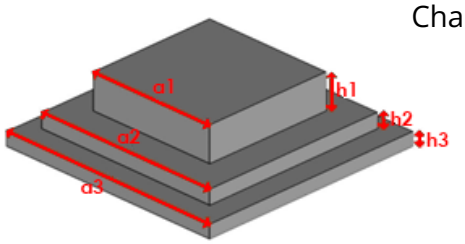
3D DESIGNS
| GHz Broadband

3

MULTI-SCALE SQUARE

The square patterned structure is designed to **extend the frequency range of electromagnetic wave absorption.** Thanks to its modular design, it is particularly suited to environments where GHz broadband performance is required, while allowing **functional integration into devices.**

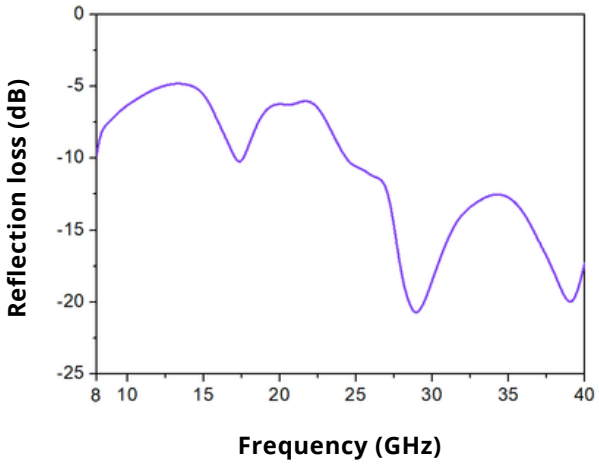


Shape: Square structure with repeating square geometric patterns.

Dimensions:
Ex: 200x200x3,7 mm³ and patterns
h1 = 2,4 mm; h2 = 0,8 mm; h3 = 0,5 mm;
a1 = 12 mm; a2 = 18mm; a3 = 20 mm

Use frequencies:
Characterized from 8 to 40 GHz.

This GHz broadband absorption is important in a variety of fields, such as **anechoic chambers, radar cross section (RCS) reduction, wireless communications and antennas.**



Reflection loss of 200x200x3,7 mm³ FILAMAG-F™ multiscale square structure (measured)

Absorption phenomena are induced here by the dimensioning of the patterns. In the lower part of the absorbed frequency range, resonance occurs when the dimensions of the square patterns correspond to a quarter of the wavelength. At higher frequencies, diffraction phenomena allow the wave to penetrate the material.

The dimensioning of this multi-scale square structure is just one example. Absorption performance varies according to size and geometry.
HYMAG'IN is able to adapt and vary the geometry of the design according **to your needs, use cases, constraints**, but also **to your specific requirements**: performance optimization, frequency band extension...

Why choose FILAMAG-F™ multi-scale square structure?

- **Broadband absorption with reduced thickness**
- **Mechanical robustness**
- **Volume gain**

Example of use: These repeated square-pattern structures can be used in **anechoic chambers** to replace GHz pyramidal absorbers. These designs are more compact than pyramids, saving space.

***of the filament used: here refer to FILAMAG-F™**