

GeoGreen

Green Roof System

**"The Right Product for the Right Solution
In Green Roof Applications!"**



GeoGreen Green Roof System

What are the advantages of a Green Roof?



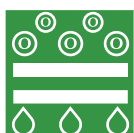
Retains the Rainwater

Green roofs use the rainwater to foster a green cover thus reducing the need for drainage. Such an arrangement reduces the load on waste water treatment network. A roof, which is densely planted to a height of 20 to 40 cm, has the capacity to retain water up to a height of 10 to 15 cm. This means that 10 to 15% of precipitation received in a residential area can be retained by green roof tops. In parallel to the increase in the thickness of the soil used, the capacity of the roof top to retain the precipitation received will increase.



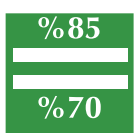
Prevents Air Pollution

Green Roofs hold between 200 g to 2 kg of dust on annual basis depending on the wind. On the basis of the measurements taken in areas in possession of green cover or not; the areas lacking green cover report to have 3 to 7 times more dust particles in the air.



Oxygen Production and Vapor Permeability

Green roofs improve the air quality and as such increase the ease of breathing. 1 square meter of grass roof top meets oxygen requirement of 4 people in summer months. As we include the nights and the months of winter in the equation we can confidently say that 1.5 square meter grass planted area is capable of producing oxygen to meet the requirements of one person per year. Moreover, the covers made up of green grass roof tops ensure that the humidity in the building increases thanks to their vapor permeability. This improves the life quality of the building residents and affects the threshold of heat perception positively.



Insulation and Weight

Green roof tops in their dry form provide heat insulation equivalent to the roofs made of rock wool. Thanks to its structure, which does not radiate heat with high insulation value, this type of roofing reduces urban heat island effect. The temperature of the roof surface is decreased contributing to the creation of cool environments. It is calculated that a green roof prevents the seeping of the outside temperature to the inside at the rate of 85% while the heat loss is reduced at the rate of 70%. It can be seen that green roofs help reduce the general costs by reducing the cooling and heating expenses.



Sound insulation

Green roofs absorb sound and reduce noise. Green roofs drop high decibel sound frequencies to below the noise threshold to provide silent spaces.



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Electromagnetic radiation

A green roof in a layer of 10 cm reduce is measured to reduce electromagnetic radiation up to 99%.



Greenhouse gases and heavy metals

Soil on the green roofs retains heavy metals and salt infiltrated into the rainwater from air. It is detected that metals such as copper, lead and cadmium are retained by 98% and zinc by 16% and removed from the rainwater.



Recycling and low energy

Green roofs are made of recycled materials. Low energy used to produce and implement them. Most of the time, manpower is sufficient.



Soil recovery

Green roofs ensure recovery of the vital soil lost during excavation for foundation. It creates green areas in the city, lending color to the urban life. It ensures contact of the buildings with nature, creating safe and healthy spaces.



Gaining from Area and Creating a New Image

Green roof tops provide the opportunity to utilize wide roof top space while enjoying means of sophisticated landscaping. In addition to the new uses provided in the wealth of design and aesthetic choices offered; this type of roofing is a beauty integrated with green.



