

Grooved & Perforated

Main feature: Distributor

GPC1 is an attribute to our core materials, developed to make the infusion process reliable, fast and robust on flat or slightly curved surfaces, while imprints on the surface are minimized.

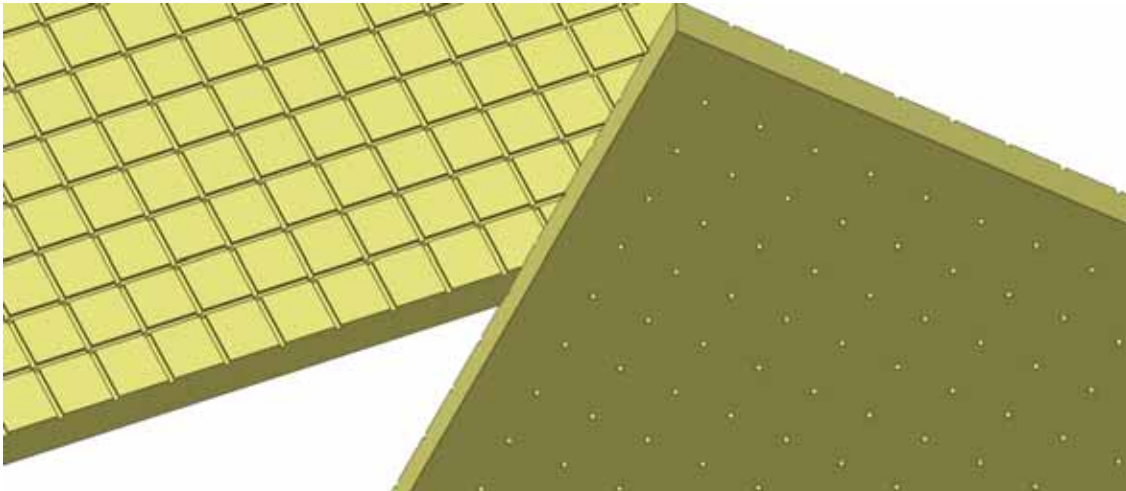


Figure 1: GPC1 top view (left picture) and bottom view (right)

Description GPC1

As shown above, one side of the core is grooved and perforated, while the other side has perforations only.

Typical measurements:	
Center-to-center (c-c)	20mm
Depth (D)	2mm
Width (W)	2mm
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, GPC1 also has economical benefits since there is no need for additional infusion materials. For example, flow meshes or flow mats, are 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 GPC1 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

GPC1 is very well suited for flat applications where efficiency and large volumes are important. It is true in particular where the core thickness is 20mm or less and there is a need for 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 which means that GPC1 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 yields a fast flow and a proper saturation of fibers and core surface, which secures a good bond line.

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.

GPC1 is intended for flat surfaces¹.

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.

¹. In combination with another finishing code, for example GS30, GPC1 may be used also for applications with a curved surface.

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