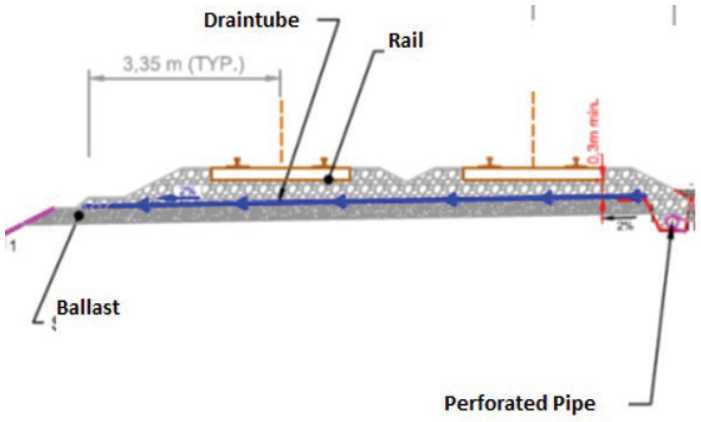
afitex GROUP GEOSYNTHETICS | GEOQUEST

DRAINTUBE™

IMPROVEMENT IN RAILWAYS USING DRAINTUBE DRAINAGE GEOCOMPOSITE

INTRODUCTION

In Civil Engineering, the drainage systems were traditionally made with granular material layers and perforated collector pipes. In railway engineering, Drain Tube drainage composites are used as lateral drainage on vertical wick drains under preloading embankments, directly under the tracks to increase the drainage capacity of the ballast or in cuttings to intercept high water tables.

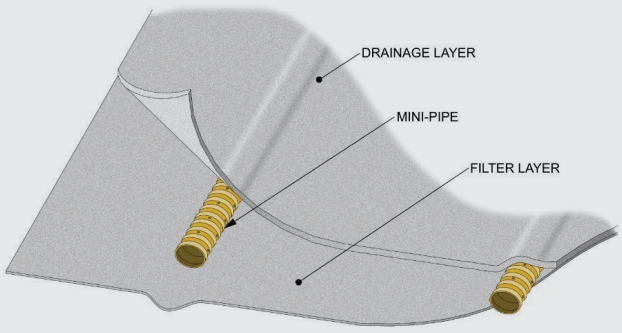


Advantages:

- Faster Installation.
- Requires less machinery.
- Reduces the Greenhouse Gas (GHG) emissions of the project.
- Increases the overall drainage capacity of the system under ballast.
- It is flexible and resistant to Biological and chemical clogging.
- It Is not sensitive to creep or geotextile intrusion and provides a higher long-term drainage capacity.
- Mechanical connection to the collector pipe using the Quick Connect System (no need to cut the entire length of the collector to insert the geonet).

DRAINTUBE™ DRAINAGE GEOCOMPOSITES

Introduction: Drainage geocomposite with mini-pipes Draintube are used in civil engineering and more especially in earthworks project for the past 30 years worldwide. They are multi-linear drainage geocomposites (terminology as per ASTM D4439-2017) composed of non-woven geotextiles that are needle-punched together with perforated, corrugated polypropylene mini-pipes regularly spaced inside and running the length of the roll. The mini pipes have two perforations per corrugation at 180˚C and alternating at 90˚C



TECHNICAL PARAMETERS: DRAINTUBE 550 FTF1 D25

S No.	Characteristics	Standard	Reference		Unit	Value (*)
Mechanical Characteristics						
1	Mass per unit area	NF EN 9864	Geotextile		g/sqm	550
			Mass per unit area Total mass (geotextile +mini pipes)		g/sqm	636
2	Thickness	NF EN 9863 -1	Under 2 kPa		mm	6
			Under 20 kPa		mm	5
3	Tensile strength	NF EN ISO 10319	Machine direction		KN/m	24
			Cross direction		KN/m	24
4	Tensile elongation	NF EN ISO 10319	Machine direction		%	100
			Cross direction		%	100
5	Pyramidal puncture resistance	NF G 38-019			KN	2.5
6	Dynamic perforation resistance	NF EN ISO 13433			mm	4
7	CBR resistance	NF EN ISO 12236			KN	4.2
Mini-pipes characteristics						
8	Diameter	NF EN 61386-1	Outside diameter		mm	25
9	Pipe stiffness at 5% deflection	ASTM D2412			kPa	3000
10	CE conformity	NF EN 61386-1				
11	Spacing of mini pipes	1 mini pipe every one metre widthways				
Hydraulic characteristics						
12	Opening size	NF EN ISO 12956	Filter layer	µm		110
13	Water permeability	NF EN ISO 11058	Filter layer	l/s/sqm		100
14	In-plane flow capacity (mini pipes)	NF EN ISO 12958	Under 400 kPa during 100h, for gradient i=1		l/s/m	2
Packaging						
15	Packaging	Standard roll	Length (variable)		m	50
			Width		m	3.9
			Weight		kg	131
			Tube inside diameter		mm	100
16	Structural Reduction Factor					
Structural Reduction Factor (SRF) is a reduction factor that must be applied on the Index Transmissivity to consider the creep and the intrusion factors. SRF = RFCR x RFIN. For Draintube technology, RFCR = 1.0 and RFIN = 1.0. The SRF value is a technology specific value.						

(*) Nominal Value

Technical parameters: Quick Connect D25			
Mechanical Characteristics			
1	Material		Nitril
2	External Diameter	mm	32
3	Max Wall thickness	mm	13

A Geoquest-Afitex Consortium for Asia
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