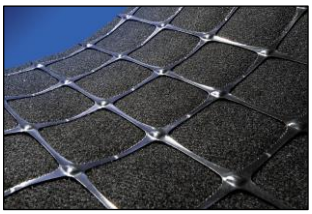
RK4 Trackbed Geocomposite

EDS030-2023-07-20

1. Description

RK4 is a bi-oriented polypropylene geogrid heat-laminated to a robust needlepunched nonwoven polypropylene geotextile (RK1) that has been manufactured from virgin high tenacity fibres and engineered to provide high puncture resistance and extension at break.



2. Applications

Used in trackbed applications for ballast confinement, reduction of mud pumping, subgrade stabilisation, filtration and separation between track ballast and subgrade.

3. Features

- *RK4 uses a wide aperture geogrid specifically designed to confine rail ballast. Its properties and composition provide a long-term resistance to mechanical and chemical degradation, even when used under very aggressive conditions.*
- *The geogrid is manufactured from a unique process of extrusion and biaxial orientation to enhance its tensile properties. It features consistently high tensile strength and modulus, excellent resistance to construction damages and environmental exposure. Furthermore, its geometry allows strong mechanical interlock with the ballast being confined.*
- *RK4 uses our RK1 needlepunched nonwoven geotextile which is specified by engineers due to its proven ability to function in the most demanding conditions – especially important under dynamic loading beneath track ballast. Extensive testing has demonstrated RK1's class leading robustness and long service life under dynamic loading conditions. This is due to its high puncture resistance, high elongation at break, excellent filtration characteristics and high UV and abrasion resistance.*

	Test Standard	Unit	Mean Values
4. Mechanical Properties - Geogrid			
Structure			Bi-oriented geogrid
Mesh type and size			Squared apertures – 65 mm
Polymer & carbon black content			Polypropylene with 2% active carbon black
Tensile strength @ 2% strain (MD/CMD)	EN ISO 10319	kN/m	11 / 12
Peak tensile strength (MD/CMD)	EN ISO 10319	kN/m	30
5. Mechanical Properties - Geotextiles			
Static puncture (CBR)	EN ISO 12236	kN	3.3
Push through displacement		mm	65
Tensile strength (MD/CMD)	EN ISO 10319	kN/m	22
Tensile elongation (MD/CMD)		%	80
Cone drop	EN ISO 13433	mm	13
6. Filter Properties - Geotextile			
Apparent opening size	EN ISO 12956	µm	60
Water permeability v_{H50}	EN ISO 11058	l/(m²·s)	85
Coefficient of permeability		m/s	$5.1 \cdot 10^{-3}$
7. Physical Properties - Geotextile			
Thickness @ 2kPa (Nominal)	EN ISO 9863-1	mm	3
Carbon black content			1% active carbon black
Standard colour			Black
Polymer			100% virgin polypropylene

a) *Mean values indicate the arithmetic mean derived from the samples taken for any one test as defined in the standard – usually an overall mean of five samples.*
b) *Mean values are subject to tolerances based on 95% confidence limits as published on the product CE declaration of performance.*
c) *Nominal thickness values indicate an average manufacturing norm and not a controlled performance parameter.*
d) *MD: Machine Direction (longitudinal to the roll). CMD: Cross Machine Direction (across the roll).*
e) *Tensile testing is performed using extensometers.*

	Test Standard	Values
8. Durability – Composite		
Weathering 50 MJ/m² (1 month)	EN ISO 12224	>90% Retained Strength
Microbiological resistance	EN ISO 12225	No loss in strength
Resistance to acids & alkalis	EN ISO 14030	No loss in strength
Oxidation at 112 days (100 years)	EN ISO 13438	>90% Retained Strength

9. Needle Detection

During manufacture, the protection geotextile passes close to three sets of magnets which remove metal particles up to 12g and >2mm. Just before the roll up, the geotextile passes through an electronic metal detection field. Audio and visual alarms indicate if metal particles are detected. Rolls are sent to stock if they pass through the field without an alarm event, otherwise the operator inspects the suspect area, locates any metal particles and removes them. If unsuccessful, or if any doubt remains as to the presence of metal particles, then the roll goes to the re-inspection facility.

10. Testing

All materials are tested every 6000m² in an UKAS accredited ISO 17025 laboratory to all mechanical properties prior to release.

11. Storage

The geocomposites are supplied in packaging designed to protect the product from damage during handling, storage and degradation as a result of UV exposure. The product should be kept in appropriate packaging until such time that it is required for installation. The product is clearly and indelibly marked with its name along the edge of the roll at regular intervals, no greater than 5m. The packaging is clearly labelled to identify the product supplied, in accordance with EN ISO 10320: Geotextile and Geotextile related products – Identification on site. Use slings where provided. Product weights are given on roll tickets. Use equipment appropriate to weight and dimensions. Store and handle in accordance with good occupational health and safety practice.

	Unit	Values
12. Dimensions		
Standard roll length	m	25
Standard roll width	m	3.9
Approximate roll weight	Kg	60

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