



**3D|CORE™**  
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# 3D|CORE™ TECHNOLOGY



FABRIC

FABRIC

3D|CORE™ FOAM CORE

RESIN

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## 3D|CORE™ TECHNOLOGY

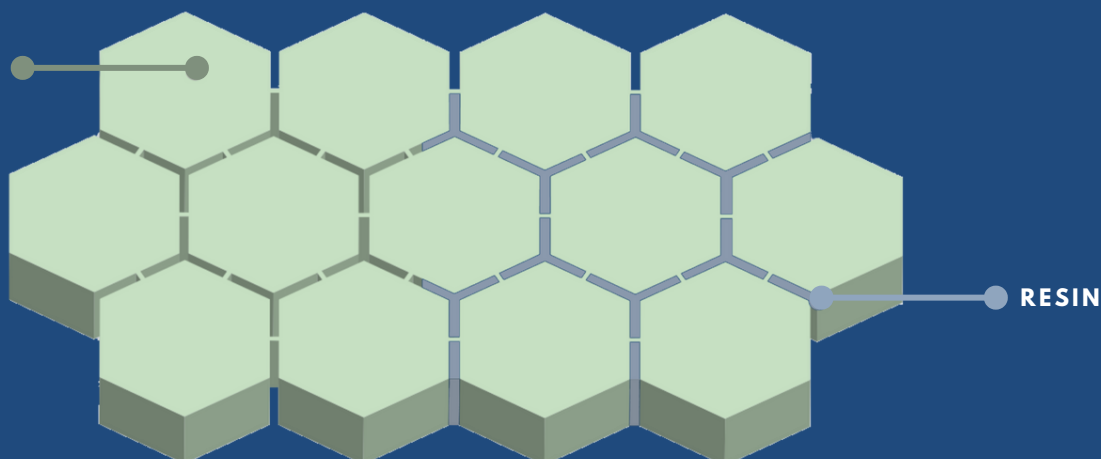
### THE LIGHTWEIGHT SOLUTION WITH A SYSTEM!

3D|CORE™ is a patented honeycomb structure that is inserted into a closed-cell PET or XPS foam core. The honeycombs, which are connected to each other via small foam bridges, run through the entire foam core and enable a high flexibility of the core. Between the individual honeycomb foam bodies are cavities that are filled with a matrix of synthetic resin and support the filling process as an integrated flow aid.

#### ONCE THE MATRIX HAS CURED:

- The foam core retains its shape and develops excellent technical properties
- The cover layers on both sides of the foam core are connected to each other via the honeycomb structure
- The detachment of the cover layers from the core is prevented (delamination)
- The complete failure of the component is excluded

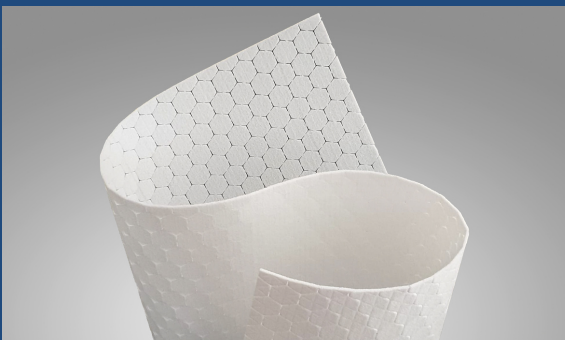
RECYCLED  
3D|CORE™ PET GR  
FOAM CORE





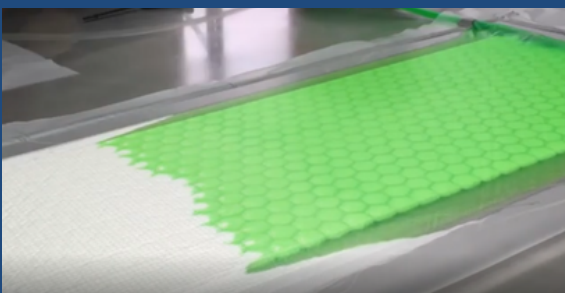
## **YOUR BENEFITS 3D|CORE™ FOAM CORE**

### **THE 3D|CORE™ STRUCTURE GIVES TECHNICAL RIGID FOAM CORES MAXIMUM FLEXIBILITY:**



- Three-dimensional formability for the production of convex and concave components
- Easy handling without pressure and heat
- No additional processing steps required (no intermediate vacuum as 3D|CORE™ foam cores adhere to the mould)
- Increased drapability (adaptation to complex shapes and contours)

