Tiltex
SYSTEM

CONCRETE
IN A ROLL

THINK DIFFERENT

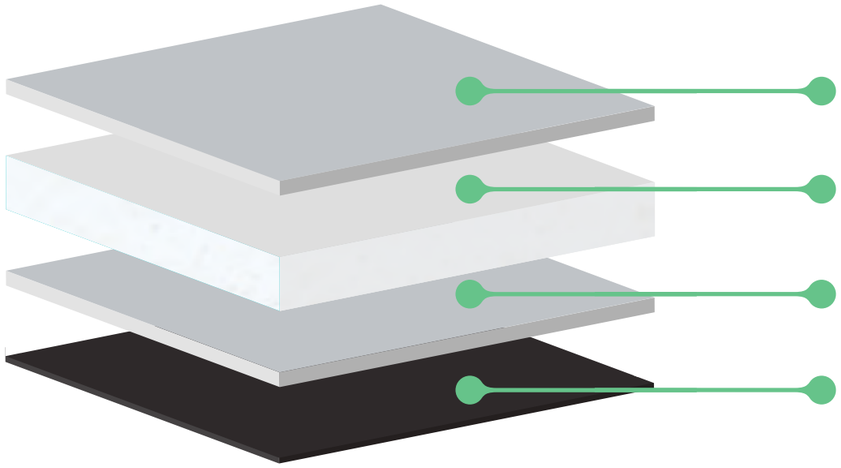
Tiltex
SYSTEM

Tiltex is an advanced product which can be quickly and easily formed to give the desired shape. Hydrated with a small amount of water, it can be shaped into a durable and firm structure serving as ground reinforcement or a protection liner.

CONCRETE
IN A ROLL

TILTEX

It is a needle-punched composite consisting of a specially developed blend of cements and sand, and its outer layers consist of polypropylene nonwoven fabrics. It can be combined with an additional layer of polyethylene geomembrane to achieve waterproofing properties - this type is called TILTEX Plus.



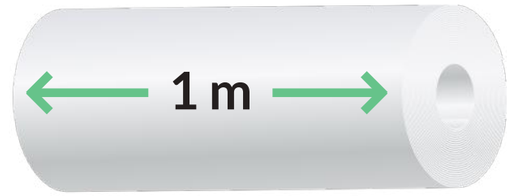
The amount of sand-cement mixture placed between the geotextiles is selected according to the required applications of the product: lower weights are recommended for protective functions, higher weights for erosion control.

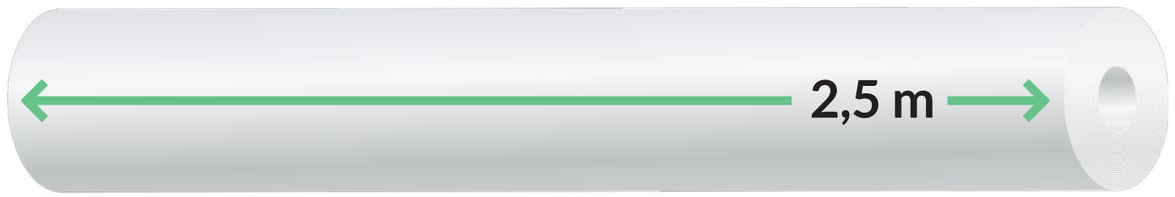
For conventional applications, TILTEX is offered in 4 different cement weight gradations, while the composition of the textiles remains unchanged. The weights offered are 7 kg/m^2, 9 kg/m^2, 10 kg/m^2, 12 kg/m^2.

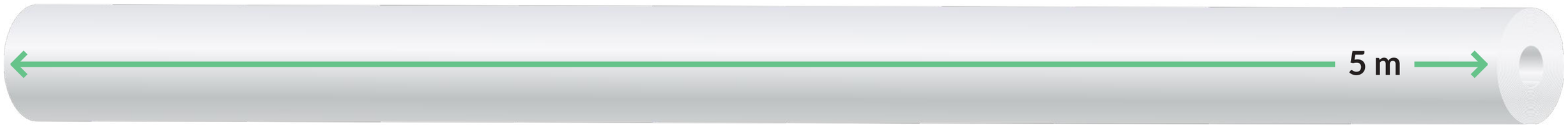
TILTEX is produced in a variety of sizes to best suit the project: 5 x 20 m, 2.5 x 20 m, 1 x 5 m.

