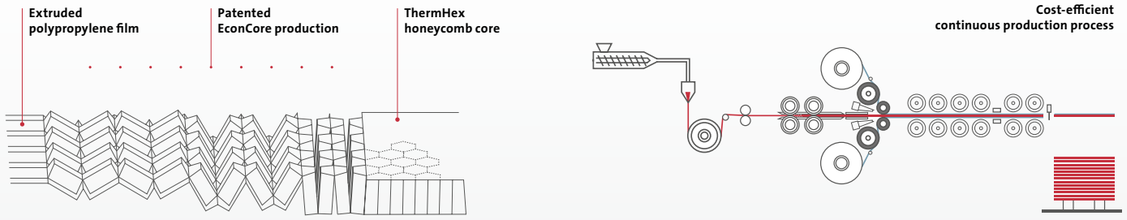
THERMHEX PP HONEYCOMB CORES OFFER TO PRODUCERS OF SANDWICH ELEMENTS A NEW GENERATION OF THE APPROVED CORE MATERIAL

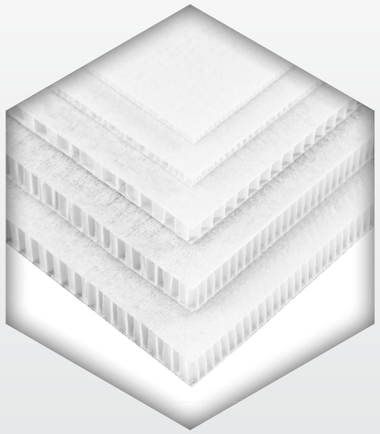
The innovative ThermHex technology for the continuous production of PP honeycomb cores supports the production of highly cost-efficient sandwich structures. Different to traditional production processes, the patented EconCore process allows for a production of PP honeycomb sheets in theoretically endless length. The low consumption of raw materials helps to save on resources and to reduce the CO_2-footprint.

ThermHex honeycomb cores are finished with a polypropylene barrier film. This film avoids the resins to ingress into the open cells during converting and in this way assures stable mechanical properties in the finished part. At the same time, the quantity of resin needed for processing is reduced to a minimum. The second standard surface layer finish is a PET non-woven material, which enables an easy bonding of various types of skin materials with all common adhesives.

YOUR THERMHEX ADVANTAGES THROUGH CONTINUOUS IN-LINE PROCESSING



MAJOR COST REDUCTION
SIGNIFICANT WEIGHT SAVING
HIGH BENDING STIFFNESS
ENERGY ABSORBENT
RESISTANT TO MOISTURE, ACIDS AND BASES
EASY RESOURCE-FRIENDLY CONVERTING
100 % RECYCLABLE



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Management System ISO 9001:2015 ISO 14001:2015 www.tuv.com ID 9108647278

LIABILITY FOR DEFECTS

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We reserve the right to adapt the product to satisfy technical progress and new developments. We would be pleased to help with any enquiries including those related to special application issues. If the application for which our products are used is subject to statutory approval, the user is responsible for the procurement of such approval. Our recommendations do not release the user from the obligation of taking the possibility of impairments to third-party rights into account and of clarifying these if necessary. Furthermore we refer to our General Terms and Conditions, especially with regard to any possible liability for defects. If you are not in possession of our General Terms and Conditions we would be pleased to supply these on request.

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THERMHEX PP AND RPP HONEYCOMB CORES

THERMHEX POLYPROPYLENE HONEYCOMB CORES
A NEW GENERATION OF THE APPROVED CORE MATERIAL

NEW PRODUCT

ThermHex COEX
THERMOPLASTIC HONEYCOMB CORES

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THERMHEX PP HONEYCOMB CORES

THPP60-FN | THPP80-FN
TRPP60-FN | TRPP80-FN

ThermHex honeycomb core with polyester non-woven and PP closure film (THPP60-FN, THPP80-FN) for bonding and processing with thermoset resins.

ThermHex honeycomb core without the polyester non-woven but with extra bonding areas for the skin material.

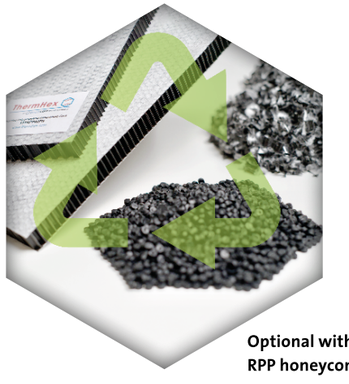
TECHNICAL DATA

PRODUCT DESCRIPTION	THPP60-FN	TRPP60-FN	THPP80-FN	TRPP80-FN
Core material	Polypropylen (PP) Color: white	Recycled PP Color: black	Polypropylen (PP) Color: white	Recycled PP Color: black

