

THERMHEX ORGANOSANDWICH LIGHTWEIGHT SANDWICH MATERIAL

THERMHEX POLYPROPYLENE HONEYCOMB CORE WITH GF/PP SKIN



Picture: Fraunhofer IMWS/Sven Döring

LIABILITY FOR DEFECTS

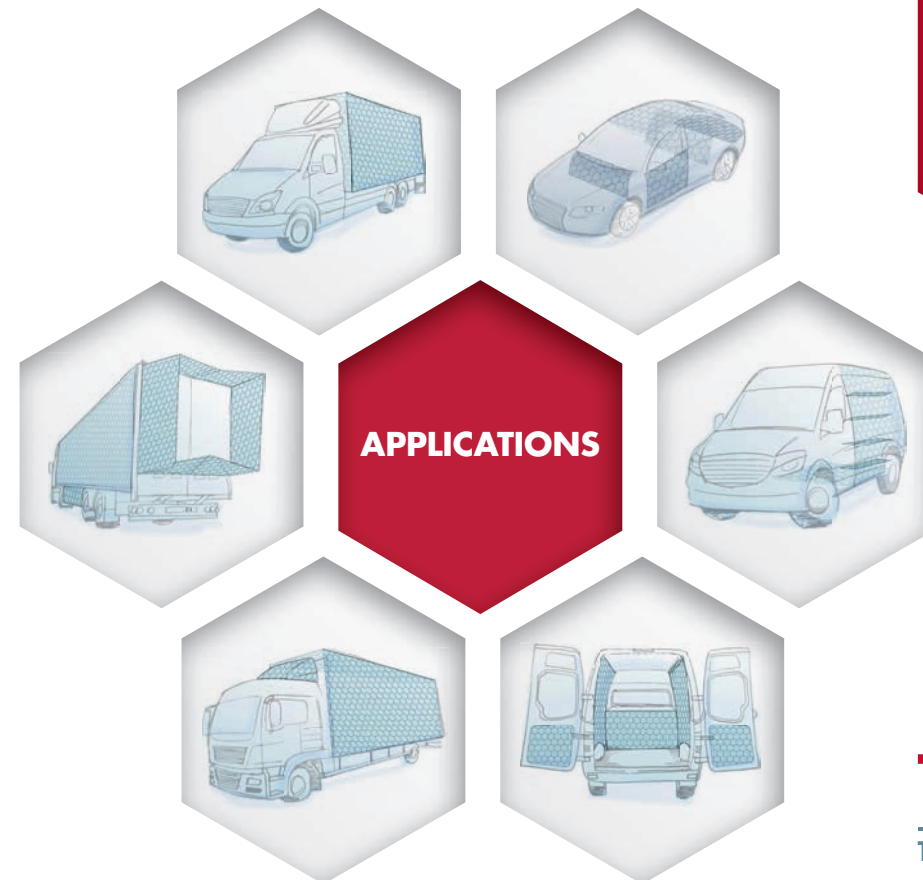
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ADVANTAGES