ADVANTAGES:

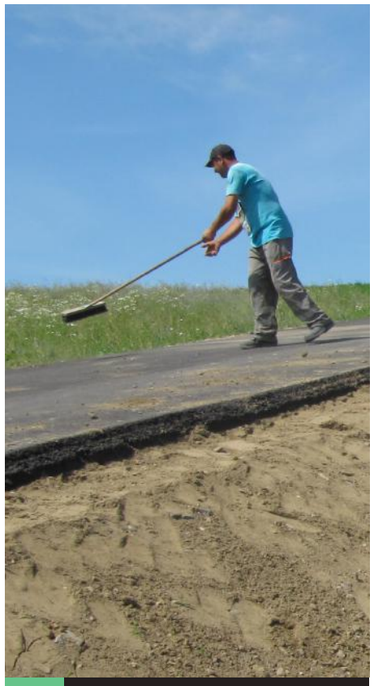
- Excellent alternative to conventional materials
- Quick and easy installation
- Suitable for long and steep slopes
- Environmentally friendly
- Minimal transport costs (approx.2400 m^2/ truck)
- Cost effective solution
- Heavy equipment not required
- Safe and stable over time
- TILTEX Plus available with membranes from 0,2mm to 2,0 mm







HOW TO INSTALL TILTEX?



1. Subgrade preparation

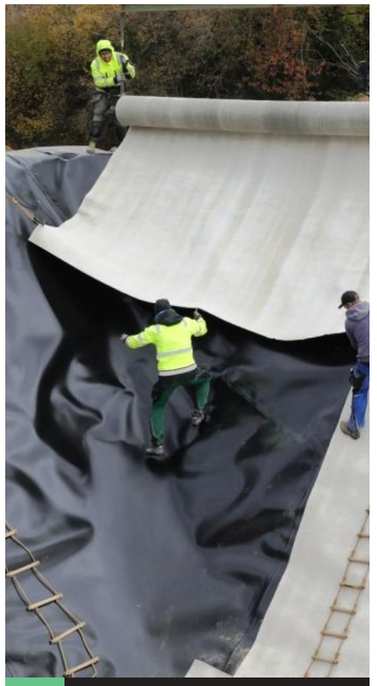
TILTEX will fit the underlying surface shape, therefore any sharp rock, organic matter and other objects shall be removed. The subgrade should be compacted to a relative proctor of at least 90% (it can be checked by the sand cone method).

2. Unrolling

Unroll the TILTEX liner on the prepared surface. The orientation of panels on slopes shall be parallel to the slope. For easier handling and positioning, it is recommended to provide a lifting device that allows the rolls to be lifted with a front-end loader. The core can be used as an unloading device as well as for liner installation.

3. Fixing and cutting

Prior to hydration, TILTEX is flexible, so it can be freely adapted to the ground and objects on it, e.g. culverts and piles. Fitting is easy as TILTEX can be cut on site to adjust the size and shape of the panels. A typical carpet knife is sufficient for cutting.



4. Overlapping

When joining the panels, follow the tile rule. When laying successive layers, make sure to keep at least 10 cm overlap between layers and the overlapping is made in the direction of water flow. Water the surface under the overlapped TILTEX sections. Watering the lower layer allows for thorough and proper hydration of the entire overlap, which without this does not have access to sufficient water amount.