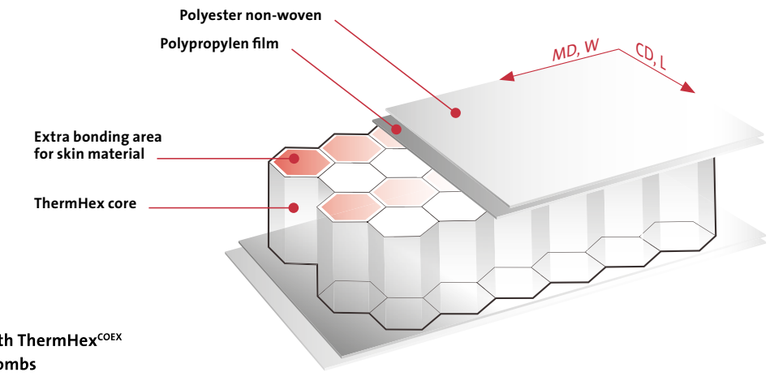
Core thickness (mm)	5	8	10	12	15	20	23	28	3.5	5	6	8	10	12	15	20	23	28
Cell size (mm)	4	8	8	5	5	5	9.6	9.6	3	4	4	8	8	5	5	5	9.6	9.6
Cell wall density (kg/m³)	60	60	60	60	60	60	60	60	90	80	80	80	80	80	80	80	80	80
Total core density (kg/m³)	128	115	92	88	84	76	76	76	167	148	123	144	117	110	109	99	99	99
Weight per unit area (g/m²)	640	920	920	1056	1260	1520	1748	2128	585	740	740	1152	1170	1320	1635	1980	2277	2772

Compressive strength (MPa)*	(ASTM C365)	0.6	1.2
Compressive modulus (MPa)*	(ASTM C365)	15	40
Shear strength (CD, L / MD, W) (MPa)	(ASTM C273)	0.4 / 0.2	0.5 / 0.3
Shear modulus (CD, L / MD, W) (MPa)	(ASTM C273)	14.0 / 5.0	15.0 / 6.0
Temperatue range (°C)			
for processing and application		–30 to +80	–30 to +80
		short-term up to +140	short-term up to +140
Thermal conductivity (W/(m*K))		0.060	0.065
Surface finish		50 µm Polypropylen film	50 µm Polypropylen film
		40 g/m² Polyester non-woven	40 g/m² Polyester non-woven
Standard dimensions (CD, L x MD, W) (mm)		1200 x 2500	1200 x 2500

*Data provided from testing. These are values of an exemplary configuration (thickness, cell size, density)



Optional with ThermHex^{COEX} RPP honeycombs



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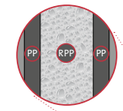
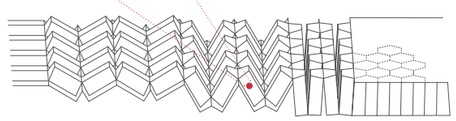


ThermHex^{COEX} THERMOPLASTIC HONEYCOMB CORES



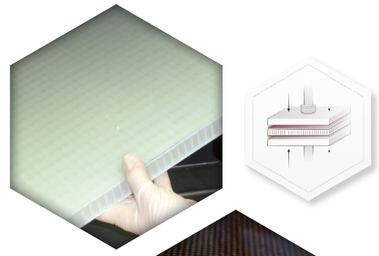
Patent protected by EP4282640 and EP1824667.

TRPP THERMHEX HONEYCOMB CORES WITH PCR PP

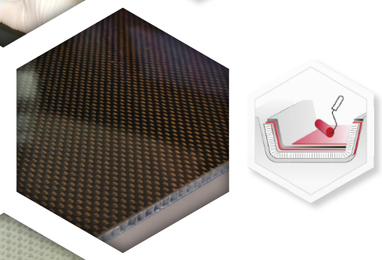
The ThermHex^{COEX} technology enables the usage of low-cost recycled material in the central layer of the sandwich cell wall, while maintaining consistent processing and mechanical properties by using the established virgin compound in the outer cell wall layers.

ThermHex TRPP can use up to 80% post consumer recycled PP in the inner layer. Due to this, the overall recycling content exceeds 25%, thereby fulfills future automotive requirements and meets the increasing sustainability demands.

HANDLING OF THERMHEX HONEYCOMB CORES

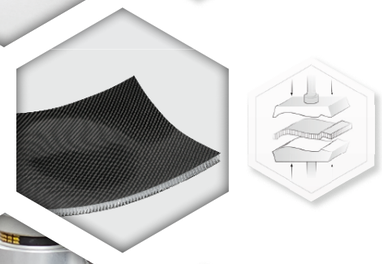


Bonding of skin layer and honeycomb core
During bonding of ThermHex honeycomb core it is essential to use the right adhesive. The adhesive is significantly determined by the requirements of the sandwich compounds.



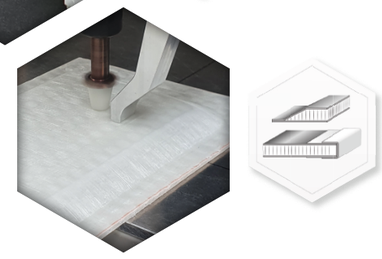
Laminating the skin layer onto the honeycomb core
ThermHex honeycomb cores can be laminated with different methods for example hand lay-up with vacuum moulding. Typical types of resin include polyurethane, polyester, vinylester or epoxy.

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



Forming
Besides forming with heat it is also possible to form honeycomb cores of small thickness (e.g. 3.5 – 10 mm) 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 band and circular saws, drawing, rotating and oscillating knives, waterjet and laser cutting, punching and others.



Edge closure and load application
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 bearing capacity.

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