

## RESEARCHES REGARDING THE INFLUENCE OF THE FORCE ON THE QUALITY PARAMETERS OF PROCESSED SURFACES THROUGH COLD PLASTIC DEFORMATION

Octavian Pruteanu<sup>1</sup>, Constantin Cărăușu<sup>1</sup>, Ionel Sarbu<sup>1</sup>, Traian Grănescu<sup>1</sup>, Mariana Pruteanu<sup>2</sup>  
& Corneliu Pricope<sup>3</sup>

<sup>1</sup>Technical University "Gheorghe Asachi" of Iasi-Romania, Department of Machine Manufacturing Technology

<sup>2</sup>INSACO INC. – U.S.A.

<sup>3</sup>S.C. Rulmenti SA Barlad

Corresponding author: Octavian Pruteanu, pruteanu@tcm.tuiasi.ro

**Abstract:** This paper presents the results of the theoretical and experimental researches obtained at the processing through cold plastic deformation of the means of bearing rings rolling. It is being presented the influence of the cold deformation force on the quality parameters: roughness, oval shape, circularity of processed surfaces, and micro hardness. Experimental results show that increasing deformation force increase surface roughness and decrease the ovality shape and surface circularity. The roughness varies in a very restricted area, 0.05  $\mu\text{m}$ ; the oval shape varies in very close limits, 0.15 mm; the circularity also has variations in a very restricted area of around 12  $\mu\text{m}$ . All deviations are within the limits of the technical conditions established for the normal working of the bearing rings. Experimental results confirm that micro hardness decrease with superficial thickness depth. Micro hardness increases with deformation force increasing. Micro hardness values were stabilized on the depths over 2 mm.

**Key words:** cold plastic deformation, force, bearing, roughness, micro hardness.