

Material Introduction & Overview

Introduction to Powder Cores

Powder Cores are made from discrete particles of ferromagnetic powder. Prior to being formed into a core, the particles are covered in a thin layer of electrically insulated material to ensure electrical isolation of each particle. The particles are then compacted under high pressure to form the core geometry. The electrical insulation between particles enables the materials to be used at high frequency. The insulation also forms a distributed air gap throughout the core material, giving the material the ability to maintain inductance linearity with a DC biasing field.

Micrometals Arnold Powder Cores manufactures 5 different classes of materials: Super-MSS™ Sendust (MS), Molypermalloy (MP), FluxSan™ Iron Silicon (FS), Hi-Flux™ (HF), and the newly introduced Optilloy™ (OP). The following table describes size and permeability ranges available for each material class, and also describes the characteristics and applications for these material classes.

Super-MSS™ Sendust

- Iron, Silicon, Aluminum alloy powder material
- Permeabilities: 14 μ , 26 μ , 40 μ , 60 μ , 75 μ , 90 μ and 125 μ
- Low Magnetostriction for audibly quiet applications
- Cost effective low loss material
- Operating frequencies to MHz
- No thermal aging
- Wide selection of toroids, E-cores and blocks

MPP Molypermalloy

- Nickel, Iron Molybdenum alloy powder material
- Permeabilities: 14 μ , 26 μ , 60 μ , 125 μ , 147 μ , 160 μ , 173 μ , 205 μ and 250 μ
- Very low loss powder material
- Operating frequencies \leq 200kHz
- No thermal aging
- Wide selection of toroids up to 154mm

FluxSan™ Silicon Iron

- 6.5% Silicon, Iron alloy powder material
- Permeabilities: 14 μ , 26 μ , 40 μ , 60 μ , 75 μ and 90 μ
- High saturation characteristics
- Low losses \leq 200kHz
- No thermal aging
- Wide selection of toroids, E-cores and blocks

Hi-Flux™ Nickel Iron

- 50/50 Nickel, Iron alloy powder material
- Permeabilities: 14 μ , 26 μ , 60 μ , 125 μ , 147 μ and 160 μ
- High saturation characteristics
- Moderate losses \leq 200kHz
- No thermal aging

Optilloy™ Optimized Alloy

- Hybrid alloy powder material
- Permeabilities: 14 μ , 26 μ , 40 μ , 60 μ , 75 μ , 90 μ and 125 μ
- Moderate losses \leq 200kHz
- No thermal aging
- Toroids up to 154mm