### PRODUCT RANGE:

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<th>Thickness (mm)</th>
<th>Stock Type</th>
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<th>Co-NETIC® AA</th>
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**Co-NETIC®** is also used where high attenuation is desired. Available as fully annealed, ready for use in shielding applications, it is used for flat shields such as covers, doors, walls, or flat surfaces. Co-NETIC® is annealed to exacting specifications in a controlled environment which builds grain structure, an important mechanical property for ultimate shielding performance. Co-NETIC® AA perfection annealed alloy is available in foil & sheet stock gauges from 0.020" to 0.062" thicknesses (0.51mm to 1.57mm).

**NETIC®** is often applied in fields of high intensity [strong fields] because of its high magnetic saturation characteristics. NETIC® is commonly used in combination (in layers) with Co-NETIC® or MuMETAL® with the NETIC® layer placed closest to the source of interference. Used for either fabricated or flat shields, it may be annealed for better performance. NETIC® is available in foil & sheet stock gauges from 0.060" to 0.095" thicknesses (1.52mm to 2.38mm).

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### MUMETAL® ALLOY for FABRICATED SHIELDS

Greek Letter μ (Mu) Represents Permeability of Mu-Metal

**HISTORY OF μ (Mu) METAL**

Mu (μ) - The 23rd letter of the Greek alphabet, it is used in physics & engineering formulae to represent permeability, the measure of a material's ability to support the formation, or absorption, of a magnetic field within itself. In other words, permeability (μ) is a value representing the degree of magnetization obtained in a material from an externally applied field. Because our alloy provides maximum permeability in magnetic shielding, it has been permanently named after the Greek letter μ (Mu). For decades, scientists, engineers, metal suppliers and fabricators have referred to mu metal as the industry standard. However, MuMETAL® is a registered trade name and exclusively available from Magnetic Shield Corporation, a worldwide leader in low-frequency magnetic shielding.

As a leading expert since 1943, Magnetic Shield Corporation has developed thousands of technical solutions, supplied millions of fabricated shields, and refined our shielding materials to be the most effective alloys available. MuMETAL® has been formulated to provide maximum magnetic permeability (highest degree of shielding) for use in most electrical/electronic applications found today. Earned its reputation as the most specified shielding alloy by OEMs, fabricators, laboratories & universities, and specialty alloy distributors.

Technical professionals and buyers beware. There are certain foreign and domestic metal companies that misrepresent MuMETAL®. Care must be taken to ensure consistency, quality, and shielding efficiency. Specifying MuMETAL® and Magnetic Shield Corporation as the material of record increases confidence throughout the product life cycle. Long-standing customers have told us MuMETAL® provides consistent results in laboratory evaluation and testing so they insist on MuMETAL® for production parts—this explains why MuMETAL® is used by thousands of customers worldwide.

When your drawing or specification calls for MuMETAL®, be sure to contact Magnetic Shield Corporation.

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### MUMETAL® TYPES & SPECIFICATIONS

MuMETAL® is typically stock in a stress annealed state to allow further fabrication, stamping, severe forming or welding. During fabrication, a material's grain structure is weakened. After final fabrication processes are completed, grain structure is then modified by controlled atmospheric annealing to relieve stress in the material, resulting in larger grain structure, softer temper, and ultimate shielding performance. Although MuMETAL® is available in many forms, most shields are fabricated from foil & sheet stock.

**AVAILABLE PRODUCT TYPES:**

- **Available Thicknesses:**
  - 0.003 to 0.010 (0.08 to 0.25mm)
  - 0.012 to 0.020 (0.30 to 0.51mm)
  - 0.025 to 0.050 (0.64 to 1.27mm)
  - 0.100 to 0.500 (2.54 to 12.70mm)

- **Available Sizes (inches):**
  - 6" to 35" (150 to 889mm)
  - 9" to 23" (223 to 584mm)
  - 12" to 36" (305 to 914mm)
  - 18" to 120" (457 to 3048mm)

- **Annal Width:**
  - up to 6" (150mm)
  - up to 9" (223mm)
  - up to 12" (305mm)
  - up to 18" (457mm)

**TYPICAL ANNEALED PROPERTIES:**

- **DC μ @ 40 gauss (μ)**
  - 63,000 (4,775)
  - 75,000 (5,693)
  - 80,000 (5,886)

- **AC 60Hz μ @ 40 gauss (μ)**
  - 65,000 (4,976)
  - 64,500 (4,833)

**TYPICAL MAGNETIC PROPERTIES:**

- **DC μ @ 40 gauss (μ)**
  - 80,000 (5,886)
  - 100,000 (6,897)
  - 120,000 (8,118)

- **AC μ @ 40 gauss (μ)**
  - 65,000 (4,976)
  - 80,000 (5,886)

- **Tensile Strength**
  - 138 ksi (950MPa)
  - 150 ksi (1,034MPa)
  - 170 ksi (1,162MPa)

- **Hardness**
  - 250HV
  - 325HV
  - 400HV

**CUSTOM SIZES & CONFIGURATIONS available**

**MuMetal® highest permeability alloy**

In stock at Magnetic Shield Corp.

www.magnetic-shield.com
FABRICATED SHIELDS & FINISHING

FABRICATION
When your shield design requires severe forming, stamping and/or welding, specifying MuMETAL® on your drawings insures you will receive the highest level of initial permeability and shielding efficiency available. And, MuMETAL® is formulated and manufactured to exacting standards which allow consistent fabrication and final anneal.

Not only does Magnetic Shield Corporation offer MuMETAL® alloy, we can provide a full range of manufacturing services. From your drawing or sketch, we can waterjet, laser, EDM, shear, slit, punch, blank, stamp, chemical etch, form, bend, roll, spot-weld, heliarc weld, and/or laser weld. Using MuMETAL® alloy, we can produce complete magnetic shields, to your drawings or specifications.

FINAL ANNEAL
After fabrication, final annealing is required to increase grain structure, which improves shielding efficiency. MuMETAL® magnetic shields are Perfection Annealed (fully annealed in a controlled hydrogen atmosphere) to Magnetic Shield Corporation’s exacting standards. Optimum magnetic properties of MuMETAL® are obtained by annealing at a temperature of 2050°F [1121°C], and cooling at a consistent rate which is critical to maintaining grain structure and part dimensions. To insure your shield is annealed properly, we can measure attenuation (a shield’s ability to absorb magnetic energy) in our ISO 9001:2008 certified Quality Control Lab. Fully annealed MuMETAL® offers magnetic properties that are considered the best available for most applications worldwide.

FINISHING
After full anneal, MuMETAL® shielding alloy exhibits a clean, bright surface condition. Also, because of its high nickel content, MuMETAL® alloy is corrosion resistant. Consequently, MuMETAL® alloys are usually used as annealed, without further finishing operations. We do offer a variety of finishing operations including painting, powder coating, polishing and plating to customers requiring additional corrosion resistance or cosmetically pleasing finished parts.

You are invited to call our Engineering Department to discuss your fabrication and finishing requirements. For a prompt and accurate quotation, send a drawing, sketch, or written description to shields@magnetic-shield.com.