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

APPLICATIONS



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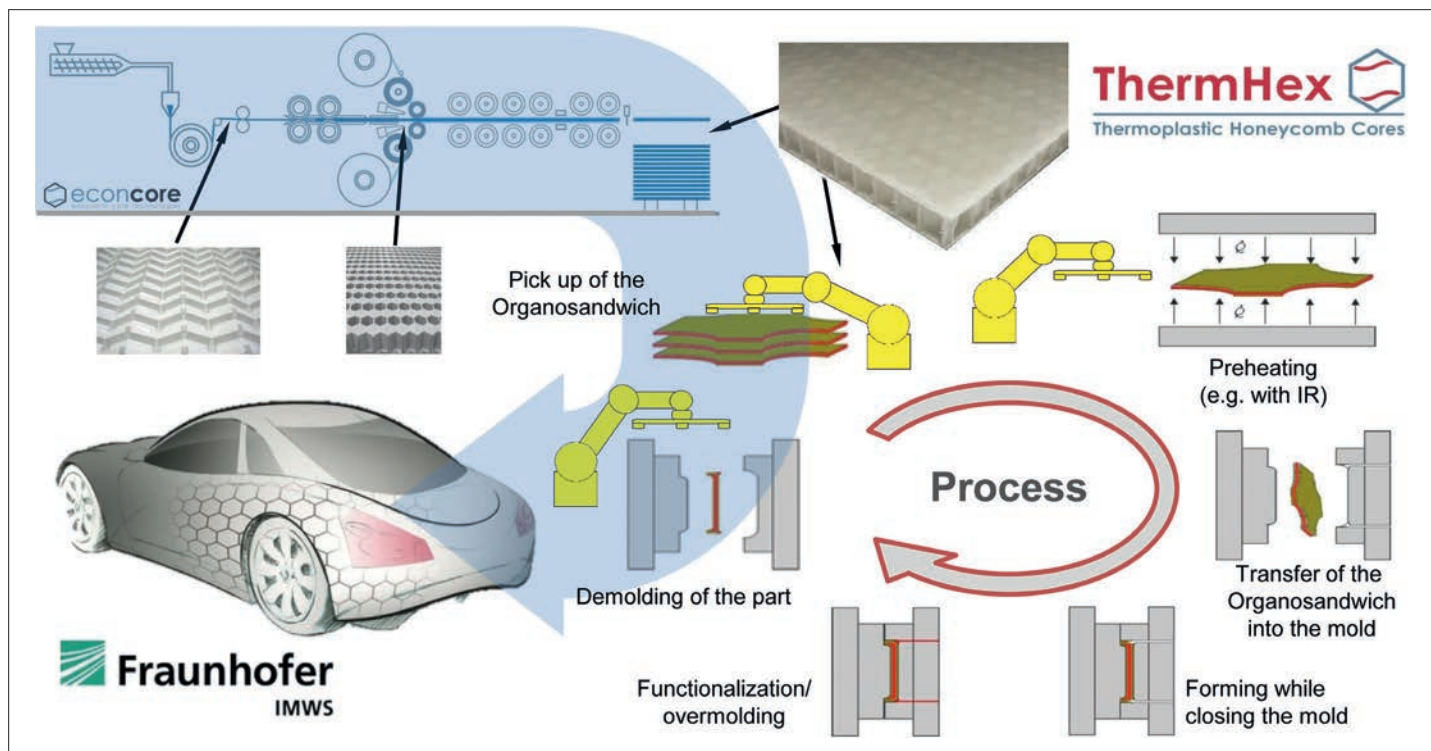
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ThermHex 
Thermoplastic Honeycomb Cores

ThermHex Waben is a licensee of EconCore NV (Belgium), the technology leader for cost-efficient sandwich material production technologies.

ThermHex 
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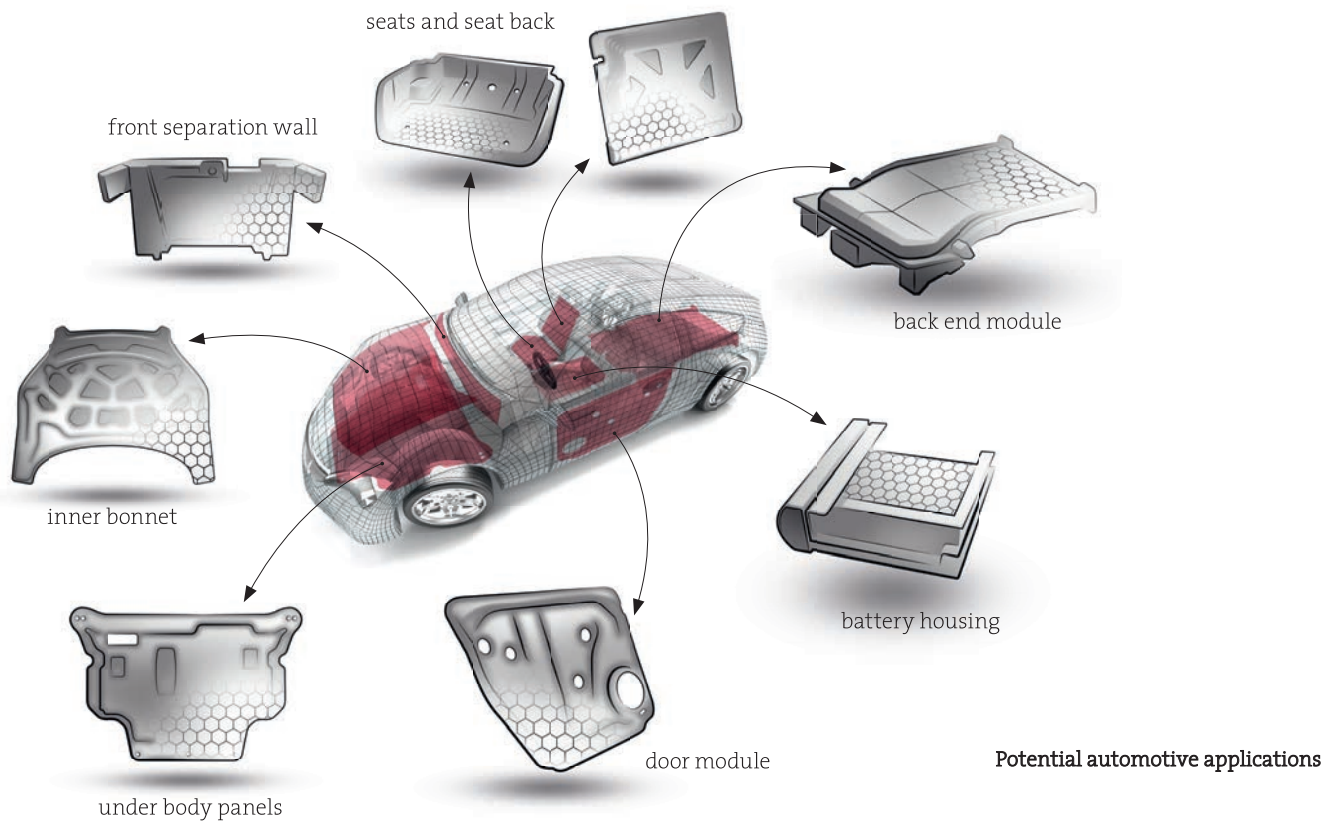
Production and processing with functionalization

