



LOGICPIR THERMAL INSULATION BOARD

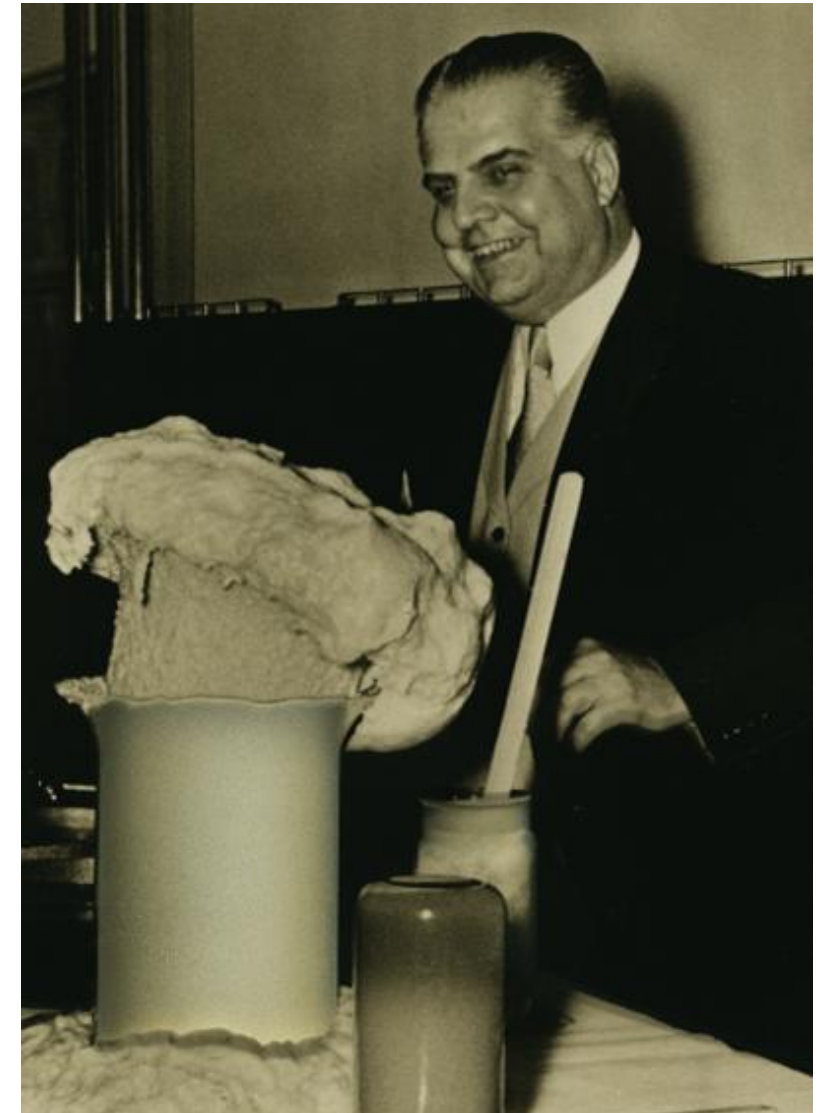
A NEW GENERATION OF CONSTRUCTION MATERIALS

KNOWLEDGE. EXPERIENCE. CRAFTSMANSHIP.

WWW.TECHNONICOL.ASIA

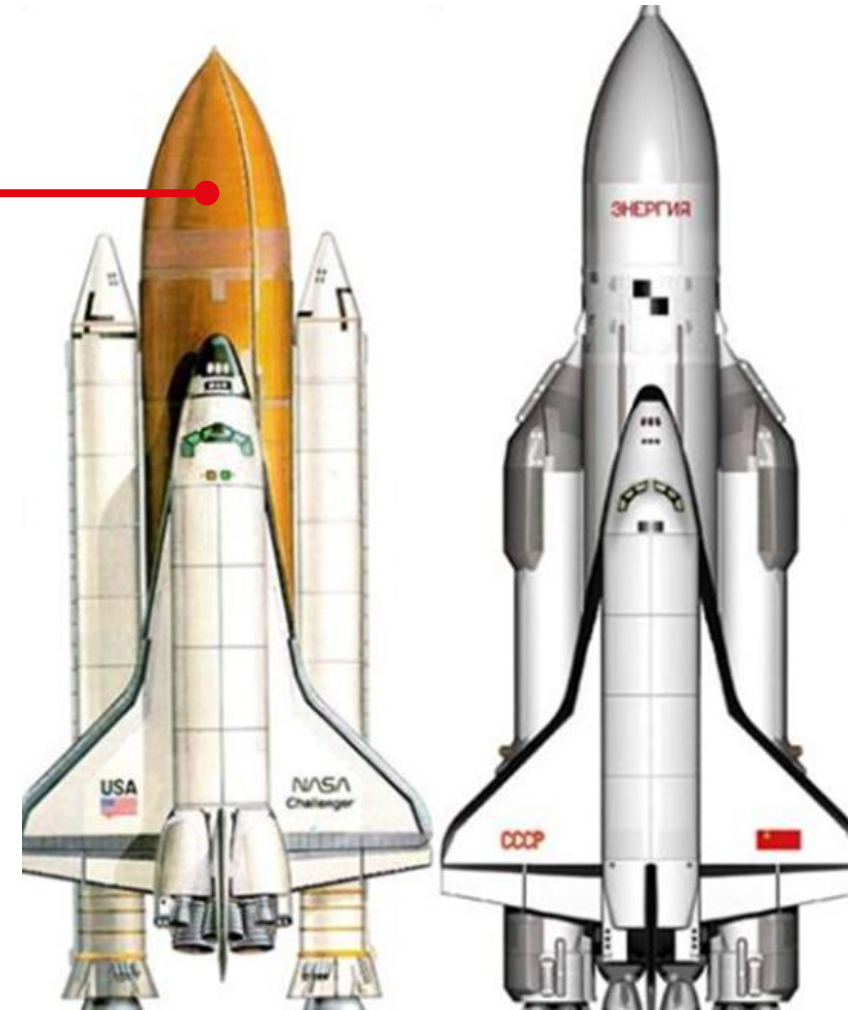
The discovery of Polyurethane Foam is attributed to Otto Bayer (founder of the group BAYER), who invented this new material for the first time in 1937, while he was trying to obtain a new polymer in the Bayer laboratories in Germany. That was a true revolution in the sphere of materials!

Thanks to its extraordinary mix of lightness, softness, elasticity, pleasantness at touch and resistance to strain, the flexible polyurethane foam soon became the material that finds a great purpose in several productive sectors, from furniture upholstery and sporting goods to the construction industry.

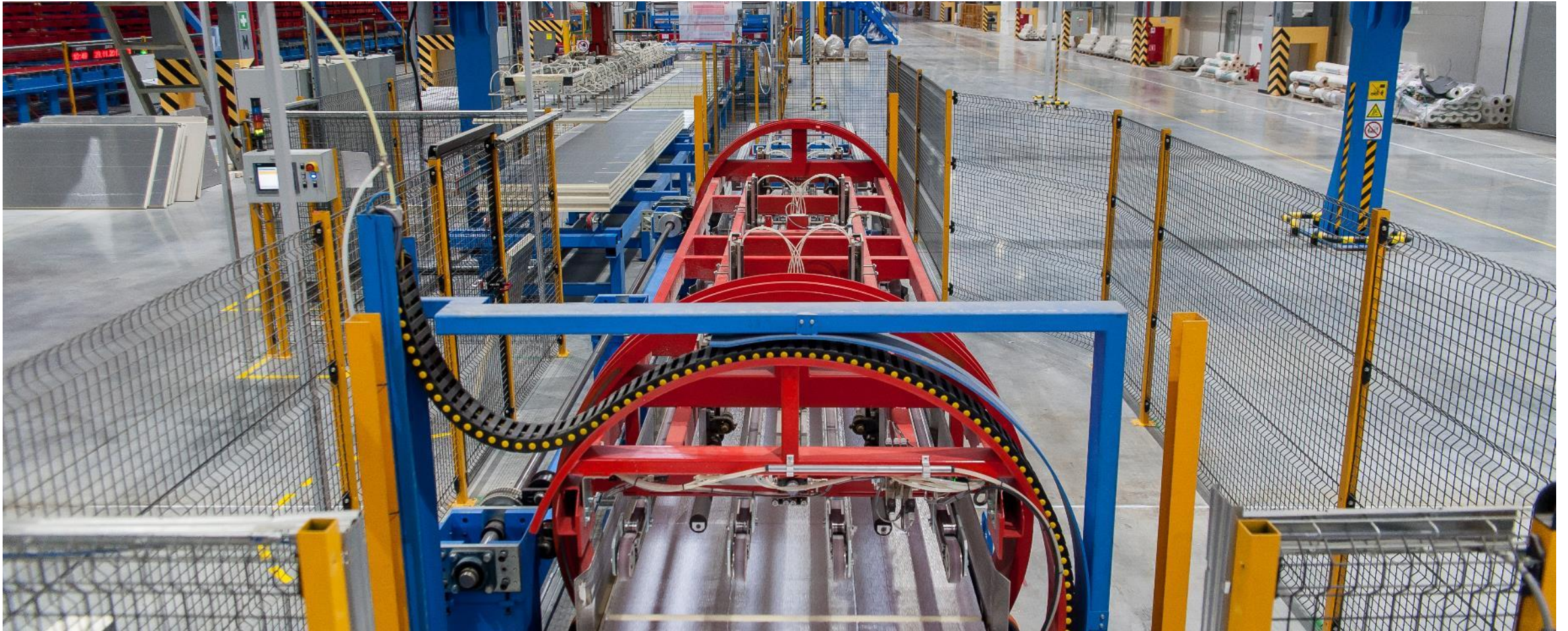


Polyurethane insulation was already used in Space Shuttles, USA (1971) and the spacecraft Buran, USSR (1976).