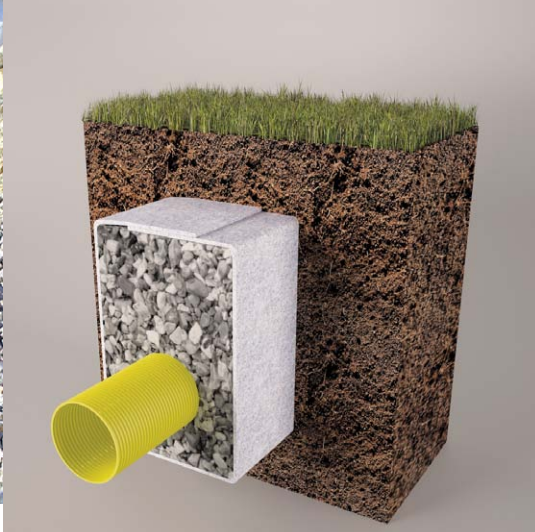
Protection of the Building

Green roofs protect the building against ultra violet lights and load bearing construction as well as protecting the roof against mechanical damage. In comparison to the -20 to +80 expansion range encountered in traditional roofs, a 10 cm thick green roof top narrows down the range for daily and seasonal temperature changes. The surface temperature remains between 10 to 30 degrees, exerting none of the ordinary contraction or expansion stress and as such material fatigue and brittleness would not be a concern. The useful life of the roof and the building will be extended. Renewal costs and operating expenses are reduced.



Fire

Green Roofs do not contain any inflammable substances. They do not conduct heat and are resistant to flames. Due to the reasons listed above this type of roofing has the highest level of safety against fires.



GeoTeknik Non-Woven Geotextile Filter

GeoTeknik Non-Woven PP Heat Treatment Filter Geotextile

GeoTeknik Filter is a non woven geotextile produced needle punching and thermally treated as to be filter material. **GeoTeknik** is producing short cut polyester or polypropylene staple fiber.

Fields Of Application

GeoTeknik Filter protects the system to avoid obstruction of the pores of drainage pipe, ditch or channel by fine material.

GeoTeknik Filter must be applied on ready surface tightly and properly in order to assure full surface contact without any flexion. GeoTeknik has to be overlap underneath the geotextile corner or edge minimum 25 cm to avoid sliding while backfilling process.

GeoTeknik Filter non woven geotextile material recommended as filtering and bedding material for effective control and direction of water is used at the following applications;

- At French drain ditches
- At green roof drainage
- At perforated pipe coatings
- At vertical applications such as tunnels and retaining walls
- At coastal structures

Advantages

GeoTeknik Filter geotextile material has below production properties;

- Manufactured from pure fiber.
- Tight processing and advanced production technology ensures that fibers are homogeneously distributed.
- The means for manufacturing up to a width of 6 m ensures an application with minimum overlap in large areas with savings on material and labor and fast application advantage.

Packaging And Storage

The materials are dispatched in the form of roils with 1 m - 6 m width and 100 m - 200 m length.

Technical Specifications

Weight		g/m ²	110
Thickness (at 2kPa)	TS EN ISO 9863-1	mm	0.90
Tensil Strength MD CMD	TS EN ISO 10319	kN/m	6 7
Elongation at Break (MD/CMD)	TS EN ISO 10319	%	50-80
Static Punching	TS EN ISO 12236	N	1200
Dynamic Punching	TS EN ISO 13433	mm	33
Permeability	TS EN ISO 11058	l/m ² s m/s	110 0.11
Visible Aperture Size	TS EN ISO 12956	mm	0.14

Roll Packing





TekDrain

Green Roof Drainage Boards

Areas of Use

- Building roofs
- Parking Lot roofs

Advantages

- It has a major role in building insulation.
- It provides significant savings in heating and air conditioning system costs and carbondioxide emissions of green building applications.
- Due to its plant layer, roof facade systems of the building are also protected against external factors.
- With multidimensional use of plant layer, it assists urban water management
- Green roof and facade systems that can hold a significant amount of rainwater assists in water treatment.

- Investment to green building systems also provides savings in operation and investment to canalization systems and water treatment systems.
- Green roof application is known to improve air quality as well.
- It diminishes the effects of sun rays that affect the building

Packaging and Storage

- Produced in 1 x 2 m plates.
- Stored horizontally.

