

Product Data Sheet — Composite D-3ER

Description

The D-3ER is a 3D-printable graphene-based composite with intrinsic electromagnetic functionality.

The functional properties are defined by the geometry and internal lattice formed during the additive manufacturing process, without the need for additional coatings or external shielding layers.

The material is designed for reducing the detectability of UAVs, ground mobile platforms, navigation equipment and specialized military and civilian vehicles. It provides a 5 to 15-fold reduction in detection range compared to conventional RAM solutions.

The anti-radar effect is achieved through decoherent scattering at the air-coating interface followed by intense internal attenuation and dissipation of electromagnetic energy within the conductive multiscale structure of the material.

The coating provides protection against electromagnetic radiation through the absorption and attenuation of electromagnetic waves in the 3–70 GHz frequency range.

Properties and Characteristics

Frequency range	3–70 GHz
Radar deception	yes (decoherence)
Shielding Effectiveness (SE)	50–90 dB
EW protection	10 ⁶ -fold attenuation (at 1.0 mm coating thickness)
Operating temperature range	–50 °C to +150 °C
Operating conditions	Resistant to UV radiation, saltwater exposure, high humidity, vibration and dynamic loads
Weight	0.9 – 1.1 g/cm ³
Service Life	Up to 36 months (without significant mechanical damage)
Shelf life	Up to 6 months
Storage conditions	–5 °C to +30 °C
Manufacturing Technology	FDM / SLA

Key Features

- Ready-to-print composite material
- Additive manufacturing via paste extrusion
- High graphene concentration
- Nano-reinforced fibrous architecture
- Complex geometries without tooling requirements
- **Electromagnetic functionality integrated throughout the material volume**

Applications

Sector	Applications	Effects
UAVs / Drones	<ul style="list-style-type: none">• Fuselage elements• Internal bulkheads• Protective housings• Functional enclosures	<ul style="list-style-type: none">• Integrated anti-radar functionality within the material• Reduced weight• Local shielding of subsystems
Naval and Ground Vehicles	<ul style="list-style-type: none">• Panels• Internal shielding elements• Protective housings	<ul style="list-style-type: none">• Integration of structural and EM functionality• Reduced weight• Reduced need for additional coatings
Radio-Electronic Systems	<ul style="list-style-type: none">• Equipment enclosures• Shielding partitions• RF housings	<ul style="list-style-type: none">• Embedded electromagnetic shielding• Reduced weight• Integration of EM functionality into structure
Satellites and Aerospace	<ul style="list-style-type: none">• Structural panels• Module housings• Internal shielding elements	<ul style="list-style-type: none">• Combined structural and EM functionality in a single material• Mass minimization• Complex geometries without tooling requirements