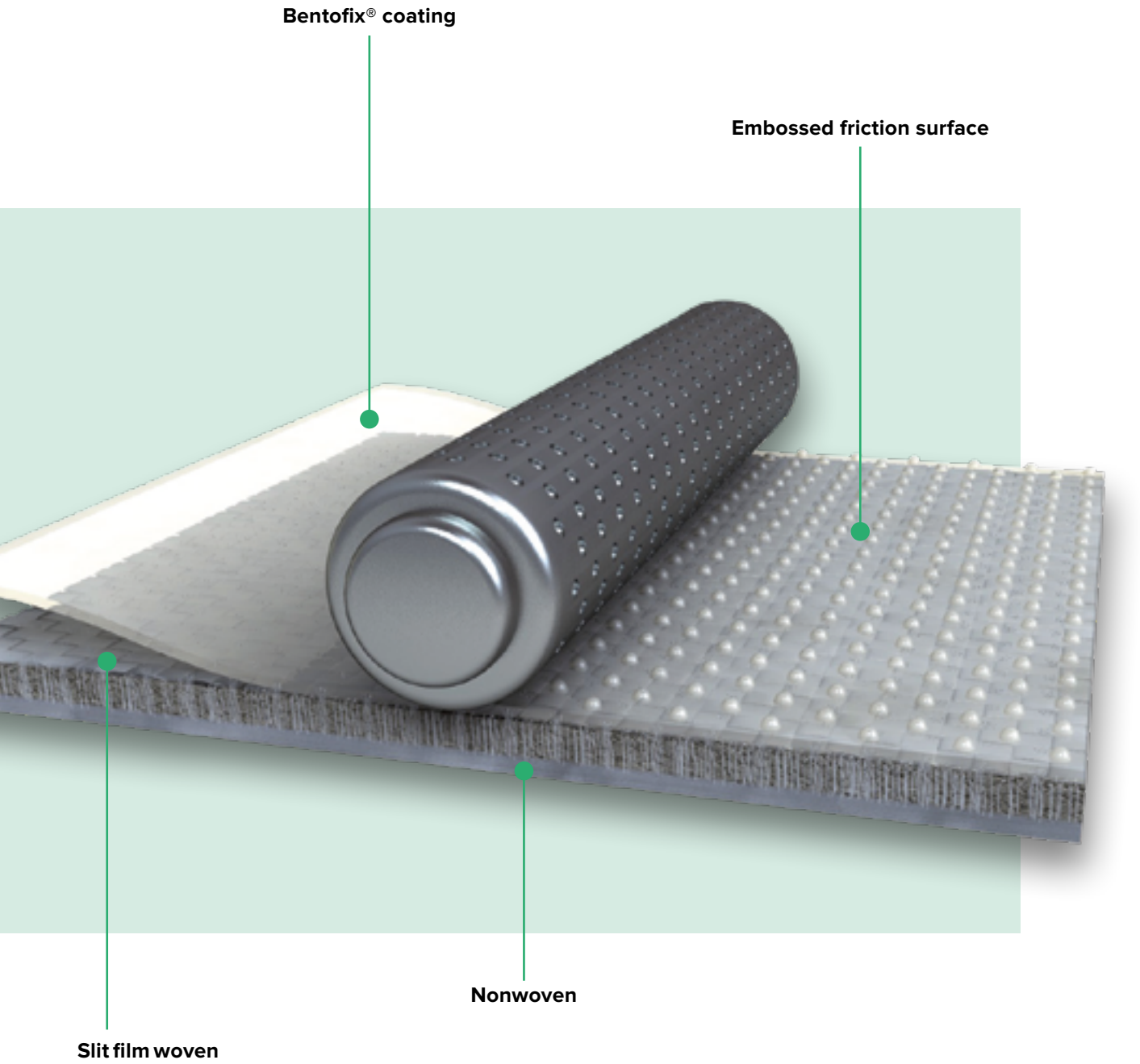
Bentofix® X

Naue

Multicomponent Geosynthetic Clay Liner (GCL)



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Building on sustainable ground.

