



POLYURETHANE SYSTEMS

Professional solutions for the industry



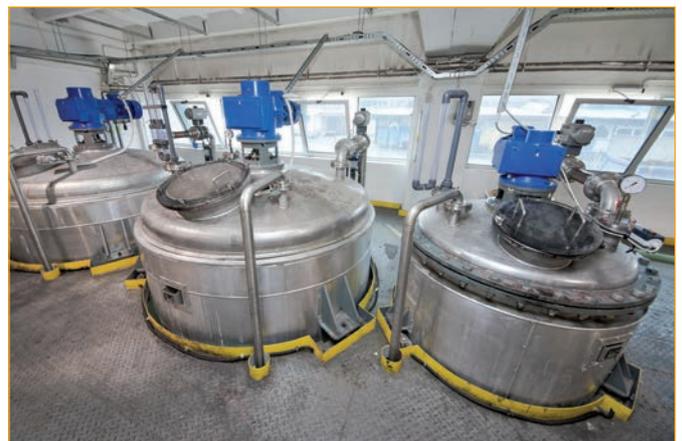
ABOUT THE COMPANY

Since 1979, **PCC PRODEX Sp. z o.o.** (former PRODEX-SYSTEM Sp. z o.o.) has been continually involved in the production of single- and two-component polyurethane systems. The solutions delivered find their applications in the production of semi-rigid and rigid insulating materials, components made of integral foams, elastic foams and adhesives for diversified applications, including mining adhesives.

In 2010, the PCC PRODEX Company was merged into the international concern PCC SE that operates on the world markets of the chemical raw materials, transportation, energy, coal, coke, fuels, plastics and metallurgy. In October 2012, PCC Rokita SA concluded, with the PCC SE Company seated in Duisburg, the contract of purchase of the PCC Prodex Sp. z o.o. Company. Due to this contract, PCC Rokita SA acquired 100% of the company shares. The polyurethane systems offered by the PCC PRODEX offer were granted a series of certificates and approvals of research institutes and certifying centres such as ITB, IMBiGS, GIG, OBAC, DNV, BV, PZH.

Due to the high qualifications of employees, experience, good knowledge of the market and excellent understanding of polyurethane processing, the Company offers wide-ranging help in implementations and applications of the polyurethane systems. In its offer, the Company possesses more than 150 systems intended for the constructional, mining, shoe-making, automotive, cooling and sport surfaces development industries, and for many other applications.

Due to in-house research & development back-up facilities, which are supported by the many-years experience of the employees, the Company may adapt, fast and flexibly, its product offer to the specific needs of customers and to the changes occurring in the market. PCC PRODEX Sp. z o.o. is able to develop the systems strictly matching individual Consumer needs. The Company puts its efforts on continuous improvement of the products, taking care about meeting the highest world standards.



PROFESSIONAL SOLUTIONS FOR THE INDUSTRY

One of the basic challenges of the contemporary world is reduction of the energy consumption. The strategy within the framework of fighting against the climate change, accepted by the European Union, is based, among others, on decreasing the total energy consumption of 40% till 2030.

For years, no consideration was given to questions connected with energy saving because the cost of energy was much lower than at present. Due to that, more than 80% of buildings in Europe were built in a way that does not enable effective energy saving.

The simplest way to decrease energy consumption is to reduce the demand for the usable heat, e.g. by improving the thermal insulation of constructional partitions and decreasing heat losses in the heated buildings.

internal insulation of attics and walls
spraying closed-cell foam



external insulation of roofs
spraying closed-cell foam



insulation lining panels



internal insulation of attics
spraying open-cell foam



insulation of floors and foundations
spraying closed-cell foam

decorative insulation panels



wall insulation (injection additional sealing of walls)



Application of polyurethane systems in dwelling building insulation.

SPRAYING POLYURETHANE FOAM

The **spraying polyurethane foam** is an ideal material serving both for thermo-insulation of new buildings as well as for thermo-modernisation of the old ones. Simple application, low thermal conductivity coefficient ($\lambda = 0.021 \text{ W/mK}$) as well as very good mechanical properties locate the PU foam on the leader position among insulating materials.