Technical Specifications

	GF 1400	GF 1500	GF 1700
Compression Strength	TS EN ISO 25619-320 kN/m ²	TS EN ISO 25619-370 kN/m ²	TS EN ISO 25619-420 kN/m ²
Weight	1.4 kg/ m ²	1.5 kg/ m ²	1.7 kg/ m ²
Water Filled Weight	5.5 kg/ m ²	5.5 kg/ m ²	6.18 kg/ m ²
Roll Length	2 m	2 m	2 m
Roll Width	1 m	1 m	1 m
Water Holding Capacity	5 lt/m ²	5 lt/m ²	5 lt/m ²
Blister Height	25 mm	25 mm	25 mm
Water Flow rate	i=0,01 0,95 lt/(m.s) i=0,02 1,35 lt/(m.s) i=0,03 2,10 lt/(m.s)	i=0,01 0,95 lt/(m.s) i=0,02 1,35 lt/(m.s) i=0,03 2,10 lt/(m.s)	i=0,01 0,95 lt/(m.s) i=0,02 1,35 lt/(m.s) i=0,03 2,10 lt/(m.s)

Roll Packing





TekDrain Geo 10 400 Drainage Board

TekDrain Geo 10 400 has high drainage capacity by preventing blockage of waste gap around the blister with its integrated geotextile cover. Air gap between the blisters enables safe drainage of flowing water and protection of the structure. Drainage board has high compression strength and important technical specifications for tunnel and infrastructure applications.

TekDrain Geo 10 400 is preferred for sub roads, parking lots, bridges and garages for its high drainage performance

Technical Specifications

Plate Raw Material	HDPE
Geotextile Raw Material	PP
Plate Color	Black
Geotextile Color	Silver, Gray
Plate thickness	0.6 mm
Geotextile weight	136 g/m ²
Roll width	2.0 – 2.4 m
Roll Length	12.5 mm
Roll Weight	22.15 kg
Area Weight	750 g/m ²
Unit Weight	886 g/m ²
Blister Height	10 mm
Blister Gap	3,360 per m ²
Air gap between blisters	7.9 l/m ²
Drainage Capacity	4.8 l/sec/m
	288 l/min./m
	17,300 l/hrs/m
Geotextile Permeability	85 l/m2/sec
Compression Strength	400 kN/m2(40 t/m ²)
Application Temperature	+40° C to +80° C
Warnings	Prevent from potable water

Roll Packing





TekDrain GGF 20 Green Roof Drainage Boards

Areas of Use

- Building roofs
- Parking Lot roofs

Advantages

- It has a major role in building insulation.
- It provides significant savings in heating and air conditioning system costs and carbondioxide emissions of green building applications.
- Due to its plant layer, roof facade systems of the building are also protected against external factors.
- With multidimensional use of plant layer, it assists urban water management.
- Green roof and facade systems that can hold a significant amount of rainwater assists in water treatment.

- Investment to green building systems also provides savings in operation and investment to canalization systems and water treatment systems.
- Green roof application is known to improve air quality as well.
- It diminishes the effects of sun rays that affect the building

Packaging and Storage

- Produced in 2.5 x 1.2 m plates or 2 x 20 m rolls.
- Rolls are stored vertically while plates are stored horizontally.

Technical Specifications

Weight	1000 g/m ²
Plate Raw Material	HDPE
Plate Color	Black
Film thickness	1 mm
Roll Width	2.50 m
Plate Dimensions	2.5 x 1.2 m – 2 x 20 m
Blister height	20 mm
Plate Thickness	20 mm
Blister Gap	400 per m ²
Air gap between blisters	14 l/m ²
Drilling Diameter	5 mm
Compression Strength	200 kN/m ²
Application Temperature	+40° C to + 80° C
Water Flow Rate	Drainage rate of 1.2 l/sec.m ²
Heat Resistance	-30° C to + 80° C
Water holding capacity	7.00 l/m ²
Does not decompose under soil, CE certified	

Roll Packing





TekDrain GGF 20 150 Green Roof Drainage Boards

Areas of Use

- Building roofs
- Parking Lot roofs

Advantages

- It has a major role in building insulation.
- It provides significant savings in heating and air conditioning system costs and carbondioxide emissions of green building applications.
- Due to its plant layer, roof facade systems of the building are also protected against external factors.
- With multidimensional use of plant layer, it assists urban water management.
- Green roof and facade systems that can hold a significant amount of rainwater assists in water treatment.

