ascentech
Engineering Solutions (P) Ltd.

Carbon Composite Shelter

Highlights:

Carbon Fiber o ers 2 to 5 times more rigidity than aluminum and steel.

For one-direction Carbon Fiber, its sti ness is 5-10 times more than steel or aluminum (of the same weight).

The component made from Carbon Fiber of the same dimensions will be 50% lighter than an aluminum one and more than 5 times lighter than a steel one.

A component made from standard Carbon Fiber of the same thickness as an aluminum one will o er 31% more rigidity than the aluminum one and at the same time weight 50% less and have 60% more strength.

Carbon Fiber will reduce its weight by 50%. Replacing steel with Carbon Fiber will reduce the weight x 5 times.

Carbon Fiber shows nearly zero heat expansion it is widely used in devices including 3D scanners.

Carbon Fiber is a material with heat expansion x 6 times less than aluminum and more than 3 times less that steel.

Carbon Fiber and epoxy resin is a material with heat conductivity x 40 times less than aluminum and 10 times less than steel.

CARBON COMPOSITE MILITTARY SHELTER – KEY FEATURES:

Construction: Shelter is constructed of foam and beam sandwich panels which consist of a polyurethane foam core, carbon composite skins and a framework of high strength FRP tubes extrusions. Structural strength is assured by orientation of the oor and roof beams in transverse direction.

Specification: MIL-S-55286E, ASTM E 1975

External Dimension: 3400 L x 2210 W x 2194 H in mm

Weight: 550 Kgs

Payload: 5000Kgs

- Roof load: Snow load of 40 lb/ft2 (200 kg/m2)
- Personnel load of 660 lb (300 kg) static over 2 ft2(0.2 m2).

Floor load:

- Uniform load of 65 lb/ft2(320 kg/m2).
- Concentrated load of 2,000 lb (900 kg) over a 4-ft2(0.4-m2)

Temperature extremes:

- **Operating:** -30oC to +55oC
- **Non-operating mode:** -40oC to +70oC

Heat transfer coefficient: 6 W/m K

RFI shielding: Attenuation of 60 db minimum over spectrum of 150KHz to 18 GHz for electric and magnetic elds and plane waves as measured IEEE 299

Water tightness: Completely water-tight tested to simulated rainfall as per ASTM E 1925 & MIL STD 55286 E

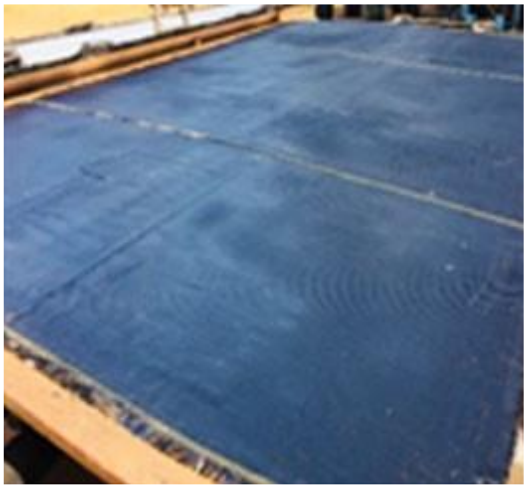
Transportation: The shelter can be transported by military truck, helicopter, cargo aircraft such as the C-130, by rail and ship

Application: For Saline seashore & High-Altitude terrain conditions

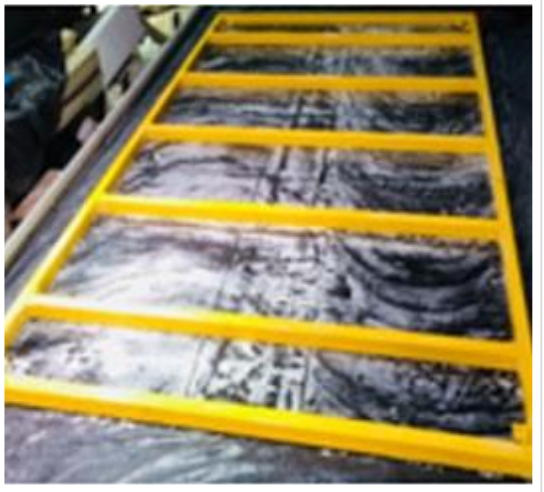
Ultra-light Carbon Composite Shelter for Saline & High-Altitude conditions

Parameters	Carbon	Aluminum	Steel
Dimensions	20ft(L)x8ft(W)x8xft(H)		
Weight in kgs	950	1450	1850
Floor load kgs	5000	3200	3200

Designed & Manufactured for the first time in the country



Carbon Fibre Sheet



FRP structural grid

Test & Trials:

Frequency	Attenuation Values in dB			
	Main door	Off Road Side	Rear End	Road Side
80MHz	96	108	104	103
100MHz	87	101	103	105
500MHz	82	103	106	101
800MHz	72	100	100	97
3 GHz	65	94	98	94
10 GHz	64	91	89	87
18 GHz	67	77	79	81

Fig1. Electrical Field

Frequency	Attenuation Values in dB			
	Main door	Off Road Side	Rear End	Road Side
150KHz	61	63	70	64

Fig 2. Magnetic Field

EMI Shielding Attenuation Results Meets the curve as per ASTM E 1925