Protective coating for external fuel tank



Polyisocyanurate, or simply PIR, is a modified and improved polyurethane foam, which is known in the world since 1968. Nowadays, in the context of constantly rising energy prices, energy-saving materials like PIR are becoming extremely popular in various industries.



According to the research of National Roofing Contractors Association (NRCA) and IAL Consultants, PIR insulation is the market leader in roofing segment in the USA:

75% of all new flat roofs are being constructed using PIR

70% of all renovation projects are carried out with PIR





LOGIPIR BOARD BY TECHNONICOL

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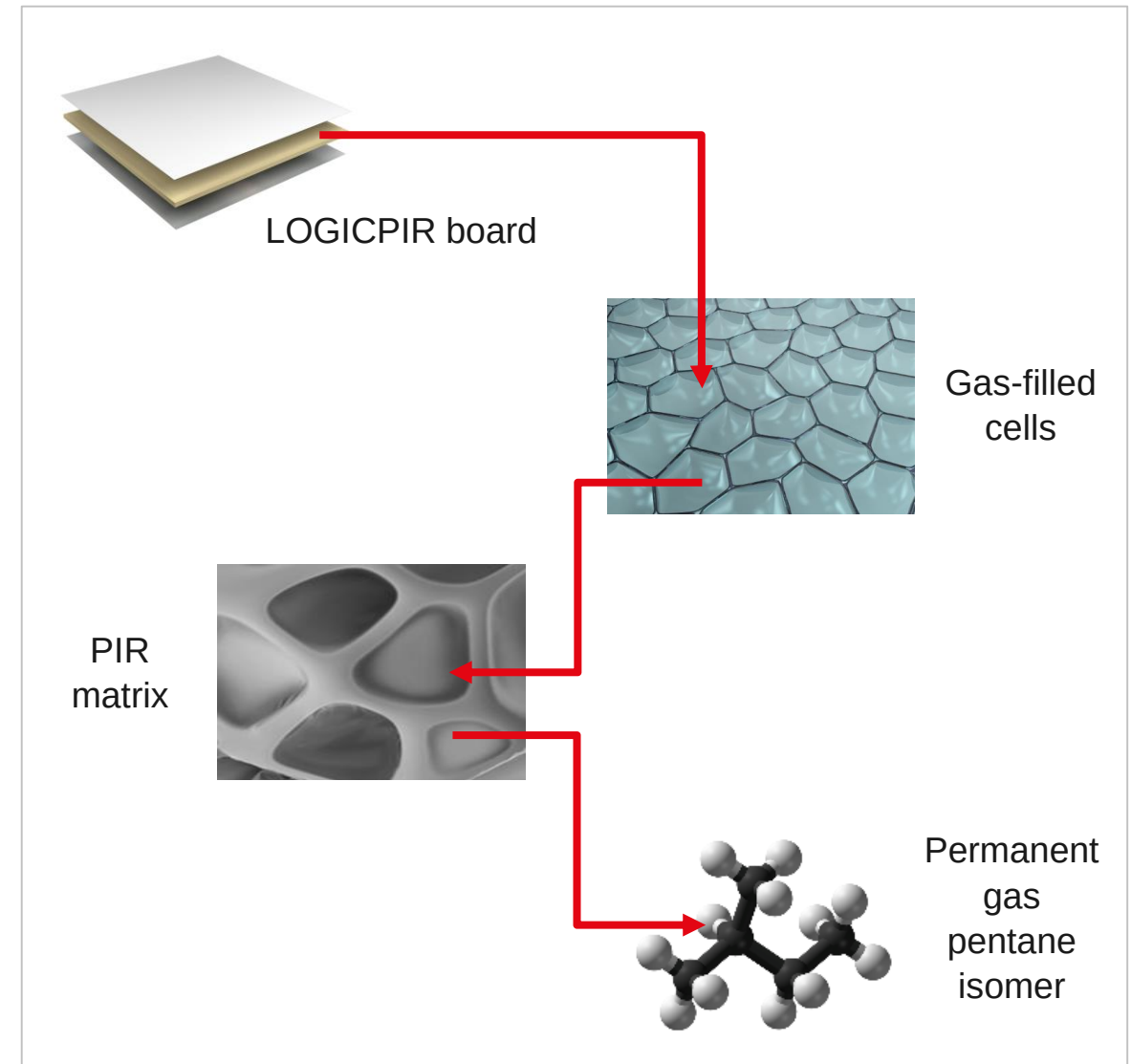
In 2016, TECHNONICOL launched a PIR factory in Ryazan. The production capacity of the line is **30 million m²** per year!



Thermal insulation LOGICPIR by TECHNONICOL is a polymer framework of many closed and gas-filled cells, which form a rigid homogeneous structure with high strength. The molecular ring structure of the polymer with strong chemical bonds and the high density of these bonds between the elements makes their destruction difficult. Closed rigid cells make up more than 95% of the volume of the material and provide it with:

- Record-low thermal conductivity
- Mechanical strength
- Minimal water absorption
- High fire resistance

Thus, thanks to its' chemical continuity, PIR boards by TECHNONICOL retain all the positive properties of polyurethane.





