



**TECHNICOL**

**PREMIUM**



HIGH STRENGTH



HIGH DURABILITY



QUALITY GUARANTEE



HIGH MAINTAINABILITY



ALL-SEASON INSTALLATION



FAST INSTALLATION

# CATALOG

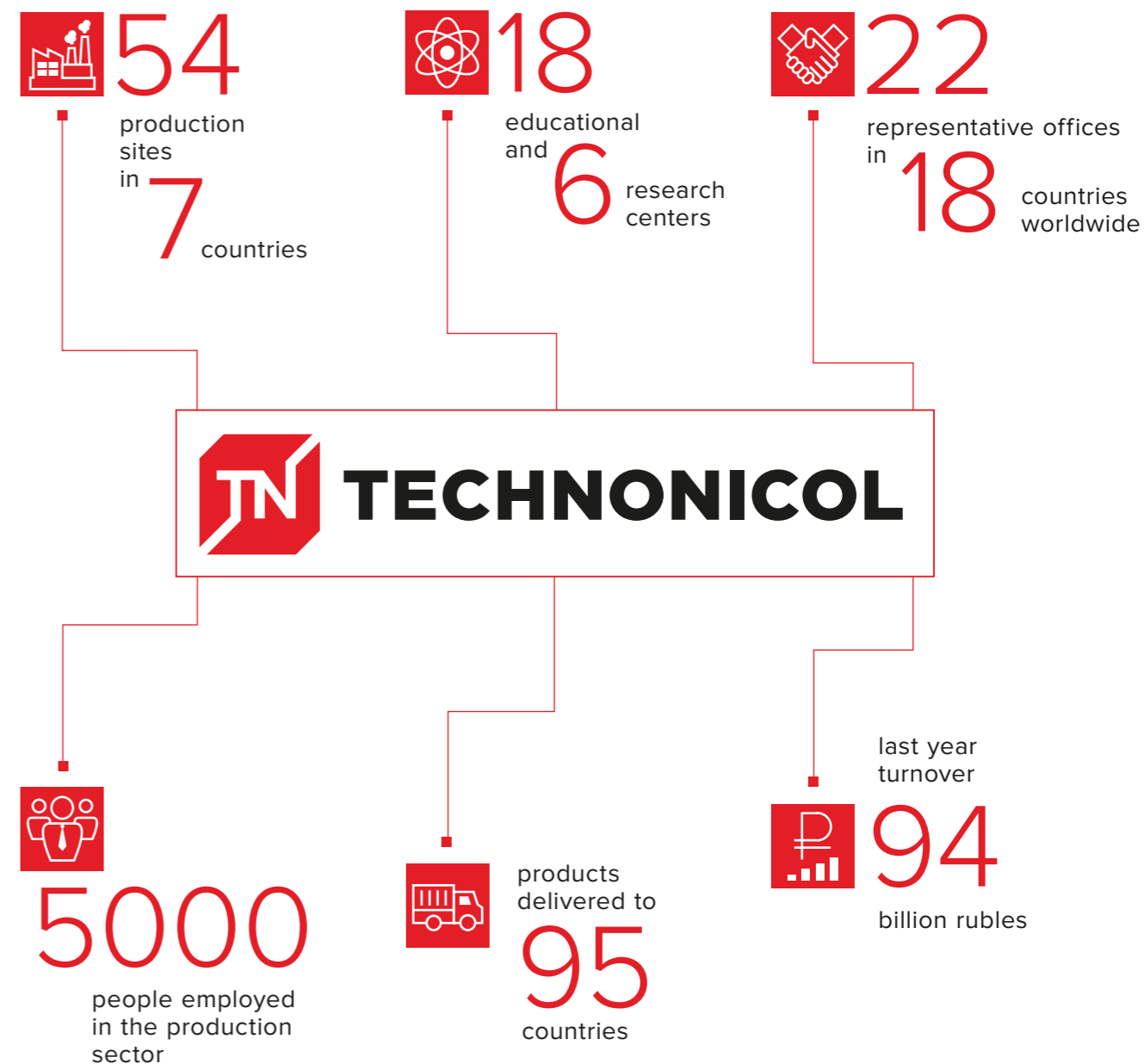
Polymeric Membranes, Dimpled Membranes and  
LOGICPIR Thermal Insulation Boards

# About Our Company

The company brings innovative products to the market, which combine cutting edge international experience with the solutions we have found in our own research centers. Collaboration with design institutions, architectural studios, developers, builders, and private homeowners enables TECHNOMICOL to react quickly and flexibly to ever-changing consumer demands.

Presently TECHNOMICOL Corporation encompasses fifty-four production sites in seven countries worldwide (including Russia, Belarus, Lithuania, and Germany), eighteen educational centers, six research centers, and twenty-two representative offices in eighteen countries. The company exports its materials to ninety five countries worldwide. TECHNOMICOL has headquarters in Russia, Poland, Italy, China, and India.

# TECHNOMICOL Corporation in Figures



# TECHNONICOL Polymeric Membranes

The LOGICROOF, LOGICBASE, and ECOPLAST polymeric membranes manufactured by TECHNONICOL are modern waterproofing and roofing materials, which bring a revolutionary approach to roofing and waterproofing technology. The membranes are manufactured from high quality plasticized polyvinylchloride (PVC-P).

The unique composition of the membranes includes the latest generation of plasticizers and additives, which ensure the roofing and waterproofing materials' long-term durability. TECHNONICOL's polymeric membranes retain their elasticity across a broad temperature range, are UV resistant, and also resist harsh environmental conditions. In comparison with common materials, TECHNONICOL membranes feature a wider band, which makes it possible to choose an optimal size roll for any roof layout. It helps to minimize the number of seams on the waterproofing covering.

LOGICROOF, LOGICBASE, and ECOPLAST PVC membranes are manufactured in Russia's first integrated production facility using the latest extrusion technology. This technology makes it possible to produce a material with a homogeneous

structure. It provides the highest quality and durability for roofing and underground waterproofing systems.

The outstanding quality of the LOGICROOF, LOGICBASE, and ECOPLAST membranes' has been acknowledged not only by leading Russian and European certifying bodies, but also through the positive experience of their successful implementation into over 90 million square meters of roofs on commercial buildings across all over the World. LOGICROOF, LOGICBASE, and ECOPLAST's production lines offer membranes ranging in thickness from 1.2 to 2.4 mm.

It is especially effective and economically efficient to use the membranes for covering and waterproofing large sized commercial roofs, where quality and mounting speed are critical for the consumer.



# Main Advantages

Polymeric membranes made of plasticized polyvinylchloride (PVC-P) have been used to waterproof roofs since the 1960s. The material is produced using the world's most advanced extrusion technology, and serves as a modern roof coat, whose longevity and durability have been proven by its many years of application and operation.



ALL-SEASON INSTALLATION



RESISTANCE TO MICROORGANISMS



FIRE SAFETY



DURABILITY



HIGH PERFORMANCE



HIGH STRENGTH



HIGH MOUNTING SPEED



HIGH FLEXIBILITY



VAPOR PERMEABILITY



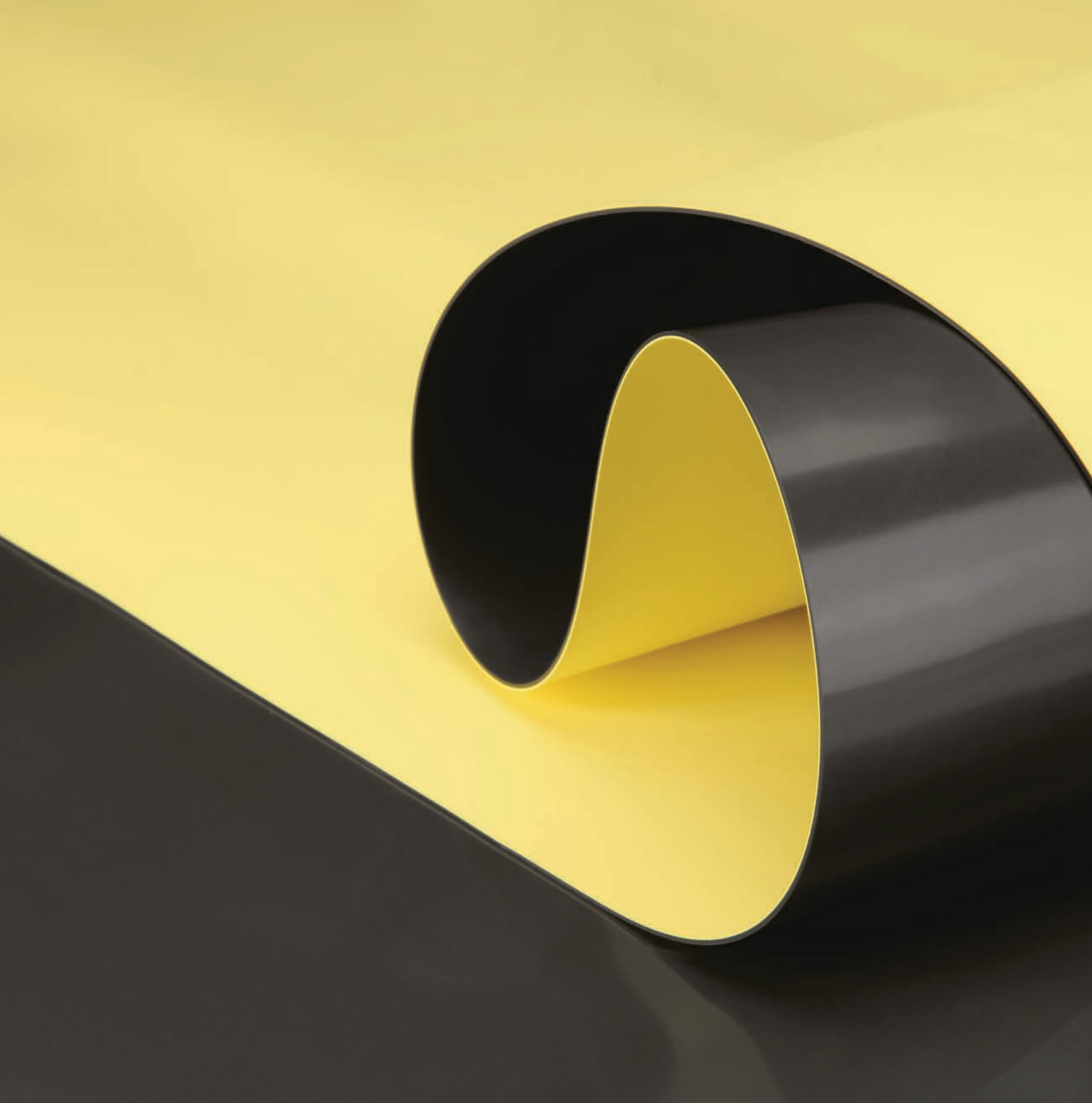
RESISTANCE TO ROOT PENETRATION



ARCHITECTURAL EXPRESSIVENESS



HIGH CHEMICAL STABILITY



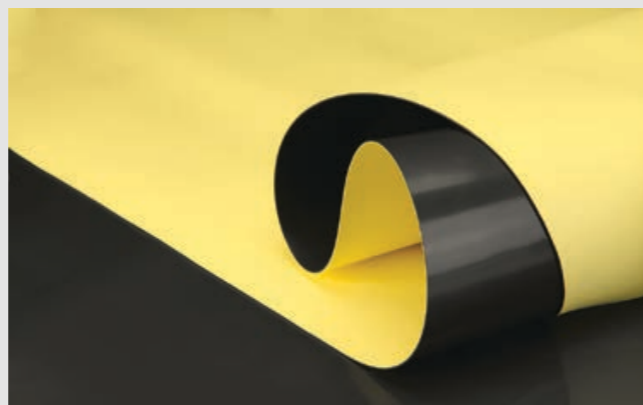
**Membranes  
for Underground  
Waterproofing**



# LOGICBASE V-SL

## Synthetic waterproofing membrane

1.5 mm 2.0 mm



LOGICBASE V-SL is a homogenous, unreinforced synthetic membrane. It is produced by co-extrusion process from polyvinylchloride (PVC-P), plasticizers, and additives. One side of the membrane is yellow, and the other side is black. The yellow signal layer allows for the detection of any damages to the waterproofing that may occur during the process of construction. The product is not UV-resistant.

### General physical and mechanical properties

Property	LOGICBASE V-SL 1.5 mm	LOGICBASE V-SL 2.0 mm
Mass per unit area, kg/m <sup>2</sup>	2.00	2.70
Tensile strength, MPa	≥16	≥16
Elongation, %	≥350	≥350
Tear resistance, N	≥350	≥450
Joint strength, N/50mm	≥600	≥600
Watertightness, 1.0 MPa for 24 hours	Pass	Pass
Resistance to static load, kg	20	20
Resistance to impact on solid base, mm	≥700	≥1400
Cold bending, °C	-35	-35
Reaction to fire	Class E	Class E

### Dimensions

Property	Value
Length of a roll, m	20
Width of a roll, m	2.05

### Application area

The material is designed for waterproofing underground structures and tunnels.

### Storage

Rolls should be stored horizontally in a dry, enclosed space. They should be stacked no more than three rows high, and should be kept in their original packaging.

### Transportation

Transport covered, on pellets, and horizontally. Stack no more than three rows high.

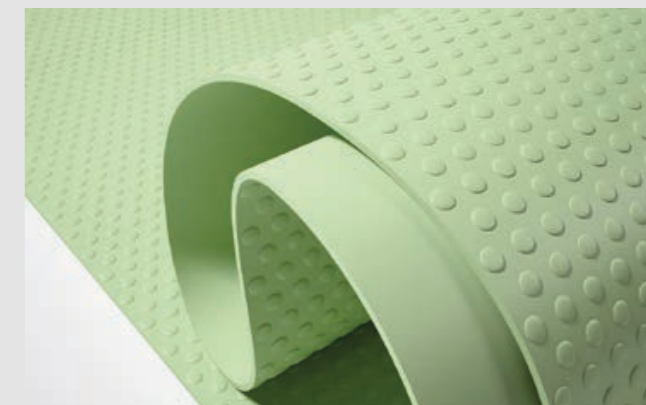
### Package

The synthetic membranes are delivered on wooden pallets. Every roll is wrapped in non-transparent, polyethylene film, which protects them from UV radiation.

# LOGICBASE V-ST

## Synthetic waterproofing membrane

1.6 mm



LOGICBASE V-ST is a homogenous, unreinforced synthetic membrane. It is produced by co-extrusion process from polyvinylchloride (PVC-P), plasticizers, and additives. The color of the membrane is light green. The upper surface is smooth, and the lower surface has 0.2 mm studs. The studs make it possible to vacuum test the waterproofing system's integrity. The product is not UV-resistant.

### General physical and mechanical properties

Property	LOGICBASE V-ST 1.6 mm
Mass per unit area, kg/m <sup>2</sup>	2.1
Tensile strength, MPa	
Longitudinal	≥14
Transversal	≥11
Elongation, %	≥300
Tear resistance, N	≥300
Watertightness, 1 MPa for 24 hours	Pass
Resistance to static loading, kg	≥ 20
Resistance to impact on solid base, mm	≥700
Joint strength, N/50mm	≥700
Cold bending, °C	-30°C
Reaction to fire	Class E

### Dimensions

Property	Value
Length of a roll, m	20
Width of a roll, m	2.05

### Application area

The material is designed for two-layer waterproofing systems of underground structures and tunnels. It is used as a second layer in waterproofing systems based on LOGICBASE V-SL synthetic membranes.

### Storage

Rolls should be stored horizontally in a dry, enclosed space. They should be stacked no more than three rows high, and should be kept in their original packaging.

### Transportation

Transport covered, on pellets, and horizontally. Stack no more than three rows high.

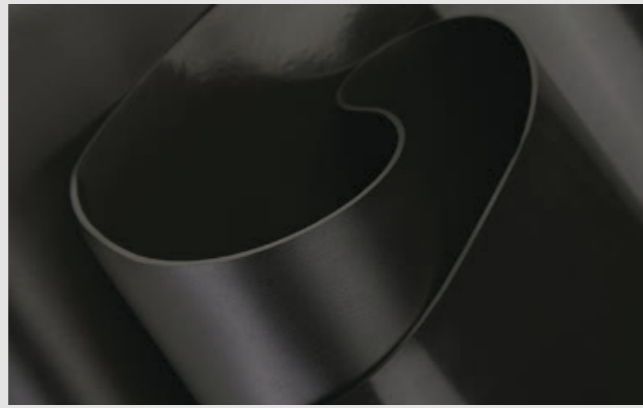
### Package

The synthetic membranes are delivered on wooden pallets. Every roll is wrapped in non-transparent, polyethylene film, which protects them from UV radiation.

# LOGICBASE V-PT

## Synthetic waterproofing membrane

1.5 and 2.0 mm



LOGICBASE V-PT is a homogenous, unreinforced synthetic membrane. It is produced by co-extrusion process from polyvinylchloride (PVC-P), plasticizers, and additives. The color of the membrane is black. The product is not UV-resistant.

### General physical and mechanical properties

Property	LOGICBASE V-PT 1.5 mm	LOGICBASE V-PT 2.0 mm
Mass per unit area, kg/m <sup>2</sup>	2.0	2.7
Tensile strength, N/mm <sup>2</sup>		
Longitudinal	≥12	≥12
Transversal	≥10	≥10
Elongation, %	≥200	≥200
Watertightness, 1 MPa for 24 hours	Pass	Pass
Resistance to static load, kg	≥ 20	≥ 20
Resistance to impact on solid base, mm	≥700	≥1400
Cold bending, °C	-20	-20

### Dimensions

Property	1.5	2.0
Thickness, mm	1.5	2.0
Roll width × length, m	2.05×20	2.05×20
Number of rolls on a pallet, pcs.	18	15

### Application area

The membrane is used as a protective layer of PVC membrane based waterproofing systems.

### Storage

Rolls should be stored horizontally in a dry, enclosed space. They should be stacked no more than three rows high, and should be kept in their original packaging.

### Transportation

Transport covered, on pellets, and horizontally. Stack no more than three rows high.

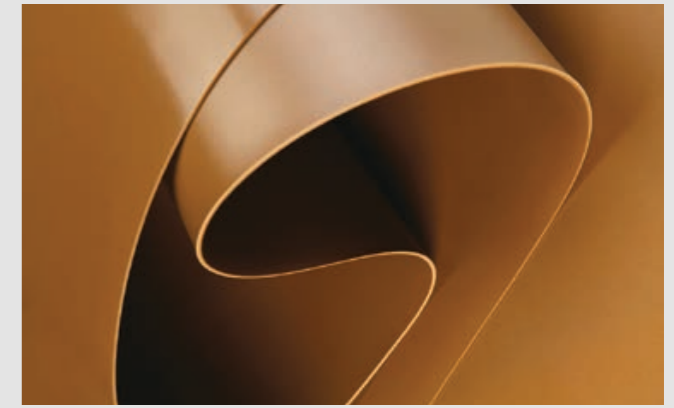
### Package

The synthetic membranes are delivered on wooden pallets. Every roll is wrapped in non-transparent, polyethylene film, which protects them from UV radiation.

# ECOBASE V

## Synthetic waterproofing membrane

1.5 mm



ECOBASE V 1.5 mm is a homogenous, unreinforced synthetic membrane. It is produced by co-extrusion process from polyvinylchloride (PVC-P), plasticizers, and additives. Standard colors: black, brown. Other colors available upon request.

### General physical and mechanical properties

Property	LOGICBASE V 1.5 mm
Mass per unit area, kg/m <sup>2</sup>	2.0
Tensile strength, MPa	
Longitudinal	≥12
Transversal	≥10
Elongation, %	≥200
Watertightness, 1 MPa for 24 hours	Pass
Resistance to static load, kg	≥20
Resistance to impact on solid base, mm	≥700
Cold bending, °C	≤ -25

### Dimensions

Property	Value
Length of a roll, m	20
Width of a roll, m	2.05

### Application area

The material is designed for waterproofing underground structures, as well as artificial lakes, ponds, etc.