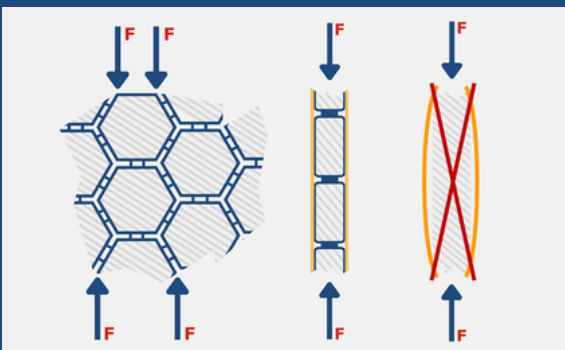
### **THE 3D|CORE™ STRUCTURE ACTS AS AN INTEGRATED FILLING AND VENTING SYSTEM:**



- The 3D|CORE™ honeycomb structure acts as an integrated flow aid and supports the filling process with a liquid matrix (no additional flow aid is required)
- Increased process speed and reliability (optimal resin filling and wetting of the surface layers guarantee a homogeneously filled component)

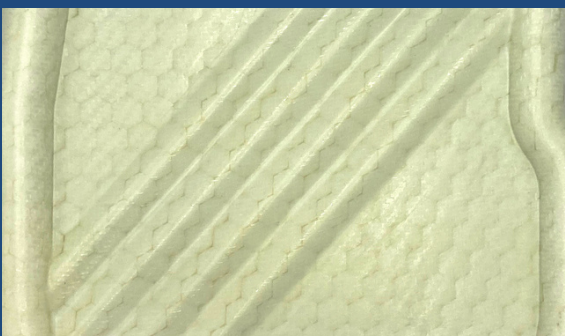
## YOUR BENEFITS FILLED 3D|CORE™ STRUCTURE

### THE RESIN STRUCTURE AROUND THE INDIVIDUAL HONEYCOMB FOAM BODIES HOLDS THE LAMINATE TOGETHER:

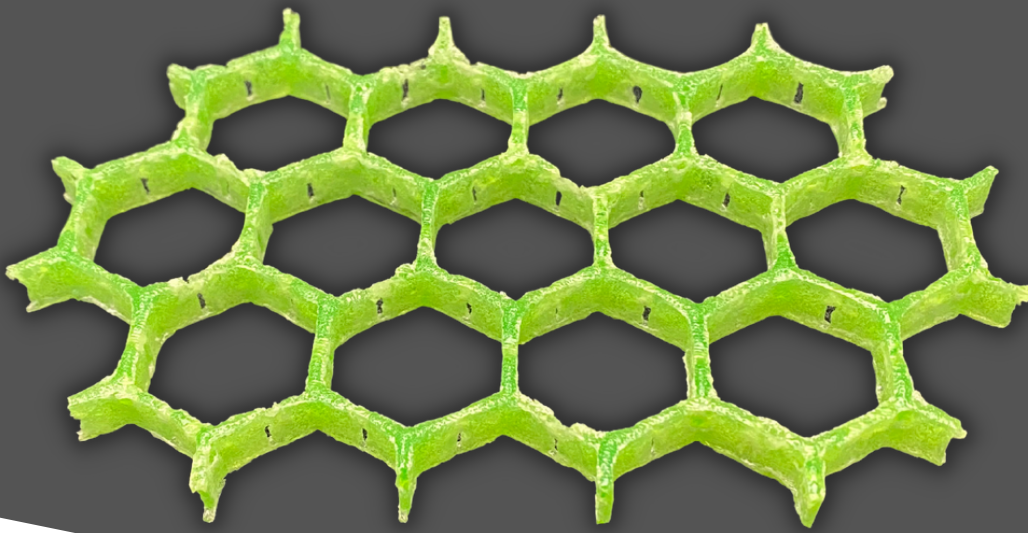


- Long-term resistance even under permanent load (delamination of the surface layers and component failure are prevented)
- High damage tolerance of the final component