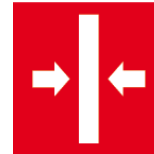
RECORD-LOW THERMAL CONDUCTIVITY



LIGHTWEIGHT



RELIABILITY AND DURABILITY



SMALL THICKNESS



HIGH FIRE RESISTANCE



EASY TO INSTALL



DYNAMIC LOAD RESISTANCE



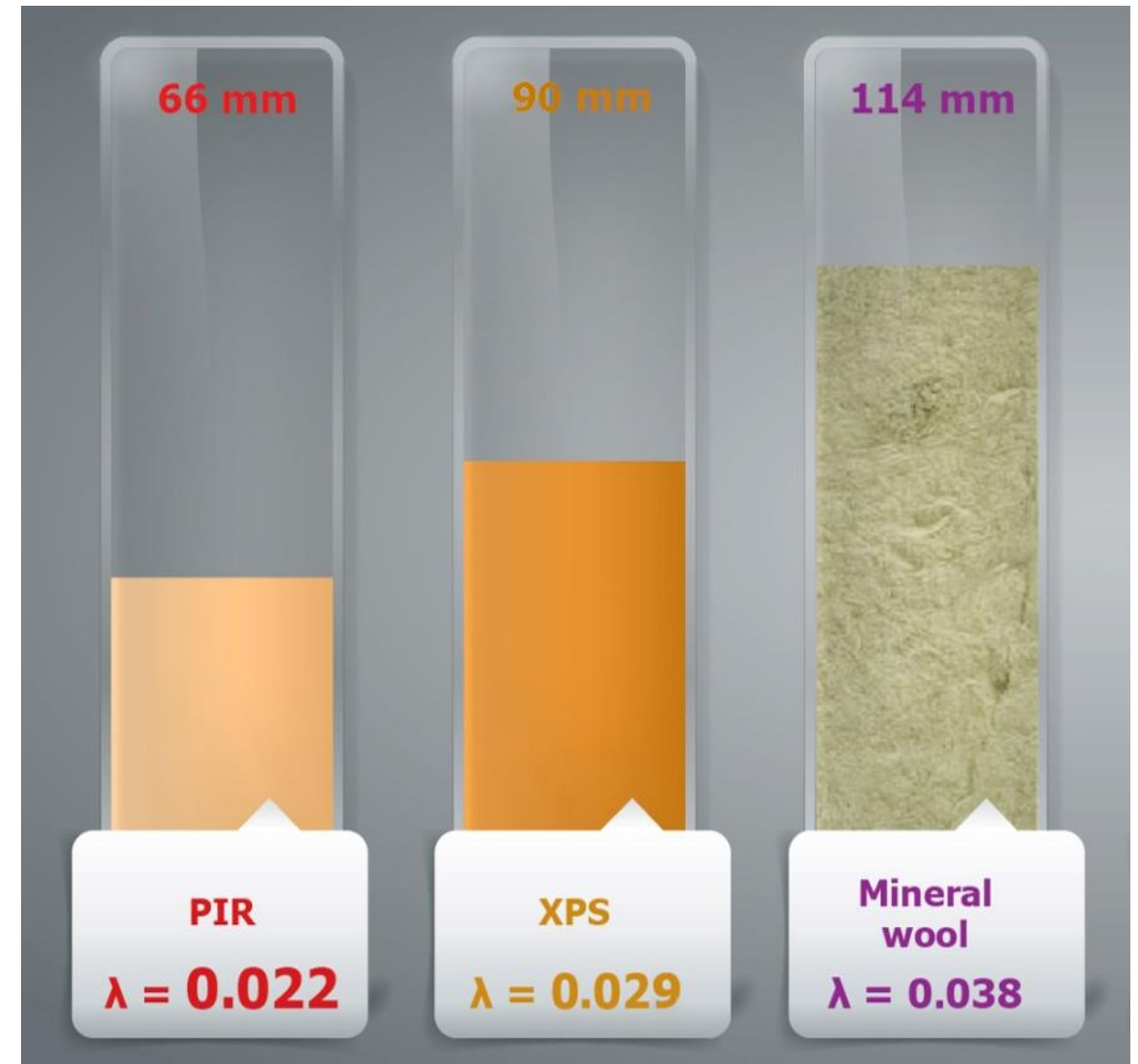
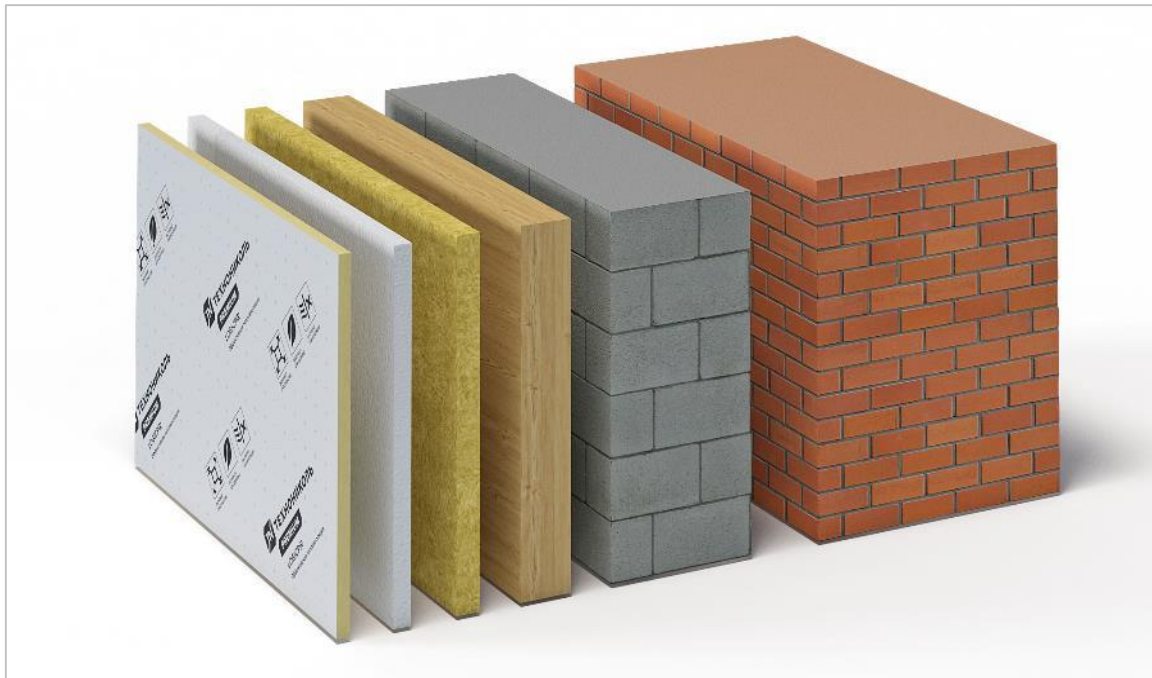
ECOLOGICAL COMPATIBILITY



MINIMAL WATER ABSORPTION

Being an energy-saving material with closed cellular structure, LOGICPIR boards by TECHNOMICOL have a record-low thermal conductivity starting from 0.022 W/m*K. That allows less thickness of the thermal insulation layer to achieve the required level of thermal resistance.

Boards are available with L-shaped edges, so they fit tightly together and thus prevent thermal bridges.





LOGICPIR insulation boards:

- Are resistant to temperature changes
- Retain their shape without deformation over time
- Do not contain fibers capable to eroding
- Are resistant to microorganisms, fungus, insects and rodents

The stability of the material provides a service life of more than 50 years. Over the lifetime material does not change the thermal characteristics and dimensions.

PIR boards by TECHNONICOL are a non-flammable material. When in contact with an open flame, polymer burns on the surface only. This creates a charcoal skin, which is an effective defence against further polymer damaging.



VS



The durable and rigid frame of each cell grants an excellent strength to the material. Due to the high compressive strength, it is possible to walk on boards during the construction of the building or at regular service of the equipment installed on the roof. Unlike other insulation materials, LOGICPIR boards are not sensitive to foot traffic and loads provided during operation.

During the walkability test in Europe, special equipment creates, an imitation of a walking person weighing 75 kg. LOGICPIR boards with the compressive strength of 150 kPa provide high resistance against deformation due to operation loads and comply with class 2 for the dynamic load (EN 826).



Small cells practically do not absorb water and do not pass it through: water absorption is less than 1%! That grants high bio-stability and the possibility of material installation in severe weather conditions.

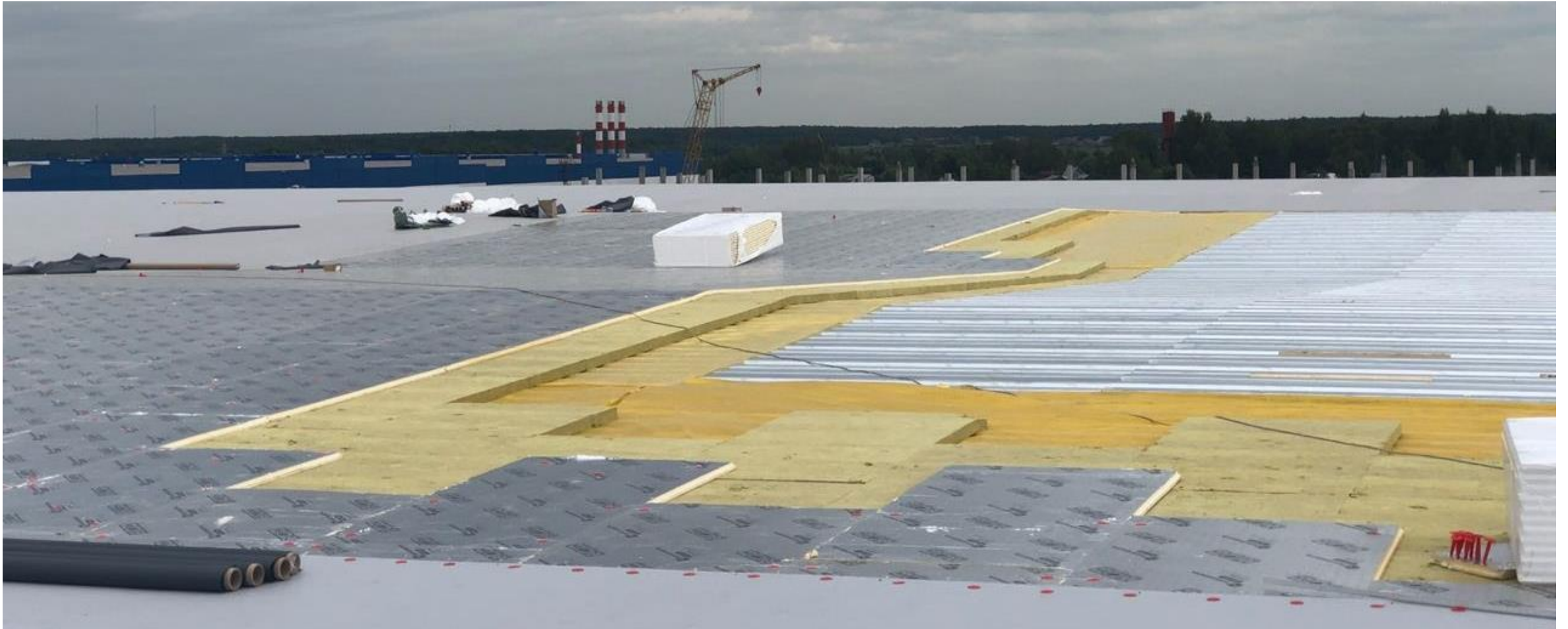




The use of PIR boards by TECHNOMICOL minimizes an additional load on the supporting base and allows the installation of thermal insulation without reinforcing the supporting structures, which is especially important for roofs renovation. Transportation costs are substantially reduced as well.

