

Full electromagnetic absorption solutions

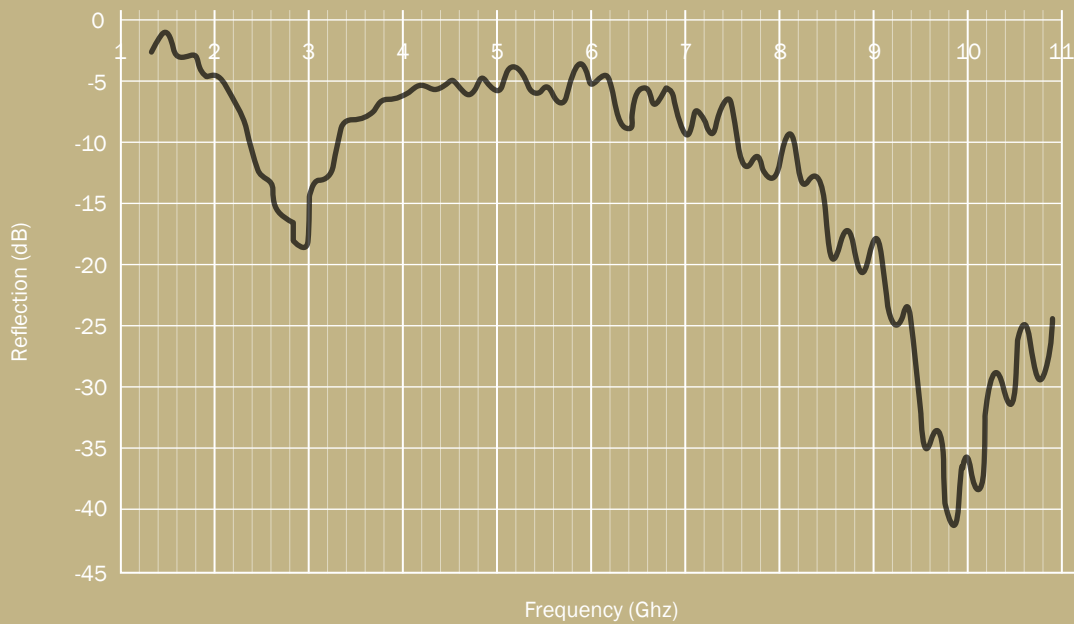
Frame™

There are many instances where the manipulation, absorption, or attenuation of electromagnetic waves is of paramount importance. From renewable energy to defence, electronic enclosures to next generation communication networks, Trelleborg's innovative new Frame™ product range has been designed to provide effective solutions to complex problems.

Frame™ (Full Radar Absorbing Materials and Equipment) is an innovative electromagnetic absorbing material created for a rapidly growing market. Developed for use in a wide variety of applications, Frame™ is lightweight, flexible, mouldable and extremely durable material for a range of applications.

As part of its ongoing commitment to better sustainability, Frame™ is supplied as a recyclable thermoplastic polyurethane nanocomposite as standard. It is also available in other material formats including fibreglass, TPE, TPV, epoxy, and polyester resins. A CARC rated absorber for use in extreme environments is also under development.





Graph showing reflection loss of Frame™ 10 GHz absorber for X-band applications

Benefits:

- **Outstanding multi-band radar absorption**

Many scenarios require absorption of frequencies from multiple radar stations, or attenuation over a wide range. Frame™ provides unique multi-band absorbers, allowing a single, simple solution for a complex problem.

- **Available from 1-12 GHz**

Absorption frequency can be tuned between 1-12 GHz, with an absorption bandwidth (below -20 dB) of 0.2 GHz, providing solutions for all EM bandwidths from L to X-band.

- **Innovative integrated fibreglass technology**

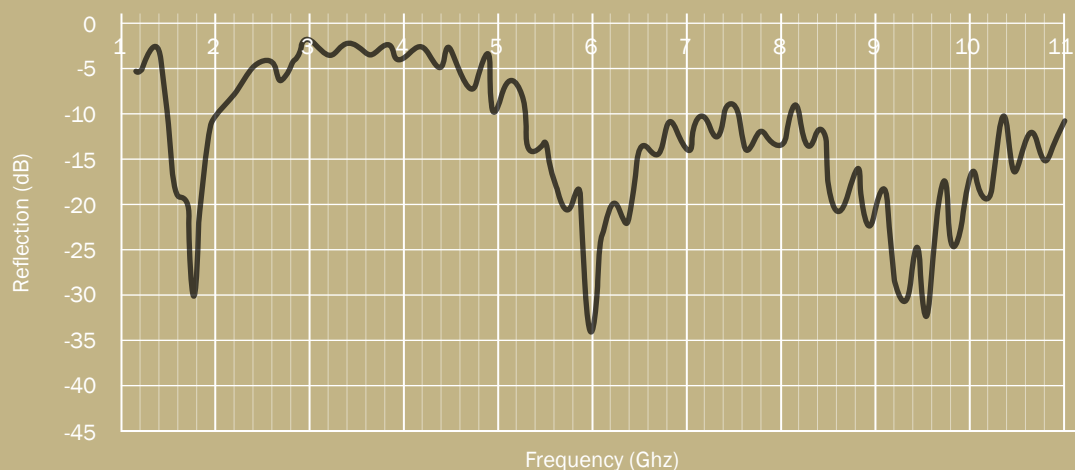
The Frame™ range has been developed to functionalize fibreglass resins to enable integrated radar absorption to make a truly robust solution.

- **Lightweight nano-composite polymer solution**

Due to the unique fillers used in Frame™, the material has been designed to keep weight to a minimum, providing maximum efficiency.

- **Cost-effective solution**

By using an easy to install and robust 'fit-and-forget' material solution, costs are minimised due to decreased downtime and maintenance.



Graph showing reflection loss of Frame™ multi-band absorber

Customization

The Frame™ range of materials can be customized to meet your specific project specifications. The thickness can be adjusted, and the coating finish can be any colour. Due to the unique fillers used in FRAME, it has enhanced mechanical properties compared to traditional RAMs, and as such is suitable for a wide range of challenging environments.

Application	Centre Frequency Reflection Loss (dB)	Bandwidth	Thickness Range	Average Density	Appearance
L Band Radar Absorption (1-2 GHz)	>30 dB	0.2 GHz	13-15 mm	1.2 g/cm ³	Black Laminate Tile*
S Band Radar Absorption (2-4 GHz)	>30 dB	0.2 GHz	7-9 mm	1.2 g/cm ³	Black Laminate Tile*
C Band Radar Absorption (4-8 GHz)	>30 dB	0.4 GHz	6 mm	1.2 g/cm ³	Black Laminate Tile*
X Band Radar Absorption (8-12 GHz)	>30 dB	0.8 GHz	3-4 mm	1.2 g/cm ³	Black Laminate Tile*

Table showing typical properties for Frame™ products across the frequency range from 1-12 GHz

*Can have any colour coating finish

Contact Us

Trelleborg's Applied Technologies division is an industry expert in delivering innovative and reliable solutions that maximize performance for our customers. Our vast range of specialized, customizable materials ensure peace of mind at every stage of your project. With reliable and efficient project management and manufacturing we endeavor to take performance to new levels by achieving your goals safely, on time and within scope.



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