

## THE EFFECT OF THE DEFORMATION DEGREE UPON THE FORM, THE ROUGHNESS AND THE MICRO-HARDNESS OF THE SURFACES PROCESSED THROUGH COLD PLASTIC DEFORMATION

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**Abstract:** After establishing the optimum values of the work parameters this work is continued the researches regarding the effect of the deformation degree of the bearings ring upon the form, the roughness and the micro-hardness of the surfaces processed through cold plastic deformation. The experimental results show that the form of the rolling surfaces is not essentially modified by the deformation degree. The roughness of the rolling surfaces presents important changes up against the half-finished roughness. The height of the asperities is reduced from 1.1532  $\mu\text{m}$ , the half-finished roughness, to 20  $\mu\text{m}$  for rolling surface A, representing a 6-time contraction. For rolling surface B the contraction of the asperities is from 0.9081  $\mu\text{m}$  to 0.29  $\mu\text{m}$ , namely a 3-time contraction. Starting from the half-finished micro-hardness of  $\text{HV}_{0.5}=192$ , after the final plastic deformation corresponding to the deformation degree of 100% we obtain a micro-hardness of  $\text{HV}_{0.5}=285$  for rolling surface A, namely an increase of 148% and  $\text{HV}_{0.5}=263$  for rolling surface B, namely an increase of 137%.

**Key words:** cold plastic deformation, shape, roughness, micro-hardness.