

BUCHHOLZ HARDNESS INDENTATION TEST

SP1900

MANUAL

1 SAFETY PRECAUTIONS

- The Slip-on weight wheel of the Buchholz Indentation Tester is a sharp object. Be careful when using it..

2 PRODUCT DESCRIPTION

The TQC Buchholz Indentation Test provides a method for carrying out an indentation test on coatings complying with the ISO 2815-2003 standard. The set consists of a calibrated slip-on weight with a sharp-edged metal wheel, an illuminated microscope, a level gauge, a digital dual timer, and two markers with template.

The calibrated slip-on weight with sharp-edged metal wheel is positioned on the test specimen for a set period of time. The length of the indentation mark in the coating is an indication of the hardness of the surface.

Mandatory test in Qualicoat, QIB and GSB accredited laboratories.

3 STANDARDS

The Buchholz Indentation hardness test complies with the following standards:

- EN ISO NF 2815-2003
- BS 3900 E9
- ECCA T12 – 1985
- NF T 30-052

Look up the appropriate standard for a correct execution of the test.

4 WHAT'S IN THE BOX?

The set consists of:

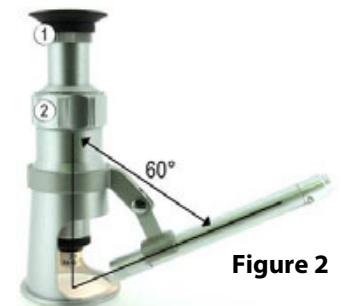
- a calibrated slip-on weight with a sharp-edged metal wheel
- an illuminated microscope with 20x magnification
- a level gauge
- a digital dual timer
- a white- and a black marker with template
- three 1.5V AAA battery



5 PREPARATIONS

5.1 Preparing the microscope

1. The microscope light source is powered by two AAA batteries. To place the batteries, unscrew the back of the torch. Place both batteries with the "+" side facing downwards (in the direction of the bulb).
2. The light source has to be mounted into the clamp bracket of the microscope manually, by clicking it in as shown as in Figure 1.
3. The angle between the tube of the microscope and the light source has to be set to 60°. (Figure 2)
4. Adjust the focus and the scale of the microscope before you take a reading.
5. Rotate the scale as required, by turning the ring (Figure 2, No.1)
6. Place the microscope on a flat surface, switch on the light and adjust the focus on the specimen by rotating the large knurled ring (Figure 2, No. 2)



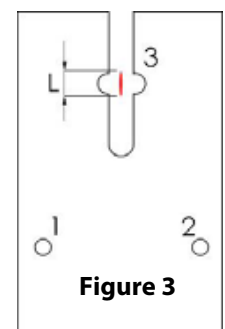
5.2 Preparing the timer

1. The indenting time 30 s set in T1 with button "S"
2. The recovery time 35 s is set in "T2" with button "S".
These values are now stored in the memory until © (clear) is selected.

6 PERFORM A MEASUREMENT

The test shall be carried out at a temperature of $23 \pm 2^\circ\text{C}$ and a relative humidity of $50 \pm 5\%$.

1. Measure the coating thickness minimal 3-45 μm (according to Table1)
2. The coating to be tested shall be smooth and clean.
3. Use the level gauge to ensure the test panel is at level on the testing surface.
4. Use the template to mark the spot to be measured (3) and the feet positions (1 and 2) on the test object. The indentation will be visible at the gap in the middle of position 3 (red mark in Figure 3).
5. Check the indentation body (weight, wheel and fixing points) and make sure they are free from dust.
6. Gentle and without tilting or lateral movements place the indentation body on the test panel, feet first exactly on the marked positions 1 and 2 then lower the indenter carefully until it touches the panel. (figure 4) and start T1 on the timer
7. After 30 seconds remove the TQC Buchholz Indentation Tester from the surface and start T2 on the timer. While removing be careful for applying any pressure to the indenter.

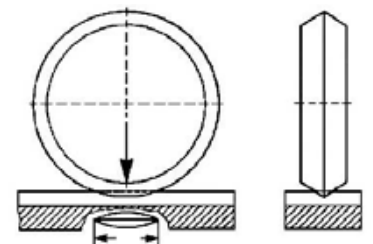
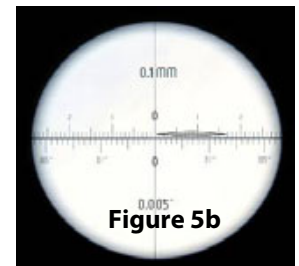


8. After the recovery period of 35 seconds measure the length of the indentation (L) with the measuring microscope. (Figure 5a and 5b)
9. Look up the indentation length (L) in table1 and find the corresponding Buchholz Indentation resistance (BH) value, or use the formula $BH = 100/L$



Table 1 – relationship between indentation length and indentation resistance

Indentation length	Indentation resistance	Indentation depth	Minimum coating thickness for which a measurement is valid
mm	BH	µm	µm
0,4	250	1	3
0,5	200	2	6
0,6	167	3	9
0,7	143	4	12
0,8	125	5	15
0,9	111	7	20
1	100	8	20
1,1	91	10	20
1,2	83	12	25
1,3	77	14	25
1,4	71	16	30
1,5	67	19	30
1,6	63	21	35
1,7	59	24	35
1,8	56	27	40
1,9	53	30	40
2	50	33	45



7 CALIBRATIONS

We recommend annual calibration. For calibration, send the instrument, together with a RMA form* to TQC, Molenbaan 19, 2908 LL Capelle aan den IJssel, NL.

*You can download the RMA form here: <http://www.tqc.eu/en/service/repairs-calibrations/>

8 MAINTENANCE

- Though robust in design, this instrument is precision-machined. Never drop it or knock it over
- Always clean the instrument after use.
- Clean the instrument using a soft dry cloth. Never clean the instrument by any mechanical means such as a wire brush or abrasive paper. This may cause, just like the use of aggressive cleaning agents, permanent damage.
- Always keep the instrument in its case when not in use.
- We recommend annual calibration

9 DISCLAIMER

The right of technical modifications is reserved.

The information given in this manual is not intended to be exhaustive and any person using the product for any purpose other than that specifically recommended in this manual without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at his own risk. Whilst we endeavour to ensure that all advice we give about the product (whether in this manual or otherwise) is correct we have no control over either the quality or condition of the product or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability whatsoever or howsoever arising for the performance of the product or for any loss or damage (other than death or personal injury resulting from our negligence) arising out of the use of the product. The information contained in this manual is liable to modification from time to time in the light of experience and our policy of continuous product development.