

Grooved & Perforated

Main feature: Distributor

GPC5/GPC7 provides a reliable and robust resin flow due to its grooves on the surface of the material. It is a suitable on flat or slightly curved surfaces, which makes it to an excellent option in closed molding processes.

The difference between GPC5 and GPC7 is that the first is grooved along the sheet and the latter transverse to the sheet.

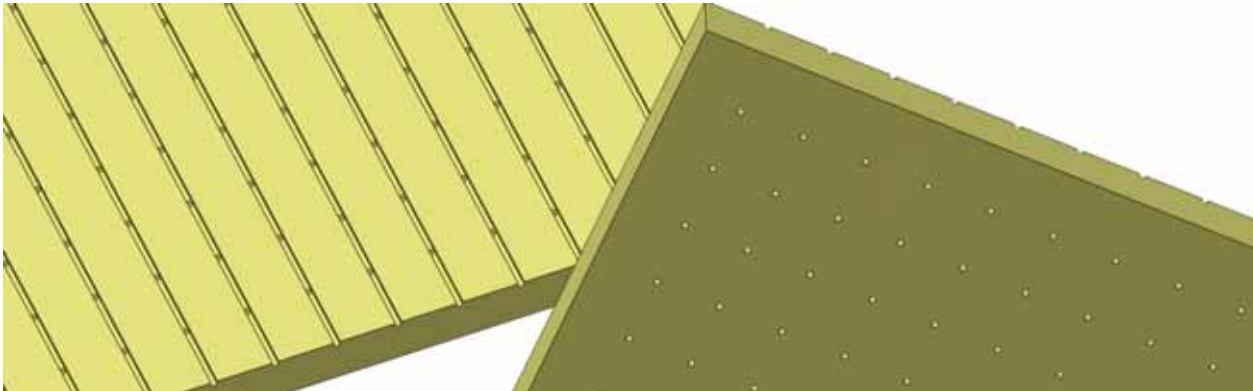


Figure 1: GPC5 top view (left picture) and bottom view (right)

Description

One side of the core is grooved in one direction and perforated while the other side has perforations only.

Typical measurements:	
Center-to-center	20mm
Depth (D)	2mm
Width (W)	2mm
Diameter perforation	Ø 2mm

Benefits

- Reduces cost
- Saves labor
- Big process window
- Minimizing the risk of print troughs from the core
- Facilitating easy and fast lay-up of infusion strategy

In addition to excellent infusion characteristics, GPC5/GPC7 also has economic benefits since there is no need for additional infusion materials. For example, flow meshes or flow mats, are usually not needed due to the effective grooving and perforating of the core. Due to its fast flow, the

distances between feeder lines are not as critical as without its configuration. This means that there are a lot of savings both in labor, materials and consumables compared to other infusion methods.

Peel plies are seldom used in combination with GPC5/GPC7 since the added value is minor. However, it might occasionally be used to facilitate an easier grinding prior to secondary bonding or to get a smoother surface.

Typical applications

- Decks
- Top sides
- Hulls
- Panels
- Webs
- Stiffeners

GPC5/GPC7 is very well suited for flat applications where efficiency and large volumes are important. This is true, in particular, when the core thickness is 20mm or less and there is a need for a good finish on one side of the application.

Process characteristics

- Good wet-out
- Robust
- Fast
- Reliable

The size of the grooves and perforations enable both low and high viscosity resins to flow securely to both sides of the core. This means that GPC5/GPC7 is both reliable and fast when used in an infusion process.

The design of the grooves (width, depth and distance between them) in combination with the perforations generates a fast flow and a proper saturation of fibers and core surface, which secures a good bonding between core and laminate.

The purpose of the perforations is to ensure a good transfer of resin to both sides of the core. A further advantage is that the infusion feeder lines can be positioned where it is most strategically appropriate, independent of the core sheet position.

As mentioned earlier, another important benefit with perforations is that it yields less print through from resin shrinkage compared to having grooves facing the outer surface.

Limitations and considerations

Resin consumption increases with thickness due to perforations.

GPC5/GPC7 is intended for flat surfaces¹ and is not quite as robust as infusion configurations where grooves are oriented in two directions.

1. In combination with another finishing code, for example GS30, GPC5/GPC7 may be used also in applications with curved surfaces.

Finishing Solutions

DIAB utilizes a combination of its complete range of finishing options to provide an optimized solution based on customers' requirements and objectives. Should the standard range not fulfill the needs, tailor made cuts and solutions can be defined and developed. Normally this is not needed as the range of options and DIAB competence covers majority of needs in various industries.

Kits

To fully optimize the application for cost, performance and quality DIAB can engineer and design a core kit delivered in lay-up sequence. The kit of precut pieces is optimized for mechanical requirements, lay-up, manufacturing process, cost and quality objectives. The kit is produced by our skilled personnel using a combination of traditional and CNC equipment to achieve the desired result.

By working with kits our customers gain access to the full competence of DIAB in terms of engineered design, core materials and range of manufacturing techniques, all having a profound impact on the ability to reach the objectives of the application from cost, quality and performance point of view.

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