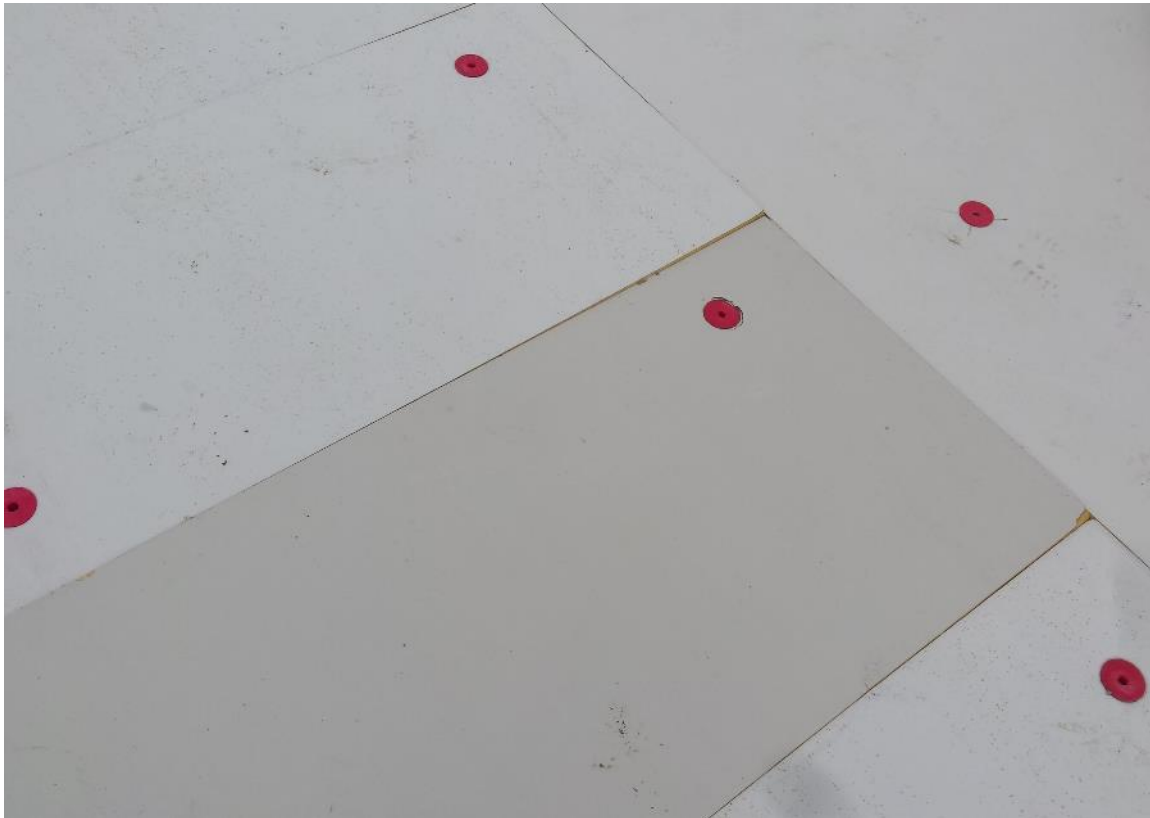


Due to the record-low thermal conductivity of LOGICPIR boards by TECHNONICOL, a smaller thickness of the insulation layer is used to achieve the required level of thermal resistance. The minimum thickness allows saving the maximum space.



EASY TO INSTALL

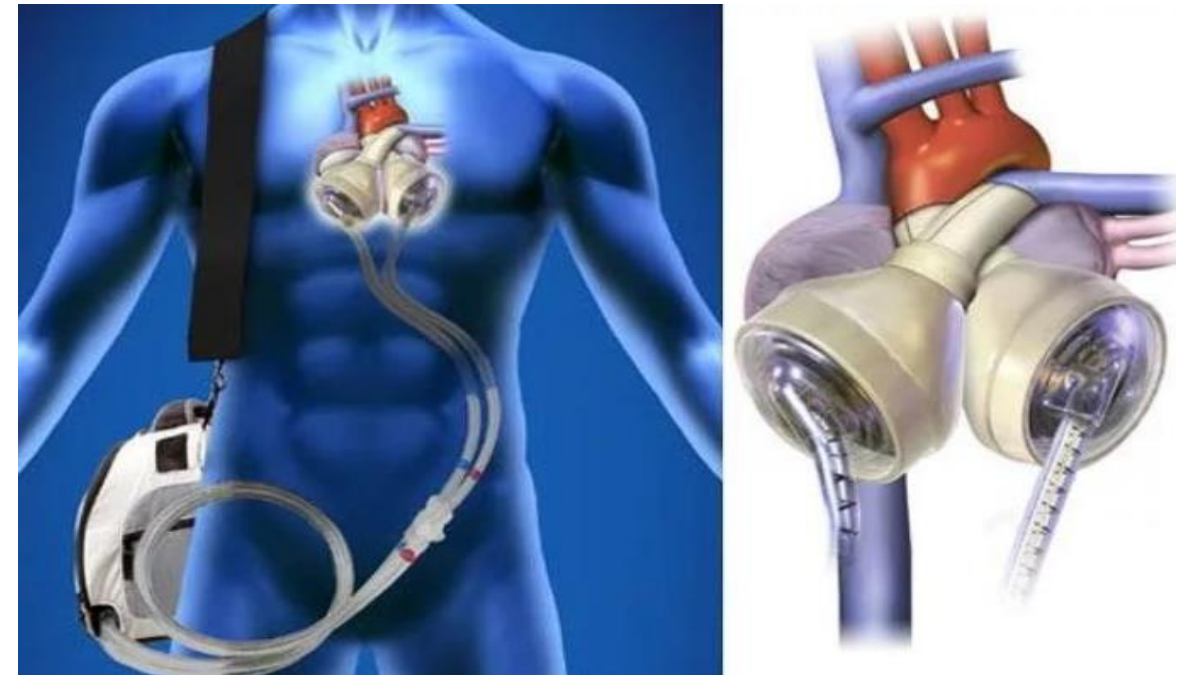
Thanks to the light weight and minimum thickness of LOGICPIR boards, even one person can easily perform the installation of the insulation layer. In addition, the availability of special prefabricated slope shaped boards significantly reduces the time of installation of the whole roofing system as well.





Polyurethanes are widely used in the manufacture of heart valves, car parts, sports equipment, furniture, children toys, mattresses and pillows, shoes and clothes, adhesives and sealants, as well as many other usual things around us.

The material does not emit any dangerous substances, therefore it is considered one of the safest for the health of people, animals and the environment.



Thermal insulation LOGICPIR by TECHNONICOL is a new generation of polyurethanes that is absolutely environmentally friendly and safe for human health and approved for use in children and medical institutions.

LOGICPIR does not emit volatile organic compounds (VOC), ammonia, formaldehyde, carcinogenic and other harmful substances, as evidenced by the certificate for M1 emission class issued by the prestigious laboratory of Eurofins Expert Services (Finland).



Class E, EN 13501-1 (test method EN ISO 11925-2), ITC, the Czech Republic

Reference No. 75 35 01742
Page 1 of 8

 **INSTITUTE FOR TESTING AND CERTIFICATION, INC.**
Iřida Tomáše Bati 299, Louky, 763 02 Zlín, Czech Republic

TEST REPORT
Reference No. 75 35 01742/ 2019

Applicant : Zavod Logicroof PIR LLC
Vostochny promuzel 21
390 047 Ryazan
Russia

Product PIR boards GTM/GTM,
brand name: TechnoNICOL

Manufacturer : Zavod Logicroof PIR LLC
Vostochny promuzel 21
390 047 Ryazan
Russia

Elaborated by : Milan Kovář

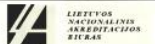
Issued on : 18th November 2019

 
Jiří Heš
Representative of Notified Body No. 1023

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Company id No.: 47910381 +420 577 801 623 +420 577 801 702 www.itc.cz

Basic properties, EN 13165, VGTU, Lithuania

VILNIAUS GEDIMINO TECHNIKOS UNIVERSITETO
STATYBINIŲ MEDŽIAGŲ INSTITUTO
TERMOIZOLIACINIŲ MEDŽIAGŲ IR AKUSTIKOS LABORATORIJA
(VILNIUS GEDIMINAS TECHNICAL UNIVERSITY, FACULTY OF CIVIL
ENGINEERING, INSTITUTE OF BUILDING MATERIALS,
LABORATORY OF THERMAL INSULATING MATERIALS AND ACOUSTICS)
Notified body number: 1688
Linkmenų 28, 08217 Vilnius
Phone +370 5 2512345, e-mail: tml@vgtu.lt