### ONCE THE RESIN HAS CURED, THE COMPONENT RETAINS ITS SHAPE:



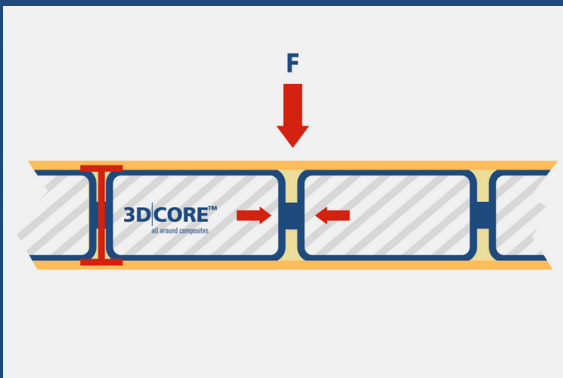
- The honeycomb foam bodies follow the shaping contour and do not stick out
- The component remains dimensionally stable after being processed



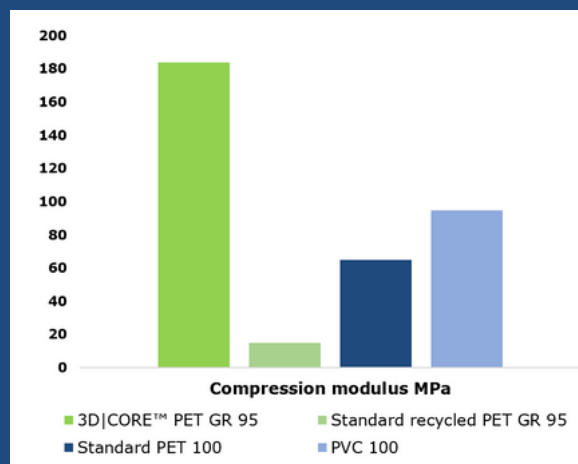
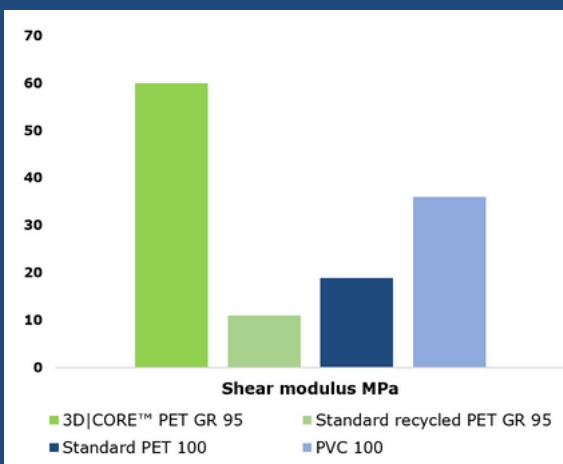
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## YOUR BENEFITS FILLED 3D|CORE™ STRUCTURE

**THE RESIN AROUND THE 3D|CORE™ STRUCTURE ACTS AS A DOUBLE-T-BEAM AND ENABLES EXCELLENT MECHANICAL PROPERTIES:**



- Improved shear and compression properties compared to standard foam cores (800% higher compression modulus, 300% higher shear modulus)
- Increased strength and stiffness compared to standard foam cores (500% higher flexural strength)
- Optimal performance to weight ratio
- Optimal absorption and transmission of forces (in-plane compression load significantly better than regular systems)
- The reinforced 3D|CORE™ high-performance foam cores replace monolithic structures and other core materials in moulds and final components