### Storage

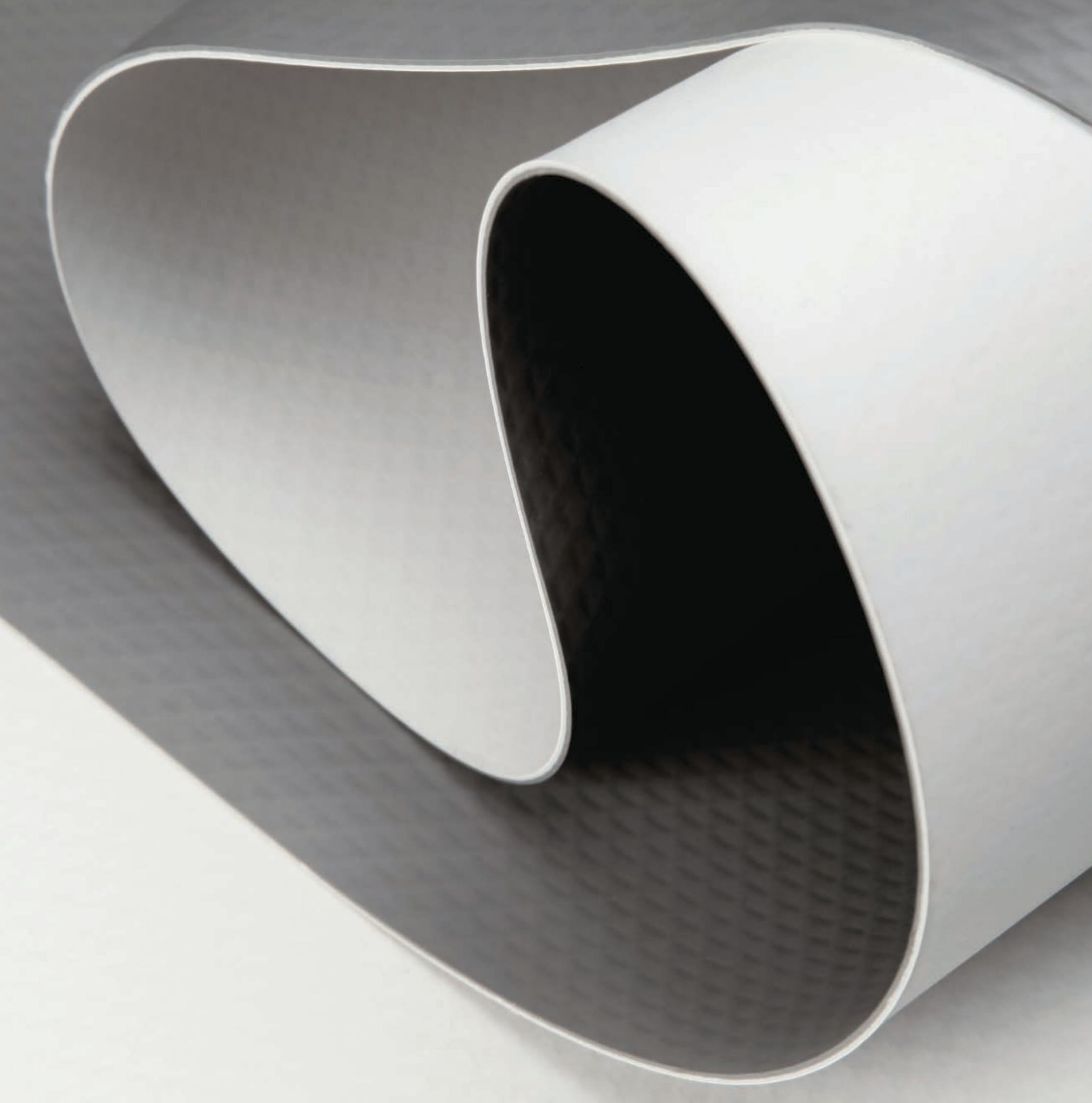
Rolls should be stored horizontally in a dry, enclosed space. They should be stacked no more than three rows high, and should be kept in their original packaging.

### Transportation

Transport covered, on pellets, and horizontally. Stack no more than three rows high.

### Package

The synthetic membranes are delivered on wooden pallets. Every roll is wrapped in non-transparent, polyethylene film, which protects them from UV radiation.

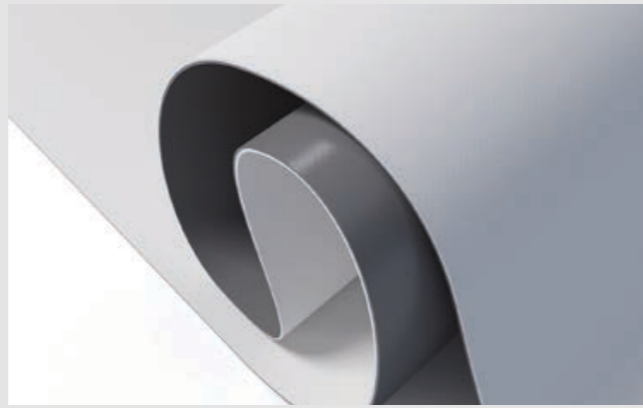


## Roofing Membranes

# LOGICROOF V-RP

## PVC membrane

1.2 mm 1.5 mm 1.8 mm 2.0 mm



LOGICROOF V-RP is a roofing synthetic membrane based on the high-quality plasticized polyvinyl chloride (PVC-P). Stabilized against UV radiation using TRI-P® system. Contains fire retardants and special stabilizers. Its increased elasticity makes it easy to lay, even at low temperatures. The material reinforced with polyester mesh.

### General physical and mechanical properties

Characteristics	LOGICROOF V-RP
External fire performance	B <sub>ROOF</sub> (t1), B <sub>ROOF</sub> (t2), B <sub>ROOF</sub> (t3)
Reaction to fire	Class E
Effective thickness, mm	1.2(-0/+10%); 1.5/1.8/2.0 (-5/+10%)
Mass per unit area, kg/m <sup>2</sup>	1.5/1.8/2.2/2.7
Tensile strength, longitudinal/transversal, N/50 mm	≥ 1100/≥ 900
Elongation, %	≥ 19
Water tightness 10 kPa during 24 heures	0
Foldability at low temperature, °C	≤ -35
Resistance to impact, rigid sub./soft sub., mm	≥ 600 (700) / ≥ 1400 (1800)
UV exposure, h	≥ 5000

\* by request

### Dimensions

Property	1.2	1.5	1.8	2.0
Length of a roll, m	2.10	2.10	2.10	2.10
Width of a roll, m	25	20	15	15

### Application method

The waterproof roofing sheet is installed with mechanically fastened seam overlaps. Overlap seams are welded using electric, hot welding equipment, such as manual hot air welders and pressure rollers or automatic hot air welders with hot air temperature control. (Recommended equipment: LEISTER TRIAC for manual welding and LEISTER VARIMAT for automatic welding).

### General features

- Outstanding resistance to weather, including permanent UV radiation;
- Wind load resistant;
- High resistance to impact and puncture;
- High tensile strength;
- Retains excellent flexibility in cold temperatures;
- High water vapor permeability;
- Outstanding weldability;
- Recyclable.

### Application area

The material is designed for single-ply, mechanical fastening to an exposed flat roof surface.

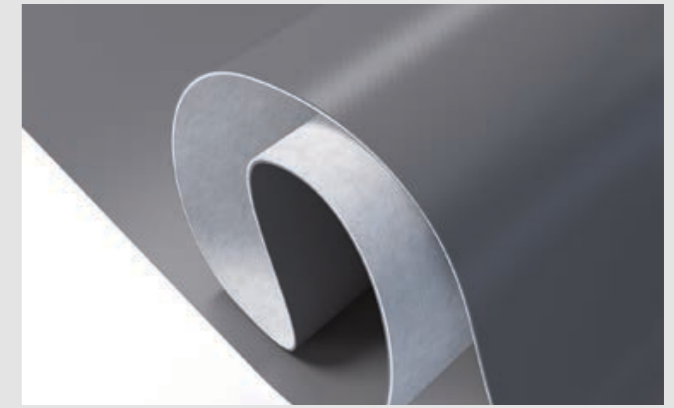
### Colour range

Light grey, dark grey, red, green, blue, white.

# LOGICROOF V-RP FB

## PVC membrane

1.2 mm 1.5 mm 1.8 mm



LOGICROOF V-RP FB is a polyester reinforced multi-layer fleece-backed synthetic waterproofing sheet for roofs. It is produced by co-extrusion process from premium quality, plasticized polyvinyl chloride (PVC-P). The light, upper layer provides very high resistance to weather and UV rays, while the under layer of the membrane is laminated, geotextile fleece. The geotextile simultaneously provides a separating layer and a surface for the application of an adhesive. All rolls have a fleece-free selvage, which allows the sheets to be hot air welded.

### General physical and mechanical properties

Characteristics	LOGICROOF V-RP FB
Reaction to fire	Class E
Effective thickness, mm	1.2(-0/+10%); 1.5/1.8 (-5/+10%)
Mass per unit area, kg/m <sup>2</sup>	1.6/1.9/2.3
Fleece, g/m <sup>2</sup>	≥100
Tensile strength, longitudinal/transversal, N/50 mm	≥ 1100/≥ 900
Elongation, %	≥ 15
Water tightness 10 kPa during 24 heures	0
Foldability at low temperature, °C	≤ -35
Resistance to impact, rigid sub./soft sub., mm	≥ 400/≥ 1500
UV exposure, h	≥ 5000

\* by request

### Dimensions

Property	1.2	1.5	1.8
Length of a roll, m	2.10	2.10	2.10
Width of a roll, m	20	20	15

### Application method

The waterproof roof sheets are attached to the thermal insulation PIR or roof deck by applying an on-site liquid adhesive. Overlap seams are welded with electric hot welding equipment, such as a manual hot air welder and pressure rollers or an automatic hot welder with hot air temperature control. (Recommended equipment: LEISTER TRIAC for manual welding and LEISTER VARIMAT for automatic welding).

### General features

- Outstanding resistance to weather, including permanent UV radiation;
- Wind load resistant;
- High resistance to impact and puncture;
- High tensile strength;
- Retains excellent flexibility in cold temperatures;
- High water vapor permeability;
- Outstanding weldability;
- Recyclable.

### Application area

The material is designed for single-ply full and partial adherence to exposed flat roofs.



# LOGICROOF V-GR

## PVC membrane

1.2 mm 1.5 mm 1.8 mm 2.0 mm 2.4 mm



LOGICROOF V-GR is a fiberglass reinforced multi-layer synthetic waterproofing sheet for roofs. It is produced by co-extrusion process from premium quality, plasticized polyvinyl chloride (PVC-P). The light, upper layer provides very high resistance to weather and UV rays.

### General physical and mechanical properties

Characteristics	LOGICROOF V-GR
Reaction to fire	Class E
Effective thickness, mm	1.2/1.5/1.8/2.0/2.4 (-5/+10%)
Mass per unit area, kg/m <sup>2</sup>	1.3/1.6/1.9/2.3/2.8
Tensile strength, longitudinal/transversal, N/50 mm	≥ 800/≥ 600
Elongation, %	≥ 200
Water tightness 10 kPa during 24 heures	0
Foldability at low temperature, °C	≤ -25
Resistance to impact, rigid sub./soft sub., mm	≥ 600 (700) / ≥ 1400 (1800)
UV exposure, h	≥ 5000

\* by request

### Dimensions

Property	1.2	1.5	1.8	2.0	2.4
Length of a roll, m	2.05	2.05	2.05	2.05	2.05
Width of a roll, m	25	20	15	15	15

### General features

- Outstanding resistance to weather, including permanent UV radiation;
- Wind load resistant;
- High resistance to impact and puncture;
- High tensile strength;
- Retains excellent flexibility in cold temperatures;
- High water vapor permeability;
- Outstanding weldability;
- Recyclable.

### Application area

The material is designed for single-ply application to ballasted roofs.

### Application method

The waterproof sheets are loose laid. Overlap seams are welded with electric hot welding equipment, such as a manual hot air welder and pressure rollers or an automatic hot welder with hot air temperature control. (Recommended equipment: LEISTER TRIAC for manual welding and LEISTER VARIMAT for automatic welding.) Finally, they are ballasted with gravel or paving slabs.

# LOGICROOF V-GR FB

## PVC membrane

1.5 mm 1.8 mm 2.0 mm



LOGICROOF V-GR FB is a fiberglass reinforced multi-layer fleece-backed synthetic waterproofing sheet for roofs. It is produced by co-extrusion process from premium quality, plasticized polyvinyl chloride (PVC-P). The light, upper layer provides very high resistance to weather and UV rays, while the bottom layer of the membrane is laminated with geotextile fleece. The geotextile simultaneously provides a separating layer and a surface for the application of an adhesive. All rolls have a fleece-free selvage, which allows the sheets to be hot air welded. Comes available with a non-slip top surface.

### General physical and mechanical properties

Characteristics	LOGICROOF V-GR
Reaction to fire	Class E
Effective thickness, mm	1.5/1.8/2.0 (-5/+10%)
Mass per unit area, kg/m <sup>2</sup>	1.6/1.9/2.3
Fleece, g/m <sup>2</sup>	≥100; ≥200*
Tensile strength, longitudinal/transversal, N/50 mm	≥ 800/≥ 600
Elongation, %	≥ 200
Water tightness 10 kPa during 24 heures	0
Foldability at low temperature, °C	≤ -25
Resistance to impact, rigid sub./soft sub., mm	≥ 600 (700) / ≥ 1400 (1800)
UV exposure, h	≥ 5000

\* by request

### Dimensions

Property	1.5	1.8	2.0
Length of a roll, m	2.05	2.05	2.05
Width of a roll, m	15	15	15

### General features

- Outstanding resistance to weather, including permanent UV radiation;
- Wind load resistant;
- High resistance to impact and puncture;
- High tensile strength;
- Retains excellent flexibility in cold temperatures;
- High water vapor permeability;
- Outstanding weldability;
- Recyclable.

### Application area

The material is designed for single-ply full and partial adherence to exposed flat roofs.

### Application method

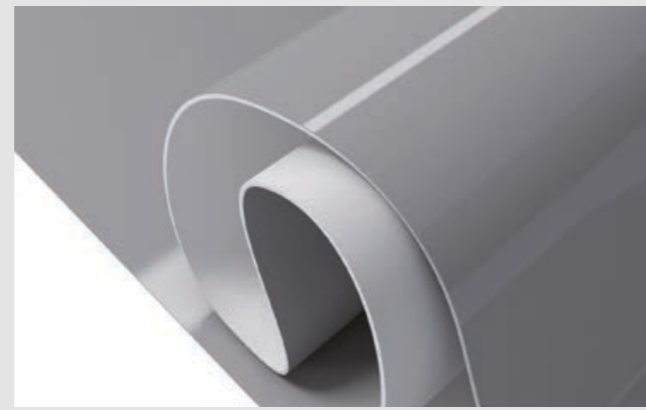
The waterproof roof sheets are attached to the thermal insulation PIR or roof deck by applying an on-site liquid adhesive. Overlap seams are welded with electric hot welding equipment, such as a manual hot air welder and pressure rollers or an automatic hot welder with hot air temperature control. (Recommended equipment: LEISTER TRIAC for manual welding and LEISTER VARIMAT for automatic welding.)

# LOGICROOF V-SR

## PVC membrane

1.5 mm 1.8 mm 2.0 mm

LOGICROOF V-SR is an unreinforced roofing membrane made from PVC-P. The light, upper layer provides very high resistance to weather and UV rays, while the bottom black layer is puncture resistant.



### General physical and mechanical properties

Characteristics	LOGICROOF V-SP
Reaction to fire	Class E
Effective thickness, mm	1.5/1.8/2.0 (-5/+10%)
Mass per unit area, kg/m <sup>2</sup>	1.8/2.2/2.5
Tensile strength, longitudinal/transversal, MPa	≥ 16/≥ 15
Elongation, %	≥ 200
Water tightness 10 kPa during 24 hours	0
Foldability at low temperature, °C	≤ -30
UV exposure, h	≥ 5000

### Dimensions

Property	1.5	1.8
Length of a roll, m	2	2
Width of a roll, m	10	20

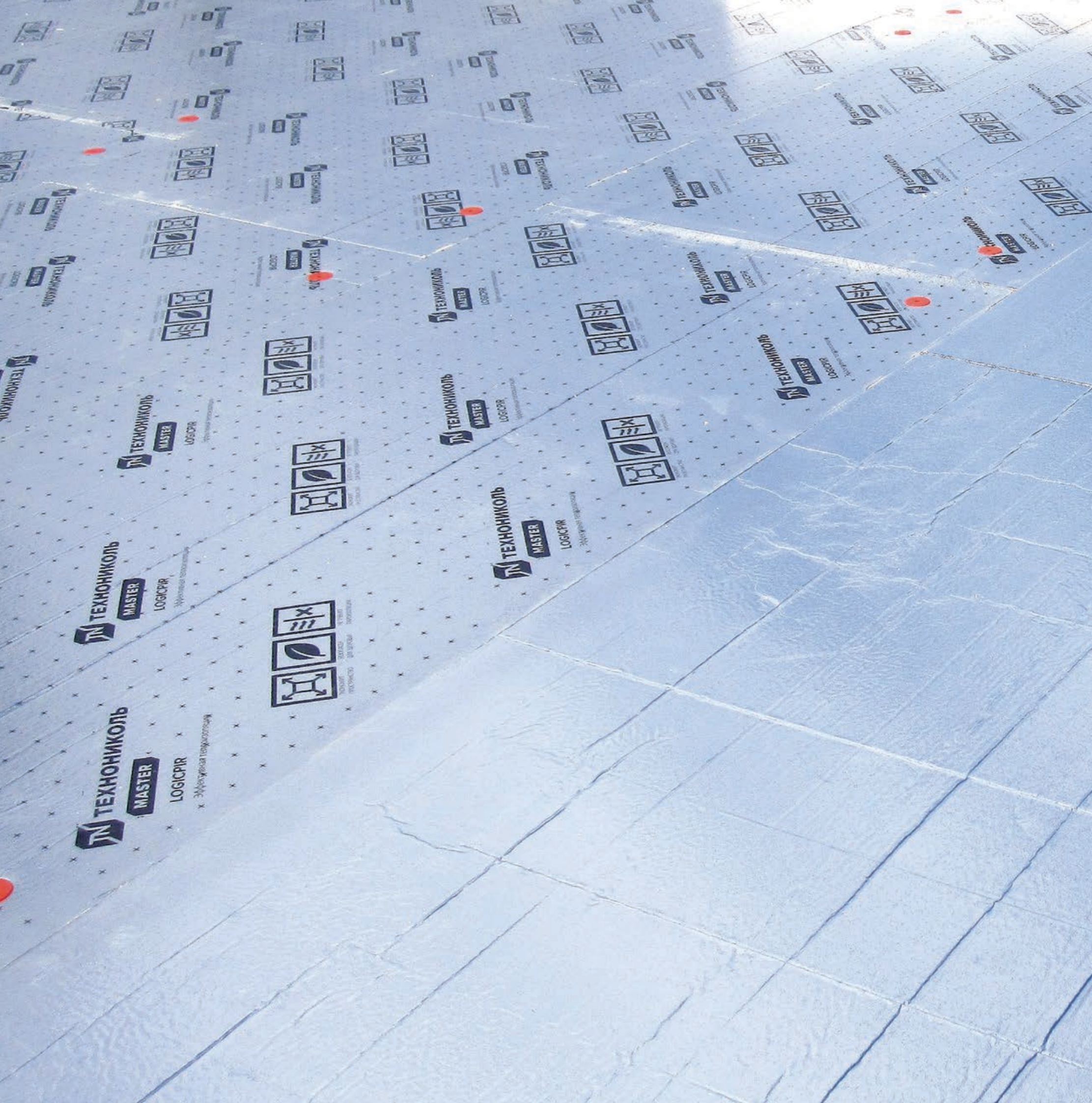
### General features

- Outstanding resistance to weather, including permanent UV radiation;
- Wind load resistant;
- High resistance to impact and puncture;
- High tensile strength;
- Retains excellent flexibility in cold temperatures;
- High water vapor permeability;
- Outstanding weldability;
- Recyclable..

### Application area

The material is designed for single-ply detailing of mechanically fastened, exposed, ballasted, and bonded roofing systems with LOGICPROOF membranes.





