

Geocomposite used for track-formation treatment 11/09/12

1.	<p>The geocomposite functions as a filter/separator and can be used to replace a sand-blanket. The geocomposite shall be installed as shown on the contract drawings.</p> <p>The geocomposite shall be manufactured under factory production control guidelines set out within EN 13250: <i>Geotextiles and geotextile-related products – characteristics required for use in railways</i>. The manufacturer must be able to supply accompanying CE documentation upon request. The manufacturer must demonstrate evidence of having provided the specified material into a permanent-way application on a previous occasion.</p> <p>The functional characteristics and relevant test methods to this specific condition of use are identified below:</p>
2.	The geocomposite shall have the following properties:

2.1 Physical Properties:				
Polymer type:	High tenacity (>42cN/tex), virgin, polypropylene, staple fibre containing 1% carbon black UV inhibitor by weight.			
Composition:	Micro-porous (<5micron) breathable filter sandwiched between two needlepunched, non-woven textiles manufactured from mechanically-entangled, staple fibre. The filter must be proven to allow water to flow upwards under pressure and, in the long term, cause any underlying residual slurry to consolidate.			
	Approved test method	Units	Mean value	Allowable tolerance to 95% confidence limits
Thickness @ 2kPa	ISO 9863-1: 2005	mm	8.8	n/a ^{*[1]}
Opening size	ISO 12956	µm	<20	n/a ^{*[2]}
2.2 Mechanical Properties:				
Static puncture strength (CBR)	ISO 12236	kN	>17	-0
Push-through displacement	ISO 12236	mm	65	n/a ^{*[1]}
Tensile strength (md/cmd)	ISO 10319	kN/m	90	-10%
Tensile extension (md/cmd)	ISO 10319	%	80	+/-30%
Cone drop perforation hole diameter	EN 13433	mm	0	+0
^[1] Indicates property not used for quality control as part of harmonised testing				
^[2] Indicates that test not suitable for site conformance testing – manufacturers CE declaration to be used as acceptance criteria.				

2.3 Durability			
Resistance to weathering (UV) @ 200MJ/m ² radiant exposure	EN 12224	Retained Strength	>90%
Resistance to oxidation (150 years)	EN 13438	Retained Strength after 84 days	>90%
Microbiological resistance	EN 12225	Retained Strength	>95%
Resistance to liquids	EN 14030	Retained Strength	>95%
Resistance to abrasion under ballast	The product must be tested below 0.3m of ballast to a loading cycle equivalent to 140,000,000 gross tonnes of main-line traffic. There must be no visible signs of damage to the filter upon completion of the test. The minimum sample size tested must be >4m ² .		
[*] Durability test data can be supplied by the manufacturer – test frequency must not exceed 2 years.			

3.	<p>The geocomposite shall be delivered to site in packaging which will protect the product from damage during handling and storage. Packaging must be suitable to protect the product from UV degradation. It shall be kept in appropriate packaging until such time that it is required for installation.</p> <p>The product shall be clearly and indelibly marked with the product name along the edge of the roll at regular intervals no greater than 5m. The labelling shall clearly identify the product supplied in accordance with EN ISO 10320: <i>Geotextile and Geotextile related products – Identification on site</i>.</p>
4.	The geocomposite manufacturer shall provide production test certificates on mechanical properties at the rate of one set of tests per 6,000m ² delivered to site and a minimum of one set per contract. Test methods employed shall be in accordance above specification and the reporting laboratory should be accredited to ISO 17025 to carry out the required tests. Certificates relevant to a batch of geotextile

	shall be furnished to the engineer prior to that batch of geocomposite being incorporated in the works. The laboratory must provide evidence of certification.
5.	The rolls of geocomposite shall be stored on level ground and stacked not more than five rolls high and no other materials shall be stacked on top.
6.	The geocomposite shall be laid and installed in the positions and to the line and levels described on the drawings. Construction plant must not operate directly on the geocomposite. Delivery and excavation plant shall operate on a minimum layer of 0.15m of cover when placing the ballast.
7.	End to end joints shall be formed by overlapping by a minimum of 1.5m. The contractor should satisfy the Engineer that no particles from the ballast can migrate between layers at the overlap.
8.	<p>The following definitions shall apply when considering test results:</p> <ul style="list-style-type: none"> • A <i>set of test results</i> shall be those results derived from specimens cut from one sample. • The <i>mean value</i> for any set of test results shall be the arithmetic mean of that set of results. <p>The <i>characteristic value</i> is the value below which not more than 5% of the test results may be expected to fall. This represents the value at 1.645 standard deviations below the mean value.</p>