- Investment to green building systems also provides savings in operation and investment to canalization systems and water treatment systems.
- Green roof application is known to improve air quality as well.
- It diminishes the effects of sun rays that affect the building

Packaging and Storage

- Produced in 2.5 x 1.2 m plates or 2 x 20 m rolls.
- Rolls are stored vertically while plates are stored horizontally.

Technical Specifications

Weight	800 g/m ²
Plate Raw Material	HDPE
Plate Color	Black
Film thickness	0,9 mm
Roll Width	2.50 m
Plate Dimensions	2.5 x 1.2 m – 2 x 20 m
Blister height	20 mm
Plate Thickness	20 mm
Blister Gap	400 per m ²
Air gap between blisters	14 l/m ²
Drilling Diameter	5 mm
Compression Strength	150 kN/m ²
Application Temperature	+40° C to + 80° C
Water Flow Rate	Drainage rate of 1.2 l/sec.m ²
Heat Resistance	-30° C to + 80° C
Water holding capacity	7.00 l/m ²
Does not decompose under soil, CE certified	

Roll Packing





TekDrain TekDrain GF 40

After İzoTeknik 5000 is laid over the root retainer folio, **TekDrain GF 40** is applied on top of these two layers. Spaces on **TekDrain GF 40** which serve to store water are filled with light drainage stones. Following this operation GeoTeknik 1100 is laid over **TekDrain GF 40**. The main purpose of this is to allow the plant roots reach the main water reservoir by going through the thin layers. Excess of rain water is directed to the parapet by the openings on **TekDrain GF 40** from where they are discharged.

TekDrain GF 40 is preferred in green roof applications since it is a durable product made of HDPE polyethylene. By means of its water retaining capacity in its reservoir, it helps plants grow without requiring any extra watering expense.

TekDrain GF 40 is delivered in plates of 3.90 x 0.92 m size.

Technical Specifications

Thickness at 2kPa	43 mm	EN ISO 9863-1
Tensile Strength (MD/CD)	31/26 kN/m	EN ISO 10319
Elongation (MD/CD)	% 35/30	EN ISO 10319
Water reservoir volume	14 L/m ²	
Mass/Unit Area (dry)	2.200 gr/m ²	EN ISO 9864
Mass/Unit Area (saturated)	16.200 gr/m ²	EN ISO 9864
Life Expectancy	120 years in pH 4 to 9 25°C	
Chemical Resistance	Excellent resistance to common chemicals	EN 14030
Resistance to microbes	No significant effect	EN 12225
Waterproofing Compability water	Fully compatible. All components compatible with protable	
Health, safety and environment	INERT. No known health hazard. No precautions necessary	

Roll Packing





TekDrain

TekDrain GF 60

After İzoTeknik 5000 is laid over the root retainer folio, **TekDrain GF 60** is applied on top of these two layers. Spaces on **TekDrain GF 60** which serve to store water are filled with light drainage stones. Following this operation GeoTeknik 1100 is laid over **TekDrain GF 60**. The main purpose of this is to allow the plant roots reach the main water reservoir by going through the thin layers. Excess of rain water is directed to the parapet by the openings on **TekDrain GF 60** from where they are discharged.

TekDrain GF 60 is preferred in green roof applications since it is a durable product made of HDPE polyethylene. By means of its water retaining capacity in its reservoir, it helps plants grow without requiring any extra watering expense.

TekDrain GF 60 is delivered in plates of 3.90 x 0.92 m size.