## Thermal Insulation Boards LOGICPIR PROF

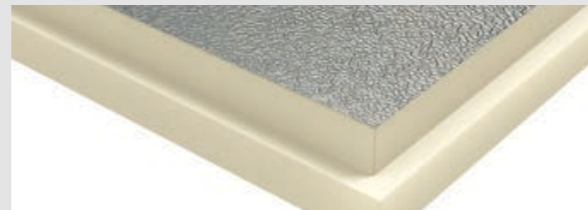


# LOGICPIR PROF

## Thermal insulation boards



LOGICPIR PROF  
with a glass fibre mat surface



LOGICPIR PROF  
with an aluminium surface

### Description of the material

Thermal insulation boards LOGICPIR PROF is an innovative heat insulating material made from rigid polyisocyanurate foam. LOGICPIR PROF have a closed cellular structure (the volume of gas filled cells does not exceed 97%). For this reason, the material has a unique thermal conductivity, a high resistance to mechanical loads, and minimal water resistant properties. LOGICPIR PROF TECHNOCOL produces a whole range of boards. Foil laminated boards are used in flat roofing systems with synthetic waterproofing membranes. Boards LOGICPIR PROF laminated with glass fibre are suited for full-adhesive bonded systems and in roofing systems with a waterproof layer welded directly onto their thermal insulation. If a pitched roofing system is required, LOGICPIR SLOPE 1.7 and 3.4% gradient tapered insulation boards are used.

### Application area

Thermal insulation boards LOGICPIR PROF are used in civil and industrial buildings during the installation of flat roofing systems together with corrugated steel substrates and concrete foundations, rolled waterproofing materials, and other types of waterproofing materials. LOGICPIR PROF can also be used for floor heating (including loaded constructions), facades, plinths, and pitched roofs.

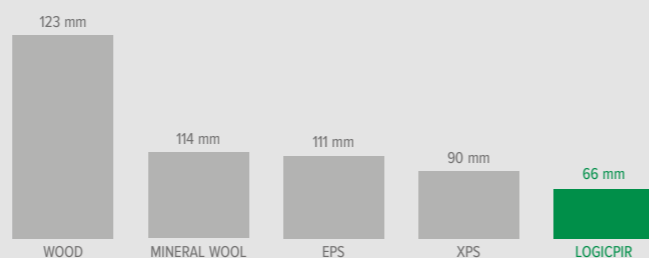
### Storage

Store the boards indoors or under a canopy to protect them against precipitation and sunlight.

### Basic physical and mechanical properties

	GLASS FIBRE MAT SURFACE	ALUMINIUM FOIL SURFACE
Thermal conductivity, W/m·K, at:		
25°C	0.023	0.021
Operating conditions A	0.025	0.022
Operating conditions B	0.026	0.023
Reaction to fire	Class E	Class E
Compression breaking strength at 10% deformation, kPa	150	150
Water absorption at continuous diving, %, not more than	1.0	1.0
Application temperature, °C	from -65 to +110	from -65 to +110

### Thickness of different types of thermal insulation with the same R-value of 3.0 m<sup>2</sup> · K/W



## Unique features



### RELIABILITY AND DURABILITY

Throughout its 50-year service life boards LOGICPIR PROF retains its qualities.



### DOES NOT ABSORB WATER

The board structure consists of closed rigid cells, which do not allow water to come into material. Composite facers, made of AL foil and plastic, provide an additional vapor barrier.



### DOES NOT BURN

LOGICPIR PROF is not flammable. When in contact with an open flame, polymer burns on surface only. This creates a charcoal skin, which is an effective defense against further polymer damaging.



### DYNAMIC LOAD RESISTANCE

boards LOGICPIR PROF complies with class 2 for dynamic load (EN 826). Compression strength of 150 kPa provides high resistance against deformation due to live loads.



### RECORD LOW THERMAL CONDUCTIVITY

LOGICPIR PROF has very low thermal conductivity of 0.021 W/m·K. Boards have L-shaped edges, so they fit tightly together and thus prevent cold bridges.



### LOW DENSITY

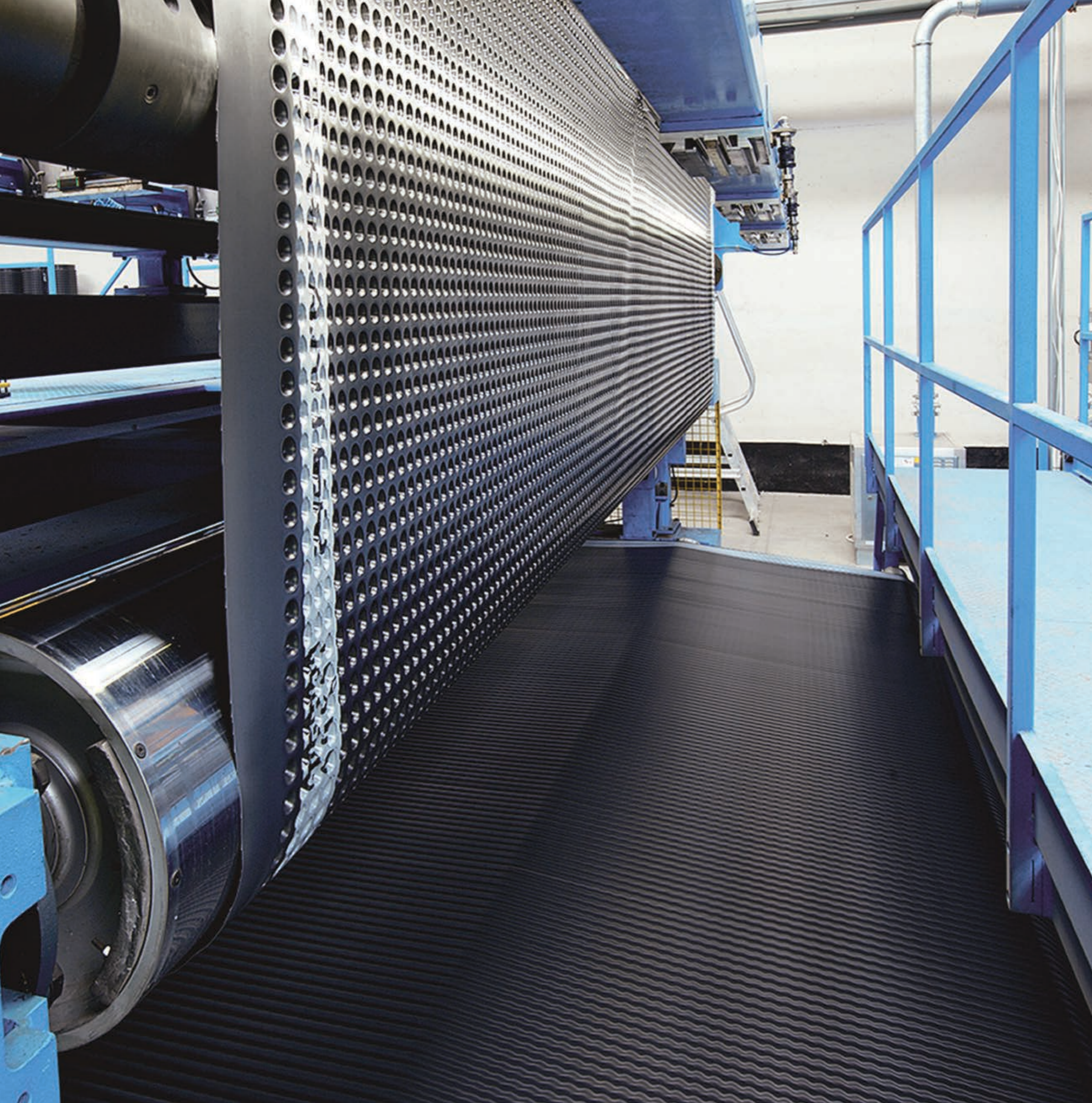
The low density of LOGICPIR PROF is combined with high thermal resistance. Use of the product reduces the overall weight of a roof. This is especially important for roof renovation. Transportation costs are substantially reduced as well.



### ALL SEASONS

It functions effectively within a temperature range from -65°C to +110°C, so it is suitable for use in any climate.





**HDPE Dimpled  
Membranes PLANTER**



# PLANTER

## Dimpled membrane



### Description of the material

It is the profiled universal polymeric membrane made from high-density polyethylene (HDPE). The top surface of the material is covered with conic studs of 8 mm height and 10 mm in diameter.

The membrane is suited for protection of waterproofing layer, construction of preparation layer for foundation slabs, sanitation of damp walls. The material is very lightweight and easy to install, herein it is featured by high strength properties. PLANTER is resistant to chemicals, mold and bacteria, roots of plants and ultraviolet radiation. The top surface of the material is covered with conic.

### Application area

**PLANTER standard:** Provides protection for embedded structure waterproofing systems during the backfilling of pit hollows, protects foundation slabs from capillary moisture, protects damp walls. May also be used in accessible roofs and during the replacement of concrete foundation mattresses.

**PLANTER eco:** Protects the foundation and foundation slab waterproofing layer from capillary moisture in cottage and low-rise construction, replacement of concrete foundation mattress.

**PLANTER extra:** For use during the construction and reconstruction of motorways and slopes, for operation in complicated hydrological conditions, for protection of waterproofing systems during important projects, during the replacement of concrete foundation mattresses, during the construction of tunnels and metro systems, for accessible flat roofing, for drainage systems during the closed-type construction of tunnels, bed drainage.

### Storage

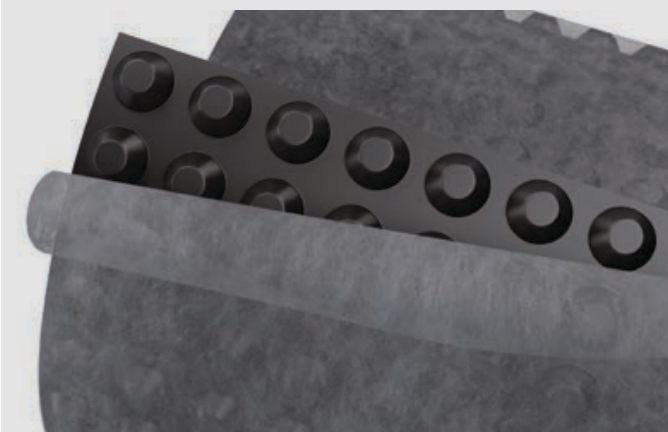
Store vertically, indoors, in a dry space.

### Basic physical and mechanical properties

	PLANTER extra	PLANTER standard	PLANTER eco
Mass of 1m <sup>2</sup> , kg, not less than	0.8	0.55	0.55
Ultimate compressive strength, kPa, not less than	550	280	200
Max tensile load, N/50 mm, not less than	450	280	200
Elongation at maximum load, %, not more than	18	20	20
Water absorption by weight, %	1	1	1
Bend point on R=5 mm beam at low temperature, °C, no more than	-45	-45	-45
Change in linear dimensions at 80 °C, %, not more than			
along the roll	2.0	2.0	2.0
across the roll	2.0	2.0	2.0

# PLANTER GEO

## Dimpled membrane



### Description of the material

High-density polyethylene membrane. The face surface is formed from 8 mm high cone shaped shoulders with thermobonded geotextile fabric.

The special structure of the surface formed from the two bonded layers gives the material a high water carrying capacity.

### Application area

**PLANTER geo:** Organizes vertical well drainage, drainage in ballasted roofing, draining of footpaths, perimeter paths, and platforms.

**PLANTER extra-geo:** Organizes 2-10 meter deep vertical drainage, bed drainage, the cut-and-cover construction of tunnels, the installation of ballasted roofing in enhanced reliability projects.

### Storage

Store vertically, indoors, in a dry space.

### Basic physical and mechanical properties

	PLANTER geo	PLANTER extra-geo
Sheet thickness, mm	0.6	0.8
Shoulder height, mm	8.0	7.5
Mass of 1m <sup>2</sup> , kg, not less than	0.65	0.9
Max tensile load, N/50 mm, not less than	420	590
Elongation at maximum load, %, not more than	30	18
Static puncture resistance, method B, kg, not less than	20	20
Bend point on R=5 mm beam at low temperature, °C, no more than	-45	-45
Water absorption, by weight, %	1	1
Water permeability at min pressure 0.001 MPa during 24 hours	no water penetration traces	
Change in linear dimensions at 80 °C, %, not more than		
along the roll	2.0	2.0
across the roll	2.0	2.0





## Accessories



# LOGICROOF WALKWAY PUZZLE

## Intended use of the material

LOGICROOF WalkWay Puzzle is designed for the construction of operated walkways on the surface of roofs covered with TECHNOMICOL PVC membranes. It protects polymeric roofing membranes against mechanical damage and significantly increases its service life. The material is highly non-slip.

## Advantages

Offers an economic benefit compared to traditional technical solutions. Allows for the safe movement of people on roofs.

Extreme wear resistance.

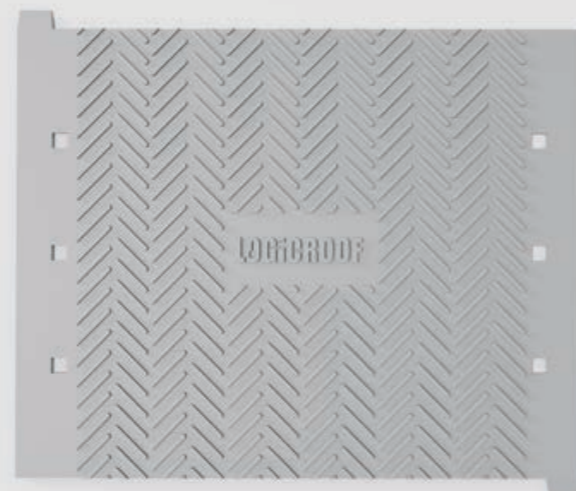
Installation time is twice reduced as compared to traditional solutions.

# LOGICROOF BOND CONTACT ADHESIVE

## Intended use of the material

The high quality, single component, contact polyurethane is intended for manual application. It is used for gluing LOGICROOF FB polymeric membranes with a fleece back-layer to concrete bases, old bitumen carpet, and LOGICPIR insulation boards with a fiberglass surface.

To facilitate work, a coloring agent (green, red, or blue) may be added as signal matter to the adhesive.



# TECHNOMICOL LOGICPIR

## Adhesive Foam



## Description of the material

The polyurethane adhesive (made from a single component polyurethane system) comes in an aerosol can and is intended for gluing LOGICPIR boards with fiberglass surfaces or aluminium foil surfaces onto various other surfaces as a cover. Such surfaces may include: bitumen covering, concrete, bricks, plaster, etc. The universal, all-season adhesive is very resistant to moisture, mold, and aging. It adheres highly to concrete, cement plaster, and other mineral bases, including wood, chipboards, OSB boards, mosaic finish, etc. The degree of expansion of the adhesive foam allows you to compensate for a 15-20 mm elevation difference between the LOGICPIR board and the base. The color is blue. It is suitable for the quick and durable fastening of LOGICPIR heat insulation boards during the installation of external and internal heat insulation systems, as well as for sealing gaps between boards.

## Application area

The foam is released from the can through a special foam gun. Apply according to the instructions on the can at any temperature between -10°C to +35°C. Can temperature: +18°C to +25°C.

## Storage

The foam cans must be stored and transported vertically, in a dry place at a temperature between +5°C and +25°C. The cans must not be stored in direct sunlight, or heated above +50°C. Guaranteed shelf life is eighteen months.

## Basic physical and mechanical properties

	TECHNOMICOL LOGICPIR
Tack-free time under the temperature of (23±5) °C, min, not more than	10
Time of complete polymerization, hour, not more than	24
Binding power (adhesion), MPa, not less than	
LOGICPIR with glass fibre mat surface	0.13
LOGICPIR with aluminium surface	0.12
Concrete	0.14
Bituminous surface	0.14
Degree of can content evacuation, %, not less than	94
Gross weight of the can, g, within the limits of	740±10
Can output when strip width is 30mm, cm, not less than	34
Time for adjustment of bonded surfaces, not more than, min	15

## Logistic Parameters

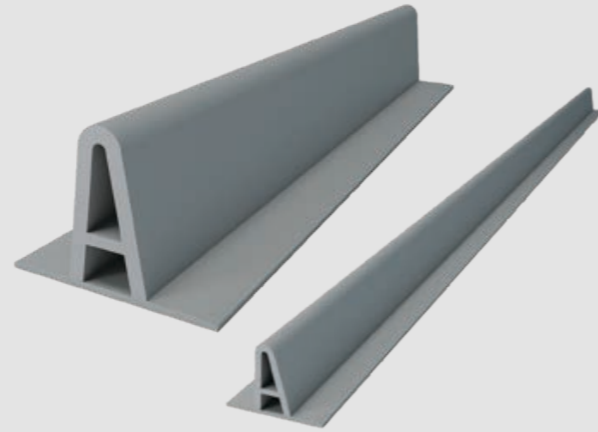
TECHNOMICOL LOGICPIR Adhesive Foam comes in 1000 ml metal cans (twelve pieces per package).



## A-PROFILE

### Intended use of the material

A-profile is made from high quality polyvinyl chloride. It is weather, impact, and UV radiation resistant. It is used with LOGICROOF PVC membranes and ECOPLAST. The profile is homogeneously welded to the membrane using hot air. A-profile is used on roofs made from PVC membranes to imitate the look of a metal folding roof. This allows the customer to create a more durable roof that is noiseless in the rain, all the while appearing identical to a metal roof.



## DRAINAGE SYSTEMS

### Intended use of the material

Rainwater drains remove rainwater from the surface of flat roofs. TECHNOMICOL's plastic drains come in a large variety of types for different types of roofs (e.g. a simple flat roof, ballasted roof, walkable roof, green roof, etc.). TECHNOMICOL's plastic drains can be equipped with a heating cable to prevent the formation of an ice coat in interseason. The rainwater drains are not vulnerable to corrosion and are resistant to various temperature changes on the roof. The drains and overflows used to provide continuous or emergency water drainage through a parapet are made from PVC and are welded to waterproof flooring.



## SHAPED ELEMENTS FOR PVC- MEMBRANES

### Intended use of the material

The shaped elements are made from plasticized PVC. They are hot air welded and fully compatible with TECHNOMICOL membranes. The elements improve the reliability of roofing system installation and save labor costs.



PVC external angle ready for use



PVC internal angle ready for use

## LOGICROOF LAMINATED PVC- METAL SHEET

### Intended use of the material

The multilayer sheet is produced by connecting 0.8 mm thick polymeric membranes' membrane to a thin (0.6 mm) galvanized steel sheet. It can be used as a technical solution when attaching the membranes to the place where the roof adjoins, as an intermediate fastener to attach the membrane to walls and parapets, to make protect aprons, for the expansion of joint compensators, elements of external drains, and cornice overhang finish. The polymeric membrane cover on the upper surface of the metal allows the plastic membrane to be welded to the metal profile providing tight joint. Laminated PVC metal is used for welding to PVC membranes. The range also includes LOGICROOF TPO metal as well.



## TECHNONICOL HARDWARE

### Intended use of the material

The telescopic fasteners consist of a plastic element and special anchor. The fasteners are used for fastening heat insulation, as well as for fastening roofing membranes to the bearing base of a zinc-coated shaped sheet, wood, or an in-situ concrete slab. When fixing the shaped sheet, the self-tapping screw must be screwed in with a screw drill, and when fixing the fastener to concrete a drive anchor must be used. The fasteners range in size from 20 to 260 mm.

The TECNONICOL edging strip is used to secure the edge of roof cladding to a vertical surface. It cannot be used for curved surfaces. It is fixed to the base with a self-tapping screw. The upper bend is filled with polyurethane sealant to create a tight seal and to prevent water from getting under the membrane.

The TECNONICOL retaining strip is used to fix the membrane to the roof perimeter, as well as around all the outstanding structures. It is installed at the bottom of vertical surfaces, where the vertical and the horizontal surfaces join together. It can also be used instead of an edging strip on curved surfaces to fix the membrane edge.

The TECNONICOL steel, retaining strip is used to fix the edge of the roof covering at the place where it joins the vertical surface. It provides an alternative to both the aluminium edging strip and the retaining strip. The strip retains high bending and torsion strength, as well as a high resistance to corrosion.



## TECHNONICOL ROOFING PVC AERATOR

### Intended use of the material

The aerator is used in the installation of a “breathable” roof. It maintains a sanitary roofing system and withdraws excess vapor from the roofing structure.