THERMHEX ORGANOSANDWICH – THE NEW SANDWICH MATERIAL

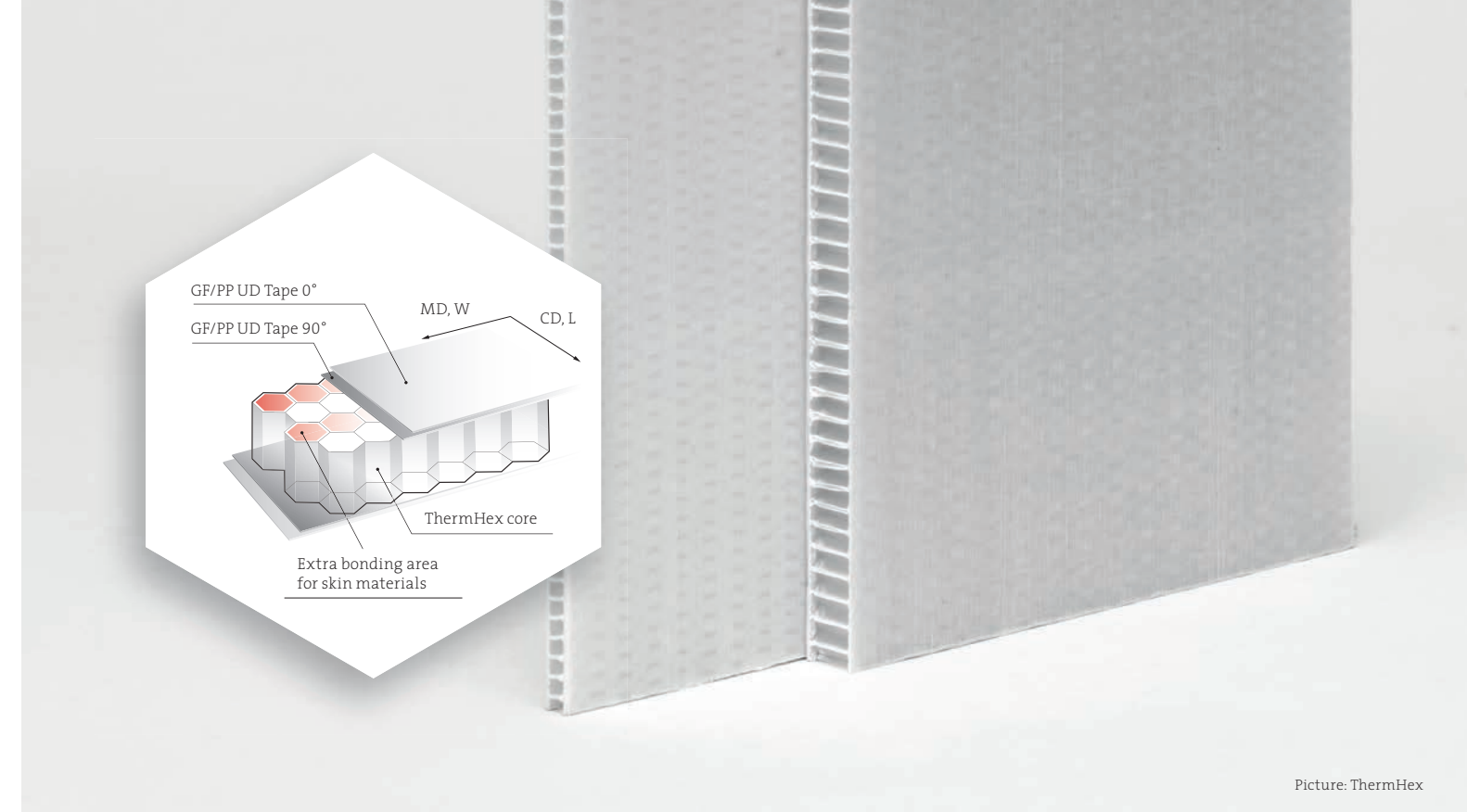
The Organosandwich production is based on the patented ThermHex process. The process enables the continuous inline production of thermoplastic honeycomb cores in a fully automatic production line.