Component weight



Costs



Material usage



Sustainability



Quality



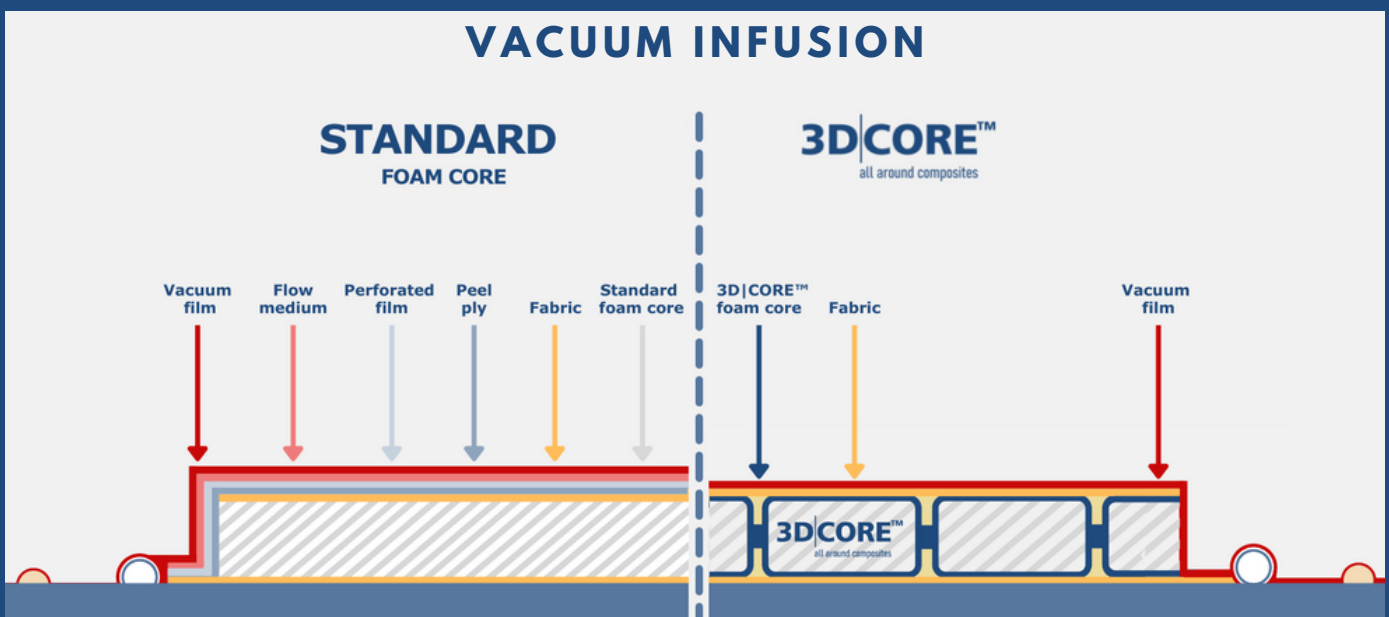
Efficiency

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## YOUR BENEFITS 3D|CORE™ SYSTEM

### 3D|CORE™ ENABLES SIGNIFICANT SAVINGS COMPARED TO STANDARD FOAM CORES AND MONOLITHIC STRUCTURES:

- Material savings: significantly less consumables (no flow aid, peel ply, fleece, perforated film and spray adhesive), less resin consumption (no additional resin for consumables), less fibres
- Weight saving: the closed-cell 3D|CORE™ foam and its honeycomb structure ensure calculable resin and fibre consumption (no additional resin and fibres without technical benefit)
- Cost saving: resulting from less weight and material and the immense time savings in processing

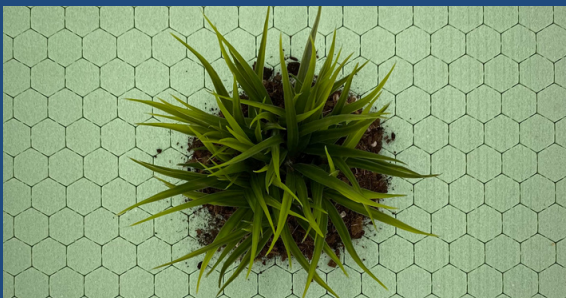




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## YOUR BENEFITS 3D|CORE™ SYSTEM

