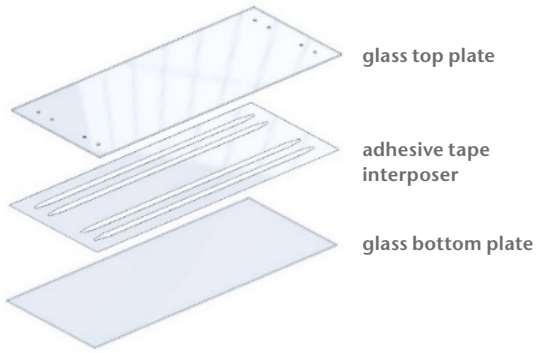
NEXTERION® bonded substrates

Nexterion bonded products are used in applications which requires a structuring inside the substrate or chip. Bonded substrates are especially interesting for microfluidic applications like NGS, molecular diagnostics and life science research. Manufacturing takes place in ISO class 5 environment, all relevant processes are in place for diagnostic company needs. In the following an overview of the available bonding methods including design options.

Tape Bonding

For all NEXTERION® taped-bonded products the channels are formed via adhesive tape. The channel depth is defined by tape thickness. The bonding process takes place at room temperature. This allows an optional functional coating on either top or bottom plate.



NEXTERION® Tape Bonding with adhesive tape interposer

Features

Material

- High-quality borosilicate glass
  - BOROFLOAT® 33
  - D 263® Family
  - Other glass materials upon request
- Polymer adhesive tape

Formats / Markings

- Outer dimensions: up to 130.0 mm
- Thickness of glass layers: 0.1 mm – 2.25 mm
- Markings upon request

	Tape-formed Channel
Inlet / Outlet Hole Diameter	> 500 µm
Channel Width	> 200 µm
Channel Depth	45 µm up to 80 µm
Distance between structures	> 200 µm
Channel roughness	Top / Bottom: < 1 nm

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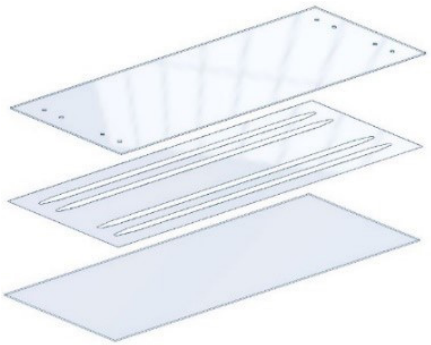
Fusion Bonding

All NEXTERION® fusion-bonded products are fully glass-based systems either in two or in three layer-designs. The layers are aligned and directly bonded via pressure contacting.

Features



Three-layer design with laser-structured interposer

Two layer design with laser ablated channels

Material

- High-quality borosilicate glass
  - BOROFLOAT® 33
  - D 263® Family
- Other glass materials upon request

Formats / Markings

- Outer dimensions: up to 130.0 mm
- Thickness of glass layers: 0.1 mm – 2.25 mm
- Markings upon request

Structuring

	Interposer Channel	Laser-ablated Channel
Inlet / Outlet Hole Diameter	500 µm up to 2 mm	500 µm up to 2 mm
Taper Angle Hole	< 3°	< 3°
Channel Width	> 500 µm	> 20 µm
Channel Depth	0.1 mm up to 2.25 mm	10 µm up to 100µm*
Channel Length	< 130 mm	< 42 mm
Taper Angle Channel	< 3°	70°
Distance between structures	> 1 mm	20 µm
Distance Edge to Channel	> 5 mm	> 5 mm

* Minimum glass thickness: 0.7 mm

Other specifications upon request

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