 **TEST REPORT**
No. 1688-CPR-1864
13 November 2018
Valid for the tested testing object
1 (1)

1. CUSTOMER: TechnoNIKOL-Strojitėnys Sistėms, ođstėpnų zavod, Sokolovská 100/94 Prague 8,
186 00 Czech Republic. Order dated on 8th of August, 2018.
2. MANUFACTURER: Zavod Logicroof PIR LLC, Vostochny promuzel 21, 390047, Ryazan, Russia.
3. PRODUCT: Polyisocyanuret foam boards **PIR F/F**. Produced according to
EN 13165:2012+A2:2016. Thermal insulation products for buildings – Factory made rigid
polyurethane foam (PU) products – Specification.
Production dates: 2018-08-10, 2018-08-11, 2018-08-12 for 30 mm thickness, 2018-08-13,
2018-08-14, 2018-08-15 for 50 mm thickness, 2018-08-25, 2018-08-26 for 100 mm thickness and
2018-08-27, 2018-08-28 for 150 mm thickness.
4. RECEIVING DATE: 16th of August, 2018.
5. TESTING DATE: From 16th of August, 2018 to 25th of September, 2018.
6. TEST LOCATION: Laboratory.
7. SAMPLES SELECTED BY: The samples were selected by customer. 10 samples representing 10
production dates were selected and presented to the laboratory. Information about sampling was
given in Sampling report/order dated on 8th of August, 2018. Boards were wrapped into
polyethylene.
8. BASE OF TESTING: EN 13165:2012+A2:2016. Thermal insulation products for buildings –
Factory made expanded polystyrene (EPS) products – Specification.
9. TESTS WERE CARRIED OUT IN ACCORDANCE WITH:
EN 1602:2013. Thermal insulating products for building applications – Determination of the
apparent density.
EN 1609:2013. Thermal insulating products for building applications – Determination of short term
water absorption by partial immersion.
EN 826:2013. Thermal insulating products for building applications – Determination of
compression behaviour.
ISO 8301:1991. Thermal insulation – Determination of steady-state thermal resistance and related
properties – Heat flow meter apparatus.
EN 12083:2013. Thermal insulating products for building applications – Determination of linear
dimensions of test specimens.
EN 12667:2001. Thermal performance of building materials and products – Determination of
thermal resistance by means of guarded hot plate and heat flow meter methods – Products of high
and medium thermal resistance.
EN 12939:2000. Thermal performance of building materials and products – Determination of
thermal resistance by means of guarded hot plate and heat flow meter methods – Thick products of
high and medium thermal resistance.
10. TEST RESULTS: Tests results are presented in Annexes. Annex A – 1 page, Annex B – 1 page,
Annex C – 1 page and Annex D – 1 page.
11. OTHER INFORMATION: After tests, all samples were destroyed.

Head of Laboratory of Thermal
Insulating Materials and Acoustics
 **Dr. G. Balėišnas**

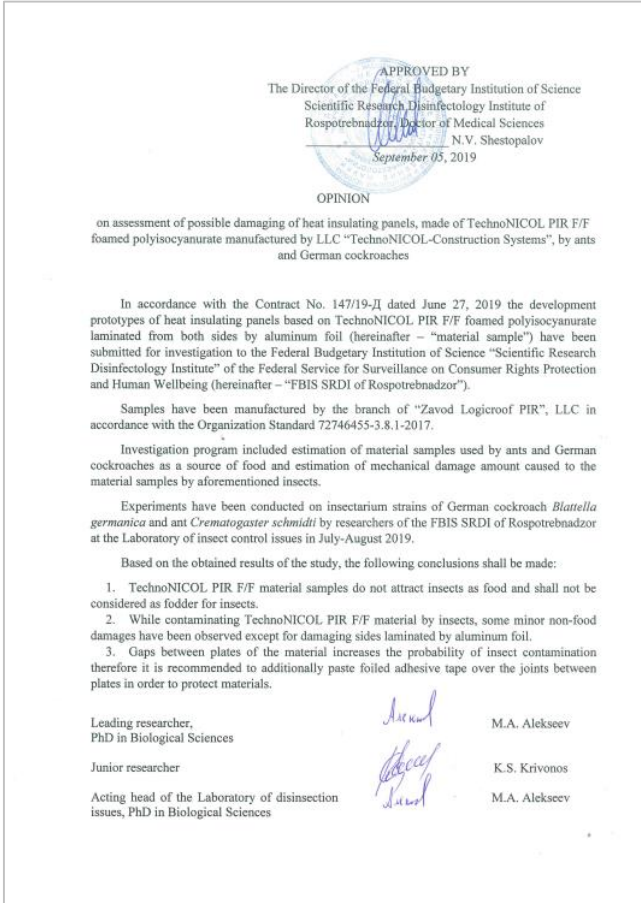
Technically responsible for tests, chief researcher
of Laboratory of Thermal Insulating Materials and Acoustics
 **Dr. S. Vaitkus**

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BDA testing, EN 13165, Kiwa, the Netherlands



Resistance to insects, FBIS SRDI of Rospotrebnadzor, Russia

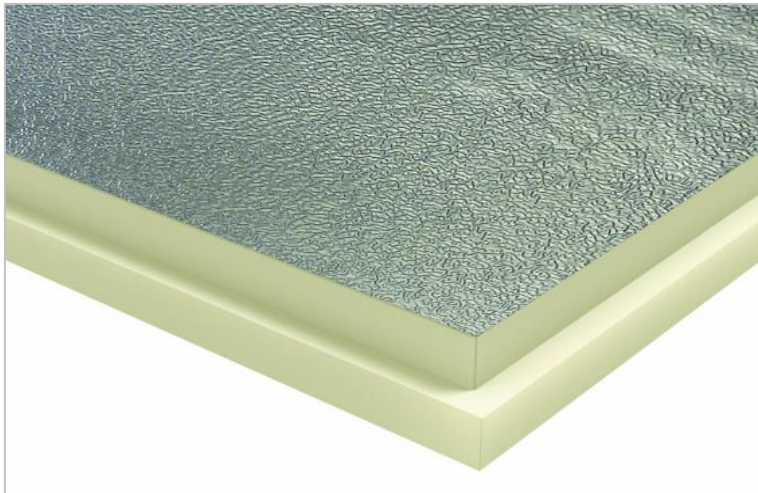


PRODUCT RANGE

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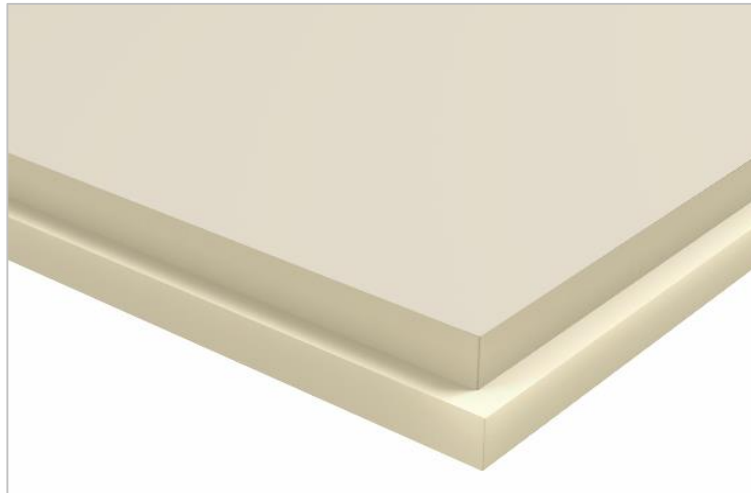
LOGICPIR is available with 2 types of the surface: aluminium foil or fiberglass mat. Can be supplied with flat or L-shaped edges. A variation with the slope shape is available for the creation of the slope of 1.7 or 3.4% in order to drain water on the roof to funnels.

Aluminium foil (F)



**Mechanically fixed
and ballasted roofing systems**

Glass tissue with mineral coating (GTM)



**Adhered roofing systems (including self-
adhesive single-ply waterproofing layer)**

Slope-shaped elements (1.7 or 3.4%)



