

# The Influence of Ultrasound on the Magnetic Properties of Amorphous Materials

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The effect of ultrasonic waves on the magnetic properties of iron-based amorphous alloys has been investigated experimentally. The effect of high-frequency ultrasound on strip processing has already been extensively studied [1], but the effect of ultrasound itself on the magnetization process remains poorly understood. Samples of strip coiled into rings were subjected to ultrasound during magnetization, and their magnetic parameters were then analyzed. The results indicate that the effect of ultrasound is measurable and influences the magnetic properties. This is attributed to vibrations that facilitate the rotation of domains during the remagnetization of amorphous material by a magnetic field and also contribute to the elimination of stresses. Under selected processing conditions, a decrease in coercivity was observed along with an improvement in magnetic permeability, suggesting an improvement in magnetic properties. The tests were carried out on ring samples in order to obtain the most reliable results. In such a core, the magnetic circuit is enclosed, which eliminates the influence of the demagnetization field and the influence of the sample dimensions on its magnetic properties. In addition, it was possible to easily introduce ultrasound into the ring-shaped sample, which was crucial for conducting the research.

## **References:**

[1] Z. Huo , G. Zhang , J. Han, J. Wang, S. Ma and H. Wang, Processes 10 (2022), 1203