VLRH.

Chart: Hardness comparison range