Slope arrangement in any roofing systems

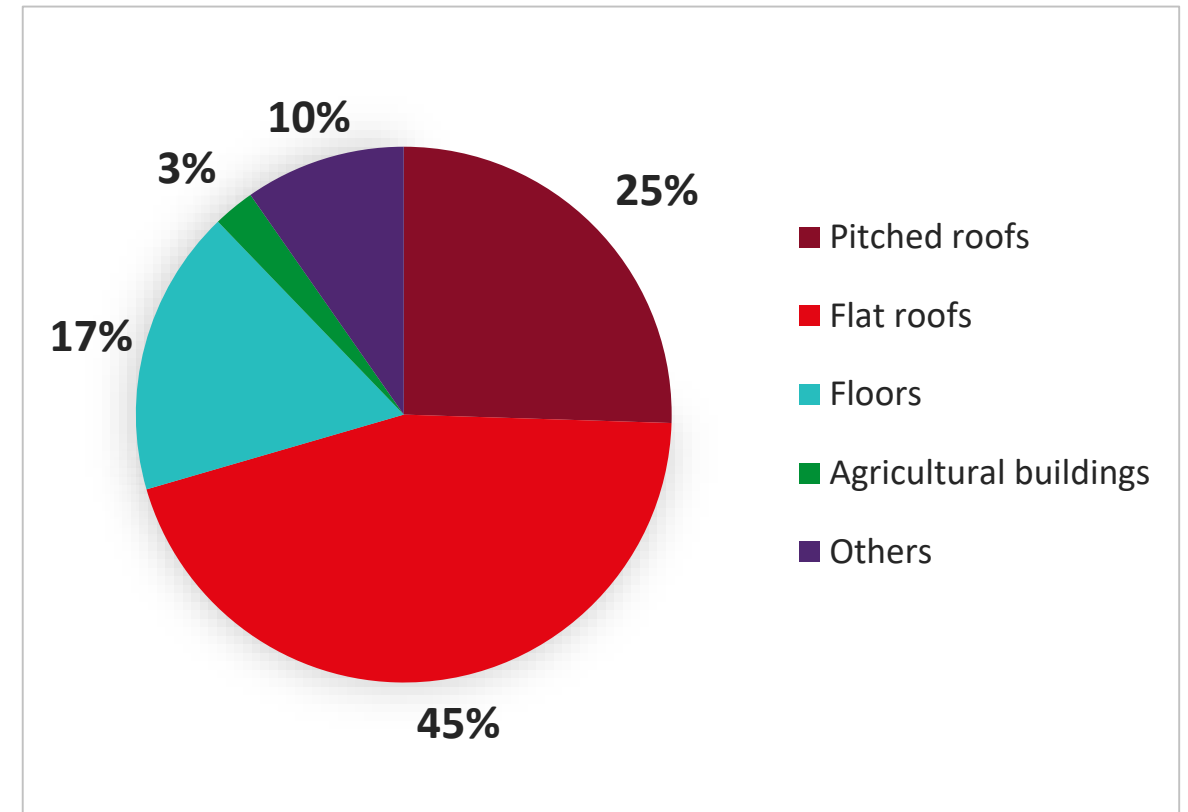


PROPERTIES	LOGICPIR
Thermal conductivity, λ_D , W/m*K	0.022 (aluminium foil covering), 0.026 (fiberglass covering)
Compressive stress at 10 % deformation, kPa	≥ 150
Long term water absorption by immersion, %	≤ 1
Reaction to fire – ignitability, Euroclass	E
Board sizes, mm	1200×600, 2400×1200
Thickness (increments 10 mm), mm	30-150
Surface type	aluminium foil or fiberglass mat

AREAS OF APPLICATION

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In Europe, the biggest part of the PIR market is occupied by flat roofs (45%). This number includes insulation on concrete flat roofs (residential and non-residential buildings) as well as on large scale steel deck roofs (commercial, infrastructure and production facilities). Pitched roofs come second and account to 25% of sales – the material is used for the new construction and reconstructions (improving the insulation of existing roofs from the outside by installing PIR thermal insulation boards on rafters). Then other areas of application follow: floor insulation, agricultural buildings and others (including wall insulation).







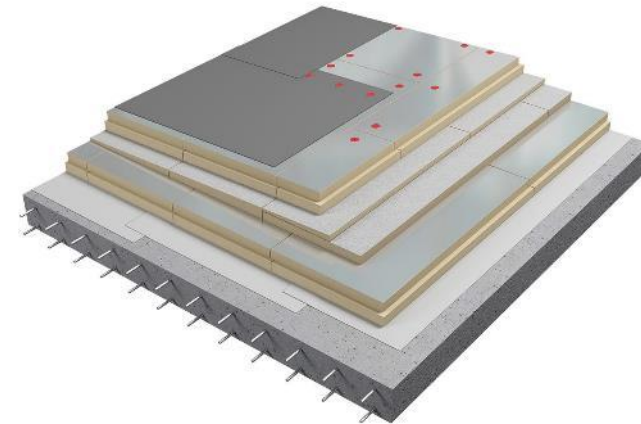
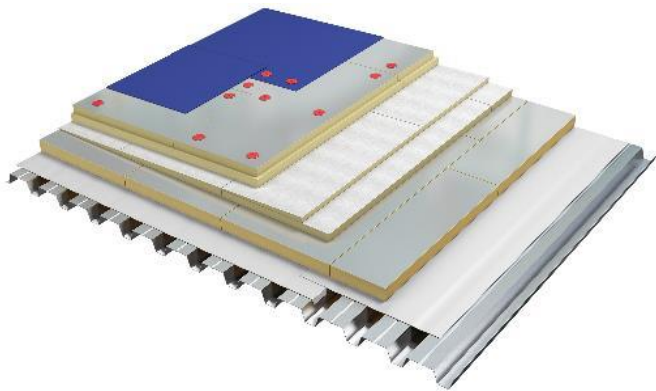
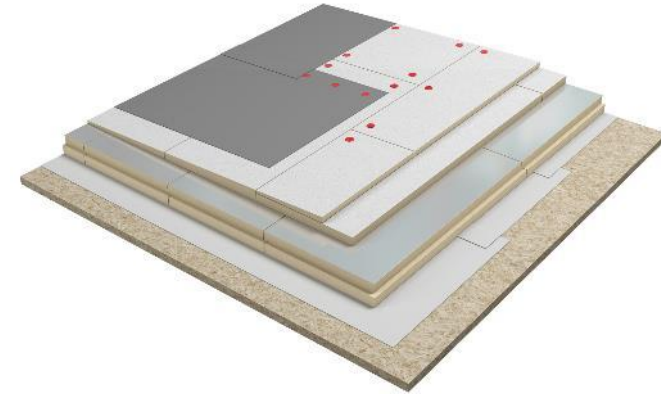
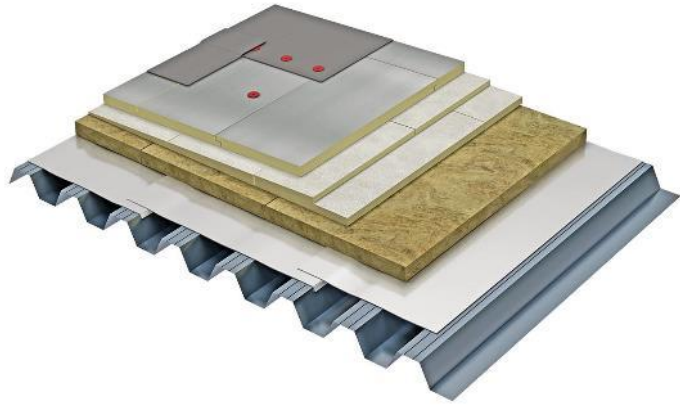
ROOFING SYSTEMS WITH LOGICPIR

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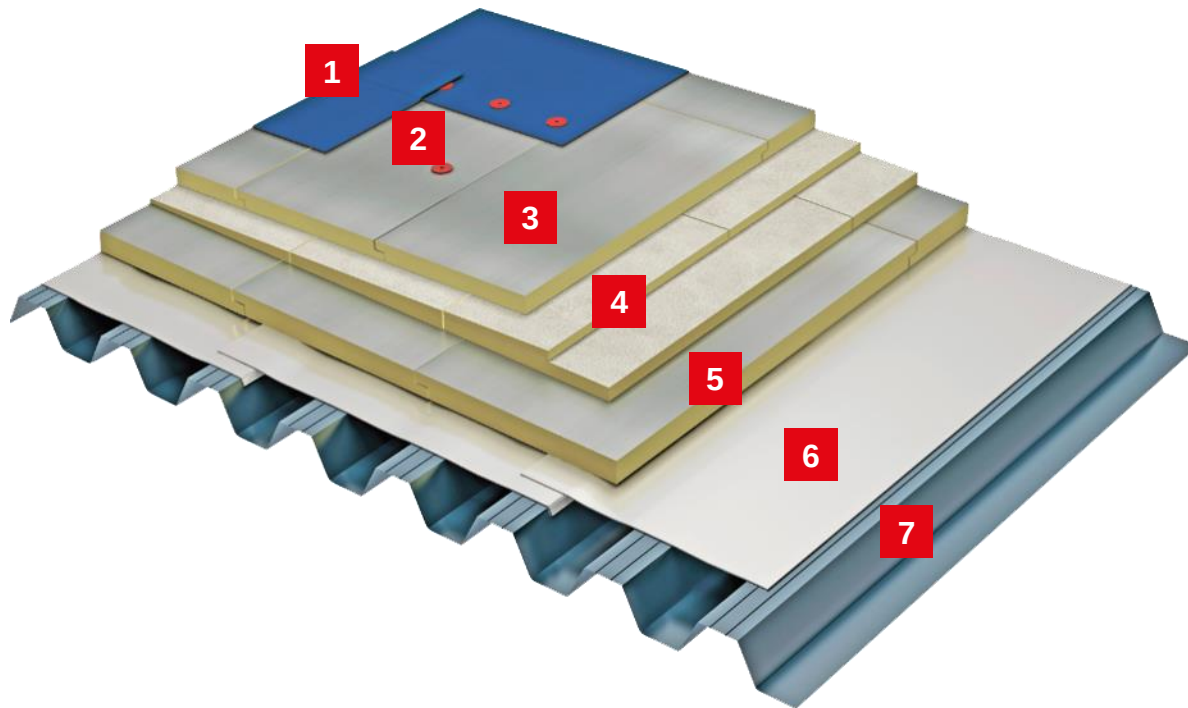
LOGICPIR thermal insulation boards are the great solution for use in different constructions of roofs: pitched and flat, exposed and ballasted (including green roof), operated and non-operated. They are also recommended for use on roofs intended for frequent attendance of personnel, for example, for adjustment of the equipment installed on the roof.

