



EXPERIENCE THE POWER OF CONFIDENCE

... the confidence of over seventy years of expertise in the research, design, manufacture and support of high quality magnetic materials and components.

A major manufacturer of the highest performance materials in the industry including powder cores, power ferrites, high permeability ferrites and tape wound cores, Magnetics' products set the standard for providing consistent and reliable electrical properties for a comprehensive range of core materials and geometries. Magnetics is the best choice for a variety of applications ranging from simple chokes and transformers used in

telecommunications equipment to sophisticated devices for aerospace electronics.

Magnetics backs its products with unsurpassed technical expertise and customer service. Magnetics' Sales Engineers offer the experience necessary to assist the designer from the initial design phase through prototype approval. Knowledgeable Sales Managers provide dedicated account management. Skilled Customer Service

Representatives are easily accessible to provide exceptional sales support. This support, combined with a global presence via a worldwide distribution network and a self-service website that provides 24-hour secure access to price, inventory availability, order tracking, account information and online purchasing, makes Magnetics a superior supplier to the global electronics industry.

MAGNETICS LOCATIONS



Visit us at www.mag-inc.com

Magnetics® Powder Cores

Magnetics' powder cores are excellent as low loss inductors for switched-mode power supplies, switching regulators and noise filters. Notable characteristics of Magnetics' powder core materials are high resistivity, low hysteresis and eddy current losses and excellent inductance stability under both DC and AC conditions. Magnetics' powder core materials are not pressed with an organic binder so there is no thermal aging. A variety of materials, sizes and geometries are available.

KOOL M μ ®

Kool M μ powder cores are distributed air gap cores made from a ferrous alloy powder for low losses at elevated frequencies. The near zero magnetostriction alloy makes Kool M μ ideal for eliminating audible frequency noise in filter inductors. In high frequency applications, Kool M μ exhibits significantly less core losses than powdered iron, resulting in lower temperature rise. The 10,500 gauss saturation level of Kool M μ provides a higher energy storage capability than can be obtained with gapped ferrite E-cores, resulting in smaller core size. Very large cores and structures are available to support very high current applications.

APPLICATIONS — SMPS inductors, chokes, power factor correction (PFC), uninterruptible power supplies (UPS), power inductors, noise filters, flyback transformers, rectifiers, ballasts, high bias current transformers, ground fault/arc fault sensors, automotive inductors

KOOL M μ ® MAX

Kool M μ MAX, the next generation of sendust cores from Magnetics, are distributed air gap cores made of an iron, silicon, and aluminum alloy. Kool M μ MAX cores are characterized by having improved DC bias performance over Kool M μ and super low core loss. Like Magnetics' other powder core materials, Kool M μ MAX operates with no aging effect at elevated temperatures, providing an advantage when compared with iron powders.

APPLICATIONS — chokes, differential filter inductors, flyback transformers, SMPS inductors, low height power inductors, PFC, UPS, PV inverters, power inductors

KOOL M μ ® ULTRA

Magnetics' **lowest loss powder core material**, Kool M μ Ultra has DC bias superior to Kool M μ and comparable to Kool M μ Hf, with core losses almost 30% below Kool M μ Hf.

APPLICATIONS — datacom/telecom power, efficient power chokes, SMPS inductors, flyback transformers, differential inductors, wide band gap (GaN or SiC) power supplies

KOOL M μ ® Hf

Kool M μ Hf powder cores are made from distributed gap alloy powder optimized for frequencies 200-500 kHz. Exhibiting approximately 35% lower losses when compared to Kool M μ — Kool M μ Hf is a cost-effective solution for maximizing efficiency in medium and high current power inductors.

APPLICATIONS — datacom/telecom power, power inductors, GaN or SiC power supplies, pulse transformers, high Q filters, power quality inductors, flyback transformers

XFlux®

Magnetics' XFlux distributed air gap cores are made from 6.5% silicon iron powder. XFlux offers lower losses than powdered iron cores and superior DC bias performance. The soft saturation of XFlux material offers an advantage over ferrite cores. XFlux cores are ideal for low and medium frequency chokes when inductance at peak load is critical.

APPLICATIONS — ballasts, SMPS inductors, noise filters, power inductors

HIGH DC BIAS XFlux®

High DC Bias XFlux cores offer the same high saturation found in standard silicon-iron XFlux while providing up to 20% improvement in DC Bias. This allows for smaller core size for use in space-conscious inductor designs.

APPLICATIONS — ballasts, SMPS inductors, noise filters, power inductors

XFlux® ULTRA

XFlux Ultra cores offer the same high saturation found in standard silicon-iron XFlux while providing a 20% improvement in core loss.

APPLICATIONS — SMPS inductors, power inverters, PV inverters, UPS, PFC, motor controllers, automotive inductors

HIGH FLUX

High Flux powder cores are distributed air gap toroidal cores made from a 50% nickel, 50% iron alloy powder for high biasing capability. High Flux cores exhibit superior performance in applications involving high power, high DC bias, or high AC excitation amplitude. The High Flux alloy has saturation flux density that is twice that of MPP alloy, and three times or more than that of ferrite. As a result, High Flux cores can support significantly more DC bias current or AC flux density.

APPLICATIONS — SMPS inductors, noise filters, power inductors, pulse transformers, UPS, PFC, automotive inductors

EDGE®

Designed for cutting edge performance, Edge cores offer excellent DC Bias. When compared with High Flux, Edge displays approximately 40% lower losses and 30% improvement in DC bias. Choose Edge for highest efficiency.

