

TECHNICAL DATA SHEET

3D | CORE™ PET GR FOAM

General Description

The 3D|CORE™ PET GR foam core is a green foam made from 100% recycled material. The core is a closed-cell, thermoplastic and recyclable rigid foam with excellent technical properties. It is suitable for the construction of high-strength lightweight components. The integrated honeycomb structure provides more flexibility and is easy to handle. The foam core follows the guidelines for recycling economy and contributes to the preservation and improvement of the human environment. The core is applicable with all known resin systems and processes.

Properties

- Excellent fatigue resistance
- Excellent long-term thermal stability up to 100°C
- Very high processing temperature up to 180°C; PET: DNV GL certified; PET FR: EN 45545-2 and IMO Part 5 certified
- Closed-cell foam (no water absorption, no re-expansion, no outgassing)
- Easy processing with all known resin systems and processes
- Very high chemical resistance
- Homogenous connection of all components
- Excellent surface adhesion (connection between the surfaces and core)
- Highly consistent material properties
- Good thermal insulation
- Integrated flow mesh

Application

- **Rail and road vehicles:** roofs, floor panels, interior, front masks, side panels
- **Ship and boat building:** hull, deck, mast, superstructures, interior, keel
- **Industrial components:** container, covers, safety doors, sleeves, sport equipment
- **Architecture and Construction:** roofs, walls, panels
- **Aviation:** interior, kitchen furniture, radoms
- **Motorsport:** spoiler, bonnet, side elements, trunk lid

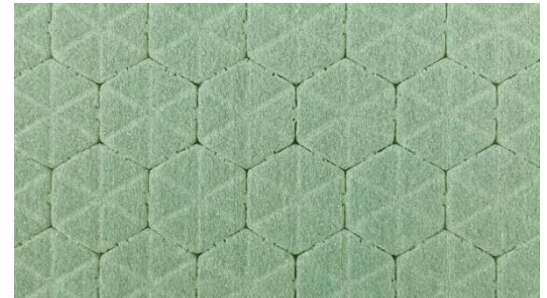
- **Automotive:** underbody protection, battery box, trunk plate, chassis
- **Sports:** Canoes, Surfboard, Skateboard, Snowboard, Ski

Processing

- Hand lay-up
- Vacuum Infusion
- Vacuum Assisted RTM (VARTM, LRTM and HP-RTM)
- Wet pressing
- Autoclave
- Prepreg
- SMC
- Bonding

Structure Pattern

HX: Hexagon



Resin uptake

Structure HX (Vacuum Infusion): 50g/m²/mm

The resin uptake depends on the process as well. Please only use this formula as an indication value.

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Foam Type			PET GR 75	PET GR 95	PET GR 200	
Structure Pattern			HX	HX	HX	
Density		Kg/m ³	3D CORE Foam ⁽¹⁾	75 ⁽³⁾	95 ⁽³⁾	195 ⁽³⁾
Shear Modulus	ASTM C 273	MPa	3D CORE Foam ⁽¹⁾	9	11	34
			3D CORE Hybrid ⁽²⁾	42.53	60	145
Shear Strength	ASTM C 273	MPa	3D CORE Foam ⁽¹⁾	0.4	0.5	1.15
			3D CORE Hybrid ⁽²⁾	0.85	1.02	1.66
Compression Modulus	ISO 844:2014	MPa	3D CORE Foam ⁽¹⁾	13	15	66
			3D CORE Hybrid ⁽²⁾	144.87	184	280
Compression Strength	ISO 844:2014	MPa	3D CORE Foam ⁽¹⁾	0.3	0.45	1.8
			3D CORE Hybrid ⁽²⁾	4.75	5.1	6.8
Thermal Conductivity	At 23 °C	W/mK	3D CORE Foam ⁽¹⁾	0.029	0.032	tbd
Permittivity	Frequency GHz 5-10	ε	3D CORE Foam ⁽¹⁾	1.63 – 1.64		
Max. Processing Temperature		°C		180		
Standard Sheets	Width	mm ± 5		405	405	405
	Length	mm ± 5		1015	1015	1015
	Thickness	mm ± 0.3		3 - 29	3 - 29	3 - 10

Remark:

(1): The values above are the actual values of the suppliers of the precursor material. We cannot give a guarantee for the quality of the values and the related measurements. 3D | CORE primarily evaluates the properties of processing of the individual foam system knowing that the quality of the foam core is essential for the quality of the composite. The size of cavities and the properties have a major influence of the final part. Please regard that every part requires its own calculation of strength and component testing.

(2): The values above are based on measurements on specimen of sandwich panels made by 3D | CORE. These panels were produced with an Epoxy system and Vacuum Injection technology. These values can differ depending on the manufacturing process. Please use the above values only as an indication for your analysis and please provide your own measurements. Specimen thickness of 20mm. Hybrid means foam core and structure filled with Epoxy resin.

(3): Tolerances +/-7 kg/m³

Disclaimer of Liability

This data is offered solely as a guide in the selection of a reinforcement. The information contained in this publication is based on actual laboratory data and field test experience. We believe this information to be reliable, but do not guarantee its applicability to the user's process or assume any liability arising out of its use or performance. The user, by accepting the products described herein, agrees to be responsible for thoroughly testing any application to determine its suitability before committing to production. It is important for the user to determine the properties of its own commercial compounds when using this or any other reinforcement. Because of numerous factors affecting results, we make no warranty of any kind, express or implied, including those of merchantability and fitness for a particular purpose. Statements in this data sheet shall not be construed as representations of warranties or as inducements to infringe any patent or violate any law, safety code or insurance regulation.

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