

# The new generation lightweight core material

*Distributed by Panel Systems Ltd*

ThermHex is an innovative material primarily used as a core material in the production of lightweight sandwich panels. It is manufactured from polypropylene (PP) honeycomb that offers a weight saving of up to 85%, compared with other core materials, such as plywood.

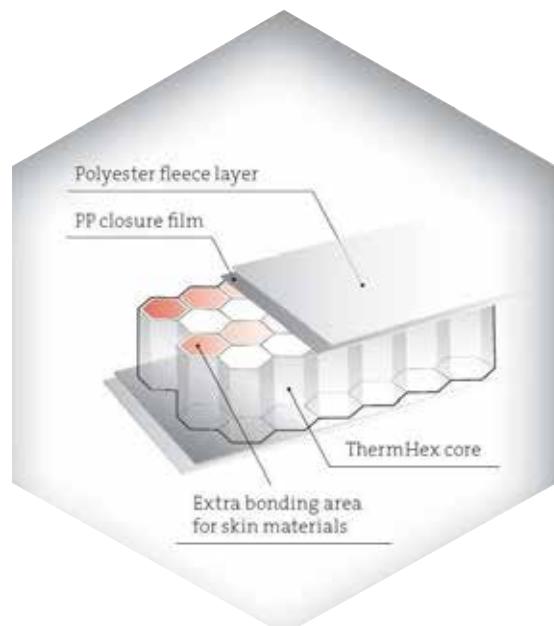
Manufactured in Germany, the material is produced in a state-of-the-art, patented process which ensures rigidity in terms of its mechanical strength, as well as stability. ThermHex is resistant to chemicals and moisture. In addition, as part of ensuring ethical and sustainable sourcing of materials, it is also 100% recyclable.

ThermHex is both light in weight and strong making it suitable for a wide range of applications including automotive, truck bodies, marine, OEM, industrial equipment, water jet cutting, caravan and motorhome markets, plus many more.

ThermHex sheets are finished with a polypropylene barrier film. This film prevents resins or adhesives from leaking into the open cells during processing and assures the material remains robust. At the same time, the quantity of resin / adhesive needed for processing is kept to a minimum. The second standard surface finish is a PET non-woven material, which enables easy bonding of various types of facing materials with all common adhesives, including polyurethane based glues.



- ✓ Major cost reduction
- ✓ Significant weight saving
- ✓ High bending stiffness
- ✓ Energy absorbant
- ✓ Resistant to moisture, acids and bases
- ✓ Easy resource-friendly converting
- ✓ 100% Recyclable



## Technical Data

ThermHex is produced at a standard density of 80kg/m<sup>3</sup> (5.0 Lbs / ft<sup>3</sup>). For applications with lower requirements to compression strength, ThermHex offers a lighter core with a density of 60kg/m<sup>3</sup> (5.0 Lbs / ft<sup>3</sup>).

ThermHex is available in the standard sheet size of 2500mm x 1200mm or can be cut to size, if required. Bespoke sheet sizes up to 7500mm long are available subject to minimum production quantities.

ThermHex sheets can be ordered from Panel Systems Ltd and are available in the following thicknesses and weights.

Thickness (mm)	Weight (kg/m <sup>2</sup> )	2500x1200mm sheet (kg)
3.5	0.59	1.76
6	0.75	2.24
8	1.15	3.46
10	1.17	3.51
12	1.25	3.75
15	1.63	4.88
18	1.96	5.89
20	1.98	5.95
23	2.36	7.08
28	2.77	8.30

## Product Description

<b>Standard dimensions (width x length)</b>	1.200 mm x 2.500 mm	
<b>Core thickness &amp; Cell size</b>	Core thickness (h)	Cell size (c)
	3,5 mm	3,0 mm
	5,0 / 6,0 mm	4,0 mm
	8,0 / 10,0 mm	8,0 mm
	12,0 / 15,0 / 18,0 / 20,0mm	5,0 mm
	23,0 / 28,0 mm	9,6 mm
<b>Tolerances</b>	Length	+ 10 / - 1 mm
	Width	+ 2 / - 1 mm
	Core thickness	+ / - 0,3 mm
	Squareness	+ / - 0,2°
<b>Density</b>	80 - 90 kg / m <sup>3</sup>	
<b>Surface finish</b>	50 µm polypropylene Film / 40 g/m <sup>2</sup> Polyester Nonwoven	