The polyurethane foam spraying is a technology of application insulation layers directly onto the surface of the insulated object. The spraying is done with use of appropriate high-pressure machines enabling the perfect mixing of two components of the polyurethane system and correct spraying of successive insulation layers.

SYSTEM	TYPE	DENSITY [kg/m ³]	APPLICATION
EKOPRODUR S0310	open-cell spray	9 ± 2	internal acoustic and thermal insulation
EKOPRODUR S0329	closed-cell spray	37 ± 3	internal thermal insulation of roofs and walls
EKOPRODUR S0540	closed-cell spray	60 ± 10	internal thermal insulation of floors and external hydro- and thermo-insulation of roofs and foundations
EKPRODUR 05200	closed-cell spray	250 ± 50	structure reinforcement

SPRAY INSULATION ADVANTAGES:

- within a single step, the thermal and anti-moisture insulation is obtained, complete with the mechanical structure reinforcement, at a low load of itself
- due to penetration into any and all unevenness, gaps or losses, durable, strong and weld-free insulation is obtained, free of thermal bridges
- excellent adherence to the substrate and stability of parameters, ensuring the durability of the prepared insulation, more than 50 years
- increased resistance to weather, chemical and biological conditions
- high efficiency of work and the easy way of foam spraying make it possible to execute even 1000 m² of roof per day; execution of the spray insulation does not need a big team and does not absorb user's facility to a large extent



INDUSTRIAL INSULATIONS

Among the available thermo-insulation materials, the rigid polyurethane foams are characterised by the lower heat conduction coefficient, λ .

Refrigerating counters and devices are the devices adapted for the sale and exhibition of food products. They are used as the outfit of the grocer's shops, hypermarkets and other gastronomy facilities. For their insulation, rigid polyurethane foams are used.

Boilers and water preheaters, like the refrigerating equipment, need thermal insulation. The systems for their insulation may be waterborn or HFC blown, depending on the requirements that must be achieved.

SYSTEM	BLOWING AGENT	INSULATION EFFICIENCY
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EKOPRODUR
2232W

CO₂

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SYSTEM	BLOWING AGENT	INSULATION EFFICIENCY
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EKOPRODUR
3050W

CO₂

••

EKOPRODUR PM2233/J	HFC	•••
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EKOPRODUR 4540W/B	CO ₂	••
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EKOPRODUR PM3032F	HFC	•••
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EKOPRODUR WH1230Z	HFC	•••
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••• - high, •• - medium, • - low



INDUSTRIAL INSULATIONS

Pre-insulated pipes are destined for the construction of pipelines for the heating and industrial domains. The pipelines serve for the transfer of, first of all, heating water, hot usable water and water steam.

SYSTEM	BLOWING AGENT	APPLICATION	INSULATION EFFICIENCY
EKOPRODUR RP4036	HFC	insulation of steel pipes	●●●

Thermo-insulation laggings are made of rigid or semi-rigid polyurethane foam. They are used in the insulation of hot and cold water pipelines and in the heating installation in dwelling and industrial buildings.

SYSTEM	BLOWING AGENT	APPLICATION	INSULATION EFFICIENCY
EKOPRODUR 0612B2	CO ₂	laggings with plastic lining	●●
EKOPRODUR 1112B2	CO ₂	laggings with plastic lining	●●
EKOPRODUR 2032B3/G	HFC	laggings without/with metal linings	●●●
EKOPRODUR PIR2037B3	HFC	laggings without/with metal linings	●●●
EKOPRODUR PS3030P	c-pentane	laggings without/with metal linings	●●●



