



SHIELDING AND INSULATION AGAINST LOW FREQUENCY ELECTROMAGNETIC FIELDS.

IS IT:

Product

Technology

Equipment

APPLICABLE FOR:

Restoration

Rehabilitation

New Construction

APPLICABLE ON:

1. Foundations and underground structures

2. Vertical structures

3. Horizontal structures and vertical connections

4. Roof and terraces

5. Façade and building envelope

6. Finishes and completion elements

7. Integrated services

8. General strategies for building recovery

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DESCRIPTION

Shielding and insulation against low-frequency electromagnetic fields, generated at the frequency of the electrical network.

- Shielding of transformer stations and electrical substations
- Protection of data processing centers (DPCs)
- Industrial machinery shielding

WHY TO USE

They are used in various architectural applications, both for human protection and to prevent electromagnetic interference.

HOW TO USE AND APPLY

On walls and ceilings of the spaces you wish to isolate and protect from magnetic fields.

The *G-iron* shielding system is installed directly to the brick or concrete wall, and does not require any metal structure to support the shielding material.

TECHNICAL CHARACTERISTICS

G-iron Superflex System

The *G-iron SuperFlex* magnetic insulation system is based on a special high magnetic permeability alloy, sealed in a glass fiber reinforced polypropylene matrix. The high magnetic permeability of *G-iron SuperFlex* acts to deflect magnetic lines of force away from the space to be protected, thus facilitating a "low resistance path" for the magnetic field.

Advanced Protection: G-iron HE2 and HE3 Systems

The *HE2* and *HE3* electromagnetic insulation systems are composed of a hybrid of two materials, *G-iron Flex* (thickness 0.7 mm, weight 3.3 kg/m²), a high magnetic permeability material, and a layer of an aluminum-based alloy (thickness 3 mm, weight 8.2 kg/m²).

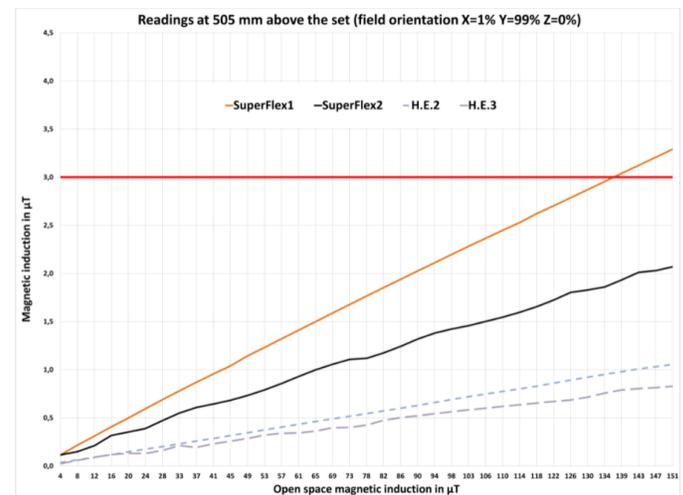
The *G-iron HE2* and *HE3* solutions provide two modes of magnetic shielding; the high magnetic permeability of the *G-iron Flex* acts to deflect magnetic lines of force away

from the space to be shielded, and the high electrical conductivity of the aluminum alloy minimizes the residual magnetic field by the magnetic field cancellation effect of eddy currents induced in the metal.

The *G-iron HE2* solution consists of one layer of *G-iron Flex* and one layer of aluminum; the *G-iron HE3* solution consists of two layers of *G-iron Flex* and one layer of aluminum.

Shielding efficiency: G-iron systems

The graph below shows the shielding effectiveness of the different *G-iron* magnetic insulation systems; *SuperFlex* in 1 and 2 layers, *HE2* and *HE3*.



The most suitable material depends on the initial magnetic field strength, and the required magnetic field reduction. ©RADIANS.A.COM

RECOMMENDATIONS AND OTHER INFORMATION

G-iron Superflex is the most suitable solution to ensure compliance with RD1066/2001 regulations on exposure to electromagnetic fields generated by transformer stations.

EXAMPLES

N/A

REFERENCES / SOURCES AND LITERATURE

<https://www.radiansa.com/es/campos-electromagneticos-baja-frecuencia/blindaje-campo-magnetico.htm#blindaje-electromagnetico-arquitectonico>

Y. Chen, L. Zhang, H. Sun, F. Chen, P. Zhang, X. Qu, P. Fan. Enhanced magnetic properties of iron-based soft magnetic composites with phosphate-polyimide insulating layer (2020) Journal of alloys and compounds

<https://doi.org/10.1016/j.jallcom.2019.152205>

WEBSITE OF THE COMPANY

<https://www.radiansa.com/index.htm>

IMAGES AND CAPTIONS



Fig.1-2: Installation of G-iron Superflex on a roof and wall mounting. Depending on the intensity of the magnetic field or its flux, a project is designed to isolate machinery or to avoid interferences. In any case, the performance is produced by encapsulating the area and acting on walls and ceilings. In complex cases, simulations can be carried out, from which the project is drafted. ©RADIANS.A.COM



Fig.3: G-iron HE2 armor finished with aluminum plates. Depending on the final objective of the client, or the regulatory requirements to be met, aluminum plates must be incorporated into the G-Iron product to achieve the desired values. Each case is different and requires a study of the initial state through diagnosis in order to calculate which is the combination of products to achieve the desired parameters. ©RADIANS.A.COM



Fig.4: G-iron Flex mounted on a steel frame. The architectural and geometric configuration of the building sometimes allows us to build a box inside the building. Reducing the area of performance, by using aluminum mullions to simplify the performance. ©RADIANS.A.COM



Fig.5: Delivery of G-iron Superflex rolls. The product comes in rolls and must be stored vertically. ©RADIANS.A.COM