Bentofix® X multicomponent geosynthetic clay liner (GCL) - also known as geosynthetic clay barrier (GBR-C) - is a needle-punched, fibre-reinforced composite that combines two durable geotextile outer layers and a uniform core of high-swelling sodium bentonite powder with an additional polyethylene extrusion-coated barrier.

This forms a multi-directional, shear-resistant, hydraulic, multicomponent barrier with replastification characteristics.

TYPICAL APPLICATIONS FOR BENTOFIX® X GEOSYNTHETIC CLAY LINERS

DESIGN ISSUES

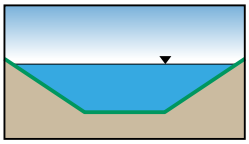


Fig. 1: Hydraulic head

Improves permeation resistance against high water heads in, e.g. hydraulic engineering applications, storage ponds/lagoons and waterproofing

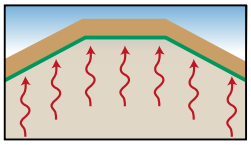


Fig. 2: Gas barrier

Provides improved and immediate gas resistance in, e.g. landfills, containment and waterproofing applications

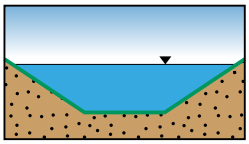


Fig. 3: Coarse subsoils

Prevents piping if subbase is a coarse aggregate, e.g. in hydraulic engineering applications and storage ponds/lagoons

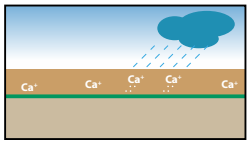


Fig. 4: Ion exchange

Protects against possible ion exchange in, e.g. the following applications: landfill engineering, containment, groundwater protection, soil encapsulation and brownfield/contaminated land developments, hydraulic engineering, mining, tank farms, storage ponds/lagoons and waterproofing

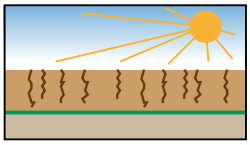


Fig. 5: Desiccation

Keeps bentonite moist and prevents bentonite dehydration in, e.g. landfill applications, containment, groundwater protection, soil encapsulation and brownfield/contaminated land developments, hydraulic engineering, mining and tank farms

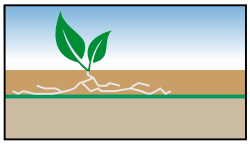


Fig. 6: Roots

Prevents root penetration in, e.g. landfill applications, containment, groundwater protection, soil encapsulation and brownfield/contaminated land developments, hydraulic engineering and storage ponds/lagoons

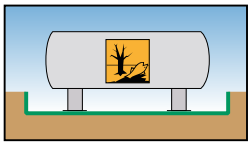
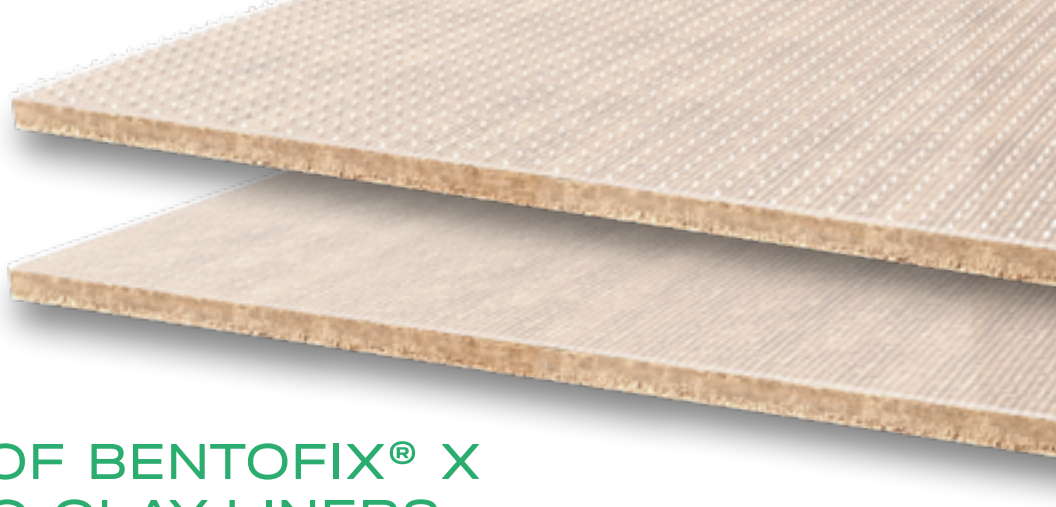