ADHESIVES

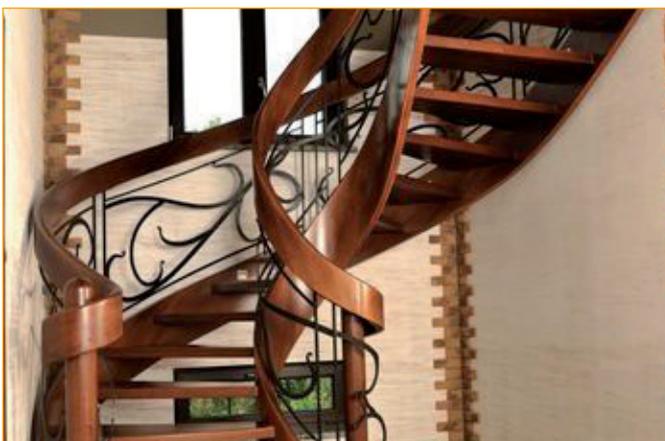
Polyurethane adhesives feature an excellent adherence to all substrates, both smooth and porous ones. They are perfectly applicable for gluing layered panels, wood, foamed polystyrene. Mineral wool, roofing paper, cardboard and typical constructional materials, e.g. concrete, asbestos-cement or metal sheets. The bond obtained is waterproof and very resistant even at very low temperature values. Due to its low viscosity, it is possible to glue materials not resistant to chemicals, e.g. foamed polystyrene, as well as wet materials.

The single-component adhesives are pre-polymers on the basis of MDI, of strictly chosen contents of the NCO groups for the application, and of adequate reactivity expressed in the glue open time and in bond binding time. The adhesives are hardened with moisture included in the air.

SYSTEM	TYPE
EKOPRODUR RB2	single-component general-purpose adhesive for gluing wood, sheets of metal, roofing paper, etc.
EKOPROMER G18	single-component adhesive for manufacturing of regenerated foam blocks
EKOPROMER G21	single-component adhesive for manufacturing of regenerated foam blocks

The two-component adhesives operate on the principle of reaction of the component A with the component B, in a proportion strictly matched by the manufacturer. The properties of the bond are similar to that of the single-component adhesives. The products, also, do not include organic solvents.

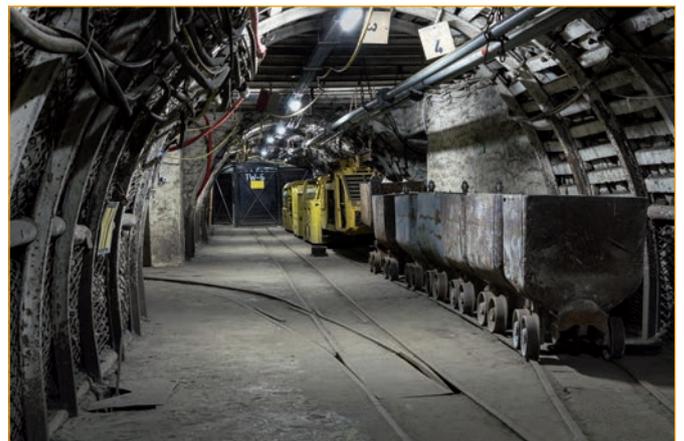
SYSTEM	TYPE
EKOPRODUR KW1	two-components polyurethane adhesive for the production of sandwich panels with the core of polyurethane, foamed polystyrene or mineral wool
EKOPRODUR KW2	two-components polyurethane adhesive for the production of sandwich panels with the core of polyurethane, foamed polystyrene or mineral wool
EKOPRODUR KW-A2	two-component polyurethane adhesive for manufacturing sandwich panels of a higher flammability class, of the core of polyurethane, foamed polystyrene or mineral wool
EKOPRODUR 1331B2	two-components polyurethane adhesive for the production of sandwich panels with the core of polyurethane, foamed polystyrene or mineral wool



MINING ADHESIVES

For centuries, work in a mine has been connected with a tremendous risk. Due to the specificity of the miner profession, all hazards may not be eliminated in 100%. Thanks to the solutions proposed by PCC Prodex Sp. z o.o., the hazards may be minimized by hardening the rock mass, stabilization of coal apt to unbind from the side wall, reinforcement of brittle layers of the rocks surrounding the excavation, or sealing the mining excavations against pressing water. For specialised applications in gassy and not-gassy mines, in excavations (rooms) of the explosion hazard degree "a", "b" and "c", the Company offers a full gamut of glues: **PROMOPUR**, **PROMOSTAT**, **PROMOFLEX** and many others. They are applied for sealing of the cracked rock mass, for reinforcement of dry and wet, strongly loosened rocks and coal beds and additional sealing of cracked constructional structures.