The material can be used with various types of the substrate, e.g. profiled metal deck, reinforced concrete, wood, OSB-3 boards, old roof covering, etc. The application of prefabricated slope shaped boards allows creating the slope for water draining fast and convenient.

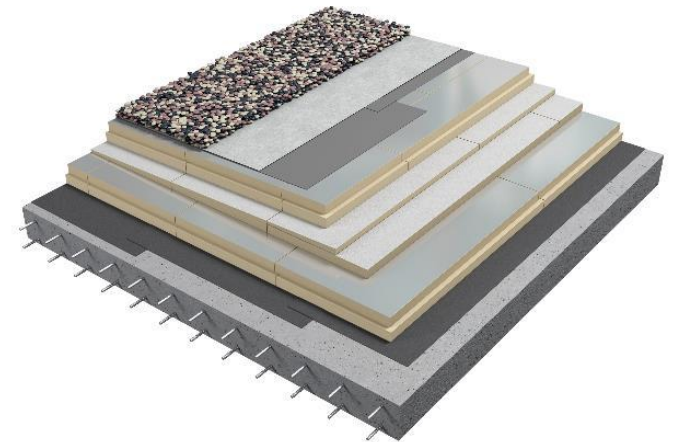
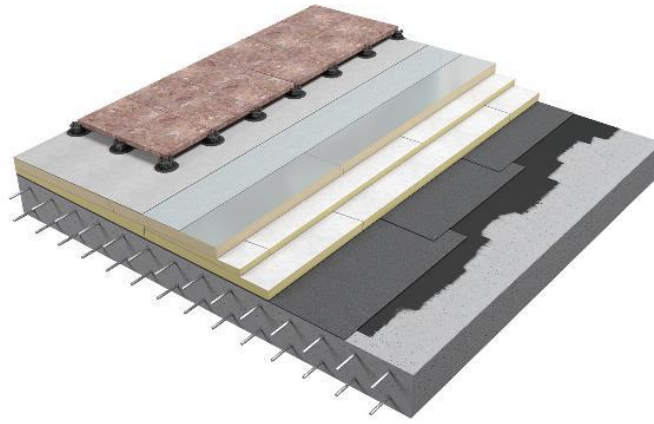
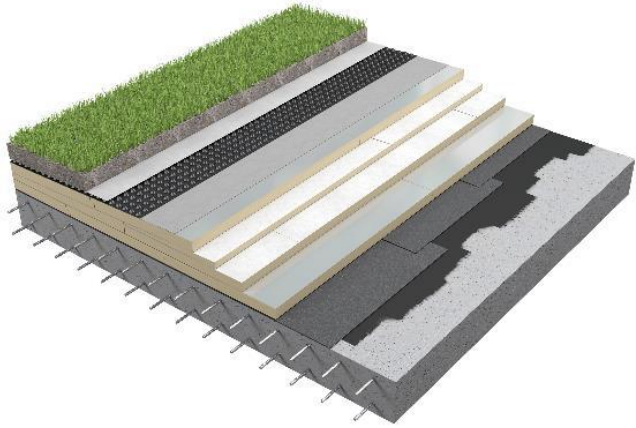




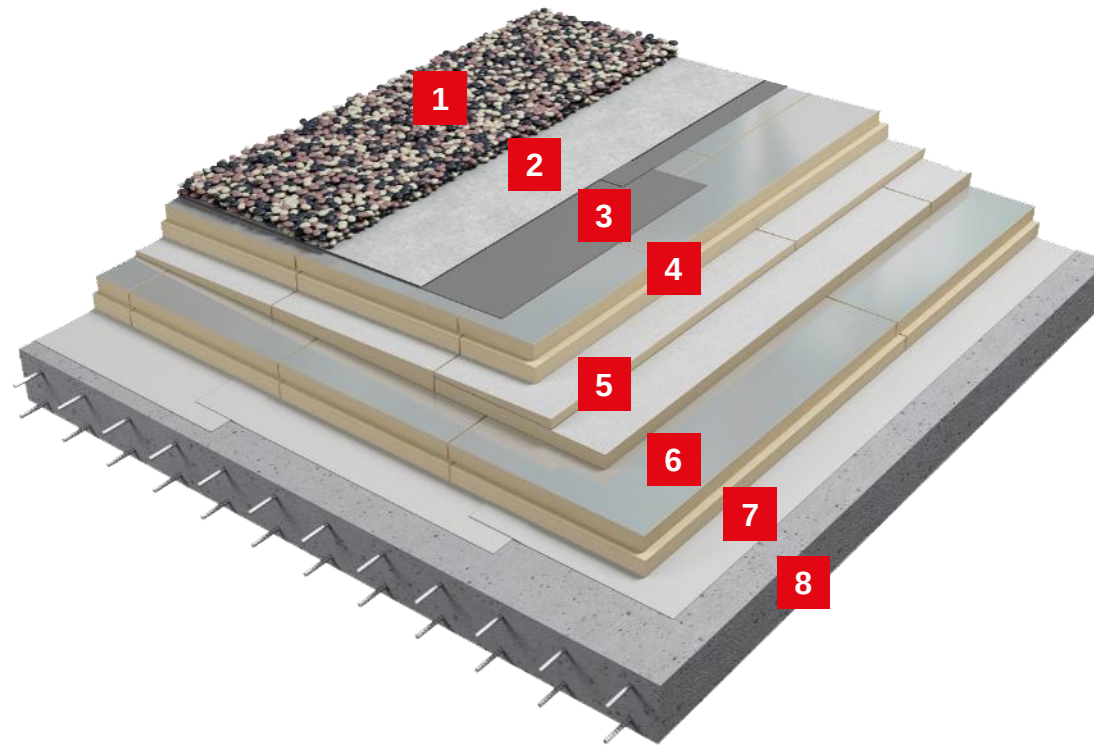
Mechanically fixed roofing system:



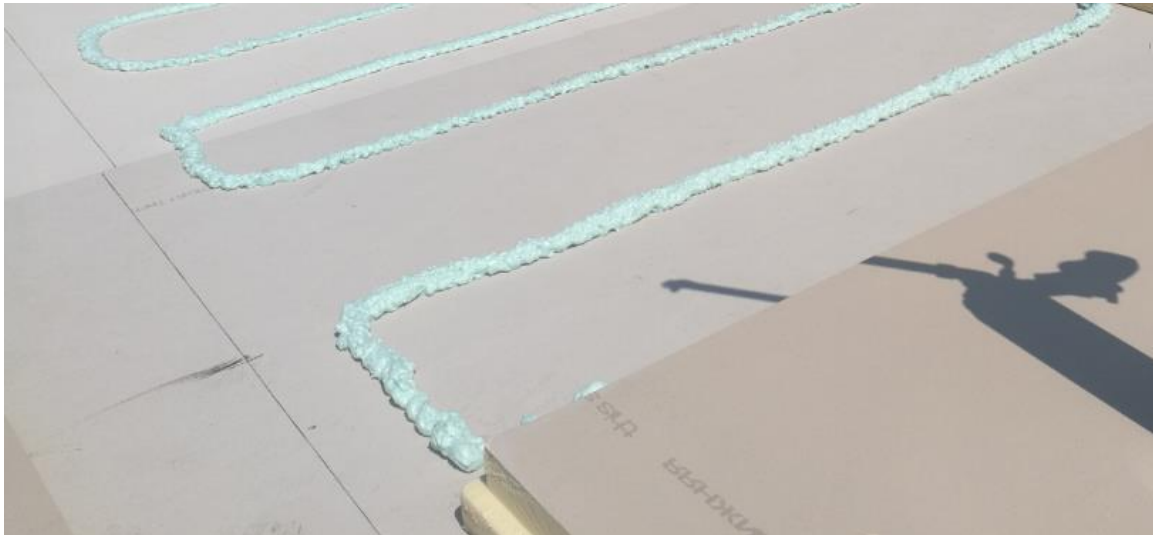
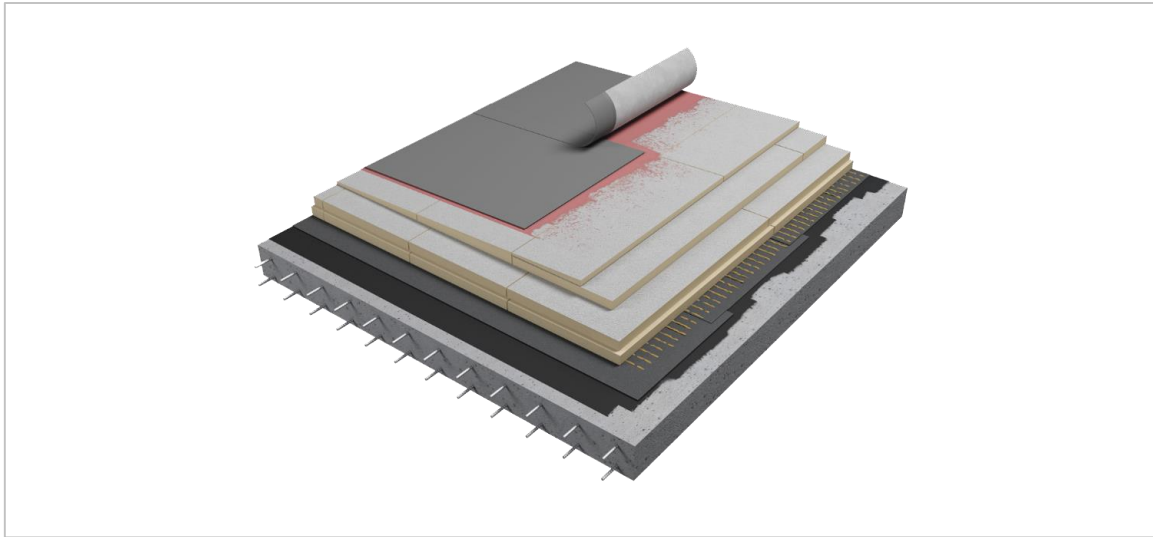
1. PVC membrane LOGICROOF V-RP
2. Telescopic fastener (anchor)
3. Thermal insulation board LOGICPIR
4. Thermal insulation board LOGICPIR Slope
5. Thermal insulation board LOGICPIR
6. Vapor barrier VAPORSTOP CA 500
7. Corrugated steel sheet