Fig. 7: Barrier against critical liquids

Improves the barrier performance and acts as a chemical protection in , e.g. landfill applications, groundwater protection, soil encapsulation and brownfield/contaminated land developments, mining and tank farms



ADVANTAGES OF BENTOFIX® X GEOSYNTHETIC CLAY LINERS

Bentofix® X GCLs exemplify how geosynthetics perform best: by interacting with natural elements to create something stronger or more secure. The main advantage of Bentofix® X is that it can be used for versatile sealing applications.

Two independent sealing barriers

The polyethylene extrusion-coated barrier improves the sealing performance and acts as a protection for the bentonite against ion exchange and against more challenging chemicals, and as an immediate gas barrier.

Less cover soil, better performance

Bentofix® X now achieves an increased resistance against desiccation while requiring less cover soil when compared to standard GCL applications.

Durable long-term shear strength

Bentofix® X is available with smooth (X2) or textured (X5F and X10F) PE coating, offering unique advantages regarding slope stability. The coating is also homogeneously extruded and firmly bonded to the GCL. No shrinkage or delamination caused in climates with high temperatures.

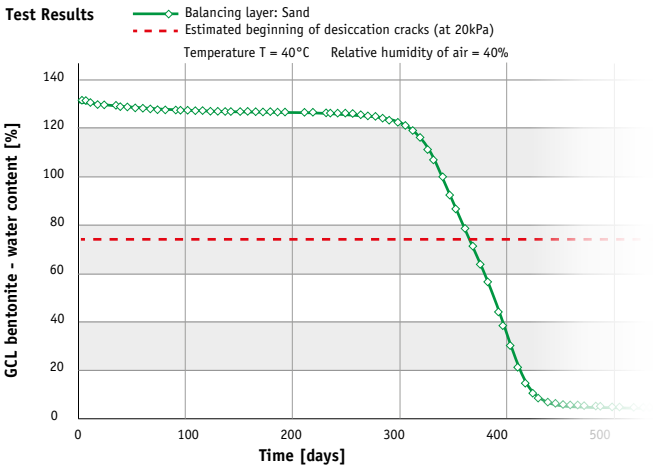


Fig. 8:
Desiccation behaviour of geosynthetic clay liners in a laboratory test

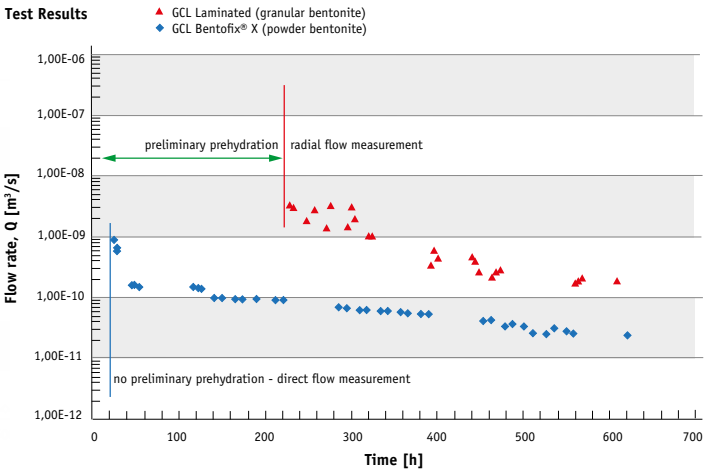


Fig. 9:
Flow rate among multicomponent GCL interfaces

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