SYSTEM	APPLICATION
PROMOPUR (STRONG)	two-component polyurethane adhesive of increased resistance, destined for sealing and reinforcing the cracked rock mass in the conditions of occurrence of dry and wet, loosened rocks and coal beds
PROMOPUR Un	two-component polyurethane adhesive of universal spectrum of the mining applications
PROMOPUR W	two-component polyurethane adhesive of fast reaction times for watered rocks
PROMOPUR L	two-component polyurethane adhesive of long reaction times for a deep penetration
PROMOSTAT	two-component antistatic polyurethane adhesive destined everywhere where a high explosion hazard exists
PROMOFLEX	antistatic foam for the insulation of pipelines in places of an explosion hazard
EKOPRODUR WPP18	two-component integral foam used for the production of the sill piece socket protection components against the collection of the excavated material in the inter-rack space of the mechanised lining
SIL-PUR 80	two-component mineral-organic adhesive for especially watered mines



ADHESIVES FOR SPORT SURFACES

A separate category is composed of the single- and two-component adhesives for the production of sport surfaces, i.e. multi-functional sportfields, playgrounds, tracks and tennis courts. Due to the use of high-quality polyurethane components with the EPDM granulated material, a uniform surface is obtained, characterized by a high elasticity and flexibility degree, and the effective absorption of the impact energy enables to maintain the adequate safety and protection against injuries at a fall down.

SYSTEM	APPLICATION
TENSILPUR ET	single-component adhesive for production of the carrying layer of a sport covering transmitting water gluing of gravel and SBR rubber granulated material
TENSILPUR S	single-component adhesive for production of the useful layer of a sport covering transmitting water gluing off rubber granulated materials SBR and EPDM
TENSILPUR NB	two-component polyurethane spray for the production of the useful layer transmitting water for application exclusively with the EPDM granulated material of a small fraction
TENSILMER BET	adhesion promoter used for concrete
TENSILMER ASF	adhesion promoter used for asphalt
TENSILPUR G	for the production of profiled rubber components such as: rubber panels for fun areas, fitness mats, vibro-insulating mats as well as curbs, bumpers, traffic lane separators, etc., as well as for colouring granulated materials



ELASTIC AND INTEGRAL FOAM

The **elastic foam** is the most popular polyurethane plastic. It represents the two thirds of the total world production of polyurethanes. It is applied in production of mattresses, upholstery furniture and vehicle components (e.g. seats, headrests).

SYSTEM	APPLICATION
EKOPROFLEX E20-50	elastic foam for the production of bicycle seats and seating components
EKOPROFLEX E20-70	elastic foam for the production of bicycle seats and seating components
EKOPROFLEX VE200	highly elastic foam for the production of flexible products

The **integral foam** is applicable where the high product flexibility and resistance against mechanical damage are required. The name of the integral foam comes from the English words "integral skin", i.e. the skin being an integral part of the product. Simply speaking, during manufacturing of the final product, a flexible core is produced, as well as a hard, mechanically robust skin of thickness up to several millimetres. This finds its application in the production of bicycle seats, vehicle components as well as playground and rest area components.

