



The multi-functional Defender panel has been developed by Pelta Protection Systems Ltd.

Pelta Protection Systems Ltd. is a joint venture between Ingegneria Dei Sistemi S.p.A. (IDS), which has over 30 years' experience of producing electromagnetic engineering solutions and services for both civil and defense applications, and Acell Industries Ltd. which has produced fire resistant foams and composite panels for building applications for over 25 years.

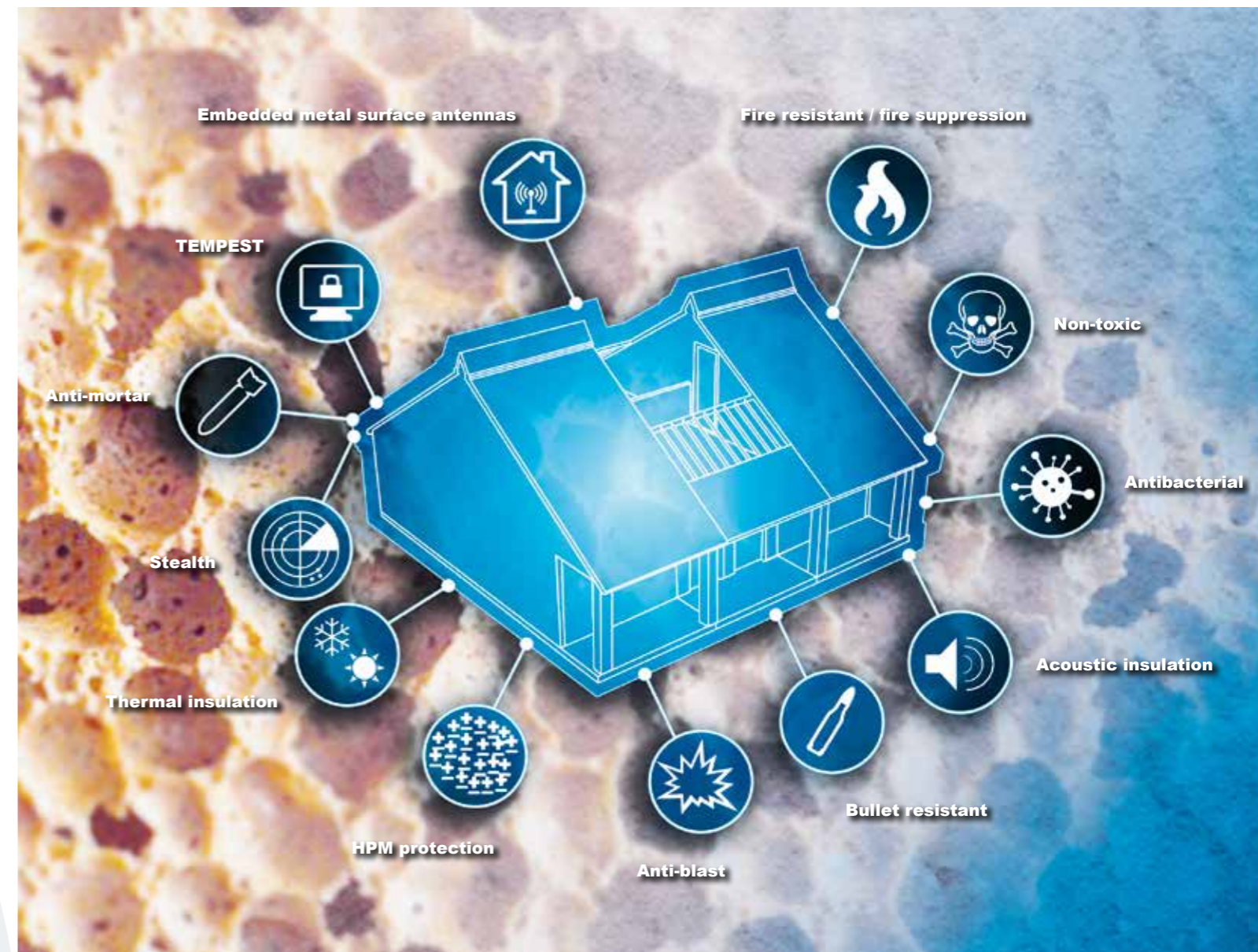
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Defender

Multi-functional Panel Construction System



Modular flexibility and rapid deployment



Defender

Defender

Defender is a building panel with a special internal foam used for the first time 25 years ago to provide fire protection at one of the world's busiest international airports.

Today, the Defender panel is at the heart of a system of lightweight building panels which can be quickly deployed in the form of prefabricated units or as external cladding for an existing structure. Their modular nature allows them to be easily dismantled, stored and re-used multiple times. The panels offer fire protection as well as thermal and acoustic insulation allowing them to be used for accommodation purposes in addition to providing offices, control rooms and strategic warehousing.

The patented technology used to manufacture these composite panels is the result of extensive research conducted together with prestigious scientific laboratories, academic institutions and high technology companies. The result is a monolithic structure ensuring against delamination, which is 100% recyclable and, when heated, does not produce toxic fumes or gases.



The panel can be produced in a variety of thicknesses and densities (from 80 to 800 kg/m²).