Technical Specifications

Thickness at 2kPa	60 mm	EN ISO 9863-1
Tensile Strength (MD/CD)	20 kN/m	EN ISO 10319
Elongation (MD/CD)	% 50	EN ISO 10319
Water reservoir volume	23 L/m ²	
Water reservoir volume [saturated]	11 L/m ²	
Mass/Unit Area (dry)	2.200 gr/m ²	EN ISO 9864
Mass/Unit Area (saturated)	26.000 gr/m ²	EN ISO 9864
Life Expectancy	120 years in pH 4 to 9 25° C	
Chemical Resistance	Excellent resistance to common chemicals	EN 14030
Resistance to microbes	No significant effect	EN 12225
Waterproofing Compability water	Fully compatible. All components compatible with protable	
Health, safety and environment	INERT. No known health hazard. No precautions necessary	

Roll Packing





IzoTeknik Non-Woven Geotextile Protector

IzoTeknik 5000 Protector and Moisture Keeper

IzoTeknik Protector is a nonwoven textile product produced in dark color by method of needling of pure polypropylene much thinner than millimeter or pure polyester based fibers as filtration material.

Fields Of Application And Usage

- It is used on thermal insulating boards for terrace roof applications thanks to its highpuncture resistance, protecting the underlying materials against impacts and allowing different operation of the materials and preventing flow of cement grout downward.
- It is used on the building foundations to preserve water insulation applications thanks to its pressure distribution effect.
- It protects the geo-membranes used on open lands against any tear or impairment arising from puncture and excessive friction.

- It is brought on the treated surface in roll and should be spread on the stretch for complete contact with the surface. In order to prevent slippage of the geotextile during the filling process, it should be applied below the previous geotextile with an overlap of 25 cm minimum.

Advantages

- It is produced by use of pure fiber.
- It has such a structure as to ensure homogenous distribution of the fibers thanks to frequent needling and superior production technology.
- Quick application advantage with minimum overlapping and labor saving over large areas thanks to production up to 6 m in width.

Packaging And Storage

Materials are shipped in rolls, 1 – 6m in width and 30 – 100 m in length.

Technical Specifications

Weight		g/m ²	500
Thickness (at 2kPa)	TS EN ISO 9863-1	mm	3.2
Tensil Strength MD CMD	TS EN ISO 10319	kN/m	17 19
Elongation at Break (MD/CMD)	TS EN ISO 10319	%	50-80
Static Punching	TS EN ISO 12236	N	3000
Dynamic Punching	TS EN ISO 13433	mm	16
Permeability	TS EN ISO 11058	l/m ² s m/s	40 0.040
Visible Aperture Size	TS EN ISO 12956	mm	0.14

Roll Packing





IzoTeknik Non-Woven Geotextile Protector

IzoTeknik 6500 Protector and Moisture Keeper

IzoTeknik Protector is a nonwoven textile product produced in dark color by method of needling of pure polypropylene much thinner than millimeter or pure polyester based fibers as filtration material.

Fields Of Application And Usage

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- Quick application advantage with minimum overlapping and labor saving over large areas thanks to production up to 6 m in width.

Packaging And Storage

Materials are shipped in rolls, 1 – 6m in width and 30 – 100 m in length.

Technical Specifications

Weight	TS EN ISO 9864	g/m ²	650
Thickness (at 2kPa)	TS EN ISO 9863-1	mm	4.2
Tensil Strength MD CMD	TS EN ISO 10319	kN/m	21 24
Elongation at Break (MD/CMD)	TS EN ISO 10319	%	50-80
Static Punching	TS EN ISO 12236	N	4200
Dynamic Punching	TS EN ISO 13433	mm	9
Permeability	TS EN ISO 11058	l/m ² s	22
		m/s	0.022
Visible Aperture Size	TS EN ISO 12956	mm	0.09

Roll Packing





TrioTex Breathing Membranes as Facade Underlays

Areas of Use and Application

Underlay should be laid by being stretched with at least 10 cm overlapping and overlaps should be sealed with recommended adhesive tape. Overlapping width can vary according to vertical and horizontal applications for roof and facade. The edges of underlay and other surface should be sealed with mastic or butyl tapes. If the product is not PLUS type, TrioTex DS 38 double side acryl tape should be applied to underlay overlaps in between or TrioTex SP UNI one side acryl tape should be applied to the overlaps top. TrioTex SP UNI is also used as repairing tape for small damage or rips and sealing for connection to brackets, ventilation shafts with short term UV resistance.

Rolls have a physical surface of 75 m² and area to be covered is 70 m² at ideal conditions.