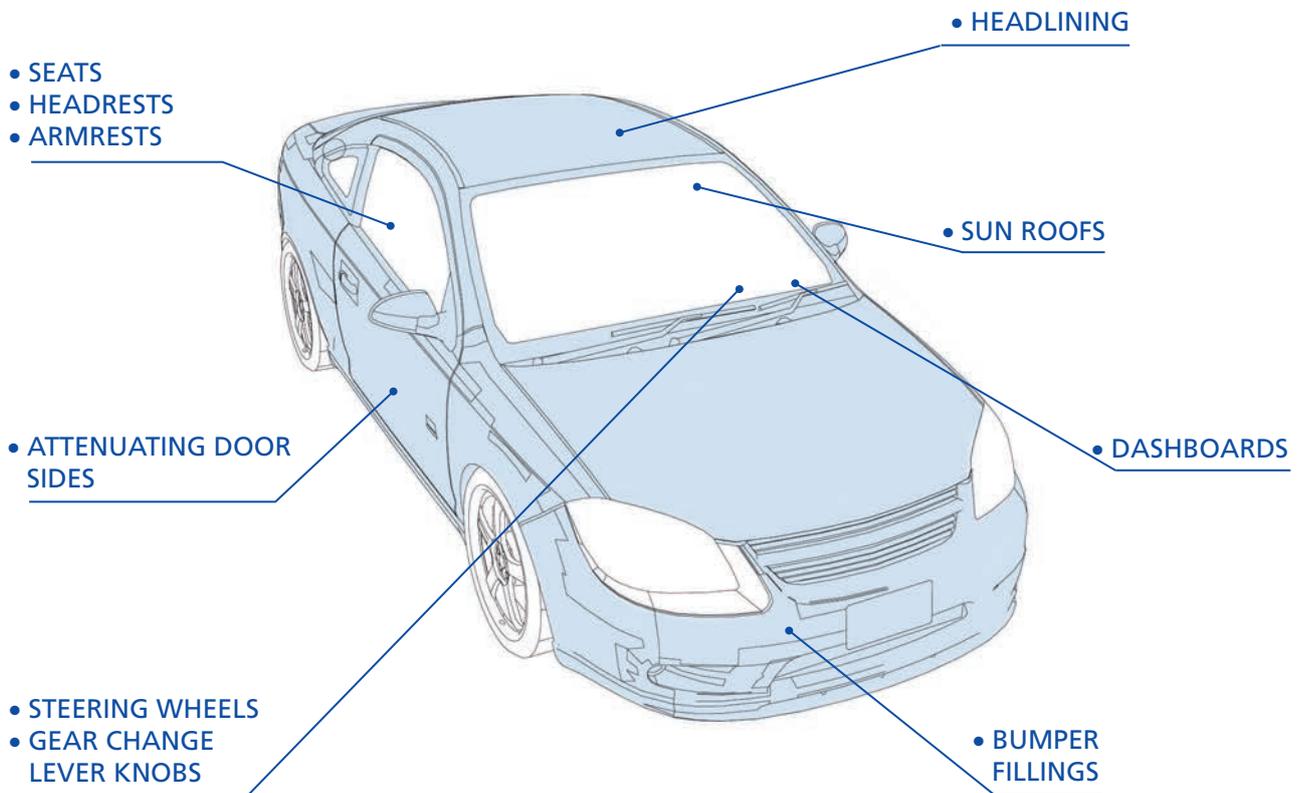
SYSTEM	APPLICATION
EKOPROFLEX 20-100	integral foam for the production of profiled components, e.g. seats, seating components
EKOPROFLEX 30-140	integral foam for the production of flexible components requiring a high mechanical resist
EKOPROFLEX 30-280	integral foam for the manufacture of industrial filters