The Defender panel can be used or stored in the harshest of field conditions and the most inclement of weather and can be offered in three different formats:

- **Prefabricated Units:** These lightweight factory assembled units can be lifted into position by helicopter or transported by truck, offering immediate protection in the field. These are ideal for short-term deployments or during the initial stages of a longer operation;
- **Modular Flat-pack:** Easily transportable and simple to set up, the modular Defender panel system can be used to build a variety of structures for medium to long term use and habitation;
- **External Cladding:** The panels can be applied to the exterior of existing buildings to provide additional protection, to change a building's characteristics or to offer additional capabilities. A tailored surface finish can be used to hide their presence.

Flexibility

Defender offers a high level of versatility, having the capability to incorporate additional materials and electronic or electromagnetic systems within the foam layer during construction. This allows quicker on-site construction without complex installation requirements.

The family of panel systems includes:

- **Fire Suppression:** Aerosol cartridges with integrated triggers within the panel can provide a fire suppression capability;
- **Blast Protection:** to provide increased blast protection;
- **Ballistic Protection:** to offer protection against fire from small arms and light weapons;
- **HPM Electromagnetic Shielding:** to protect against disruptive incoming attacks from high-power microwave weapons;
- **Communication Protection:** to control the transmission and reception of radio waves and other signals;
- **Antennas:** the panels can accept embedded or conformal communications, microwave or low-power radar antennas. These can be integrated within the foam layer or on the panel surface;
- **Radar Absorbing Materials or Structures:** to reduce radar signatures or electromagnetic interference;
- **Antibacterial:** the panels can accept embedded components which enable them to provide an excellent antimicrobial effect;
- **Acoustic Systems:** acoustic sensors and/or transmitters can be fitted to panels and connected to amplifiers or signal processors to provide various acoustic functions such as surveillance, perimeter defense, 1-way or 2-way communication and alarm.

Applications

The flexibility of the Defender panels makes them ideal for use in the following applications:

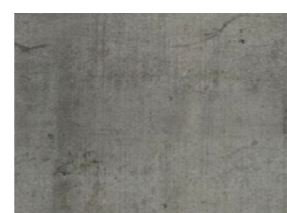
- Protection for civilian contractor residences in low security or conflict zones;
- Communications and entertainment facilities in remote locations;
- Protection and communication for oil and gas field units;
- Protection for equipment and personnel at military forward operating bases;
- Secure headquarters and command and control centers for peacekeeping forces;
- Protection for embassies and official residencies, government offices and public agencies;
- Security control rooms and crisis management centers;
- Accommodation facilities near to fuel tanks, hazardous material storage and other hazardous sites;
- Coating and antibacterial protection for the internal surfaces of kitchens, bathrooms, bedrooms, infirmaries and decontamination rooms;
- Bunkers and panic rooms;
- Protected warehouses;
- Additional protection for existing shelters;
- Refitting of existing buildings;
- Secure entry control points and watchtowers;
- Electromagnetic protection for sensitive data storage rooms such as at banks, data centers or corporate headquarters;
- Protection for critical infrastructure;
- Radar absorbing surfaces for airport buildings and hangars to reduce reflections and interference affecting navigation equipment;
- Public address, communications and alarm systems for military bases, oil/gas terminals and other large compounds.

Technical Specifications

PHYSICAL PROPERTIES			
Test	Standard	Panel Density	
		120kg/m ³	150kg/m ³
Compressive Strength (MPa)	UNI 6350	0.7	0.8
Flexural Strength (MPa)	UNI 7031	0.5	0.6
Thermal Conductivity (W/m ² K)	EN12667/12664	0.0463	0.0478
Smoke Generation and Toxic Gas Emission	ATS.1000.001	Aeronautical - Passed	
		Railway - M1F1	
Moisture Properties	DIN 52615	70	90
Punking	BS 5946	Passed	Passed

FIRE RESISTANCE		
Foam panel density 150 kg/m ³ - Thickness 60 mm		
Minutes exposed to fire	Temperature of the face exposed to the fire (°C)	Temperature of the unexposed face (°C)
15	750	20
30	850	40
60	950	80
90	1000	85

SOUND ABSORPTION		
Tested on a panel composed of 45mm of foam + SMC + sand finish, 75mm of fibreglass panel & 10mm of plasterboard		
Characteristics	Method	Value (dB)
Acoustic property (40mm foam), R _w	ISO 140-3	52.0
Sound absorption coefficient at 100 Hz	ISO 140-3	26.7
Sound absorption coefficient at 200 Hz	ISO 140-3	39.1
Sound absorption coefficient at 500 Hz	ISO 140-3	50.9
Sound absorption coefficient at 800 Hz	ISO 140-3	55.0



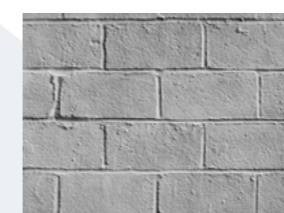
Concrete



Marble



Camouflage



Cinder Blocks

The sheet molding compound (SMC) outer layers can be provided with a variety of textures to help them blend into their surroundings...

...or to create a more natural and pleasing appearance, especially useful when providing units for accommodation.