## TECHNONICOL SELF- TAPPING SCREWS FOR CONCRETE of 6.3 DIA.

### Intended use of the material

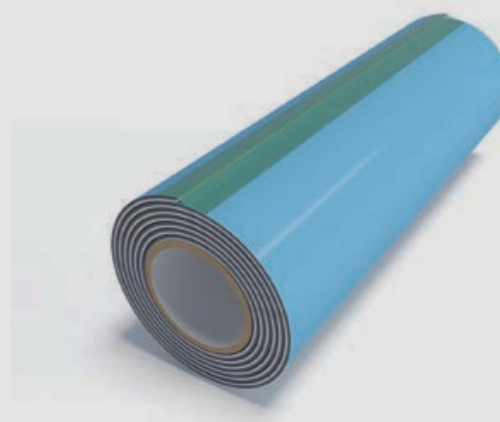
The self-tapping screws are used during the mechanical mounting of the roof pie to the prefabricated and solid concrete bases (hollow core slabs, ribbed slabs, and reinforced concrete). They are used with completed telescopic fasteners. To make installation easy, the self-tapping screws come complete with TORX type bits and a 5.5 mm boring tool.



## LOGICROOF SelfPatch

### Intended use of the material

A unique solution for urgent repairs! The LOGICROOF SelfPatch patch consists of a waterproof layer, which consists of a 1.2 mm LOGICROOF V-RP PVC membrane, an adhesive layer that sticks to the membrane being repaired, and an anti-adhesive film. The patch helps reliably protect the roof from leaks in case of damage to the roofing membrane. The LOGICROOF SelfPatch is intended for emergency temporary repairs caused by mechanical damage (punctures, cuts, cracks, etc.) to the surface of PVC membrane roofs. It is especially useful and convenient for roofs with a large surface area, where it is difficult to connect a feeding cable in order to weld a patch with hot air.



# TECHNICOL POLYURETHANE SEALANT

## Intended use of the material

The sealant is a high quality single-component, polyurethane, visco-elastic mass, which is characterized by suitable plasticity and strong adhesion. After application, the sealant hardens as a result of indirect exposure to moisture and air and forms a firm joint.

It is used for filling the upper bend of the edge strips, for an additional seal at the site of the installation of water intake funnels, pipe penetrations, supports for equipment on the roof, etc., for sealing lightweight metal and steel structures, for sealing ventilation ducts, silos, containers, reservoirs, etc., for filling and sealing vertical and horizontal compensation joints, for sealing joints in concrete slabs, cable, and pipe penetrations.



# PVC RONDEL

## Application area

This disk-fixing element is used to mechanically fasten geotextile and PVC membranes to vertical surfaces and tunnel arches.



## General physical and mechanical properties

Parameter	Value
Operation temperature	From - 50° to +90°C
Weight g.	35
Shore A hardness	75
Tensile strength, MPa	11
Elongation, %	200

# INJECTION FLANGES

Injection flanges are moulded items made from plasticized PVC

The flanges are components of the injection system that allows for the injection of special polymeric resins into damaged sections of the waterproofing system.



## General physical and mechanical properties

Characteristics	Angular PVC injection flange	Straight PVC injection flange
Application temperature range	- 50° to +90°C	
Mass, g	110	130
Length, mm	—	180
Flange diameter, mm	180	170
Inlet diameter, mm	10	16
Shore A hardness,	75	
Tear resistance, MPa	11	
Elongation at rupture, %	200	

## Advantages

- High flexibility
- Long life span
- Resistant to aggressive substances
- Applicable to a wide range of temperatures
- Excellent weldability
- Recyclable

## Application area

Injection flanges are used together with waterproofing PVC membranes to make repairable, waterproof systems in building and engineering structures. In two-layer, waterproof systems, the angle injection flange is also used for vacuum testing.

## Base surface preparation

Before welding the flanges to the surface of the membrane, the membrane must be thoroughly cleaned with Technicol cleaner for PVC membranes.

## Compatibility

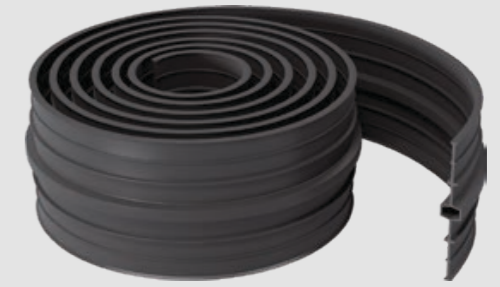
Can only be used with PVC membranes. The products must not be in direct contact with substances containing bitumen fat, tar, oil, foam insulation (EPS, XPS, PIR), and/or solvents.

## Storage

The flanges should be stored unopened, in their original package in a dry, covered space away from direct sunlight.

# TECHNONICOL WATERSTOPS

TECHNONICOL Waterstops are elastic, profiled tapes made from plasticized PVC by extrusion process. Waterstops are designed for sealing construction and movement joints in concrete structures, being under continuous or temporary action in subsurface water, and for the compartmenting of waterproofing made from PVC membranes.



## General physical and mechanical properties

Waterstop	Image	Application
EC-220-3		External waterstop for sealing construction joints and for compartmenting waterproofing made from PVC membranes.
EC-320-4		External waterstop for sealing construction joints and for compartmenting waterproofing made from PVC membranes.
IC-240-2		Internal waterstop for sealing construction joints in underground constructions.
IC-240-6		Internal waterstop for sealing construction joints in underground constructions.
EM-260/20		External waterstop for waterproofing movement joints. Can be applied with waterproof PVC membranes.
EM-260/50		External waterstop for waterproofing of movement joints. Can be applied with waterproofing PVC membranes.
IM-240/20		Internal waterstop for sealing movement joints in underground constructions.
IM-260/50		Internal waterstop for sealing movement joints in underground constructions.

## Storage

Rolls should be kept in a dry, enclosed space.

## Transportation

Transport covered, on pallets, in rolls 3-4 rows high. Pallets should be in one tier.

## Package

Waterstops are delivered on wooden pallets. Every roll is wrapped in non-transparent, polyethylene film, which protects them from UV radiation.

## General physical and mechanical properties

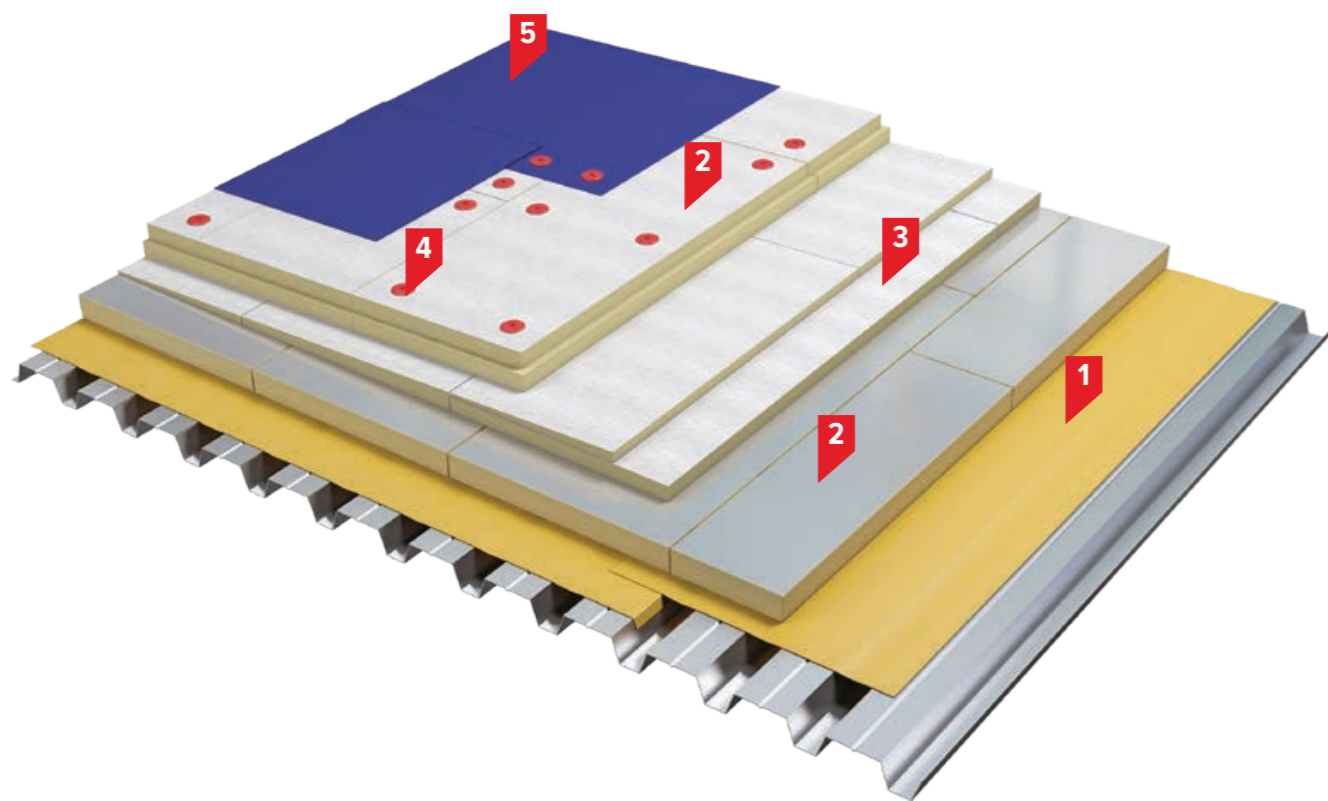
Property	Value
Shore A hardness	75±5
Specific gravity, g/cm <sup>3</sup>	1.3
Tensile strength, MPa	10
Elongation, %	200
Changes of dimensions 6 h. at 80°C, %	2.0
Cold bending, °C	-20





## Roofing Systems

## Mechanically fixed roofing system on a corrugated steel deck with LOGICPIR insulation boards and TECHNOMICOL synthetic membrane.



1. TECHNOMICOL vapor barrier film
2. LOGICPIR PROF with aluminium foil surface
3. LOGICPIR SLOPE with glass fibre mat surface
4. TECHNOMICOL telescopic fasteners
5. LOGICROOF V-RP polymeric membrane

The LOGICPIR PROF boards are highly resistant to dynamic loads due to an increased compressive strength, which exceeds 150 kPa.

Higher mounting speed when compared to the waterproofing and thermal insulation materials of similar systems.

The system's low weight per square meter is due to the unique thermal conductivity of the LOGICPIR PROF boards (0.021 W/m·K).

Object commissioned by the due date thanks to all-season mounting.

This system is designed to complete a task that is very important to every investor, the construction of a long lasting roof with a long, service life with no repairs. Several factors have an impact on roof service life: correct design and mounting, the selection of suitable construction materials and parts, external factors, and weather conditions. Dynamic load may be considered one of the key elements, as it causes system damage during the mounting and operation stage. This system is designed specifically for that task. The system is recommended for roofs that are often visited by personnel performing maintenance tasks, for example, during snow cleaning and the maintenance of equipment located on the roof.

In comparison to common thermal insulation gear, LOGICPIR PROF thermal insulation makes it possible to lower the weight of 1 m<sup>2</sup> of the roof cover by an average of 20 kg, which results in considerably lower material and labour costs for logistics, material lifting and mounting. It also shortens the roofing works.

### Material consumption

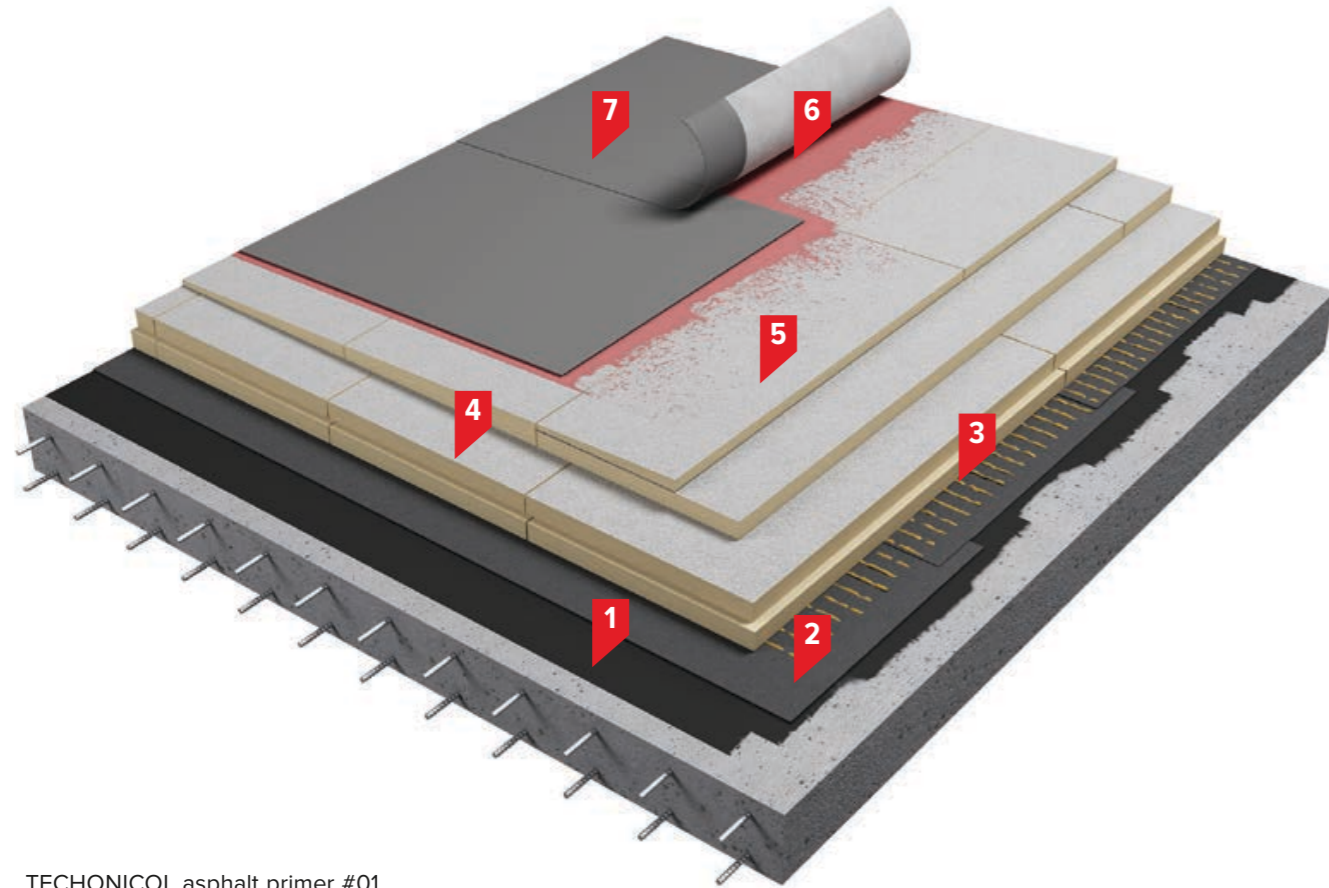
Material	Dimension, packaging	Consumption per, m <sup>2</sup>
Vapor barrier film TECHNOMICOL	Roll 1.5-3.0 m × 30.0-100 m	1,10
Thermal insulation boards LOGICPIR PROF with aluminium foil surface	Board 2400 × 1200x20 (up to 100 mm)	According to calculation
Thermal insulation boards LOGICPIR SLOPE with glass fibre mat surface	Board 1200 × 600 mm	According to calculation
Telescopic fasteners TECHNOMICOL	Length: 20-200 mm Box: 250-2000 pc.	According to calculation
Polymeric membrane LOGICROOF V-RP	Roll 2.10 × 20 m 42 m <sup>2</sup>	1,15

### Application area

The system is designed for use in public (shopping and leisure centers, sports complexes, swimming pools, etc.) and industrial buildings (warehouses and logistics centers, etc.) with increased loads arising from roof maintenance issues (including snow removal), as well as from examination and maintenance roof-mounted equipment.



## Fully adhered roofing system with LOGICPIR insulation boards and TECHNOMICOL synthetic membrane.



1. TECHNOMICOL asphalt primer #01
2. Bitumen vapour barrier with fine-grained sand covering on the top surface
3. LOGICPIR adhesive foam
4. LOGICPIR PROF with glass fibre mat surface
5. LOGICPIR SLOPE with glass fibre mat surface
6. LOGICROOF Bond adhesive
7. LOGICROOF V-GR FB polymeric membrane

A high level of wind resistance is a key feature of high-altitude objects located on open terrain (seashores, fields, etc.).

Preserving the integrity of the bearing support.

Localization of potential leaks—in case of mechanical damage to the roofing material, water does not spread under its surface.

Low extra weight on supporting structures.

The thermal insulation layer of this system consists of LOGICPIR PROF thermal insulation boards, which are also provided with a double-sided fiberglass adhesive tape. The combination is fixed together with LOGICPIR adhesive foam. The waterproof layer includes the LOGICROOF V-GR FB polymeric membranes' membrane with fleece backing made from laminated geotextile, and adhered to the surface of the LOGICPIR PROF boards with LOGICROOF Bond adhesive.

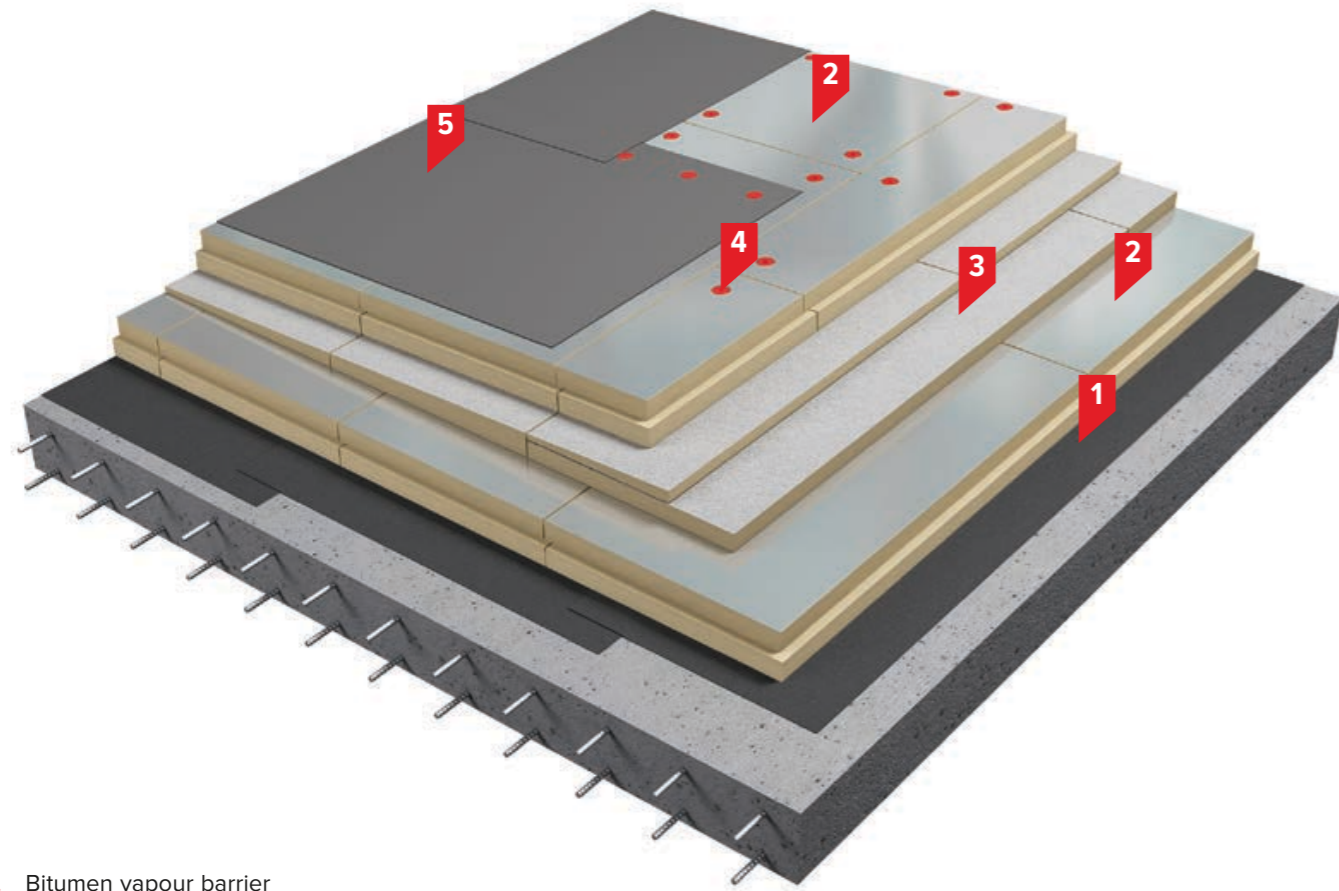
### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
Asphalt primer TECHNOMICOL No.01	Metal eurobucket, volume 10 l and 20 l	0.35
Bitumen vapour barrier	Roll 1m × 10 m square 10 m <sup>2</sup>	1.15
Adhesive foam LOGICPIR	Cylinder 11	0.25
Thermal insulation boards LOGICPIR PROF with glass fibre mat surface	Board 2400 × 1200 × 20 (flo 200)	1.02
Thermal insulation boards LOGICPIR SLOPE with glass fibre mat surface	Board 1200 × 600	According to calculation
Adhesive LOGICROOF Bond	Bucket 10 × 1	0.25
Polymeric membrane LOGICROOF V-GR FB	Roll 2.05 m × 15 m square 30.75 m <sup>2</sup>	1.15

### Application area

The system is designed for new construction and roof refurbishment in civic, residential, public, and industrial buildings where it is difficult or impossible to use mechanical fastening and ballast weight.