APPLICATIONS — rack mount power supplies, telecom servers, switching regulator inductors, EMI/RFI filters, flyback transformers, PFC, UPS, automotive inductors

HIGH DC BIAS EDGE®

Magnetics' **highest DC bias material**, High DC Bias Edge cores provide up to 20% improvement in DC bias compared to standard nickel-iron Edge powder cores.

APPLICATIONS — rack mount power supplies, telecom servers, switching regulator inductors, EMI/RFI filters, flyback transformers, PFC, UPS, automotive inductors

MPP

Molypermalloy powder cores (MPP) are distributed air gap toroidal cores made from 81% nickel, 17% iron, and 2% molybdenum alloy powder which have extremely low core losses, highest Q, and best temperature stability compared with other materials. MPP cores possess many outstanding magnetic characteristics, such as high resistivity, low hysteresis and eddy current losses, excellent inductance stability after high DC magnetization or under high DC bias conditions and minimal inductance shift under high AC excitation.

APPLICATIONS — differential filter inductors, EMI/RFI filters, high Q filters, low height power inductors, noise filters, efficient power chokes, load coils



Magnetics® Nanocrystalline Cores

APPLICATIONS — common mode filters, current transformers, chokes

Nanocrystalline cores are made from amorphous metal which is annealed to create a uniform nanocrystalline microstructure. Toroids and split cores are available with the option of durable cases in polyester (<130°C) or Rynite polyester (<155°C). Nanocrystalline cores are a choice solution for applications such as common mode chokes and current transformers as they exhibit high permeability, low power loss, and high saturation.



Magnetics® Amorphous Cores

Amorphous cut cores are made from metallic glass materials with an amorphous atomic structure, which creates higher resistivity than nanocrystalline cores. Amorphous cores offer excellent frequency response and efficiency, and they are a choice solution for high frequency, low loss applications.



APPLICATIONS — SMPS inductors, high frequency power transformers, power factor correction

Tape Wound Cores

Magnetics tape wound cores are made from high permeability magnetic strip alloys of nickel-iron (80% or 50% nickel) and silicon-iron. The alloys are known as Orthonol®, Permalloy 80, Supermalloy, 48 Alloy and Magnesil®. Tape Wound Cores are produced as small as 0.438" outside diameter to 3" outside diameter, in hundreds of sizes. For a wide range of frequency applications, materials are produced in thicknesses from ½ mil (0.013 mm) through 4 mils (0.102 mm). Cases are robust nylon and aluminum boxes, rated for 200°C continuous operation and 2,000 minimum voltage breakdown.



APPLICATIONS — current transformers, gate drive transformers, low frequency power transformers, magnetic amplifiers, power transformers

Bobbin Cores

Magnetics bobbin cores are miniature tape cores made from ultra-thin ½ mil (0.00317 mm) to 1 mil (0.0254 mm) strip material wound on nonmagnetic stainless steel bobbins. Bobbin cores are generally manufactured from Permalloy 80 and Orthonol®. Covered with protective caps and then epoxy coated, bobbin cores can be made as small as 0.05" inside diameter and with strip widths down to 0.032". Bobbin cores can switch from positive to negative saturation in a few microseconds or less, making them ideal for analog logic elements, magnetometers, and pulse transformers.

APPLICATIONS — gate drive transformers, magnetic amplifiers, magnetometers, pulse transformers



Magnetics® Ferrite Cores

Magnetics' ferrite cores are manufactured for a wide variety of applications. Magnetics produces the leading MnZn ferrite materials for power transformers, power inductors, wideband transformers, common mode chokes, and many other applications. Magnetics also offers standard gapping to precise inductance or mechanical dimension, a wide range of available coil formers and assembly hardware, and superior toroid coatings available in several options.

POWER MATERIALS

Five low loss materials are engineered for optimum frequency and temperature performance in power applications. Magnetics' R, P, F, L, and T materials provide superior saturation, high temperature performance, low losses and product consistency.

APPLICATIONS — power transformers, EMI/RFI filters, pulse transformers

HIGH PERMEABILITY MATERIALS

Three high permeability materials (5,000 μ J material, 10,000 μ W material, and 15,000 μ M material) are engineered for optimum frequency and impedance performance in signal, choke and filter applications. These Magnetics materials provide superior loss factor, frequency response, temperature performance, and product consistency.

APPLICATIONS — chokes, current transformers, EMI/RFI filters, power transformers, noise filters



Magnetics® History

Magnetics Inc. was founded in Butler, Pennsylvania after three engineers created Orthonal tape wound cores to replace the military's vacuum tubes. Within 10 years, Magnetics Inc. is the #1 supplier of high permeability products.

1949

1953

Molypermalloy (MPP) powder cores were manufactured to help filter out unwanted noise in telephone circuits.

Magnetics begins manufacturing of ferrite cores for high frequency transformers.

1962

1968

Magnetics was acquired by Spang & Company.

Magnetics opens a new plant in Xiamen, China and customer service center in Hong Kong.

2006

2012

Magnetics moves production facilities from Xiamen to a new plant in Haicang, China.

Magnetics continues to provide high quality powder, ferrite and strip wound cores which meet RoHS, REACH, ISO 9001, and IATF 16949 standards.

TODAY



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