

New-High Performance Magnetic Powder Core Material: EU-69

Technical background

In order to improve the performance of solenoid valves and other actuators, high magnetic flux density in the iron core material is indispensable. Low core loss is also required, particularly in devices used in the high frequency region. Hitachi Powdered Metals recently developed a new material which realizes a good balance of high magnetic flux density and low core loss in the high frequency region.

Conventional technology

High performance magnetic powder core material: EU-65

Density (Mg/m ³)	7.60
Magnetic flux density B (T)	1.50
Core loss W (W/kg)	72

New technology

New-high performance magnetic powder core material: EU-69

Density (Mg/m ³)	7.70
Magnetic flux density B (T)	1.60
Core loss W (W/kg)	60

Features of the new technology

In the conventional material (EU-65), 0.3mass% of resin is added to obtain low core loss, but as a result, density was limited to 7.60Mg/m³. In contrast, high density of 7.70Mg/m³ is realized in the developed material (EU-69) by substantially reducing the content of added resin, resulting in a 7% improvement in magnetic flux density, which is strongly dependent on the density of the magnetic powder core, in comparison with the conventional material. On the other hand, a 20% reduction in core loss was also successfully achieved in the developed material by applying a new method of adding a very small amount of resin which has been refined to a small size by crushing and classification. In addition to realizing high magnetic flux density and low core loss, mechanical properties were also improved by applying ingenuity to the heat treatment conditions, resulting in a 60% improvement in radial crushing strength in comparison with the conventional material. The developed material also has excellent machinability, and displays a satisfactory machined surface after machining.

Examples of applicable products

- Magnetic cores for solenoid valves
- Materials for various types of yokes and magnetic seals
- Other magnetic part for use in the high frequency region

Applied products



Stator cores for injectors in diesel automobiles