5. Anchoring

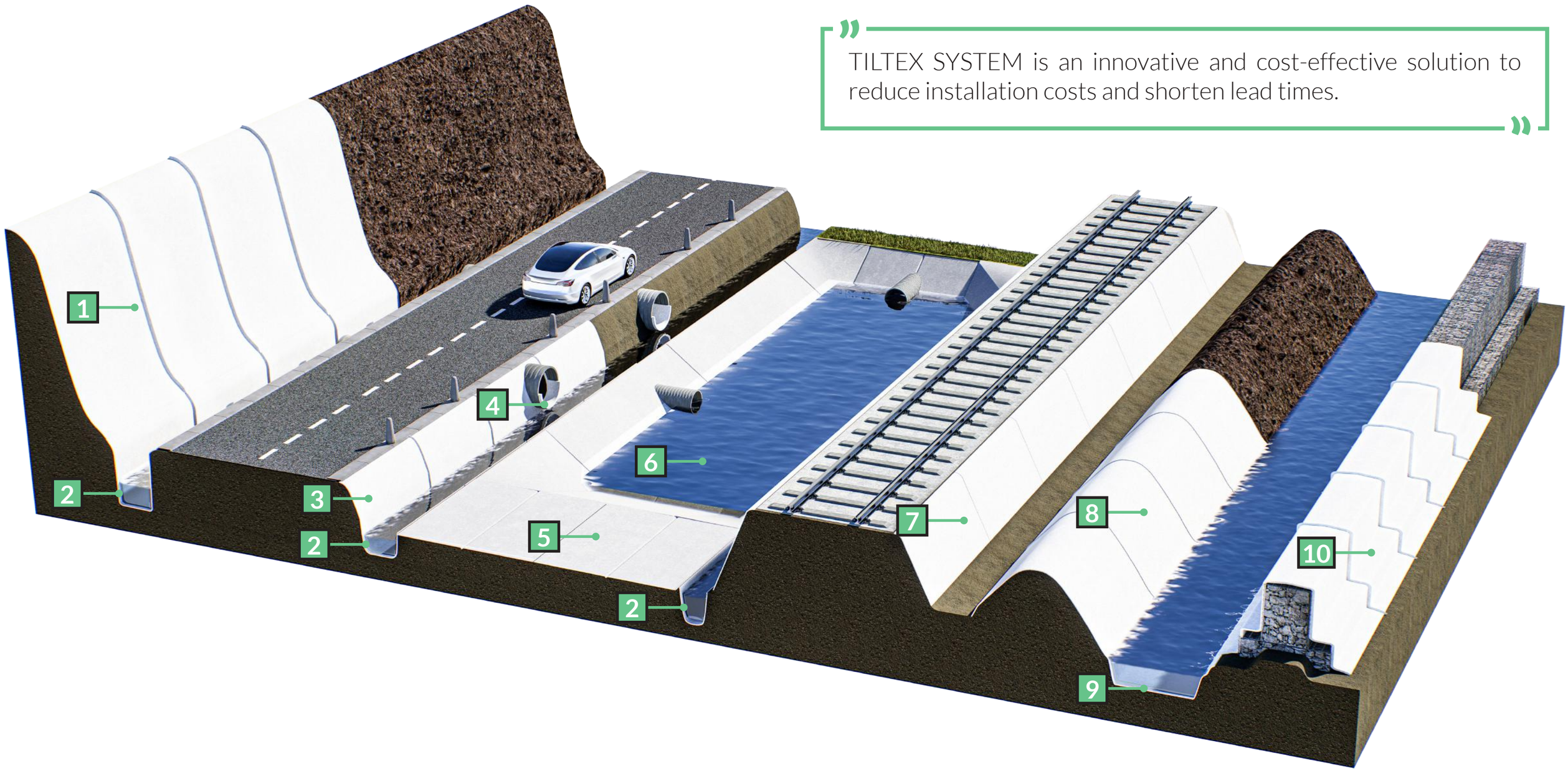
The overlaps should be fixed with screws every 20 cm, and screws shall be placed 5 cm from the edge of the TILTEX. The edges of the TILTEX should be fixed in anchor trenches. The positioning of the anchors on the surface of the panels should be adapted to the conditions at the installation site - we will help to design the anchoring if necessary.

6. Hydrating

After fixing and connecting, spray TILTEX with water. The minimum water to liner ratio is 1:2. There is no risk of overhydrating. To ensure sufficient hydration, TILTEX should be re-sprayed after 1 hour from the first hydration. TILTEX needs minimum 90 minutes to start curing.

