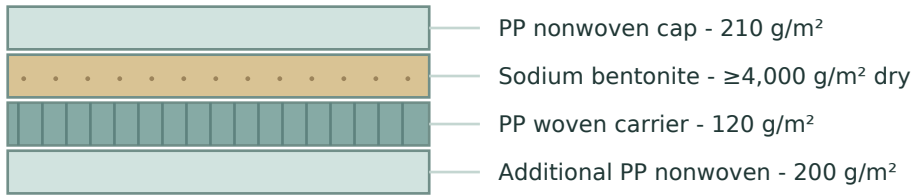


PRODUCT GCL-H

Kontain GCL Heavy

Composite woven/nonwoven base for more demanding placement.

GCL-H uses a composite carrier with woven reinforcement and an additional nonwoven layer. The GCL-H-4000 reference construction combines a heavier base with $\geq 4,000$ g/m² dry bentonite for projects needing greater puncture resistance and a different contact interface.



Construction schematic. Layers exaggerated; confirm supplied face orientation.

Reference technical data - GCL-H-4000

Property	Declared value	Test method
Dry bentonite mass	$\geq 4,000$ g/m ²	ASTM D5993
PP cap / composite carrier mass	210 / 320 g/m ² reference	EN ISO 9864 / ASTM D5261
Composite carrier components	120 woven + 200 nonwoven g/m ²	Construction declaration
Total GCL mass	4,530 g/m ² reference	ASTM D5993
Fluid loss / swell index	≤ 18 mL / ≥ 24 mL/2 g	ASTM D5891 / D5890
Tensile strength - MD / cross-MD	Method and units to confirm	Numeric value withheld
Peel strength	360 N/m reference ¹	ASTM D6496
Static puncture resistance (CBR)	$\geq 2,500$ N	EN ISO 12236
Hydraulic conductivity, k	$\leq 3 \times 10^{-11}$ m/s	ASTM D5084
Index flux, q ₁₀	$\leq 2.7 \times 10^{-9}$ (m ³ /m ²)/s	ASTM D5887
Hydrated peak internal shear ²	≥ 35 kPa at 10 kPa normal stress	ASTM D6243

¹ The reported peel value is a reference, not a confirmed minimum. ² Peak shear at one normal stress does not establish a design envelope. Hydraulic test conditions require confirmation.

Reference values are data-sheet declarations for the stated construction. They are not independent test results, certified acceptance limits or minimum average roll values (MARV). Final values, tolerances, test conditions and quality records are agreed in the order-specific supply schedule.

PRODUCT GCL-H

Granular fill and design

Robustness depends on the construction and the placement method.

Direct granular cover

Accepted crushed aggregate up to 25 mm may be placed directly over the selected heavy construction where the aggregate contains no lime and the grade-specific puncture, chemistry and placement checks are satisfied. Confirm grading, angularity, first-lift thickness, compaction method and equipment ground pressure before work.

The 25 mm limit is the proposed Kontain contact-cover limit for this detail, not an unlimited rock-placement rating derived from the CBR index result. Require finer bedding or a cushion if trials or design checks indicate damage. Plant must remain on sufficient approved cover and must never traffic on exposed GCL.

Friction and slopes

The nonwoven composite base provides an alternative contact surface that can improve friction for suitable granular interfaces. Prefer compatible, well-graded granular contact materials where their puncture and chemical performance is acceptable, and test the actual layers above and below the GCL.

Slopes as steep as 1V:2H may be considered only in exceptional, design-verified cases. This is not a GCL-H product rating. Check hydrated peak and residual internal/interface strengths, normal stress, cover pore pressures, anchorage and construction loading. Smooth laminates can introduce a different controlling interface.

Sealing, protection and options

Provide 300 mm minimum direct GCL overlap, subject to the approved detail. Factory-treated longitudinal edges self-seal under hydration and confinement; treat ends and cut edges with matching bentonite. Protect from uncontrolled wetting, displacement and damage until the inspected liner is covered.

A 3,700 g/m² heavy version can be specified separately. Do not transfer this 4,000 g/m² reference schedule automatically. Polymer-modified bentonite and laminate options also require a construction-specific schedule and test evidence.

Supply item	Order requirement
Common roll	5 m × 30 m = 150 m ² gross; allow separately for overlaps and cutting.
Custom manufacture	Roll dimensions, bentonite mass, formulation and compatible constructions can be specified, subject to confirmation.
Core and handling	Plastic or steel core to client preference. Confirm bore, roll mass, roll diameter and mandrel compatibility before lifting.
Accessories	Matching bentonite, paste or sealant; penetration and termination details to the approved project schedule.

Before supply: resolve tensile method/units and peel acceptance; confirm all acceptance values, tolerances, hydraulic conditions, bentonite source/form, roll details and batch quality records. No project friction angle or permissible plant load is declared by this sheet.

Installation details: [Kontain GCL Installation Guide](#)

Product selection and project supply: kontainsolutions.com/products/gcl-systems