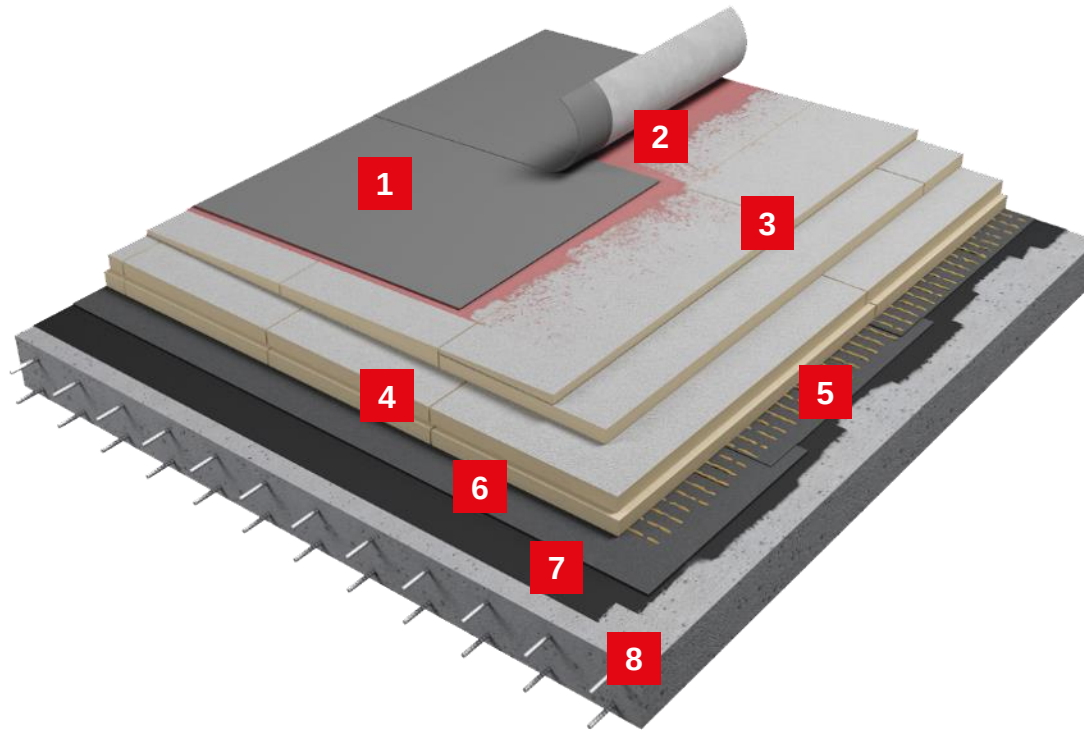
Ballasted roofing system:



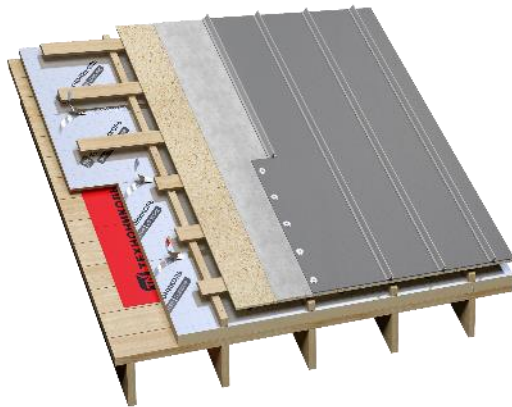
1. Ballast
2. Geotextile 300 g/m²
3. PVC membrane LOGICROOF V-GR
4. Thermal insulation board LOGICPIR
5. Thermal insulation board LOGICPIR Slope
6. Thermal insulation board LOGICPIR
7. Vapor barrier VAPORSTOP CA 500
8. Reinforced concrete base



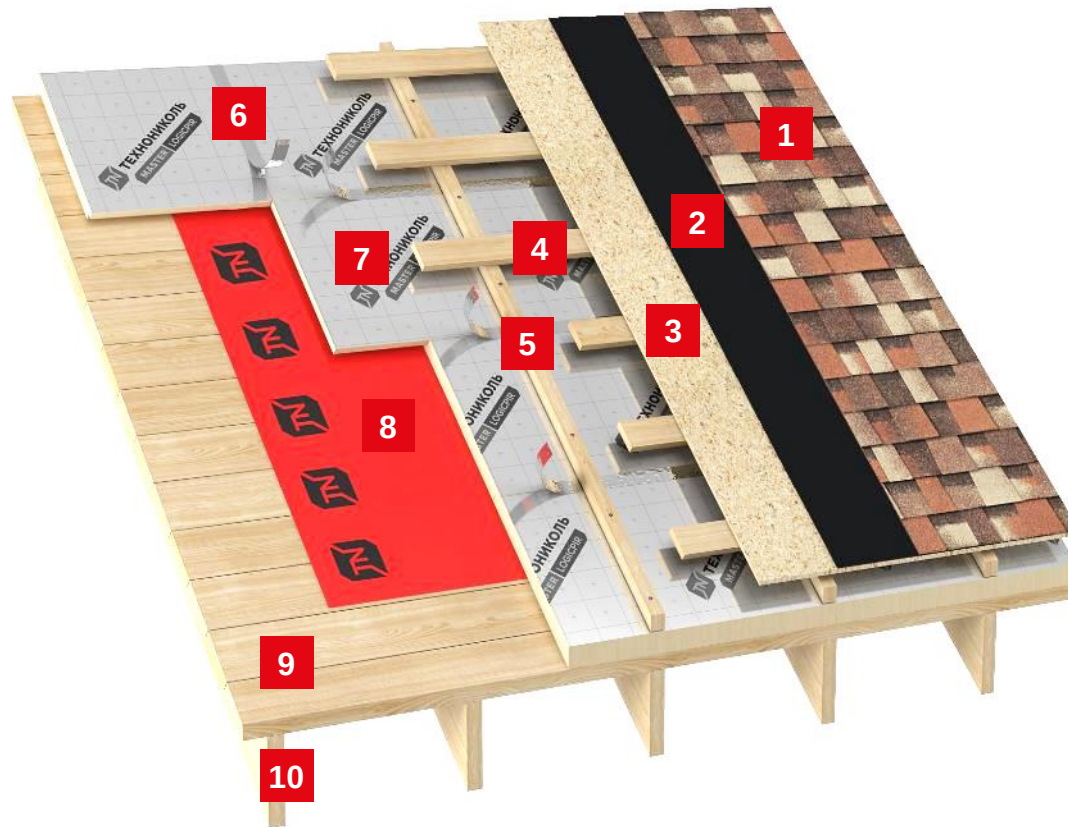
Adhered roofing system:



1. PVC membrane LOGICROOF V-GR FB
2. LOGICROOF adhesive compound
3. Thermal insulation board LOGICPIR Slope with fiberglass mat surface
4. Thermal insulation board LOGICPIR with fiberglass mat surface
5. Glueing foam TECHNONICOL 500
6. Bitumen vapor barrier VAPORSTOP CA 500 / ULTRAFLEX SA
7. BITUMEN PRIME COATING
8. Reinforced concrete base



Pitched roofing system:



1. TECHNOMICOL roofing shingles
2. Underlayment membrane of UNDERLAY series
3. Solid base (OSB-3 or plywood)
4. Counter battens
5. Ventilation space battens
6. NICOBAND self-adhesive sealant tape
7. LOGICPIR boards with aluminium foil covering
8. Vapor barrier film TECHNOMICOL ALPHA
9. Wood decking
10. Rafter system



REFERENCES

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THANK YOU FOR ATTENTION!

For additional information please contact us at:
info@technonicol.asia