## MECHANICALLY FIXED ROOFING SYSTEM on a concrete base with LOGICPIR insulation boards and TECHNOMICOL synthetic membrane.



1. Bitumen vapour barrier
2. LOGICPIR PROF with aluminium foil surface
3. LOGICPIR SLOPE with glass fibre mat surface
4. TECHNOMICOL telescopic fasteners
5. LOGICROOF V-RP polymeric membrane

Low extra weight on supporting structures.

High-level resistance to pedestrian loads—the system withstands the regular movement of personnel during roof equipment maintenance and snow cleaning, without any strength degradation of the thermal insulation material.

All-season mounting — LOGICPIR PROF thermal insulation material can be installed in a damp environment; it is not affected by moisture.

The thermal insulation of the structure is comprised of thermal insulation boards made from hard polyisocyanurate foam (PIR) with a combustibility group rating of G1. The thickness and total weight of the thermal insulation layers are considerably smaller in comparison to traditional solutions due to the low thermal conductivity of the insulation. The high strength and durability of the LOGICPIR PROF boards and their resistance to concentrated loads increases roof maintenance intervals. Waterproofing covering of the roof is made from LOGICROOF synthetic membrane. The system components are mechanically fixed to the base, considerably increasing the speed of the mounting process. TECHNOMICOL telescopic fasteners with self-tapping screws for concrete with a diameter of 6.3 mm or sharp-tipped self-tapping screws with polyamide plugs may be used as fasteners.

### Material consumption

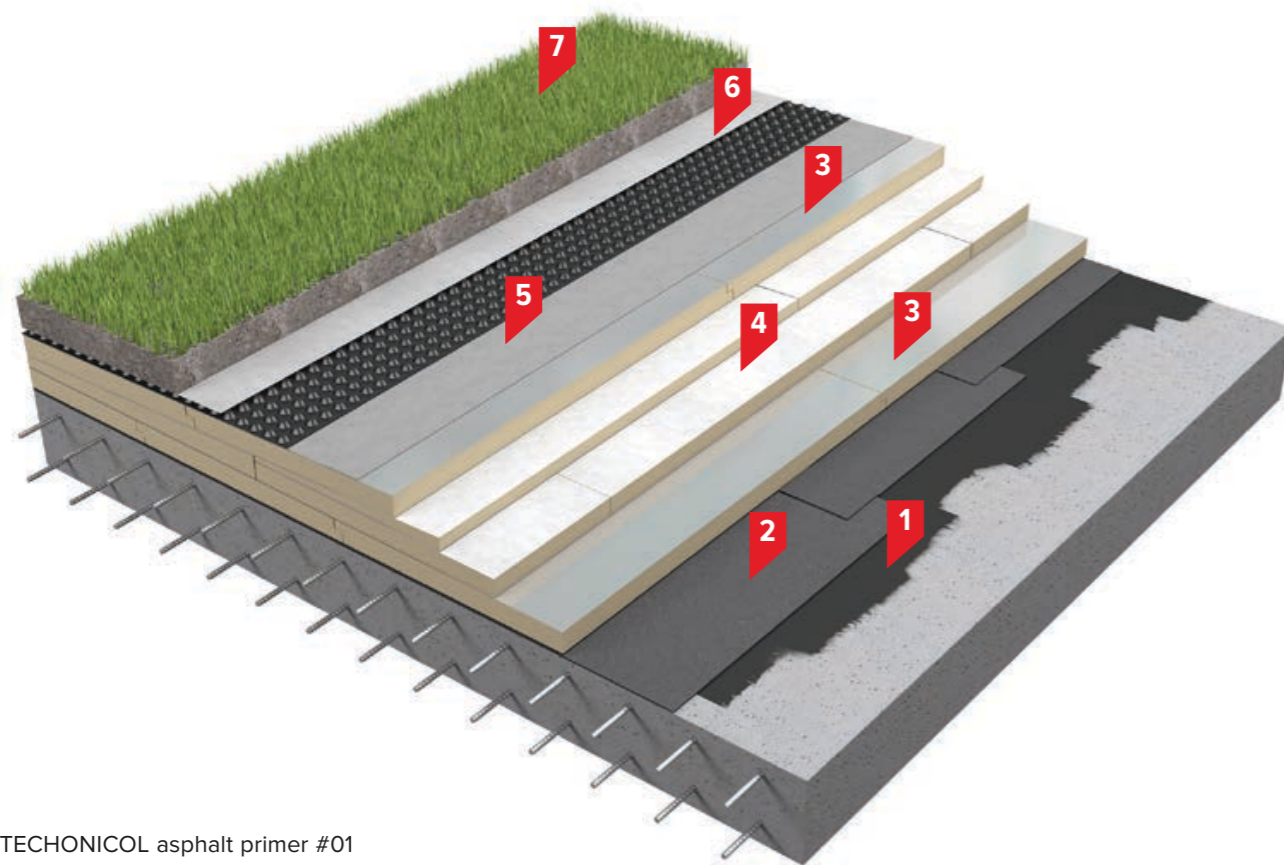
Material	Dimension, packaging	Consumption per, m <sup>2</sup>
Bitumen vapour barrier	Roll 1 m × 15 m	1.15
Thermal insulation boards LOGICPIR PROF with aluminium foil surface	Board 2400 × 1200 × 20 (up to 200 mm)	1.02
Thermal insulation boards LOGICPIR SLOPE with glass fibre mat surface	Board 1200 × 600	According to calculation
Telescopic fasteners TECHNOMICOL	Length: 20-200 mm Box: 250-2000 pc.	According to calculation
Self-tapping screw for concrete TECHNOMICOL	Length: 70-110 mm diameter: 6.3 mm Box: 250-2000 pc.	According to calculation
Polymeric membrane LOGICROOF V-RP	Roll 2.1 m × 20 m square 42 m <sup>2</sup>	1.15

### Application area

The system can be applied not only to new construction, but also during the refurbishment and repair of old roofs in civil, residential, public, and industrial buildings where roof access is used for roof maintenance (including snow removal), as well as for the examination and maintenance of roof-mounted equipment.



## Green roofing system with LOGICPIR insulation boards and TECHNOMICOL synthetic membrane.



1. TECHNOMICOL asphalt primer #01
2. Bitumen vapour barrier
3. LOGICPIR PROF with aluminium foil surface
4. LOGICPIR SLOPE with glass fibre mat surface
5. LOGICROOF V-GR polymeric membrane
6. PLANTER geo dimpled membrane
7. Growing media and vegetation

High mounting speed.

Roof sloping with mount-ready components.

All-season mounting.

Mounting without open flame sources.

Roof cladding with high resistance to all types of mechanical damage and UV radiation thanks to the vegetation substrate ballast.

The system is designed as a long lasting, ecologically pure, and aesthetically pleasing protective roof coating that allows for all-season mounting. The system uses the LOGICROOF V-GR PVC membrane for waterproofing, which is highly resistant to root penetration. The high stability of the linear sizes and even higher resistance to puncture is provided by the membrane's fiberglass reinforcement. The LOGICROOF V-GR polymeric membranes' membrane is freely applied to the roof without fixation to the base; the seams of the membrane are welded with hot air.

The defensive qualities of the polymeric membranes' membrane and its drainage system are provided by the PLANTER geo-dimpled membrane. A soil layer with vegetation plays the role of ballast in this configuration.

The highly efficient polymeric membrane's plate thermal insulation made from polyisocyanurate foam (PIR) operates as a thermal insulation layer. Originating in the ballast system, it is strong enough to bear operation loads. When compared, the difference between LOGICPIR PROF and other thermal insulations is that LOGICPIR PROF allows for a reduction in the thickness of the system and the volume of the thermal insulation.

Using the LOGICPIR SLOPE tapered boards for the roof slope makes it possible to avoid constructing a sloping layer made of claydite gravel and reinforced sand cement screed. It increases mounting speed and decreases the load on the support structures.

Due to the lack of "wet" processes, the system may be mounted in any season.

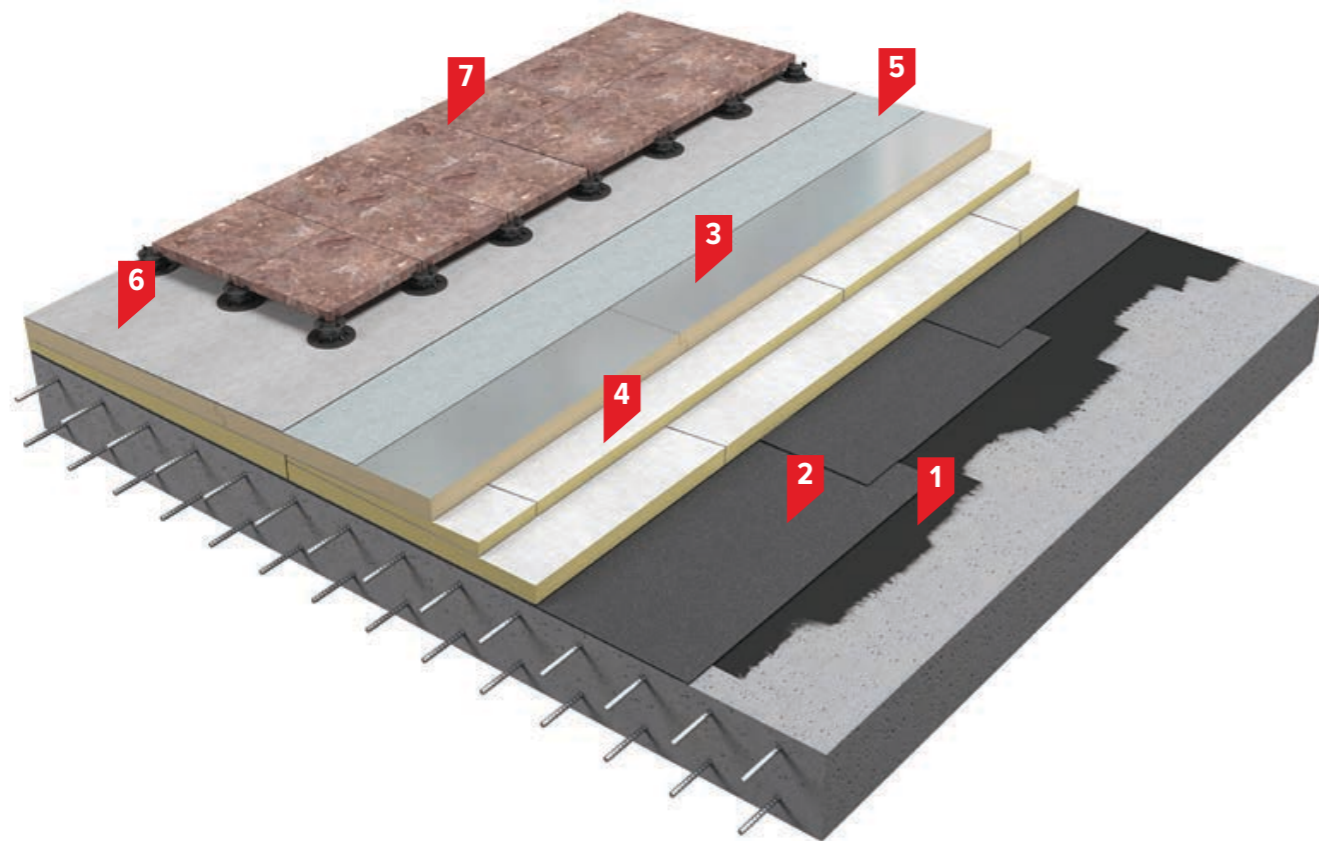
### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
Asphalt primer TECHNOMICOL No.01	Metal eurobucket volume 10 l and 20 l	0.35
Bitumen vapour barrier	Roll 1 m x 15 m	1.15
Thermal insulation boards LOGICPIR PROF with aluminium foil surface	Board 2400 x 1200 x 20 (up to 200)	according to calculation
Thermal insulation boards LOGICPIR SLOPE Glass fibre mat surface	Plate 1200 x 600 x variable thickness	according to calculation
Polymeric membrane LOGICROOF V-GR	Roll 2.05 m x 20 m square 41 m <sup>2</sup>	1.15
PLANTER geo shaped membrane	Roll 2.0 m x 15 m square 30 m <sup>2</sup>	1/2
Soil with vegetation	—	—

### Application area

During development, the system takes pedestrian loads into account, and can be used for new construction on the roofs of modern, multi-functional complexes. It can be used for roof overall when changing all the insulation layers.

## Ballast roofing system for pedestrian traffic with LOGICPIR insulation boards and TECHNOMICOL synthetic membrane.



1. TECHNOMICOL asphalt primer #01
2. Bitumen vapour barrier
3. LOGICPIR PROF with aluminium foil surface
4. LOGICPIR SLOPE with glass fibre mat surface
5. LOGICROOF V-GR polymeric membrane
6. TECHNOMICOL needle-punched geotextile 300 g/m<sup>2</sup>
7. Paving tiles on the adjustable supports

Fast assembly.

Mounting without open flame sources.

Without grouting.

The roof cladding offers high resistance to mechanical damage and UV radiation thanks to the vegetation substrate ballast.

Roof sloping with the mount-ready components.

Suitable for areas with high wind loads.

This system does not use grouting on top of the thermal insulation, which leads to a decrease in labour input, lowers overall expenses, and lightens structure weight. The reinforced paving tiles in the system are mounted directly onto the special plastic supports, and the whole roof pie is held up by the weight of the ballast. The use of plastic pillars allows the tiles to be laid with a zero slope, decreases the weight of the roof structure, and prevents the formation of puddles on the surface of the roof. When the system is designed, pedestrian load requirements are duly taken into account. The thermal insulation layer consists of LOGICPIR PROF thermal insulation boards provided with double-sided adhesive tape, and LOGICPIR SLOPE thermal insulation boards for the roof slopes.

The LOGICROOF V-GR PVC fiberglass reinforced membrane increases the durability of the roof cladding. If it is necessary to create a zero slope on a roof that has a slope, then adjustable (screw) supports are used.

### Material consumption

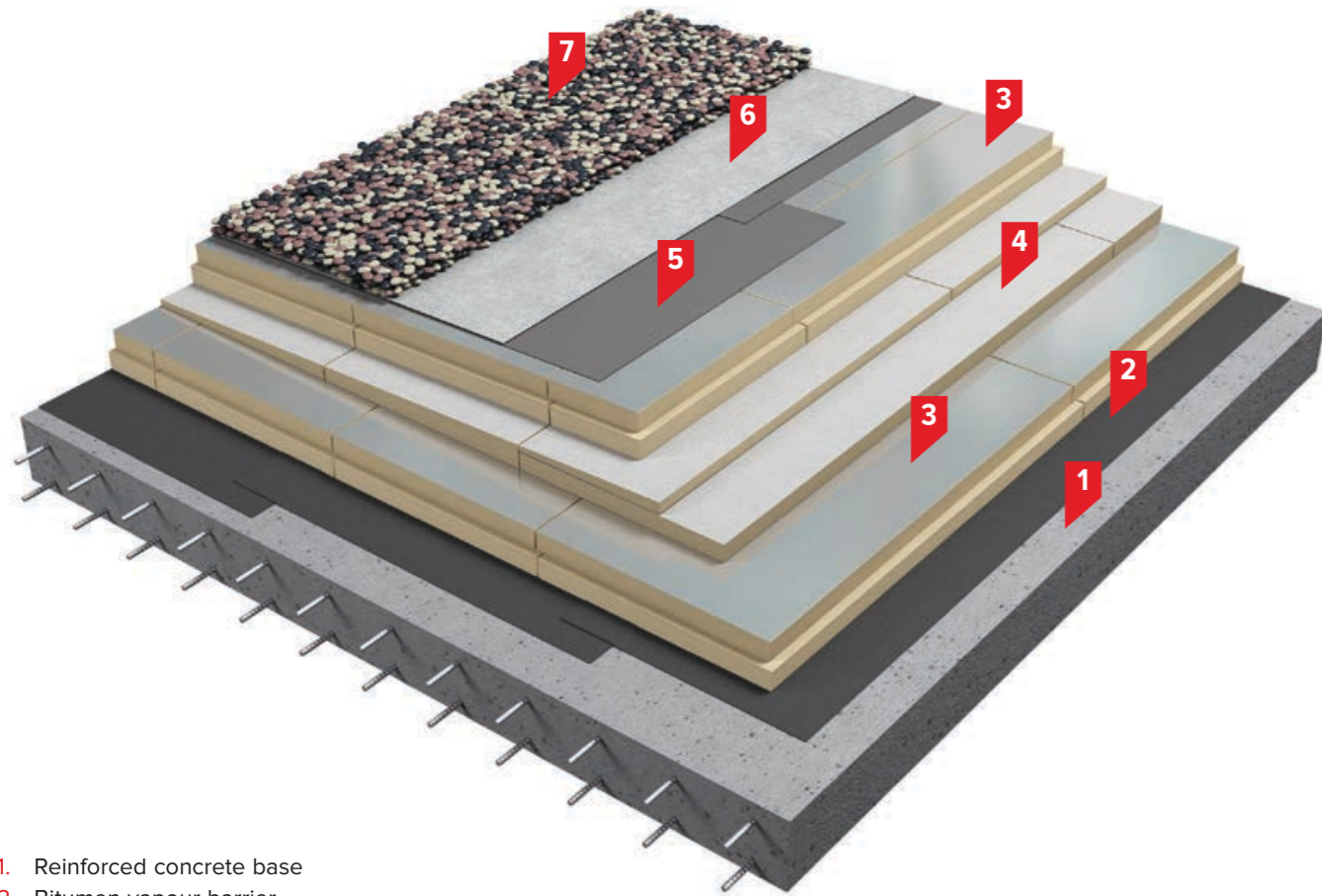
Material	Dimension, packaging	Consumption per, m <sup>2</sup>
Bitumen vapour barrier	Roll 1 m × 15 m	1.15
Thermal insulation boards LOGICPIR PROF with aluminium foil surface	Board 2400 × 1200 × 20 (up to 200)	1.02
Thermal insulation boards LOGICPIR SLOPE with glass fibre mat surface	Board 1200 × 600 × Variable thickness	According to calculation
Polymeric membrane LOGICROOF V-GR	Roll 2.05 m × 20 m square 41 m	1.15
Needle-punched heat-treated geotextile TECHNOMICOL 300 g/m <sup>2</sup>	Roll 2.05 m × 20 m square 41 m <sup>2</sup>	1.15
Needle-punched heat-treated geotextile TECHNOMICOL 300 g/m <sup>2</sup>	Roll 2.4 m × 50 m square 120 m <sup>2</sup>	1.1
Paving tiles on the adjustable supports	—	—

### Application area

When the system is developed, pedestrian loads are taken into account. The system can be used for new construction on the roofs of modern, multi-functional complexes. It can also be used for roof overhaul, when all the insulation layers are changed.



## Ballast roofing system with LOGICPIR insulation boards and TECHNOMICOL synthetic membrane.



1. Reinforced concrete base
2. Bitumen vapour barrier
3. LOGICPIR PROF with aluminium foil surface
4. LOGICPIR SLOPE with glass fibre mat surface
5. LOGICROOF V-GR polymeric membrane
6. TECHNOMICOL needle-punched geotextile 300 g/m<sup>2</sup>
7. Ballast

Low system cost.

Reduced seam number thanks to wider rolls.

Can be laid on any base able to support the membrane and ballast weight.

Fast assembly.

Increased roof cladding protection against mechanical damage.

Increased protection of the roof cladding against mechanical damage.

