

The tearing test

For creating the test-report the wire will be fixed in the testing machine. Therefore we have got a load measuring device for the thin and weak wires with a maximum load of 200 N. For the strong wires we have got a load measuring device of 5000 N. So we receive exact measuring results both in the lower and upper part.

The measurement of the wire stretching is more difficult. For measuring the elongation we need an always equal long testlength and the lengthening has to be measured in a thousandth of a mm. For this we have got an extensometer with an exactly defined measuring length (L) of 50 mm. With this equipment we can determine the exact change of length (ΔL_t) without faking the test results because of sliding in the wire clamps or because of swaying of the test lengths.

For compensating the normal wire curvature we work with a small preload. The preload is included at the load measuring device and flows into the calculation of the drawing force. So the beginning of the diagramm of the load deflection curve printout is placed higher to the preload. So the beginning of the curve looks smoother but this does not have an influence on the measured datas.

Only because of the optimized test arrangement of the measuring of thin wires it is possible to make statements about the maximum drawing force (F_m), the different elastic limits ($R_{r0,01}$, $R_{r0,03}$, $R_{p0,2}$) and the coherent results like modulus of elasticity (E) and spring stiffness.