ANALYSIS OF RESULTS OF TESTING OF WIRE BY REVERSE BENDING FROM THE VIEWPOINT OF NORMALITY OF THE MEASURED DATA

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Abstract

Test of wire by alternate bending to rupture is specific in that only a very small part of the sample is at this test exposed to plastic deformation. Thanks to this, the test result, it means the number of bends to rupture, depends strongly on the wire area, which was affected by bending. If, in fact this area contains an inclusion, test result will be strongly misrepresented. From the usual operating results it then seems that the variable "number of bends to fracture" does not have a normal probability distribution. This paper aims to determine, whether the results of the bending test to rupture can be treated as data with normal distribution. Series of tests were carried out for different wire diameters and for different materials and structural states (deformed state, annealed state) and the results were tested for normality and for outliers.

Keywords: bending test, steel wire, statistical analysis, normal probability distribution

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