The highly efficient thermal insulation boards LOGICPIR PROF serves as the thermal insulation layer, as its durability allows it to withstand the operational loads originating in the ballast system. The LOGICPIR SLOPE tapered boards are implemented in the main and counter slopes. The fiberglass reinforced LOGICROOF V-GR PVC membrane, which has a high resistance to the impact of the ballast's sharp edges, is used as the waterproof cladding. The waterproof PVC membrane's additional protection against punctures is ensured by covering it with a needle-punched, TECHNOMICOL geotextile weighing at least 300 g/m<sup>2</sup> before laying the ballast layer.

### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
Reinforced concrete base	—	—
Bitumen vapour barrier	Roll 1 m × 15 m	1.15
Thermal insulation boards LOGICPIR PROF with aluminium foil surface	Board 2400 × 1200 × 20 (up to 200)	1.02
Thermal insulation boards LOGICPIR SLOPE with glass fibre mat surface	Board 1200 × 600 × Variable thickness	1.2
Polymeric membrane LOGICROOF V-GR	Roll 2.05 m × 20 m square 41 m <sup>2</sup>	1.15
Needle-punched heat-treated geotextile TECHNOMICOL 300 g/m <sup>2</sup>	Roll 2.4 m × 50 m square 120 m <sup>2</sup>	1.1
Ballast	—	—

### Application area

The system is used for ballast roofs according to the standard pattern (waterproofing above thermal insulation). It is suited for residential and public buildings, and constructions with multi-level roofs and a large roof square.





## Waterproofing Systems for Tunnels



Single-layer waterproofing system based on PVC membranes and intended for application in NATM tunnels under simple engineering and geological conditions. The system protects the concrete lining structure from the adverse impact of underground water.



1. Ground
2. Primary lining
3. TECHNOMICOL needle-punched geotextile, 500 g/m<sup>2</sup>
4. LOGICBASE V-SL waterproofing membrane
5. LOGICBASE V-PT protective PVC membrane
6. Protective cement-sand screed
7. Final lining
8. TECHNOMICOL PVC disk fixing element

Loose layed system, ensuring efficient compensation of any movements and deformations.

Possible to install on a damp base.

Reliable protection during the entire service life of the tunnel.

Incorporates a membrane with a signal layer for prompt detection of damages.

The laying process is fire-safe, as it does not require the application of an open flame.

Quick installation of the system.

The system is made in the form of a closed loop. A LOGICBASE V-SL PVC membrane is used as the waterproofing layer, which is attached to the internal surface of the concrete lining above the preliminary fastened geotextile layer. The shotcreting method is used for concrete lining construction. It artificially increases the stability of the rock until the permanent lining is complete. A temporary concrete forms the base for the installation of the waterproofing system. PVC waterproofing is not continuously adhered to the base, and therefore it is highly resistant to differential settings and ground pressure. The waterproofing layer is attached to the walls and arch of tunnels on a spot basis by welding it to PVC disk fixing elements, which, in turn are mechanically fastened to the concrete lining. The seams of LOGICBASE V-SL membranes are welded using automatic, hot air welding equipment. The special LOGICBASE V-PT PVC membrane is used to protect the waterproofing layer. It is welded to the waterproofing membrane at certain points along the whole area. Protective membrane sheets are welded together using either automatic or manual welding equipment.

#### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
TECHNONICOL needle-punched geotextile, 500 g/m <sup>2</sup>	Rolls 2.15 × 45 m	1,15
LOGICBASE V-SL waterproofing membrane*	Rolls 2.05 × 20 m	1,15
LOGICBASE V-PT protective PVC membrane**	Rolls 2.05 × 20 m	1,15

\* Alternative material – LOGICBASE P-SL TPO membrane;  
\*\* Alternative material – LOGICBASE P-PT TPO membrane.

#### Application area

The system can be applied in tunnels that relate to rock mass as follows:

- When engineering and geologic hard rocks with a high hardness ratio and a low porosity prevail at the construction site.
- The hydrogeologic characteristic of the mass absence of water-bearing horizons in the vicinity of the tunnel or the presence of a water-bearing horizon with an insignificant capacity, and the water is homogeneous in terms of its chemical composition and degree of aggressiveness.



For waterproofing NATM tunnels in severe hydraulic and geological conditions. The system protects the lining structure from the adverse impact of underground water.



1. Ground
2. Primary lining
3. TECHNOMICOL needle-punched geotextile, 500 g/m<sup>2</sup>
4. LOGICBASE V-SL waterproofing membrane
5. Injection hoses
6. Angular injection flange
7. EC-220-3 waterstop
8. Protective PVC membrane LOGICBASE V-PT
9. Protective cement-sand screed
10. TECHNOMICOL PVC disk fixing element

Maintainability during the whole service life of the structure.

Loose laid system, ensuring efficient compensation for any movements and deformations.

Localization of potential leaks.

Possible to install at temperatures as low as -10°C.

Possible to install on a damp base.

Incorporates a membrane with a signal layer for prompt detection of damages.

The laying process is fire-safe, as it does not require the application of an open flame.

The waterproofing system ensures tunnel protection from water ingress and protects the tunnel structure from corrosion. The membrane is attached to the walls and arches of the primary lining with PVC disk fixing elements, and is loose laid on horizontal surfaces.

The waterproofing area is divided into 100-150 m<sup>2</sup> sections by PVC waterstops, which are welded to the membrane and concreted into the bearing structure of the final concrete liner. In case of damage to the waterproofing layer, the waterstops integrated into the concrete prevent water from spreading between the structure and the waterproofing membrane and localize the leak within the damaged section. In addition to sectioning by waterstops, the waterproofing system also includes an injection repair system. The injection system consists of injection flanges with injection hoses. In case of a leak, polymeric repair compounds are injected into the damaged section of the waterproofing via the injection system; they polymerize to form a dense, watertight gel, thus restoring the integrity of the waterproofing layer. A special, protective LOGICBASE V-PT PVC membrane is used to protect the waterproofing layer. It is placed in sections between the waterstops and welded to the waterproofing membrane at certain points along the entire area. Protective membrane sheets are welded together with hot air automatic or manual welding equipment.

#### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
Needle-punched geotextile TECHNOMICOL, 500 g/m <sup>2</sup>	Rolls 2.15 × 45 m	1,15
LOGICBASE V-SL waterproofing membrane	Rolls 2.05 × 20 m	1,15
LOGICBASE V-PT protective PVC membrane**	Rolls 2.05 × 20 m	1,15
TECHNOMICOL injection flange	Boxes, 50 pcs.	as per design
EC-220-3 waterstop***	Bundles, 20 m	as per design
PVC disk fixing element	Boxes, 300 pcs.	as per design
Injection hoses	Bundles, 50 m	as per design

\* Alternative material — LOGICBASE P-SL TPO membrane;

\*\* Alternative material — LOGICBASE P-PT protective TPO membrane;

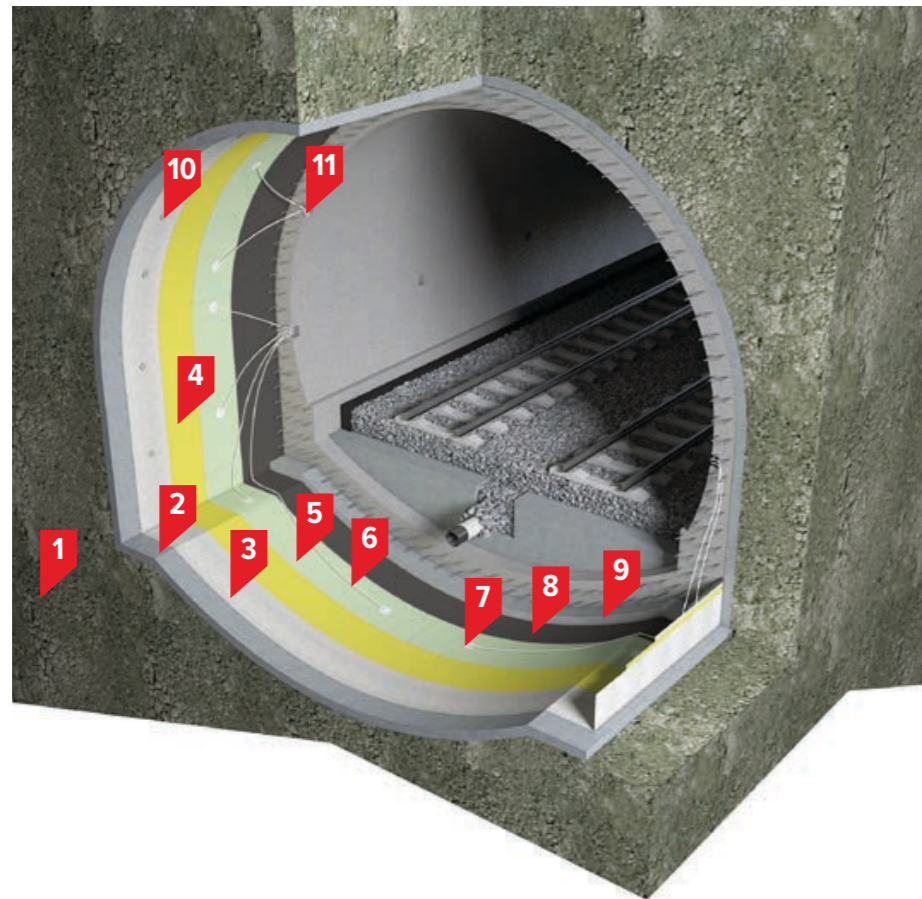
\*\*\* Alternative material — EC-320-4 waterstop.

#### Application area

The system can be applied in tunnels that relate to rock mass as follows:

- Engineering and geologic properties of the mass: predominant hard rock with a high hardness ratio and low porosity.
- Hydrogeologic characteristic of the mass: presence of one or more water-bearing horizons with medium capacity and insignificant hydraulic pressure, and the water is homogeneous in terms of its chemical composition and degree of aggressiveness.

The two-layer waterproofing system with vacuum quality control is intended for use in NATM tunnels in severe hydraulic and geological conditions. The system protects the lining structure from the adverse impact of underground water.



1. Ground
2. Primary lining
3. TECHNOMICOL needle-punched geotextile, 500 g/m<sup>2</sup>
4. LOGICBASE V-SL waterproofing membrane
5. LOGICBASE V-ST waterproofing membrane
6. Injection hoses
7. Angular injection flange
8. LOGICBASE V-PT protective PVC membrane
9. Protective cement-sand screed
10. TECHNOMICOL PVC disk fixing element
11. Niche for injection hoses

Possibility to control watertightness of the system at all stages of construction and operation.

Increased reliability thanks to two waterproofing layers.

Loose laid system, ensuring efficient compensation for any movements and deformations.

Localization of potential leaks.

Possible to install at temperatures as low as -10 °C.

Possible to install on a damp base.

Incorporates a membrane with a signal layer for prompt detection of damages.

The most reliable solution for the waterproofing of technically complex structures constructed in a ground with high water content is a two-layer waterproofing system with vacuum quality control. The system includes two waterproofing materials—the LOGICBASE V-SL membrane with a signal layer and the LOGICBASE V-ST structured membrane. LOGICBASE V-SL and LOGICBASE V-ST membranes are used for the construction of waterproofing compartments of up to 150 m<sup>2</sup>. The waterproofing layer LOGICBASE V-ST is placed on LOGICBASE V-SL with the textured surface facing downwards. The two layers are welded along the perimeter, making a waterproof cell of up to 150 m<sup>2</sup>. The LOGICBASE V-ST relief prevents the membranes from sticking together during the vacuum test. After the two waterproofing layers are welded, holes are made in the LOGICBASE V-ST in order to weld flanges and connect hoses for vacuum quality control. During the vacuum test, the air is pumped out from the waterproofing compartment (the space between the two waterproofing membranes) through connected hoses and the vacuum level is measured. The tightness criterion is the maintenance of the vacuum in the cell within five minutes. If necessary, a waterproofing layer repair is carried out by injecting a special injection compound through the injection hose into the space between the two membranes. After polymerization, the repair compound restores the tightness of the waterproofing layer. The LOGICBASE V-PT special protective membrane forms the protective layer of the system with vacuum quality control. On horizontal surface, the waterproofing layer is also protected by a protective screed.

#### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
TECHNONICOL needle-punched geotextile, 500 g/m <sup>2</sup>	Rolls 2.15 × 45 m	1.15
LOGICBASE V-SL waterproofing membrane*	Rolls 2.05 × 20 m	1.15
LOGICBASE V-ST waterproofing membrane**	Rolls 2.05 × 20 m	1.15
LOGICBASE V-PT protective PVC membrane***	Rolls 2.05 × 20 m	1.15
TECHNONICOL injection flange	Boxes, 50 pcs.	as per design
PVC disk fixing element	Boxes, 300 pcs.	as per design
Injection hoses	Bundles, 50 m	as per design

\* Alternative material — LOGICBASE P-SL TPO membrane;  
 \*\* Alternative material — LOGICBASE P-ST TPO or LOGICBASE V-ST-T PVC membrane;  
 \*\*\* Alternative material — LOGICBASE P-PT protective TPO membrane.

#### Application area

The system can be applied in tunnels that relate to rock mass as follows:

- Engineering and geologic properties of the mass: predominant hard rock with a high hardness ratio, low porosity, and high water content at the construction site.
- Hydrogeologic characteristic of the mass: presence of one or more water-bearing horizons with high capacity and hydraulic pressure, and the water is not homogeneous in terms of its chemical composition and degree of aggressiveness.



Single-layer waterproofing, umbrella system with drainage intended for application to newly constructed or reconstructed tunnels. The system protects the lining structure from the adverse impact of underground water.



1. Ground
2. Primary lining
3. PLANTER extra-geo dimpled membrane
4. TECHNOMICOL PVC disk fixing element
5. LOGICBASE V-SL waterproofing membrane
6. LOGICBASE V-PT protective membrane
7. Final lining

Primary collection and removal of infiltrating water.

Preparation of a gunite bed for the installation of waterproofing without the use of expensive equipment.

The drainage membrane prevents hydrostatic pressure from affecting the waterproofing.

Loose laid system, ensuring efficient compensation for any movements and deformations.

Possible to install at low temperatures.

Possible to install on a damp base.

Incorporates a membrane with a signal layer for prompt detection of damages.

The waterproofing system ensures effective protection against underground water that seeps in through defects in the primary lining.

The problem of the collection and removal of infiltrated water is solved with primary drainage made from either the PLANTER geo or extra-geo dimpled membrane. The dimpled surface of the membrane forms an air gap. Water that flows from the rock mass runs freely into drain pipes laid along the lower part of the tunnel. The PLANTER geo is laid on the primary lining of the tunnel walls and arch.

The LOGICBASE V-SL membrane (with a signal layer) and the LOGICBASE V-PT protective membrane ensure the reliability of the waterproofing that the system provides. The LOGICBASE V-SL waterproofing membrane is spot welded to disk fixing elements that fix the PLANTER geo or extra-geo drainage membrane.

The LOGICBASE V-PT PVC membrane is spot welded to the surface of the LOGICBASE V-SL membrane. It protects the waterproofing layer from damage during the concrete casting of the final lining. The material features high impact strength and excellent weldability.

#### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
PLANTER extra-geo dimpled membrane*	Rolls 2.05 × 15 m	
LOGICBASE V-SL waterproofing membrane**	Rolls 2.05 × 20 m	1.15
LOGICBASE V-PT protective membrane***	Rolls 2.05 × 20 m	1.15
PVC disk fixing element	Boxes, 300 pcs.	as per design

\* Alternative material: PLANTER extra-geo dimpled membrane;  
 \*\* Alternative material: LOGICBASE P-SL waterproofing membrane;  
 \*\*\* Alternative materials: LOGICBASE P-PT protective membrane.

#### Application area

The system can be applied in tunnels that relate to rock mass as follows:

- Engineering and geologic properties of the mass: hard rocks with a high hardness ratio water content, as well as low porosity, prevail at the construction site.
- Hydrogeologic characteristic of the mass: there is a low thickness water horizon with a homogeneous chemical composition and degree of aggressiveness.

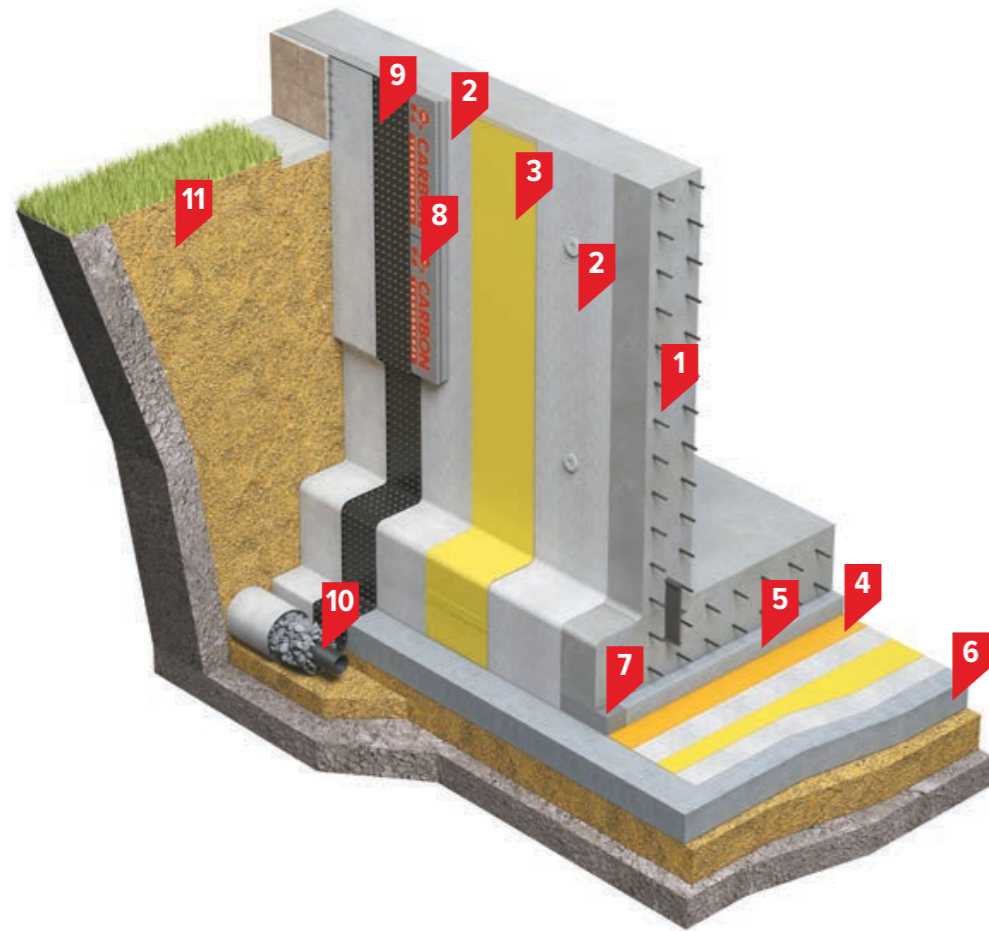




**Waterproofing  
Systems for  
Foundations**



For waterproofing the foundations of small buildings and structures that are constructed in ditches with backfill, in the absence of underground water.



1. Reinforced concrete structure
2. TECHNONICOL needle-punched geotextile, 500 g/m<sup>2</sup>
3. LOGICBASE V-SL PVC membrane
4. TECHNONICOL polyethylene film, 200 μm
5. Protective cement-sand screed
6. Base concrete
7. TECHNONICOL CARBON PROF XPS angular compensator
8. TECHNONICOL CARBON PROF XPS thermal insulation
9. PLANter extra-geo dimpled membrane
10. Drainage pipe
11. Backfilling material

Loose laid system, ensuring efficient compensation for any movements and deformations.

Possible to install at temperatures as low as -10°C.

Possible to install on a damp base.

Incorporates a membrane with a signal layer for prompt detection of damages.

The laying process is fire-safe, as it does not require the application of an open flame.

Quick installation.

An optimal system for waterproofing shallow foundations made of monolithic concrete. All the system's materials are made from thermoplastic polymers. They are an excellent alternative to materials made from modified bitumen.

Structural simplicity and high installation speed are among the specific features of the system.

The one-layer system is made from the LOGICBASE V-SL waterproofing membrane. The membrane is mechanically fixed to walls and loosely laid on base concrete.

