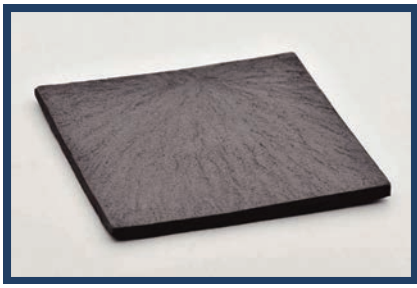
Panasonic INDUSTRY



Under Development

Ultra-light weight at 1/270 the bulk density of aluminum*

Ultra-light EMC shielding material

* The bulk density of the ultra-light EMC shielding material are roughly 0.01 g/cm^3, compared to that of aluminum at 2.7 g/cm^3.

1. Ultra-light weight with a bulk density of 0.01g/cm^3 using carbon nanotubes.
2. Shielding or absorbing capability is adjustable for wide band frequencies.
3. Excellent workability enables the creation of 3D structures.

Applications

Spacecraft (artificial satellites, space probes, etc.), Electric aircraft (drones, eVTOL vehicles, etc.), 5G/6G application-related devices (mobile base stations, etc.), Industrial equipment (robots, AGVs, etc.), In-vehicle devices (millimeter wave radar, various sensors, etc.), VR/AR devices, etc.

Concept

By combining our thermosetting polymer formulation compounding design technology based on carbon nanotubes with environmental test technology and know-how assuming various use cases, we have achieved both lightness and excellent electromagnetic shielding and absorption. Ultra-light EMC shielding material contributes to weight reduction of equipment and improvement of communication quality.

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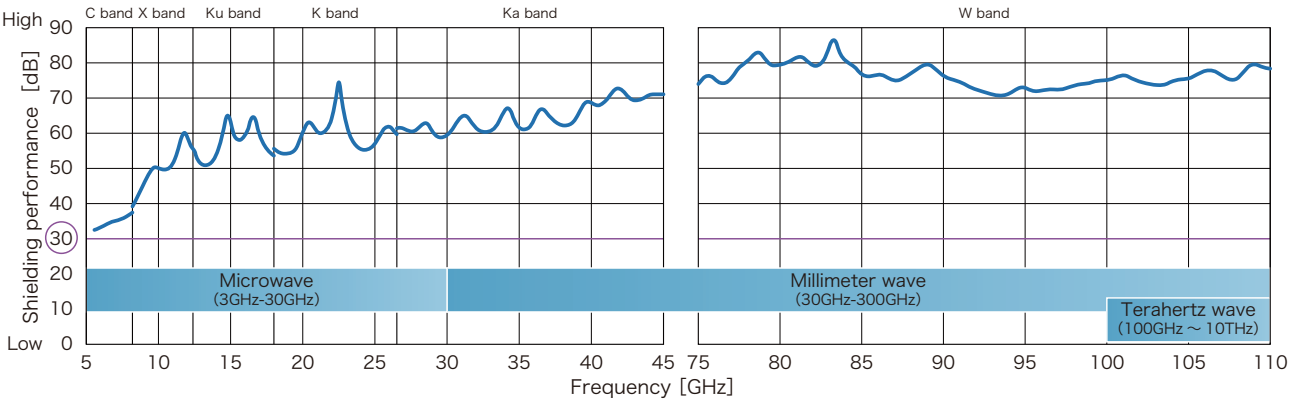
3D structure molding

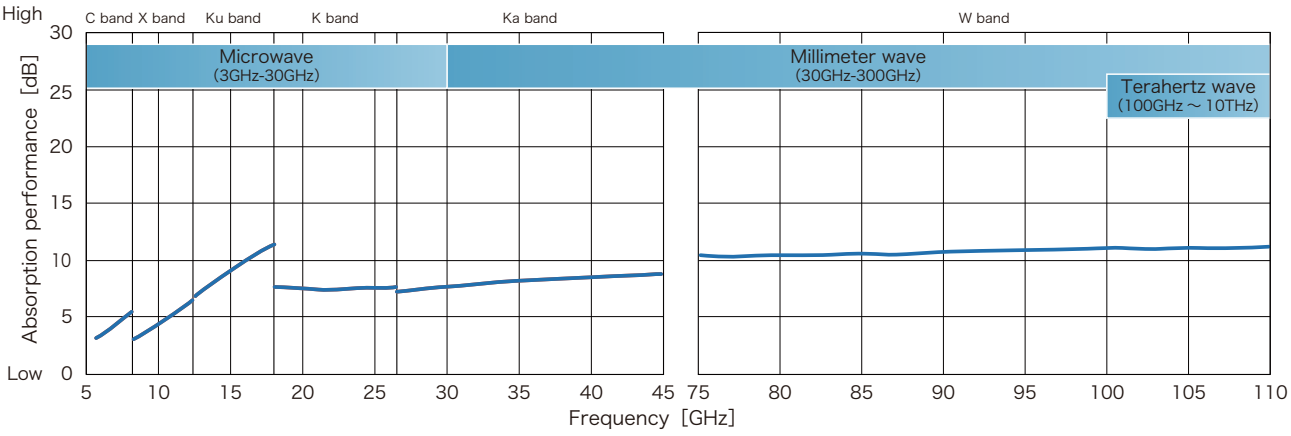
Three-dimensional structures can be created using Panasonic Industry's thermosetting resin formulation technology and freeze-drying manufacturing method, enabling processing customized to the shape of the devices made with these new materials.

Electromagnetic shielding performance



These data are measured values and do not guarantee performance.

Electromagnetic absorption performance



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Comparison of applicable frequency bands

Shielding material		Applicable frequency band		
		Microwave band (3～30GHz)	Millimeter wave band (30～300GHz)	Terahertz wave band (100GHz～10THz)
Aluminum	Shielding	No frequency selectivity		
	Absorption	N/A (not available)	N/A (not available)	N/A (not available)
New Material	Shielding	Frequencies to be shielded or absorbed can be set according to the specifications of devices.*		
	Absorption			

* To be studied about control methods in joint research project on "Ultra-light EMC shielding material" technology, under JAXA's "Solution Creating Research" for space exploration.
Research period: June 2022 to June 2024
Joint research members: JAXA (Japan Aerospace Exploration Agency), Nagoya University, Yamagata University, Akita University

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