

# If you need the best magnetic shielding, you need M $\mu$ Shield materials.

M $\mu$ Shield products have been proven in a wide range of demanding applications.

Cathode ray tubes and yokes

Photomultiplier tubes

Storage tubes

PET and CAT scan machines

Power supplies

Electro-optical devices

Camera housings

Computers

Disk drives

Printed circuits

PC terminals

Nuclear Magnetic Resonance Imaging

Electron microscopes

X-ray spectrography

Wide area shielding in laboratories and other sensitive areas

## Magnetic interference can drive sensitive electronic circuits crazy. Sometimes with disastrous results.

That's why companies with highly demanding applications specify magnetic shielding made of M $\mu$ Shield materials.

A pilot flying a jet fighter at Mach III can't afford any surprises from the instrument panel. That's why McDonnell-Douglas shields the instruments of its F-18 with M $\mu$ Shield materials.

When NASA planned to send the Voyager Space Probe on a three year trip to Uranus, the engineers specified M $\mu$ Shield materials to protect the atomic clock that timed its arrival to within 12 seconds.

And when the Smithsonian Astrophysical Observatory scientists set up an experiment to test Einstein's Theory of Relativity, they specified M $\mu$ Shield to protect the atomic clock used to explore the structure of space and time.

Specifications don't get more demanding than that. Do you need magnetic shielding this good? Custom shielding with optimum attenuation or totally uniform permeability? Then you need M $\mu$ Shield magnetic shields and shielding material.



## Who needs magnetic shielding?

Magnetic shielding protects electronic circuitry from magnetic interference. Usually, the sources of this interference are permanent magnets, transformers, motors, solenoids, and cables.

In operation, a magnetic shield deflects magnetic flux by providing a path around the sensitive area. In addition, shielding may be used to contain magnetic flux around a component generating magnetic flux.

The ability to conduct magnetic lines of force is called *permeability*. In a magnetic shield, the degree of permeability is expressed numerically; the standard is free space with a rating of one. M $\mu$ Shield materials range in permeability from 200 to 350,000.

## You can count on our experience.

The M $\mu$ Shield Company has extensive experience in the aerospace, nuclear, and electronics industries. As a result, we're used to meeting the tightest shielding specifications for photomultiplier, cathode ray, and storage tubes.

In addition to meeting shielding specs, we can also form metal into nearly any configuration. M $\mu$ Shield offers many capabilities, including spinning, hydroforming, drawing, stamping, and welding. Whatever it takes to produce the most intricate shapes for the most demanding applications.

We can design the complete shield, or assist your own design engineers. Prototypes and production lots can be furnished as you require. For custom shapes, we can often minimize set-up costs by adapting tooling from similar shields we have manufactured. Or we can provide you with coils, sheets, and tubing from our large inventory.

## Heat treatment is standard.

To ensure maximum permeability with low shock sensitivity, M $\mu$ Shield heat treats all materials during manufacturing. Should your permeability requirements ever change, you can return any M $\mu$ Shield product for special heat treating.

## Precision testing for highest quality.

To ensure optimum performance, M $\mu$ Shield sophisticated test equipment precisely measures field reductions. Our principal QC instrumentation includes a one-meter Helmholtz Coil, a Rawson-Lush Gauss Meter (rotating coil type), and an F.W. Bell Gauss Meter (Hall Effect type). These instruments provide a guaranteed accuracy of readings to  $\pm 0.1\%$ , traceable to the National Bureau of Standards. Overall quality control, including mechanical inspection, is in conformance with Mil-I 45208-A standards.

Finally, the M $\mu$ Shield Company guarantees the permeability and uniformity of all M $\mu$ Shield material. So you can install our shielding with complete confidence.

## Shielding for all conditions.

M $\mu$ Shield products can handle two categories of shielding applications. One is to keep strong fields from radiating from sources such as transformers, magnets, or motors.

The second application is to shield instruments and devices from magnetic fields present in the environment or emanating from other sources.

M $\mu$ Shield maintains a substantial inventory of tested annealed raw materials for these two categories of shielding. There are three general types: high permeability, medium permeability, and high saturation.

- High Permeability M $\mu$ Shield Material. Minimum permeability is 80,000 at B-40. Maximum permeability is 350,000 with a saturation point of approximately 7,500 gauss after M $\mu$ Shield heat treating.

- Medium Permeability M $\mu$ Shield Material. Normally used in conjunction with high permeability material. It has a permeability of 12,500 to 150,000 with a saturation point of approximately 15,500 gauss.

- High Saturation M $\mu$ Shield Material. Permeability ranges from 200 to 50,000 with a saturation point between 18,000 and 21,000 gauss.

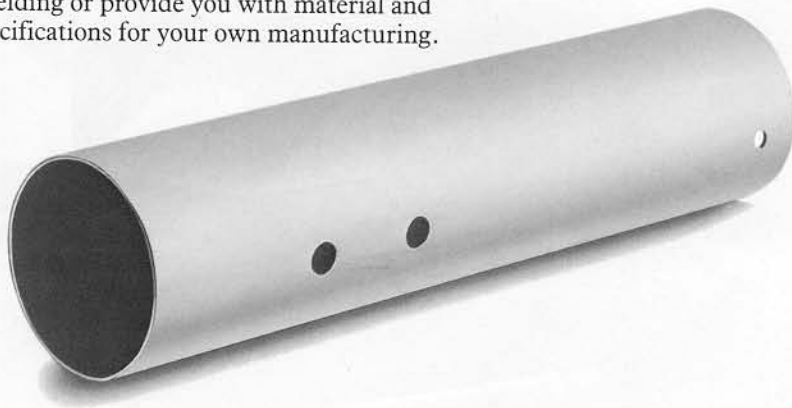
## Consultation services

What if you've got a shielding problem so big that you can't bring it to us? The answer is simple: we'll come to you.

M $\mu$ Shield engineers have solved some highly unusual shielding problems in hospitals, factories, process mills, and offices.

If you need on-site consultation, we can analyze your problems and issue a report for corrective action. And we can implement any or all of our recommendations if you desire. As you wish, we can design and manufacture custom shielding or provide you with material and specifications for your own manufacturing.

M $\mu$ Shield is the only supplier of seamless, magnetic shield tubing. The unique manufacturing process eliminates the non-uniformity of permeability inherent in welded tubing.



# Design • Prototype • Production

## M $\mu$ Shield is Magnetic Shielding

M $\mu$ Shield has a tradition of producing high quality magnetic shields which are both affordable and effective. Our business is magnetic shielding; we will work closely with our customers in the initial stage of shield design, through prototype, and into production. Because product turn-around and affordability are critical to our customers, we have invested in both the engineering expertise and the machinery to produce high quality products as needed.