### 3D|CORE™ SUPPORTS YOU IN ACHIEVING YOUR CO<sub>2</sub> TARGETS:



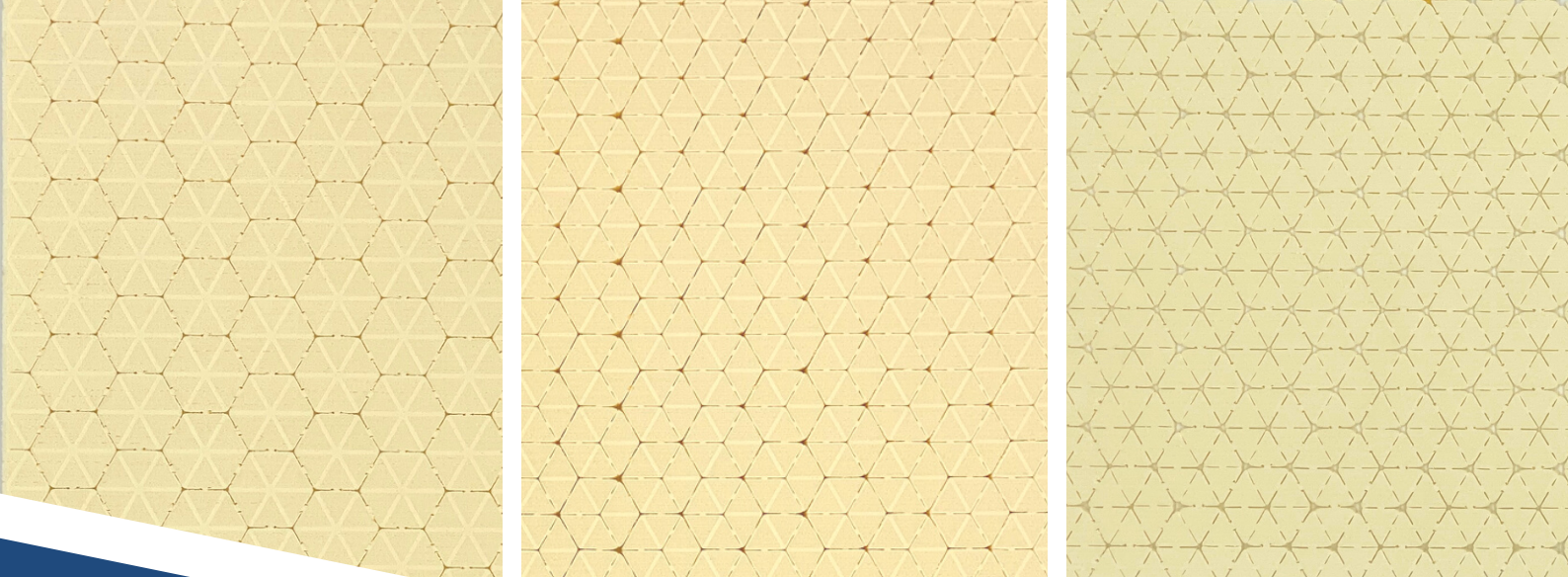
- Sustainable manufacturing process (savings of consumables)
- Recycled and recyclable core materials
- Minimization of material consumption (no extra weight without technical benefit)

### DID YOU KNOW?

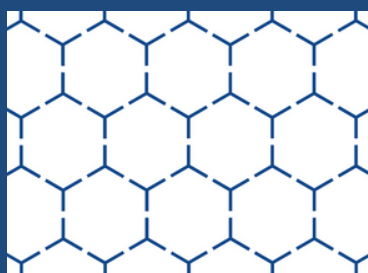
300 m<sup>2</sup> of our 3D|CORE™ PET GR in 20 mm thickness save 969 kg CO<sub>2</sub>.

That is equivalent to one passenger flying from Frankfurt to New York!





## 3D|CORE™ STRUCTURES

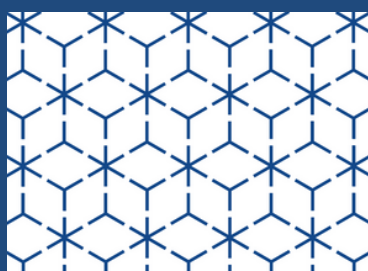


### HEXAGON STRUCTURE

Improvement of the 3D|CORE™ HX structure compared to standard foam cores:

- Technical properties of the core by 100%, flexibility by 100% and more
- Peel strength of the fibre layers by 100%

Available in the XPS and PET foam.



### RHOMBUS STRUCTURE

Improvement of the 3D|CORE™ RB structure compared to standard foam cores:

- Technical properties approx. 200%, flexibility approx. 200% and more
- Peel strength of the fibre layers about 150%

Available in the XPS and PET foam.



### DELTA STRUCTURE

Improvement of the 3D|CORE™ DT structure compared to standard foam cores:

- Flexibility by more than 300%
- Peel strength of the fibre layers about 200%

Available in the XPS and PET foam.

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**ENGINEERING**

**PROCUREMENT**

**PRODUCTION**

**CERTIFICATION**

3DICORE GMBH & CO. KG  
OSTSTRASSE 74  
32051 HERFORD  
GERMANY  
[WWW.3D-CORE.COM](http://WWW.3D-CORE.COM)  
TEL: 0049 5221 93 63 90  
E-MAIL: SALES@3D-CORE.COM

CONNECT WITH US:

