THE MAGNETIC PROPERTIES AND STRUCTURE OF Co-Fe-Si-B POWDER PREPARED BY BALL MILLING.

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9.7 cm

The amorphous $Co_{70.3}Fe_{4.7}Si_{10}B_{25}$ ribbon was prepared by melt spinning method and then milled in a vibratory micro-mill up to 1500 hours. Magnetic properties (magnetic moment, coercivity, thermomagnetic curves) were measured by a vibrating sample magnetometer (VSM). The structure of the samples was detected by means of a scanning electron microscope (SEM).

VSM measurements results show that the coercivity of the milled powder steeply rises at the beginning of milling and it reaches maximum at 12 kA/m for 800 hours of milling. This value does not significantly changes up to 1300 hours of milling but further prolongation of the milling time causes sharp decrease of the coercivity. Magnetic moment of the samples measured at room temperature very slowly rises up to a value of about 119 Am^2/kg for 700 hours of milling and then steeply decreases with the extension of the milling time. Thermomagnetic curves show the presence of newly formed phases. All these results are discussed taking into account the results of the structure analysis.

13.4 cm

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