The surface of product should be protected from dust and water once it is unpacked. Application of adhesives such as tapes and mastic requires clean surfaces. Underlay should be covered against sunlight in maximum 4 months. "TrioTex Roof and Facade Solutions" should be reviewed for details. It is an element of system on heat insulated walls in mechanical cladding facade and siding applications

Advantages

- Effectively transmits the moisture out that is contained in the building by its breathing property.
- Increases efficiency of the cold and warm air in the building by means of its wind barrier effect. It also protects heat insulation against erosion caused by wind and air ventilation.
- It is completely water proof. It protects the outer surface of heat insulation from external rain and snow.
- Based on the results of aging tests, it is a durable and long-life product against UV and temperature changes which the building is exposed to.
- High strength, possibility to use for a long period of time after a single application and heat loss prevention properties make TrioTex an environment friendly product.
- It is equipped with a coating that prevents disturbing reflections.

Packaging and Storage

It is delivered in rolls in polyethylene packaging. Roll dimensions: 1.5 x 50 m
Rolls should be kept on a clean surface in the storage facility either vertically or horizontally protected from sunlight.

Technical Specifications

(EN 13859-1;2)			F90	120
Mass per unit area	EN 1849-2	g/m ²	92	112
Roll weight		kg	7.5	9
Reaction to fire	EN 13501 EN 11925-2	Class	E	E
Resistance to water penetration	EN 1928 EN 13111	Class	W1	W1
Water vapour transmission properties (Sd)	EN 12572 EN 1931	m	0.02	0.02
Maximum tensile force MD / CMD	EN 12311-1 EN 13859-1, 2	N/50mm	220/125	250/165
Elongation at max. tensile force MD / CMD	EN 12311-1 EN 13859-1, 2	%	50/70	50/70
Resistance to tearing MD / CMD	EN 12310-1 EN 13859-1, 2	N	80/90	115/135
Dimensional stability	EN 1107-2	%	< 2	< 2
Flexibility at low temperature	EN 1109 EN 495-5	°C	-20	-20
Resistance to penetration of air	EN 12114 EN 13859-1, 2	m ³ /m ² .h.50Pa	<0.02	<0.02
Working Temperature		C°	-40 /+80	-40 /+80
Water Column	EN 20811	cm	>150	>200
Change after artificial ageing				
Resistance to water penetration	EN 1297	Class	W1	W1
Max. Tensile Force	EN 13859-1, 2	%	< 20	< 20
Elongation at max. tensile force	Annex C	%	< 35	< 35



TS EN 13859-1
14.4.41.0.00.00/TSE-65164

Roll Packing





TekDrain Root Inhibitive Foil

TekDrain HDPE Polyethylene Based Root Retaining Folio

TekDrain Folio is manufactured of low density polyethylene creating a resilient cover in black or other color, against plant roots.

Areas Of Usage And Advantages

It is a multi-purpose material that is used to prevent any damage to the insulation of green roofs caused by plant and tree roots. Furthermore, it can be used as a layer between two concrete sections to prevent the vapor permeability.

The rolls must be laid down with an overlap of 1.5 meters.

- Prevents any damage that may be caused by plant roots to the insulation.
- Can be used between two concrete layers preventing the humidity and vapor from underneath to penetrate the structure above.

Packaging And Storage

- Manufactured in 5 - 8 x 25 m rolls
- Must be stored in vertical position.

Technical Specifications

Weight	TS EN ISO 9864	gr/m ²	380
Thickness	TS EN ISO 9863-1	µm	400
Density	EN ISO 1183-1/A	g/cm ³	0,935
Tensile strength at 20°C at 120°C	EN ISO 527-3	N/mm ²	40-45 20-25
Elongation at break	EN ISO 527-3	%	>400
Sd (Permeability of water vapour)	EN 1931	m	>200
Kd (coefficient of sliding friction)			0,29
Dimension			5mx30m
Colour			Transparent or black
Raw material			LDPE

Roll Packing