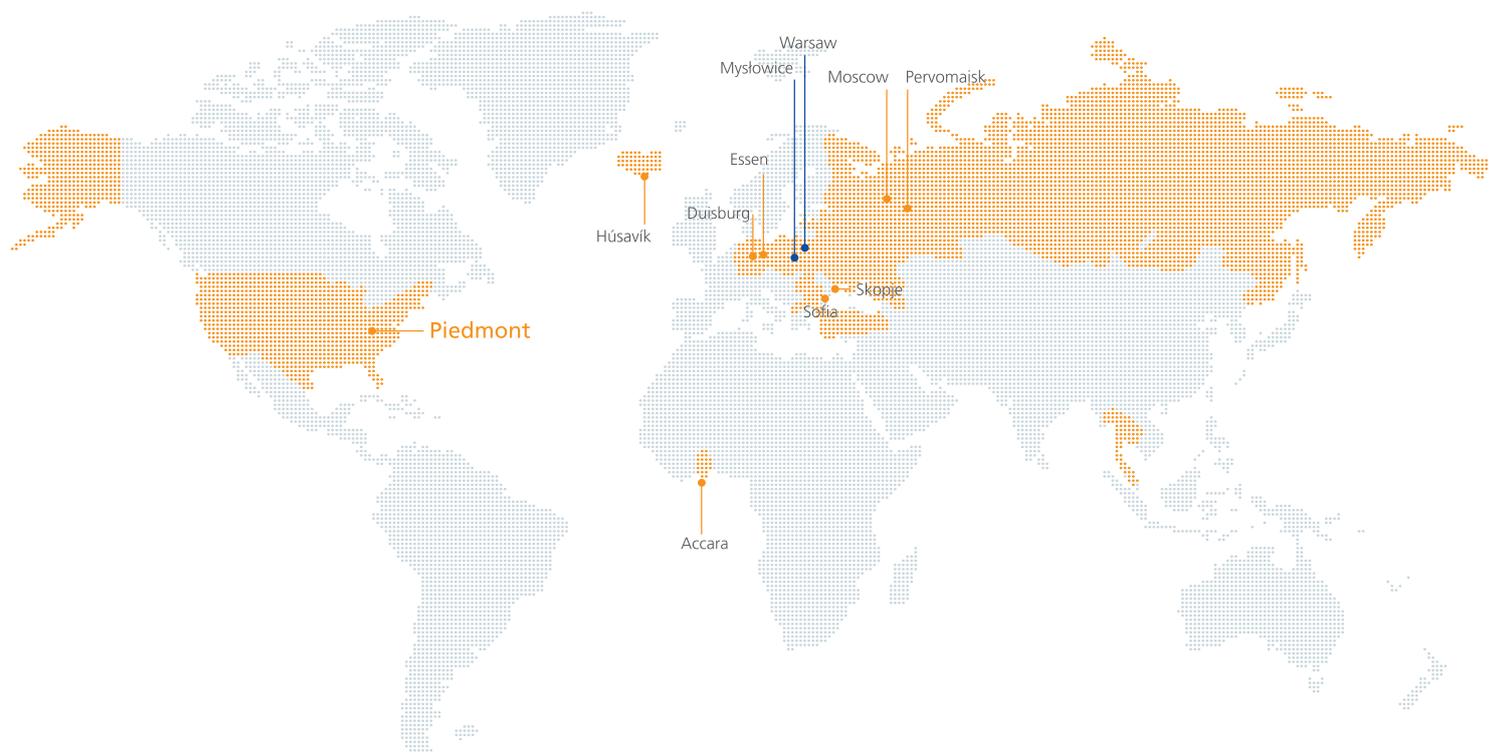
FOAMS FOR THE AUTOMOTIVE INDUSTRY

A separate product group is represented by the PU systems designed especially for the manufacture of cars body components. Nowadays, a key job of the automotive branch is the design of automobiles that are safe, effective and functional. Polyurethanes combine the lightweight and the flexibility with the high resistance and robustness. Their versatility is a priority feature in obtaining the required mechanical properties in specialised applications.

SYSTEM	APPLICATION
EKOPROFLEX A15-25	semi-rigid foam applied for the production of false ceilings in automobiles
EKOPROFLEX A15-46	elastic foam for the production of seats, headrests and attenuating components in automobiles, tractors, trains, ships
EKOPROFLEX A15-60	integral foam applicable for the production of automobile dashboards
EKOPROFLEX A25-140	integral foam applicable for the production of steering wheels, gear change levers and armrests



PCC GROUP AROUND THE WORLD



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