TILTEX IN DIFFERENT APPLICATIONS:

> TILTEX SYSTEM is an innovative and cost-effective solution to reduce installation costs and shorten lead times.



1 Slope protection
2 Ditch lining
3 Road slope protection
4 Culvert lining
5 Vegetation regulation
6 Reservoir bed and slope protection
7 Railway slope protection
8 Bund lining
9 River bed and slope protection
10 Gabion remediation

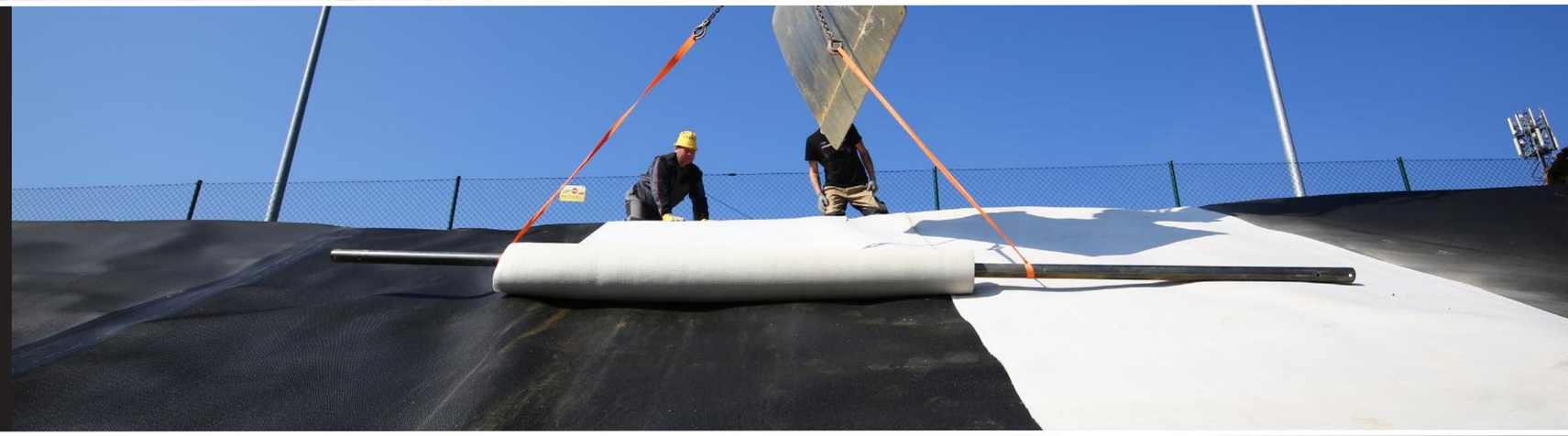
BUND LINING

CANAL AND DITCH LINING

CULVERT LINING