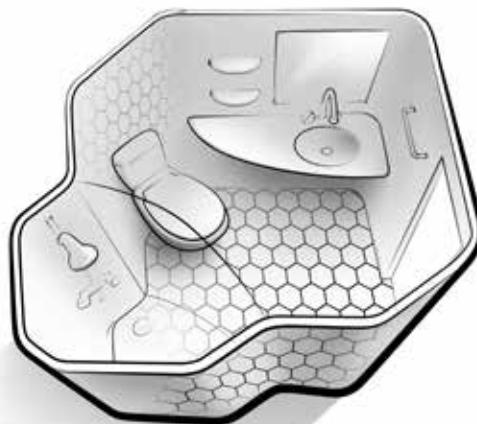
## Physical Properties

<b>Compressive strength</b>	1,2 MPa (174 Psi)	ASTM C365-57
<b>Compressive modulus</b>	40 MPa (5.800 Psi)	ASTM C365-57
<b>Shear strength (L-W)</b>	0,5 MPa – 0,3 MPa (73 Psi – 44 Psi)	ASTM C273-61
<b>Shear modulus (L-W)</b>	15 MPa – 6 MPa (2.176 Psi – 870 Psi)	ASTM C273-61
<b>Temperature range for processing and application (°C)</b>	- 30 to + 80 short term to + 140	
<b>Thermal conductivity</b>	0,065 W / mK	
<b>Fire-resistance</b>	Normally inflammable (building material class B2 DIN 4102-1, respectively D according to EU classification), higher grades of fire resistance can be obtained in sandwich elements when using specialized skin materials.	
<b>Chemical resistance</b>	Excellent resistance to water, most acids, bases and salt solutions.	
<b>Resistance to UV rays</b>	Lasting UV resistance can be guaranteed in sandwich elements when using appropriate skin materials.	

## Handling of ThermHex

### Bonding

During bonding of the ThermHex honeycomb core it is essential to use the right adhesive. The correct adhesive should be determined by the requirements of all the sandwich components.



### Laminating

ThermHex honeycomb cores can be laminated with different methods for example hand lay-up with vacuum moulding, fibre resin spray-up, vacuum or light-rtm. Possible types of resin are polyurethane, polyester, epoxy or phenol.



### Spray-up

For large components or lamination of ThermHex honeycomb cores the fibre resin spray-up suits well. During this process, the merging of the compounds (resin, reactant and reinforcing fibre) as well as the deposition are done with a fibre-resin diffuser.

### Forming

Besides forming with heat it is also possible to form honeycomb cores of small thickness (e.g. 3.5 – 10mm) at room temperature during curing of the skin layers with the help of pressure or vacuum.



### Cutting

The cutting of ThermHex honeycomb cores is carried out with conventional tools and methods such as e.g. circular saw, CNC machining, circular knife, waterjet cutting, laser cutting, punching and so on.



### Edge Closure

Depending on the kind of procedure, usage and pressure on the finished sheet, different edge closures are possible. For load application points, it is recommended to work with inserts that connect the two skin layers, in order to achieve a higher load application.

## Applications

### Building

- Cladding
- Partition Panels
- Wall Panelling

### Industrial

- Wind Turbines
- Floating floors
- Swimming Pools
- Waterjet Cutting (sacrificial sheet)
- Boxes
- Furniture

### Transport

- Trucks/Trailer Bodies
- Caravans & Leisure Vehicles
- Ambulances
- Buses
- Flooring

### Yachting/Boating

- Deck Reinforcement
- Structural Walls
- Furniture
- Hull
- Interiors



For more information or to place an order, contact the sales office at  
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