The waterproofing membrane sheets are joined by welding the overlaps. Special automatic welding equipment is used to form a double seam with a central air channel for checking seam tightness. A foundation drainage system can be arranged as an additional measure to protect the structure.

#### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
TECHNONICOL needle-punched geotextile, 500 g/m <sup>2</sup>	Rolls	2.3
LOGICBASE V-SL waterproofing membrane*	Rolls 2.05 × 20	1.15
TECHNONICOL CARBON PROF 300 extruded polystyrene foam	580 × 1180 mm	as per design
PLANter extra-geo** dimpled membrane	2 × 15 m	1.15
TECHNONICOL CARBON PROF 300 extruded polystyrene foam compensator	580 × 1180 mm	as per design
TECHNONICOL polyethylene film 200 μm	1.5 – 3.0 m wide rolls	1.15

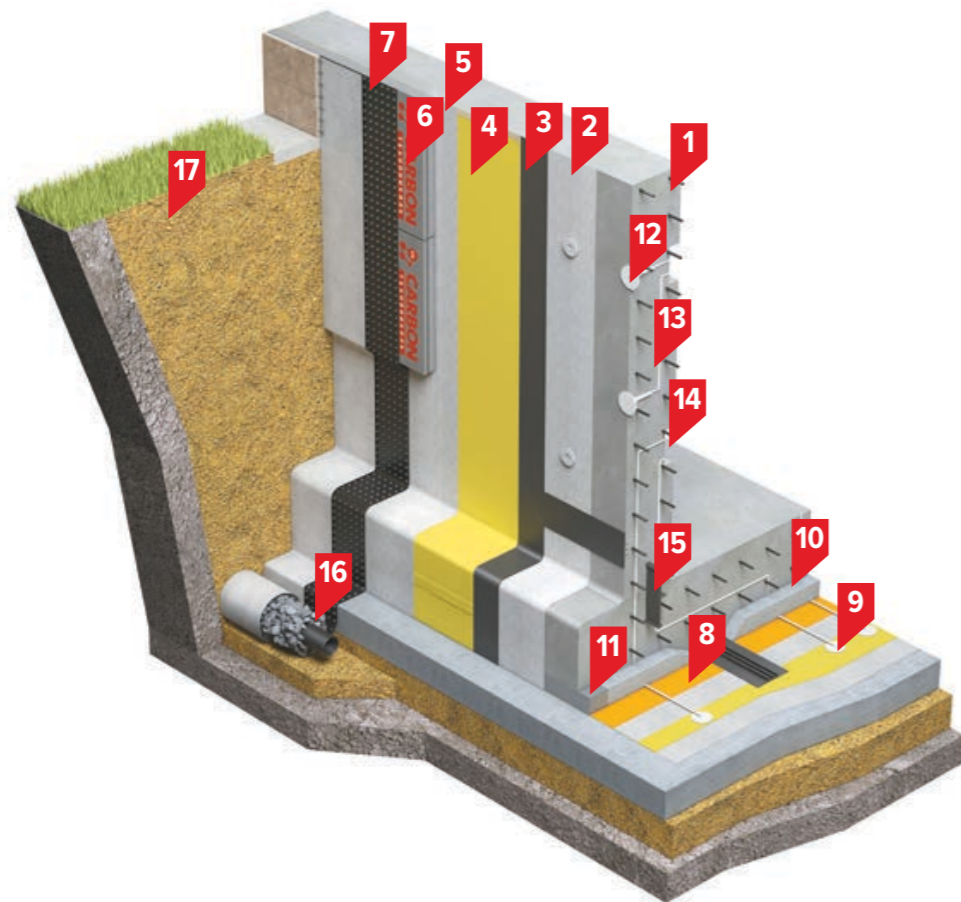
\* Alternative material — LOGICBASE P-SL waterproofing membrane based on thermoplastic polyolefines.

\*\* Alternative material — PLANter geo dimpled membrane.

#### Application area

- Absence of specific soils on a construction site with predominantly sandy soil.
- No underground water or there is only one horizon of it below the foundation base and the water is homogeneous in terms of chemical composition and degree of aggressiveness.

For waterproofing the foundations of mass construction buildings and structures with normal and increased levels of responsibility that are constructed in ditches with backfill in complicated.



1. Reinforced concrete structure
2. TECHNONICOL needle-punched geotextile, 500 g/m<sup>2</sup>
3. EC-220-3 waterstop
4. LOGICBASE V-SL PVC membrane
5. TECHNONICOL needle-punched geotextile, 500 g/m<sup>2</sup>
6. TECHNONICOL CARBON PROF XPS thermal insulation
7. PLANTER extra-geo dimpled membrane
8. TECHNONICOL polyethylene film, 200 µm
9. Angular injection flange
10. Protective cement-sand screed
11. TECHNONICOL CARBON PROF XPS angular compensator
12. Straight injection flange
13. Injection hose
14. Niche for injection hoses
15. IC-240-6 waterstop
16. Drainage pipe
17. Backfilling material

Repairable throughout the entire service life of the structure.

Loose laid system, ensuring efficient compensation for any movements and deformations.

Possible to install at low temperatures .

Possible to install on a damp base.

Incorporates a membrane with a signal layer for prompt detection of damages.

The laying process is fire-safe, as it does not require the application of an open flame.

This system is used for construction in open ditches. On vertical surfaces, components of the system are mounted on finished, reinforced concrete structures. LOGICBASE V-SL PVC membranes with a yellow signal layer are used as a waterproofing material.

Compartmentalization of the waterproofed area with waterstops and a repair injection system, which consists of injection hoses and flanges, are among the specific features of the system.

Compartmentalization is necessary to localize leaks if they appear. The waterstops prevent water from freely flowing between the waterproofing and the structure; it is confined to a section limited by waterstops. This greatly facilitates the detection and elimination of leaks when compared to systems without compartmentalization. Special injection compounds are injected through the system to repair a damaged section.

EC-220-3 or EC-320-4 PVC waterstops are usually used for compartmentalization of the waterproofing. On horizontal surfaces, the waterproofing is protected from mechanical damages by a TECHNONICOL geotextile (with a density of 500 g/m<sup>2</sup>), TECHNONICOL polyethylene film 200 mm, and a protective cement-sand screed. On vertical surfaces, a TECHNONICOL geotextile (with a density of 500 g/m<sup>2</sup>) and a PLANTER standard or PLANTER geo-dimpled sheet ensure protection. Using a PLANTER geo makes it possible to install a wall drainage system to increase the reliability of the waterproofing.

#### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
TECHNONICOL needle-punched geotextile, 500 g/m <sup>2</sup>	Rolls 2.15 × 45	2.3
LOGICBASEV-SL waterproofing membrane*	Rolls 2.05 × 20 m	1.15
TECHNONICOL CARBON PROF 300 extruded polystyrene foam	580 × 1180 mm	as per design
EC-220-3 PVC waterstop»	Bundles, 20 m	as per design
PLANTER extra-geo dimpled membrane**	2.0 × 15 m	1.15
TECHNONICOL CARBON PROF 300 extruded polystyrene foam	580 × 1180 mm	as per design
TECHNONICOL polyethylene film 200 µm	Rolls 1.5 – 3.0 m wide rolls	1.15
TECHNONICOL injection flange	Boxes, 50 pcs.	as per design
IC-240-6 waterstop****	Bundles, 20 m	as per design
Injection hoses	Bundles, 50 m	as per design

\* Alternative material — LOGICBASE P-SL waterproofing membrane based on thermoplastic polymers.

\*\* Alternative material — EC-320-4 waterstop or TECHNONICOL waterproofing PVC band.

\*\*\* Alternative material — PLANTER geo dimpled membrane.

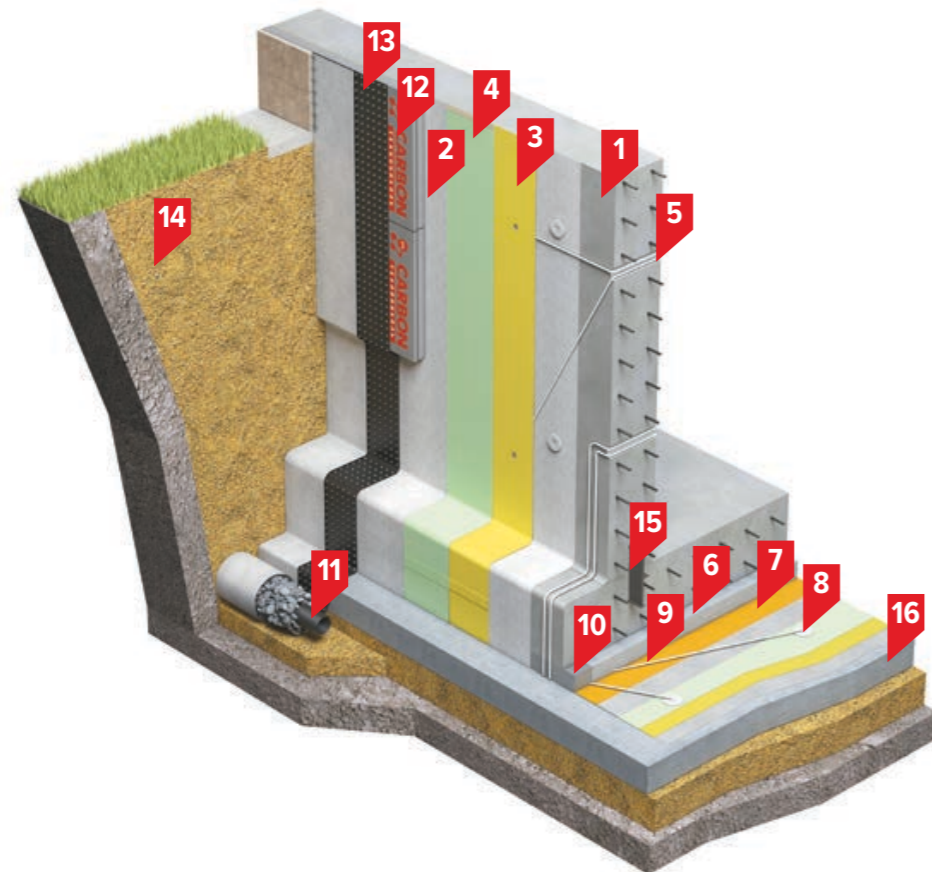
\*\*\*\* Alternative material — IC-240-2 waterstop.

#### Application area

Ground water formed as a result of an accumulation of ice and rain water. Underground water is represented by one or more horizons, located at the level of or above the foundation slab. Underground water is not homogeneous in terms of chemical composition and contains impurities.



For waterproofing the foundations of complicated and unique buildings with normal and increased levels of responsibility that are constructed in ditches, with backfill, in complicated engineering and geologic conditions.



- |   |   |
|---|---|
| 1. Reinforced concrete structure              | 10. TECHNONICOL CARBON PROF XPS angular compensator |
| 2. TECHNONICOL needle-punched geotextile, 500 | 11. Drainage pipe                                   |
| 3. LOGICBASE V-SL PVC membrane                | 12. TECHNONICOL CARBON PROF XPS thermal insulation  |
| 4. LOGICBASE V-ST textured PVC membrane       | 13. PLANTER extra-geo dimpled membrane              |
| 5. Metal pipe for injection hoses             | 14. Backfilling material                            |
| 6. Protective cement-sand screed              | 15. IC-240-6 waterstop                              |
| 7. TECHNONICOL polyethylene film, 200 µm      | 16. Base concrete                                   |
| 8. Angular injection flange                   |   |
| 9. Injection hose                             |   |

Increased reliability thanks to two waterproofing layers.

Possible to control the system's watertightness at all stages of construction and operation.

Repairability within the whole service life of the structure.

Localization of potential leaks.

Possible to install at temperatures as low as -10°C.

Possible to install on a damp base.

Incorporates a membrane with a signal layer for prompt detection of damages.

No open flame required.

The system is a two-layer system with vacuum quality control. It consists of two waterproofing materials: the LOGICBASE V-SL membrane with a signal layer and the LOGICBASE V-ST membrane with a textured surface.

LOGICBASE V-SL and LOGICBASE V-ST membranes are used to create two waterproofing layers with an area of up to 150 m<sup>2</sup>. The insulation layer of the LOGICBASE V-ST membrane is laid on the layer of the LOGICBASE V-SL membrane, textured face down. The two layers are joined by all-around welding to form an airtight compartment with an area of up to 150 m<sup>2</sup>. After welding, holes are cut in the upper membrane (LOGICBASE V-ST), and injection flanges are welded at these points. The pipes for vacuum quality control are connected to these flanges.

During the vacuum test, air is pumped out of the waterproofing compartments via these pipes, and the vacuum level is measured. The textured surface of LOGICBASE V-ST prevents the membranes from sticking together during the test. The criterion for the airtightness of a compartment is the maintenance of the vacuum for five minutes. If necessary, the waterproofing is repaired by pumping special injection compounds into the space between the membranes via the connected pipes.

Geotextile, polyethylene film, and protective screed are used as protective layers on horizontal surfaces. Geotextile and PLANTER geo or the PLANTER standard, dimpled membrane are used as protective layers on vertical surfaces.

#### Material consumption

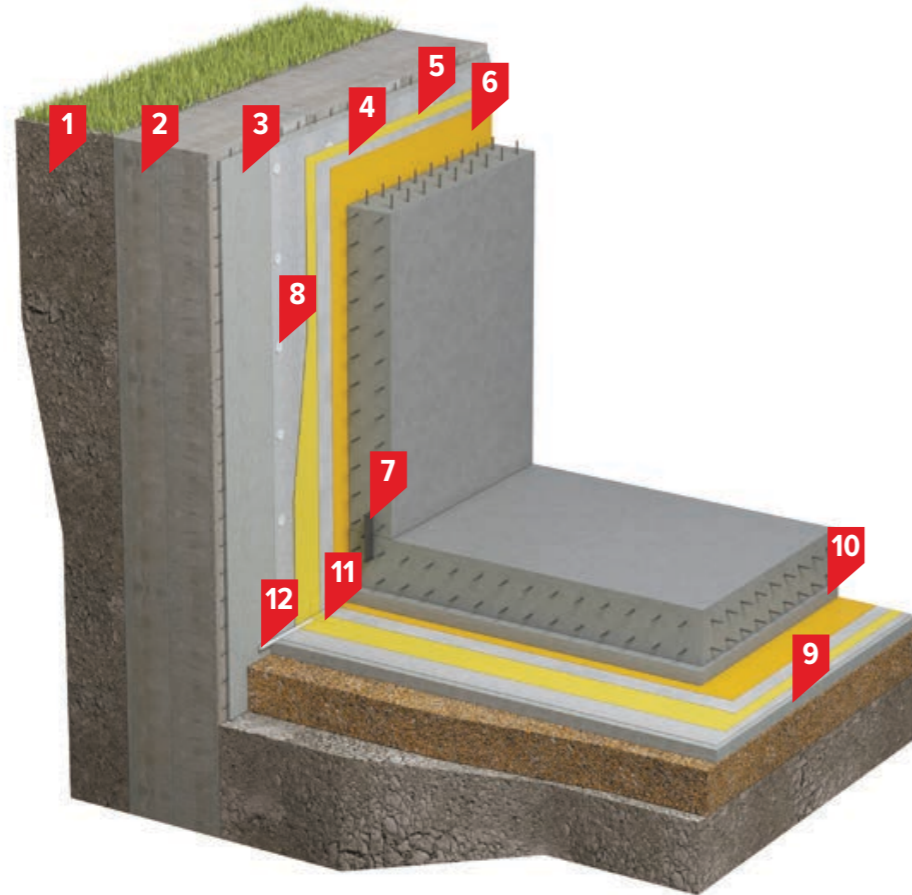
Material	Dimension, packaging	Consumption per, m <sup>2</sup>
TECHNONICOL needle-punched geotextile, 500 g/m <sup>2</sup>	Rolls 2.15 × 45 m	2.3
LOGICBASE V-SL waterproofing membrane*	Rolls 2.05 × 20 m	1.15
LOGICBASE V-ST waterproofing membrane	Rolls 2.05 × 20 m	1.15
TECHNONICOL CARBON PROF 300 extruded polystyrene foam	580 × 1180 mm	as per design
PLANTER extra-geo dimpled membrane**	2.0 × 15 m	1.15
TECHNONICOL CARBON PROF 300 extruded polystyrene foam	580 × 1180 mm	as per design
TECHNONICOL polyethylene film 200 µm	Rolls 1.5 – 3.0 m wide rolls	1.15
TECHNONICOL injection flange	Boxes, 50 pcs.	as per design
IC-240-6 waterstop	Bundles, 20 m	as per design
Injection hoses	Bundles, 50 m	as per design

\* Alternative material — LOGICBASE P-SL TPO membrane;  
 \*\* Alternative material — LOGICBASE P-ST TPO based membrane;  
 \*\*\* Alternative material — PLANTER geo dimpled membrane.

#### Application area

Ground water formed as a result of an accumulation of ice and rain water. Underground water is represented by one or more pressure horizons of variable capacity, located above the foundation plate. Underground water is not homogeneous in terms of chemical composition and contains impurities.

For waterproofing the foundations of small buildings and structures that are constructed in ditches, with a diaphragm wall, in the absence of underground water. The foundation abuts the diaphragm wall.



1. Ground
2. Diaphragm wall
3. Leveling plaster
4. Needle-punched geotextile TECHNONICOL, 500 g/m<sup>2</sup>
5. LOGICBASE V-SL PVC membrane
6. TECHNONICOL polyethylene film, 200 μm
7. IC-240-6 waterstop
8. TECHNONICOL PVC disk fixing element
9. Base concrete
10. Protective screed
11. Strengthening layer of LOGICBASE V-SL membrane
12. Cellular polyethylene compensator

Loose laid system, ensuring efficient compensation for any movements and deformations.

Possible to install at temperatures as low as -10°C.

Possible to install on a damp base.

Incorporates a membrane with a signal layer for prompt detection of damages.

The laying process is fire-safe, as it does not require the application of an open flame.

Quick installation of the system.

In conditions of compact planning, in close proximity to existing buildings, foundations are constructed in ditches limited by a diaphragm wall; often this is the only technological solution in such conditions. In this system, LOGICBASE V-SL PVC unreinforced membrane is used as a waterproofing material. The waterproofing membrane is installed on the horizontal concrete base and the vertical, leveled diaphragm wall of the ditch before construction of the bearing structure. The leveling layer of cement-sand slurry or extruded polystyrene is applied to prepare the surface of the diaphragm wall. Rubber-granulate mats or in some cases, PLANTER dimpled sheets, can also be used. The system consists of a geotextile underlayer, a waterproofing membrane, a protective geotextile, and a polythethylene film layer. Moreover, cement-sand screed is applied to the horizontal surface to prevent membrane damage during the course of the installation of the reinforcement foundation slab.

#### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
TECHNONICOL needle-punched geotextile, 500 g/m <sup>2</sup>	Rolls 2.15 × 45 m	2.3
PVC disk fixing element	Boxes, 50 pcs.	as per design
LOGICBASE V-ST waterproofing membrane	Rolls 2.05 × 20 m	1.15
TECHNONICOL polyethylene film 200 μm	Rolls 1.5 — 3.0 m wide rolls	1.15
Strengthening layer of LOGICBASE V-SL membrane	Rolls 2.05 × 20 m	as per design
Waterstop IC-240-6	Bundles, 20 m	as per design

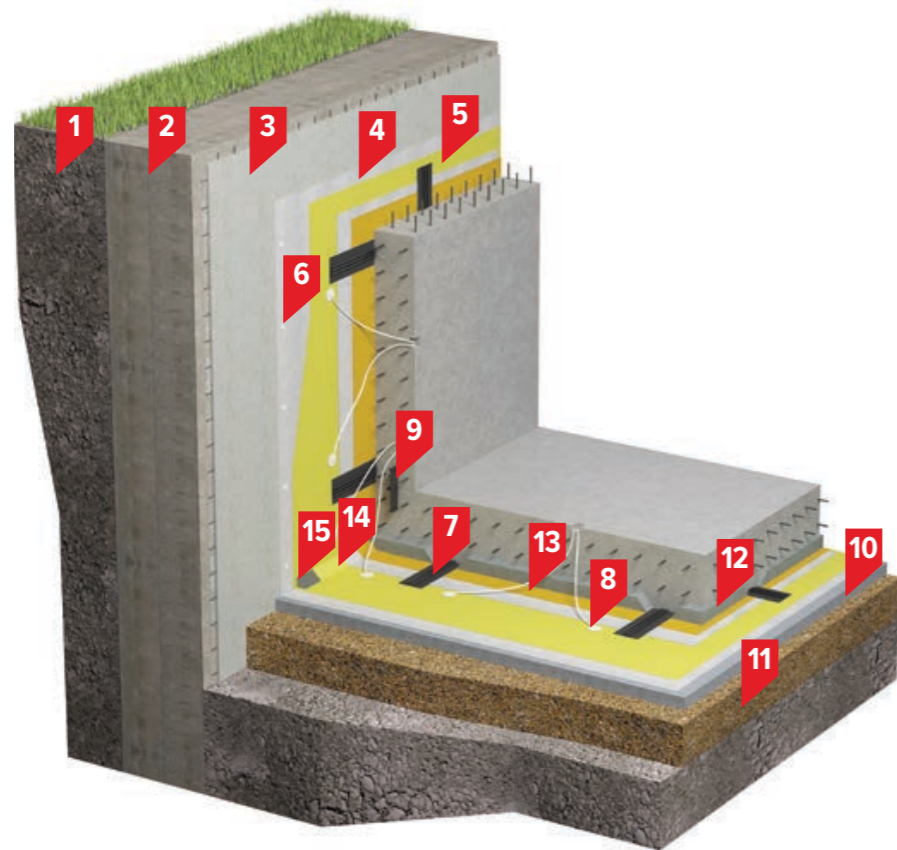
\* Alternative material — LOGICBASE P-SL waterproofing membrane based! on thermoplastic polymers.

