Metal cabinets, (19) Racks and enclosures

How to design a shielded enclosure?

We deliver relatively simple shielded boxes for small studies to large EMI and FCC heavy-duty Shielded enclosures.

Our Shielded enclosures allow you to meet a wide variety of requirements for EMI/RFI suppression including:

- Mil Spec 285
- TEMPEST
- FCC Part 15
- European VDE

Our EMI shielded racks are constructed of Mu-ferro 6800 series, which is galvanically perfectly compatible with our gasket materials.

Metal racks

Make a choice

The cheapest materials for electromagnetic shielding are galvanized steel and aluminium. Approximately 90% of cabinets and enclosures on the market today are made of these materials. For that reason we have developed a special material (Amucor Shield) which is compatible with both of thesematerials. When the enclosure is used in a corrosive atmosphere, itis better tomanufacture it from stainless steel, brass, or aluminium with a chromate layer (alochroom 1200).

Corrosion protection is very importantat locationsclose to the sea (salt) and in outdoor applications. The gaskets should also be electrically compatible with the materials you are using. You may always request free advice from our engineers (direct support telephone: +31-(0)78 6131366).

In a salty environment it is best to keep the valueswithin 0.3 Volts andin a wet atmosphere within 0.5 Volts; compare the table of values measured against galvanic silver.

Thickness of enclosure material

A thickness of 0.1 mm will be enough for efficient shielding above 1 MHz. Only at low frequencies such as 10 kHz and less it becomesimportant to usehighly conductive materials and alsothicker material. A military EMP bunker, for example, will have to be made6 mm thick. This is because such a bunker will have to shield at about 10 kHz and 80 dB. When shielding at 50 Hz one also has to use thick metal layers and special materials like Mu-metal and Mu-ferrous metal. This application is toshield the rooms of the transformer to reduce health risks for operators and to enable machines to work withoutinterference (see https://www.faradaycages.com)

Openings in enclosures

Especially at frequencies above 5 kHz itis essential to prevent gaps in the enclosure. Higher frequencies like 100 MHz to 40 GHz are very sensitive to gaps;the higher the frequency, the more attention should be paid to avoiding any holes in the shield. It is therefore important to use flexible gaskets. The gaskets should not only be very conductive but should also be able to generate a firm electrical contact with low compression force.

Distance of mounts / hinges / locks

We have designed special lightly resilient gaskets such as Ultra Soft Shield. They prevent bending between the attachment points of the hinges so it is possible to design a housing that is not too heavy. This also allows for cheaper fasteners, hinges and locks as well as thinner sheet material, which saves considerable expenditure.

To give you an idea what type of gasket will besuitable, you can choose the stiffness of your constuction on the vertical scale.The distance from the anchor points is found on the horizontal scale. At the intersection of the two, you then find a recommended gasket. It is however better to send a drawing to our specialists. They see more than 60 different designs every day and specialize in giving you the right product. This is generally entirely free of charge.

You can send your drawing to us via fax (+31-0(7)8 - 6149585) or email

It is important for us to know what type of material has been used and which amountyou need, in orderto be able to help you quickly. As far as we are concerned, your order is welcome to be anywhere between 1 and 1,000,000 pieces.