

Core loss of compacted NiFeMo powder

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Supermalloy is a soft magnetic material with extremely high initial and maximum permeability and low coercivity. Supermalloy (usually Ni₇₉Fe₁₆Mo₅) is fabricated in the form of thin sheet, in the form which is not convenient for some applications; therefore it is logical to attempt to prepare such material in more bulk form.

The aim of this work was to investigate dc (magnetization curves, initial and maximum permeability) and ac magnetic properties of bulk soft magnetic materials in the form of a ring prepared by the compaction of Ni₇₉Fe₁₆Mo₅ powder obtained by milling of small swarfs for 1 or 100 hours in planetary ball mill.

From the frequency dependences of the core loss (dc to 50 Hz) were calculated the components of the loss: dc loss, classical loss and domain wall eddy current loss.