By using our lightweight Organosandwich weight savings of over 80 % are possible compared to a monolithic construction. In comparison to a monolithic organosheet laminate, a sandwich of the same stiffness requires less number of layers, which means considerable cost savings when using the Organosandwich.

The Organosandwich consist of 0°/90° cross ply laminate skin layers made of continuous glass fiber reinforced polypropylene (GF/PP). The folded honeycomb core material consists of a polypropylene as well. This allows an optimal bonding between core and skin layers in the lamination process by thermoplastic welding. The sandwich can be pressed locally to a monolithic laminate which allows the thermoforming of multi-curved shell structures and the pressing of pressure stable monolithic joining surfaces in one step. The pressed areas offer the possibility of functional integration by means of injection molding. Hence, complex lightweight parts can be produced very cost-efficient in short cycle-times which is essential for many automotive applications.



Potential automotive applications



Picture: ThermHex

PROVISIONAL PRODUCT DESCRIPTION

Standard dimensions (CD, L x MD, W)

Sandwich thickness

Skin layer thickness

Core thickness

Cell size

Weight per unit area

Sandwich density

Core density

Tolerances MD (machine direction), W

CD (cross direction), L

Sandwich thickness

Squareness

6THPP120CP820

1.200 mm x 2.500 mm

6 mm

0,5 mm

5 mm

4 mm

2.400 – 2.460 g/m²

400 – 410 kg/m³

120 – 130 kg/m³

+10 / -1 mm

+2 / -1 mm

+/- 0,3 mm

+/- 0,2°

12THPP120CP820

1.200 mm x 2.500 mm

12 mm

0,5 mm

11 mm

5 mm

3.120 – 3.240 g/m²

260 – 270 kg/m³

120 – 130 kg/m³

+10 / -1 mm

+2 / -1 mm

+/- 0,3 mm

+/- 0,2°

PHYSICAL PROPERTIES

Bending stiffness (CD, L – MD, W)

Compressive strength (Z-direction) ASTM C365-57

Compressive modulus (Z-direction) ASTM C365-57

Shear strength (CD, L – MD, W) ASTM C273-61

Shear modulus (CD, L – MD, W) ASTM C273-61

Temperature range for processing

and application (°C)

Thermal conductivity

Fire-resistance

Chemical resistance

140–125 Nm (at 400 mm span length in 3PB test)

2,0 MPa (290 Psi)

25 MPa (3626 Psi)

0,7 MPa – 0,4 MPa (101 Psi – 58 Psi)

21 MPa – 6 MPa (3.045 Psi – 870 Psi)

- 30 to +80

short term to +140

0,065 W/mK

Normally inflammable, higher grades of fire-resistance can be obtained in sandwich elements when using specialized surface modification.

Excellent resistance to water, most acids, bases and salt solutions.

590–475 Nm (at 400 mm span length in 3PB test)

2,0 MPa (290 Psi)

45 MPa (6527 Psi)

0,7 MPa – 0,4 MPa (101 Psi – 58 Psi)

21 MPa – 6 MPa (3.045 Psi – 870 Psi)

- 30 to +80

short term to +140

0,065 W/mK