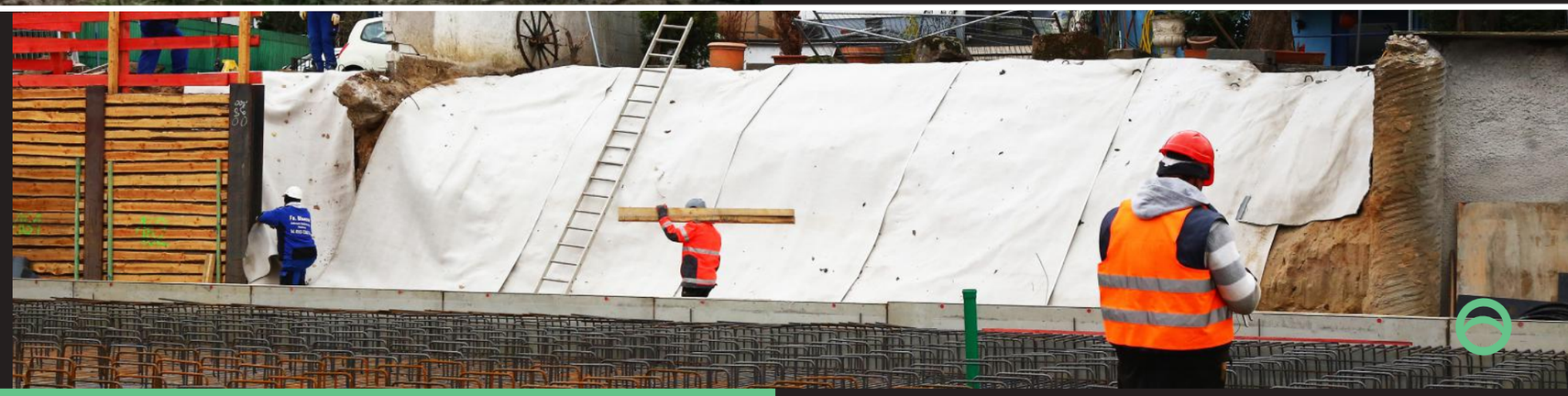
POND AND RESERVOIR LINING

GEOMEMBRANE PROTECTION

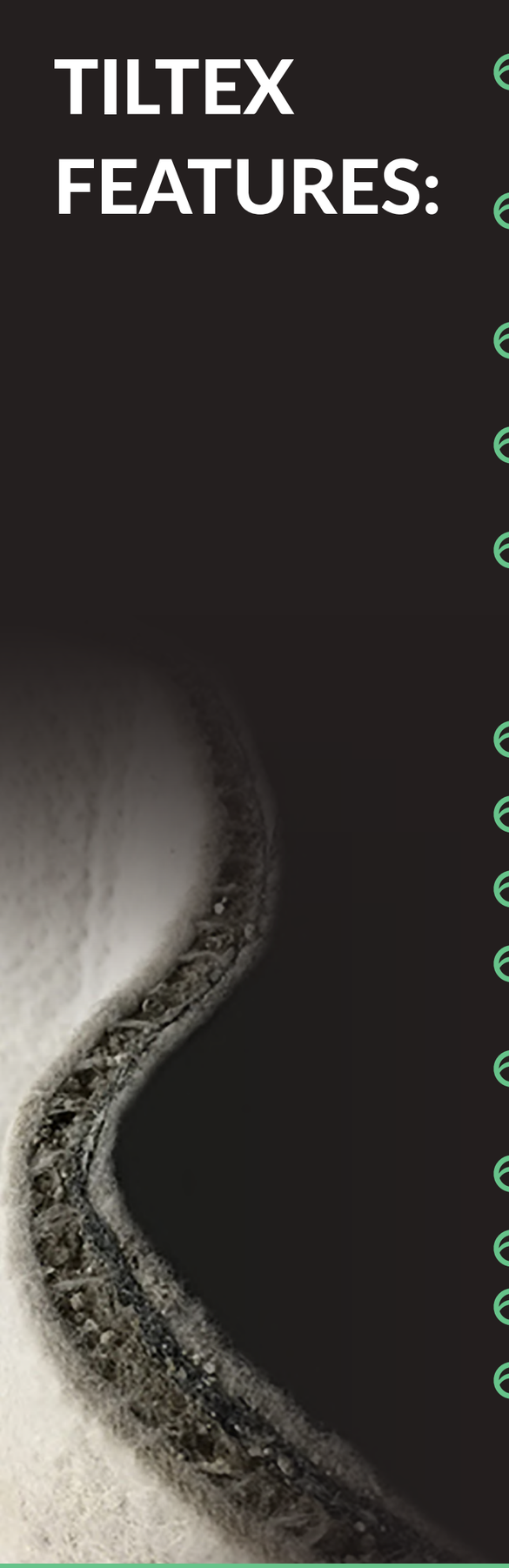


ROAD AND RAILWAY DITCHES LINING

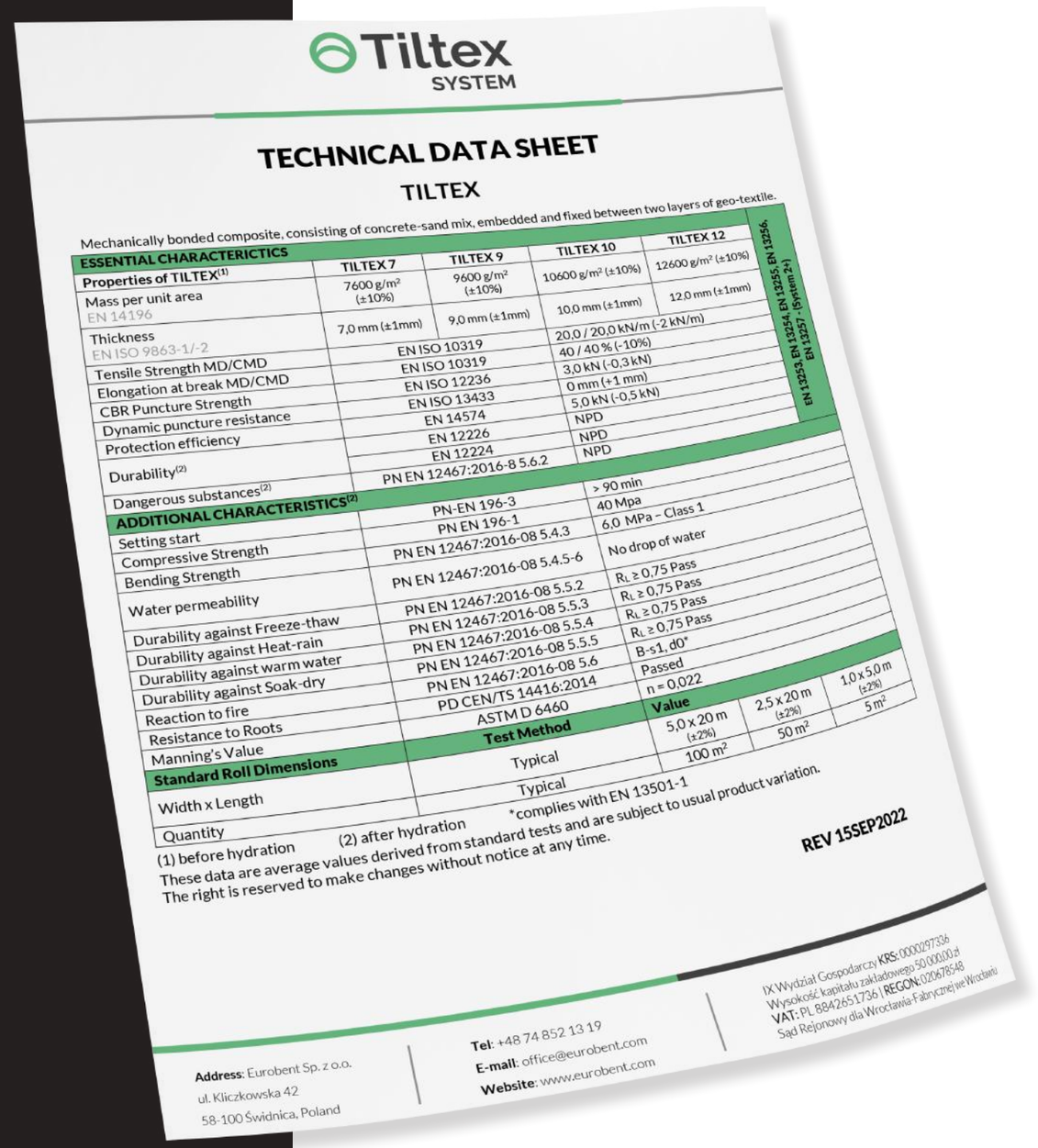
SLOPE STABILIZATION



TILTEX FEATURES:



- Depending on outside temperatures and the quantity of water used for hydration, TILTEX needs minimum 90 minutes to harden while full readiness for use is after 28 days.
- The composite has a high tensile strength, which prevents it from being damaged during installation - the minimum tensile strength, according to EN ISO10319
- Tiltex can be offered in two types of cement and sand mixes. Their compressive strengths are 40 MPa or 80 MPa respectively
- Before hydration it retains the elasticity of the geotextile and therefore adapts perfectly to the subgrade on site
- The composite is characterized by high puncture resistance, which guarantees a homogeneous concrete cover already at the installation stage, therefore a uniform coating after hydration is ensured. The minimum puncture resistance according to EN ISO 12236 is 3 kN
- TILTEX is non-flammable. Its reaction to fire class B-s1, d0 allows it to be used as fire insulation
- Its protection efficiency indicates that it can be used to protect geomembranes and beyond
- It is resistant to root penetration, so it can be a barrier to vegetation
- It has high puncture and tensile strengths still before hydration, so it guarantees safety in transport and during installation
- It is tested for freeze-thaw cycles and no change of properties have been observed, so temperatures do not affect its performance
- It has high abrasion resistance and will perfectly protect sensitive surfaces
- 50 year manufacturer's warranty
- Production in accordance with European standards: ISO 9001, ISO 14001
- Last but not least - the ease with which the required shapes and sizes can be adjusted, rearranged and cut on site, makes the installation extremely simple and smooth



Tiltex SYSTEM

TECHNICAL DATA SHEET

TILTEX

Mechanically bonded composite, consisting of concrete-sand mix, embedded and fixed between two layers of geo-textile.

ESSENTIAL CHARACTERICTICS					
Properties of TILTEX(1)	**TILTEX 7**	**TILTEX 9**	**TILTEX 10**	**TILTEX 12**	EN 13253, EN 13254, EN 13255, EN 13256, EN 13257 (System 2+)
Mass per unit area EN 14196	7600 g/m² (±10%)	9600 g/m² (±10%)	10600 g/m² (±10%)	12600 g/m² (±10%)	
Thickness EN ISO 9863-1/-2	7,0 mm (±1mm)	9,0 mm (±1mm)	10,0 mm (±1mm)	12,0 mm (±1mm)	
Tensile Strength MD/CMD	EN ISO 10319		20,0 / 20,0 kN/m (-2 kN/m)		
Elongation at break MD/CMD	EN ISO 10319		40 / 40 % (-10%)		
CBR Puncture Strength	EN ISO 12236		3,0 kN (-0,3 kN)		
Dynamic puncture resistance	EN ISO 13433		0 mm (+1 mm)		
Protection efficiency	EN 14574		5,0 kN (-0,5 kN)		
Durability(2)	EN 12226		NPD		
Dangerous substances(2)	EN 12224		NPD		
ADDITIONAL CHARACTERISTICS(2)	PN EN 12467:2016-8 5.6.2		NPD		
Setting start	PN-EN 196-3		> 90 min		
Compressive Strength	PN EN 196-1		40 Mpa		
Bending Strength	PN EN 12467:2016-08 5.4.3		6,0 MPa - Class 1		
Water permeability	PN EN 12467:2016-08 5.4.5-6		No drop of water		
Durability against Freeze-thaw	PN EN 12467:2016-08 5.5.2		$R_L \geq 0,75$ Pass		
Durability against Heat-rain	PN EN 12467:2016-08 5.5.3		$R_L \geq 0,75$ Pass		
Durability against warm water	PN EN 12467:2016-08 5.5.4		$R_L \geq 0,75$ Pass		
Durability against Soak-dry	PN EN 12467:2016-08 5.5.5		$R_L \geq 0,75$ Pass		
Reaction to fire	PN EN 12467:2016-08 5.6		B-s1, d0*		
Resistance to Roots	PN EN 14416:2014		Passed		
Manning's Value	PD CEN/TS 14416:2014		n = 0,022		
Standard Roll Dimensions	ASTM D 6460				
Width x Length	**Test Method**		**Value**		
Quantity	Typical		5,0 x 20 m (±2%)	2,5 x 20 m (±2%)	1,0 x 5,0 m (±2%)
	Typical		100 m²	50 m²	5 m²

(1) before hydration (2) after hydration *complies with EN 13501-1

These data are average values derived from standard tests and are subject to usual product variation.
The right is reserved to make changes without notice at any time.

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