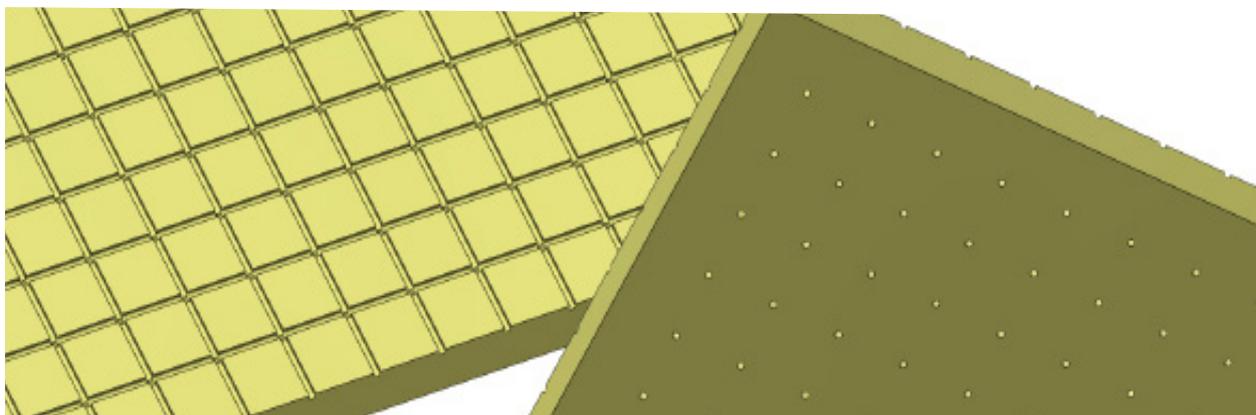


Finishing | Flow

Grooved & Perforated

Grooved & Perforated, GP is a specialized attribute applied to Diab core materials, designed to make the infusion process reliable, fast, and robust on flat or slightly curved surfaces—while minimizing print-throughs.



Description

Grooved & Perforated finishing features grooving on one or two sides of the core and the material is perforated with 2mm drills. The configuration of grooves and perforations can be designed to suit different needs, see process characteristics for further information.

The grooves transport resin over the surface while perforations enable resin transport to both sides of the core to ensure a good wet-out of laminates. In addition to its excellent infusion performance, it provides significant economic advantages. The need for supplementary infusion materials, such as flow meshes or flow mats, are eliminated due to the core's integrated grooving and perforation. Its rapid resin flow also reduces sensitivity to feeder line spacing, resulting in substantial savings in labor, materials, and consumables compared to conventional infusion methods.

Benefits

- Robust and secure distribution of resin
- Ensures reliable wet-out of fibres
- Reduced risk of print-through
- Reduce need of distribution medias
- Facilitating fast lay-up of infusion strategy

Typical application areas

- Hulls & topsides
- Decks & superstructures
- Bulkheads & stiffeners

Grooved & Perforated finishing is especially well suited for flat applications where efficiency and high production volumes are critical.

Standard finishing types

Configuration	GPC1	GPC2	GPC8	GPL1 ²
Distance between grooves	20mm	20mm	20mm	20mm
Orientation grooves ¹	0, 90°	0, 90°	0°	0, 90°
Placement grooves	Top	Top & bottom	Top & bottom	Top
Dimension grooves, D, W	2x2mm	2x2mm	2x2mm	2x1mm
Distance between perfs 0°	20mm	20mm	40mm	40mm
Distance between perfs 90°	20mm	20mm	20mm	20mm
Perforation Ø	2mm	2mm	2mm	2mm

1. 0° or 90° orientation versus length of full size sheet.

2. Perforations create a diamond pattern, due to a 20mm offset between rows of perforations.

PROCESS CHARACTERISTICS

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.

The material can be ordered with grooves on both sides of the core and in both 0° and 90° angle, which can be useful when doing infusion when having a thicker core. If resin saving is in focus, the material can be ordered with grooves in one direction only on one side of the core, which can be a good solution when having thin laminates and when printing is a critical factor. Grooves are more likely to cause imprints on the surface versus only having perforations against the mould during infusion.

The 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.

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 a 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 pre-cut 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.

Disclaimer:

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