#### Application area

- Absence of specific soils at a construction site with predominantly sandy soil.
- No ground water or there is only one horizon of it, located below the foundation plate, and the water is homogeneous in terms of chemical composition and degree of aggressiveness.



For waterproofing the foundations of mass construction buildings and structures with normal and increased levels of responsibility that are constructed in complicated engineering and geologic conditions, in ditches with a diaphragm wall (3-20 m deep). The foundation abuts the diaphragm wall.



- |  |   |
|--|---|
| 1. Ground  | 10. Base concrete                             |
| 2. Ditch envelope — diaphragm wall                                 | 11. Sand cushion                              |
| 3. Leveling plaster or TECHNOMICOL CARBON PROF XPS heat insulation | 12. Protective cement-sand screed TECHNOMICOL |
| 4. TECHNOMICOL needle-punched geotextile, 500 g/m <sup>2</sup>     | 13. Polyethylene film, 200 μm                 |
| 5. LOGICBASE V-SL PVC membrane                                     | 14. Strengthening layer of LOGICBASE V-SL     |
| 6. TECHNOMICOL PVC disk fixing element                             | 15. Cellular polyethylene compensator         |
| 7. EC-220-3 PVC waterstop  |   |
| 8. Injection flange  |   |
| 9. IC-240-6 waterstop  |   |

Repairability during the whole service life of the structure.

Loose laid system, ensuring efficient compensation for any movements and deformations.

Possible to install at temperatures as low as -10 °C.

Possible to install on a damp base.

Incorporates a membrane with a signal layer for prompt detection of damages.

The laying process is fire-safe, as it does not require the application of an open flame.

LOGICBASE V-SL PVC membranes with a yellow signal layer are used as waterproofing material. The waterproofing system is loose laid on horizontal base concrete and attached to vertical sheeting with PVC disk fixing elements. Membrane sheets are hot air welded with special equipment. The LOGICBASE V-SL PVC membrane is placed between two layers of geotextile for protection against mechanical damage. On vertical and horizontal foundation structures, polyethylene film is placed above the geotextile. Moreover, on the horizontal surface the waterproofing system is protected by cement-sand screed. The compartmentalization of the waterproofing area by waterstops and the presence of a repair injection system are the distinctive features of the system. The repair system includes injection hoses and injection flanges. Waterproofing layer compartmentalization is required for the localization of leaks, if there are any. Thanks to the waterstop system, water cannot freely move between the waterproofing layer and the structure; it remains in the restricted section. It is much easier to detect and eliminate such a leak than it would be without the sectioning system. During repair, special polymeric compounds are delivered to the damaged section of the waterproofing via the injection system, which fills it up, polymerizes, and restores the integrity of the waterproofing layer.

#### Material consumption

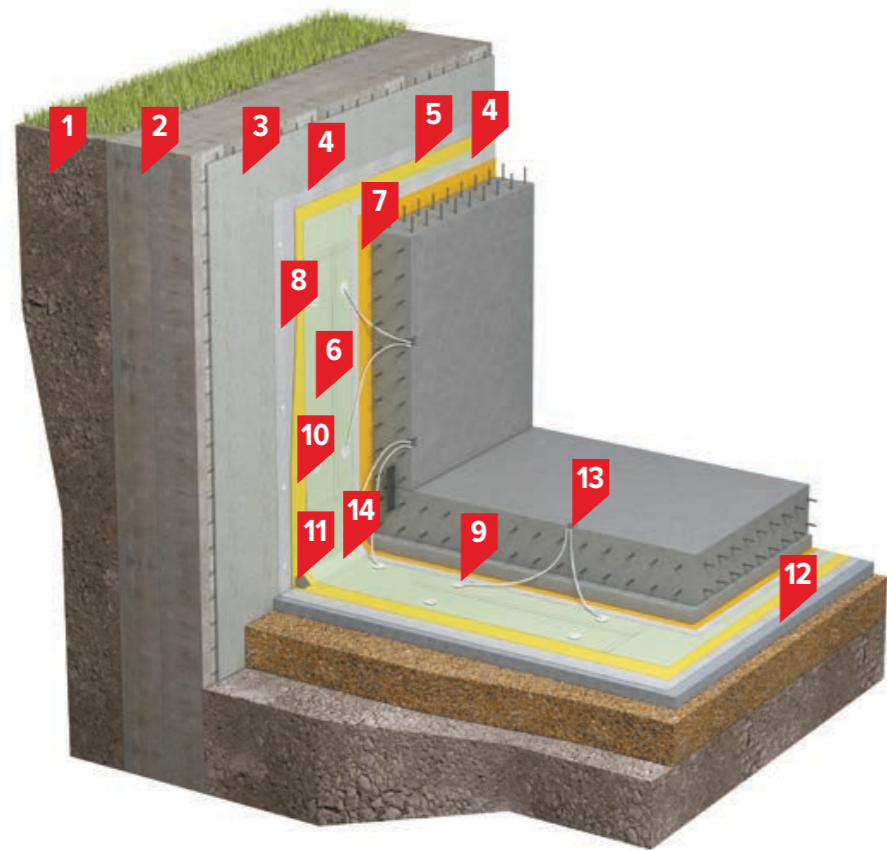
Material	Dimension, packaging	Consumption per, m <sup>2</sup>
TECHNONICOL needle-punched geotextile, 500 g/m <sup>2</sup>	Rolls 2.15 × 45 m	2.3
LOGICBASE V-SL waterproofing membrane*	Rolls 2.05 × 20 m	1.15
TECHNONICOL polyethylene film 200 μm	Rolls 1.5 — 3.0 m wide rolls	1.15
TECHNONICOL injection flange	Boxes, 50 pcs.	as per design
Strengthening layer of LOGICBASE V-SL membrane	Rolls 2.05 × 20 m	as per design
EC-220-3 waterstop**	EC-220-3 waterstop», r.m.	as per design
Waterstop IC-240-6	Bundles, 20 m	as per design
PVC disk fixing element	Boxes, 300 pcs.	as per design
Injection hoses	Bundles, 50 m	as per design

\* Alternative material — LOGICBASE P-SL waterproofing membrane based on thermoplastic polyolefines.  
 \*\* Alternative material — EC-320-4 PVC waterstop

#### Application area

Ground water formed as a result of an accumulation of ice and rain water. Underground water is represented by one or more horizons, located at the level of or above the foundation plate. The underground water is not homogeneous in terms of chemical composition and contains impurities.

For waterproofing the foundations of complicated, unique buildings and structures with an increased level of responsibility that are constructed in complicated engineering and geologic conditions, in ditches with a diaphragm wall (3-50 m deep). The foundation abuts the diaphragm wall.



1. Ground
2. Diaphragm wall
3. Leveling plaster or TECHNOMICOL CARBON PROF XPS
4. TECHNOMICOL needle-punched geotextile, 500 g/m<sup>2</sup>
5. LOGICBASE V-SL PVC membrane
6. LOGICBASE V-ST PVC membrane
7. TECHNOMICOL polyethylene film, 200 urn
8. TECHNOMICOL PVC disk fixing element
9. Injection flange
10. LOGICBASE-V-SL PVC membrane
11. TECHNOMICOL CARBON PROF XPS corner compensator
12. Base concrete
13. Niche for injection hoses
14. Strengthening layer of LOGICBASE V-SL waterproofing PVC membrane

Possible to control the system's watertightness at all stages of construction and operation.

Loose laid system, ensuring efficient compensation for any movements and deformations.

Localization of potential leaks.

Possible to install at temperatures as low as -10 °C.

Possible to install on a damp base.

The system is a two-layer system with vacuum quality control. The system includes two waterproofing materials: LOGICBASE V-SL membrane with a signal layer and LOGICBASE V-ST structured membrane. LOGICBASE V-SL and LOGICBASE V-ST membranes are used for the construction of waterproofing compartments of up to 150 m<sup>2</sup>. The waterproofing layer of LOGICBASE V-ST is placed on LOGICBASE V-SL with the textured surface facing downwards. Then the two layers are welded along the perimeter to form a waterproof compartment of up to 150 m<sup>2</sup>. After welding the two waterproofing layers, holes are made in the upper LOGICBASE V-ST membrane and injection flanges with connected hoses are welded on these spots. During the vacuum test, air is pumped out from the waterproofing cell (the space between the two waterproofing membranes) via connected hoses and the vacuum level is measured. The tightness criterion is the preservation of the vacuum in the cell within five minutes. If necessary, waterproofing layer repair is carried out through an injection of a compound into the space between the two membranes through the connected hoses. The protective layer of the vacuum system is geotextile and polyethylene film. On the horizontal surface, the waterproofing layer is also protected by protective screed. For additional reliability, the system may involve sectioning the waterproofing into isolated compartments with waterstops and the provision of an additional injection repair system.

#### Material consumption

Material	Dimension, packaging	Consumption per, m <sup>2</sup>
TECHNONICOL needle-punched geotextile, 500 g/m <sup>2</sup>	Rolls 2.15 × 45 m	2.3
LOGICBASE V-SL waterproofing membrane*	Rolls 2.05 × 20 m	1.15
LOGICBASE V-ST waterproofing membrane	Rolls 2.05 × 20 m	1.15
TECHNONICOL CARBON PROF 300 extruded polystyrene foam	580 × 1180 mm	as per design
TECHNONICOL CARBON PROF 300 extruded polystyrene foam	580 × 1180 mm	as per design
TECHNONICOL polyethylene film 200 μm	Rolls 1.5 — 3.0 m wide rolls	1.15

\* Alternate material — LOGICBASE P-SL TPO membrane;  
 \*\* Alternative material - LOGICBASE P-ST TPO or LOGICBASE V-ST-T PVC membrane.

#### Application area

- Specific soils of widespread occurrence with predominantly clay and loamy ground.
- Ground water formed as a result of an accumulation of ice and rain water. Underground water is represented by one or more horizons of variable capacity, located above the foundation plate. The underground water is not homogeneous in terms of chemical composition and contains impurities.





## Reference List





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### Distribution Centre Tchibo

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#### LOGICROOF V-RP 1.5 mm

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The area of 65 000 m<sup>2</sup>  
2017. Cheb, Czech Republic



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### Toyota Plant

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#### LOGICROOF V-RP 1.5 mm

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The area of 60 000 m<sup>2</sup>  
2015, St. Petersburg, Russia



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### Petroleum Company PEMEX

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#### LOGICROOF V-RP WHITE 1.8 mm

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The area of 25 000 m<sup>2</sup>  
2017. Mexico



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### Olympic Stadium

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#### LOGICROOF V-RP FB 18 mm

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The area of 40 000 m<sup>2</sup>  
2013, Moscow, Russia



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### Arena Kaliningrad

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#### LOGICROOF V-RP 1.5 mm

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The area of 40 000 m<sup>2</sup>  
2017. Kaliningrad, Russia



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### Kurumoch International Airport

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#### LOGICROOF V-RP 15 mm

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The area of 44 000 m<sup>2</sup>  
2015, Kurumoch, Russia





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**Great Amber Concert Hall**

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**LOGICROOF V-RP WHITE  
2.0 mm**

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The area of 40 000 m<sup>2</sup>  
2017



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**Hypermarkets OBI**

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**LOGICROOF V-RP 12 mm**

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The area of 150 000 m<sup>2</sup>  
2011, Russia



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**Spartak Moscow Stadium**

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**LOGICROOF V-RP 12 mm**

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The area of 36 000 m<sup>2</sup>  
2015, Moscow, Russia



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**IKEA Mall**

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**LOGICROOF V-RP 1.8 mm**

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**LOGICPIR PROF with  
aluminium foil surface**

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The area of 40 000 m<sup>2</sup>  
2017, Ufa



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**IKEA Mall**

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**LOGICROOF V-RP 1.8 mm**

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**LOGICPIR PROF with  
aluminium foil surface**

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The area of 47 000 m<sup>2</sup>  
2017, Ekaterinburg



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**IKEA Mall**

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**LOGICROOF V-RP 1.8 mm**

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**LOGICPIR PROF with  
aluminium foil surface**

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The area of 31 500 m<sup>2</sup>  
2017, Omsk





**Moscow City,  
plot 2. 3. 11. 17. 18**

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**LOGICBASE V-SL 2.0 mm**

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Waterproofing of the basement  
The area of 100 000 m<sup>2</sup>  
2008–2017, Moscow



**Mriya Resort & Spa**

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**LOGICBASE V-SL 2.0 mm**

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Waterproofing of the basement  
The area of 40 000 m<sup>2</sup>  
2016–2017, Crimea



**Leningrad Atomic Power  
Station-2**

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**LOGICBASE V-SL 2.0 mm**

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Waterproofing of the basement  
The area of 100 000 m<sup>2</sup>  
2011–2017, St. Petersburg



**Railway Tunnel**

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**LOGICBASE V-SL 2.0 mm**

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Waterproofing of railway tunnels # 6. 7. 8.  
The area of 35 000 m<sup>2</sup>  
2012, Sochi



**Dzhubgba-Sochi Tunnel**

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**LOGICBASE V-SL 2.0 mm**

---

Waterproofing of the road tunnel  
The area of 23 500 m<sup>2</sup>  
2011-2012, South Russia



**Railway Tunnel T-49A**

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**LOGICBASE V-SL 2.0 mm**

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Waterproofing of the railway tunnel  
The area of 500 000 m<sup>2</sup>  
2017, Kashmir, India





### Railway Tunnel T-49B

#### LOGICBASE V-SL 2.0 mm

Waterproofing of the railway tunnel  
 The area of 290 000 m<sup>2</sup>  
 2017, Kashmir, India



### Jebskiy Railway Tunnel

#### LOGICBASE V-SL 2.0 mm

Waterproofing of the railway tunnel  
 The area of 25 000 m<sup>2</sup>  
 2016, Krasnoyarsk Region, Russia



### Road Tunnel at the 91-th km of the Transcaucasian Highway

#### LOGICBASE V-SL 2.0 mm

Waterproofing of the tunnel  
 The area of 35 000 m<sup>2</sup>  
 2016, North Caucasus, South Russia



### Moskva Station

#### LOGICBASE V-SL 2.0 mm

Waterproofing of the station  
 The area of 20 000 m<sup>2</sup>  
 2013-2014, Kazakhstan



### Likhmanovskaya Station

#### LOGICBASE V-SL 2.0 mm

Waterproofing of the station  
 The area of 25 000 m<sup>2</sup>  
 2016-2017, Russia



### Rokskiy Road Tunnel

#### LOGICBASE V-SL 1.5 mm

Waterproofing of the tunnel  
 The area of 40 000 m<sup>2</sup>  
 2015, North Caucasus, South Russia





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**Museum and Exhibition  
Complex of the Moscow  
region "New Jerusalem"**

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**PLANTER Geo**

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Green roof  
The area of 15 000 m<sup>2</sup>  
Russia, Istra, Moscow region



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**Trade&Entertainment Center  
"SKY"**

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**PLANTER Geo**

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Multipurpose flat roof, underground  
drainage  
The area of 10 000 m<sup>2</sup>  
Russia, Nizhny Novgorod



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**Housing Complex  
"Embankments City"**

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**PLANTER Geo**

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Underground drainage  
The area of 13 000 m<sup>2</sup>  
Russia, Moscow region, Khimki



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**Logistic Center "Magnet"**

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**PLANTER Geo**

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Bedded drainage  
The area of 35 000 m<sup>2</sup>  
Russia, Krasnoyarsk



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**Hotel Complex "Roza Hutor"**

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**PLANTER Geo**

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Underground drainage  
The area of 5 000 m<sup>2</sup>  
Russia, Sochi



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**Micro district "Solar System"**

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**PLANTER Geo**

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Multipurpose flat roof, underground  
drainage  
The area of 25 000 m<sup>2</sup>  
Russia, Moscow



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**Winter Sports Complex**

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**PLANTER Geo**

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Underground drainage  
The area of 35 000 m<sup>2</sup>  
Russia, Cheboksary





## Documentation

# Certificates and Conclusions

Many established, independent institutes have confirmed the high quality of our materials.



## Compliance with European quality standards, CE

LOGICROOF polymeric membranes comply with the EN 13956 standard, meaning that the material is health-safe and environmentally sound.



## Fire hazard class Broof (t1), (t2), (t3)

LOGICROOF polymeric membranes have high fireproof properties (B Roof (t1), B Roof (t2), B Roof (t3)); this is confirmed by the corresponding tests. The fire resistance tests (EN 1187) aimed to define the properties of the roofing materials in the context of fire propagation, taking into account the base (insulation type) and roof slope, as well as the effects of wind and heat. The tests simulate the conditions of a fire on the roof with maximum realism.



## Compliance with the requirements of The Foundation for Scientific and Industrial Research SINTEF

The long service life of the LOGICROOF membranes is confirmed by the independent research organisation SINTEF (Norway).

Several tests were performed, including artificial ageing according to the EN 1297 cycle (UV and water impact) for the duration of 1000 hours. The main stress-related properties of the material either did not change at the end of the test, or their change was negligible.

The strength and elongation indexes at maximum load were 0 to 2.5% (SINTEF tolerance is 20%), and the melt flow index at low temperatures showed an expressive value of 40 °C (accepted value is 5 °C).

The SINTEF certificate also confirms that the given material is safe for people and the environment.



## Compliance with ETAG 006 wind load

LOGICROOF polymeric membranes were successfully tested for wind loads at the BDA Research Institute (Keuringsinstituut B.V., Netherlands) in accordance with the ETAG 006: 2000/ Amended: 2007



The Solar Reflectance Index (SRI) is a measure of the solar reflectance and emissivity of materials that can be used as an indicator of how hot they are likely to become when solar radiation is incident on their surface. The lower the SRI, the hotter a material is likely to become in the sunshine.

This is important as solar radiation can cause buildings to overheat if their external fabric has a high solar absorptance and is unable to 'lose' (emit) absorbed heat by re-radiating it to the outside. In addition, the high solar absorbent nature of many human-made surfaces means that urban areas can have a higher average temperature than surrounding green spaces. This is referred to as the urban heat island effect.

The Solar Reflectance Index can be used in 'cool roof' calculations to demonstrate compliance with LEED (Leadership in Energy and Environmental Design), a voluntary environmental certification system developed by the U.S. Green Building Council.



A building industry based on ecological properties has been as stable trend in world practice over the past decades. LEED (Leadership in Energy and Environmental Design) is a rating certification system for "green" buildings with high technical and operational properties developed by the U.S. Green Building Council.

The system is based on ratings. The material itself cannot receive a LEED certificate, but if it is used in building construction, the building can get a certain number of points. Roofing systems with TECHNINCOL PVC membrane and LOGICPIR thermal insulation boards can directly affect the receipt of up to twenty-two points (depending on the version and version of LEED, as well as the volume of design solutions using LOGICROOF PVC membrane) and to comply with the mandatory LEED standard for energy efficiency.



Testing according to prEN 13491:2016 for an intended service life declaration of up to fifty years.





[www.logicroof.ru](http://www.logicroof.ru)