



GALEN[®]

COMPOSITES OF THE FUTURE

COMPOSITE CONSTRUCTION MATERIALS





- Established in 2001
- Pioneer of basalt technologies in Russia and CIS
- ISO 9001:2008 certified since 2008
- Nanotechnologies since 2009
- Leader in the Russian market for construction materials
- National partner of world leading composite companies, transfer of high technologies to Russia
- The largest exporter of the branch

Galen is a developer and manufacturer of modern composite materials for industrial and civil engineering, mining, highway and electric power industries.

The company is a pioneer of basalt technologies in Russia, West and East Europe and CIS.





Galen today:

- 2 plants and 30 dealers in Russia in CIS
- Representative office in USA
- Dealers in Germany, Poland, Czech republic, Lithuania, Australia, UAE



Basalt is a volcanic rock, which content in the Earth crust is nearly 30%. Basalt can be processed by melting.

Basalt fiber reinforced plastic (BFRP) is a product based on basalt, a modern composite material used in construction.

BFRP characteristics:

- High strength - 2,5 times stronger than steel
- Corrosion resistance
- Alkali resistance
- Non-magnetic material
- Low thermal conductivity
- Low weight - 3,7 times lighter than steel
- Durability
- Dielectric
- Fire safety
- Eco-friendliness





ROCKBAR® is BFRP or GFRP reinforcing bars with or without sand coating in diameter from 2,5 to 16 mm.

Designed for reinforcement of prestressed and non-prestressed construction structures and members, such as building foundations, concrete floors and road surface.

Advantages:

- Absolute corrosion resistance, alkali resistance
- Durability forecast > 75 years
- Increased period without repair, reduced costs for maintenance
- Reduced costs for transportation
- Easy installation





Technical characteristics	ROCKBAR BFRP	ROCKBAR GFRP	AV steel rebars	Stainless steel rebars
1. Tensile strength, MPa	1200	1000	550	550
2. Thermal conductivity	< 0,46	< 0,56	56	17
3. Density, g/cm ³	2,0	2,0	7,85	7,85
4. E-modulus, GPa	55	50	200	200
Safety indicators:				
1. Electrical conductivity	non-conductive	non-conductive	conductive	conductive
2. Magnetic characteristics	non-magnetic	non-magnetic	magnetic	non-magnetic
3. Corrosion and chemical resistance	very high	high	low	high



REINFORCEMENT OF FOUNDATION PLATE IN MOSCOW

ROCKBAR-G[®]
 $\varnothing=15$ mm

A500C rebars
 $\varnothing=20$ mm

REBAR LENGTH:
 29 343,00 m

REBAR LENGTH : 22
 674,00 m

Weight: 11 284,00 kg

Weight: 56 004,00 kg

Reinforcement of foundation plate of 17-storey building with composite rebars ROCKBAR-G[®]:

- Reduced costs in comparison with metal rebars
- Reduced period of construction and installation work
- Reduced logistics costs



Bridge deck, Northern Ireland



Renovation of fountains, Poland



Federal Road, Russia

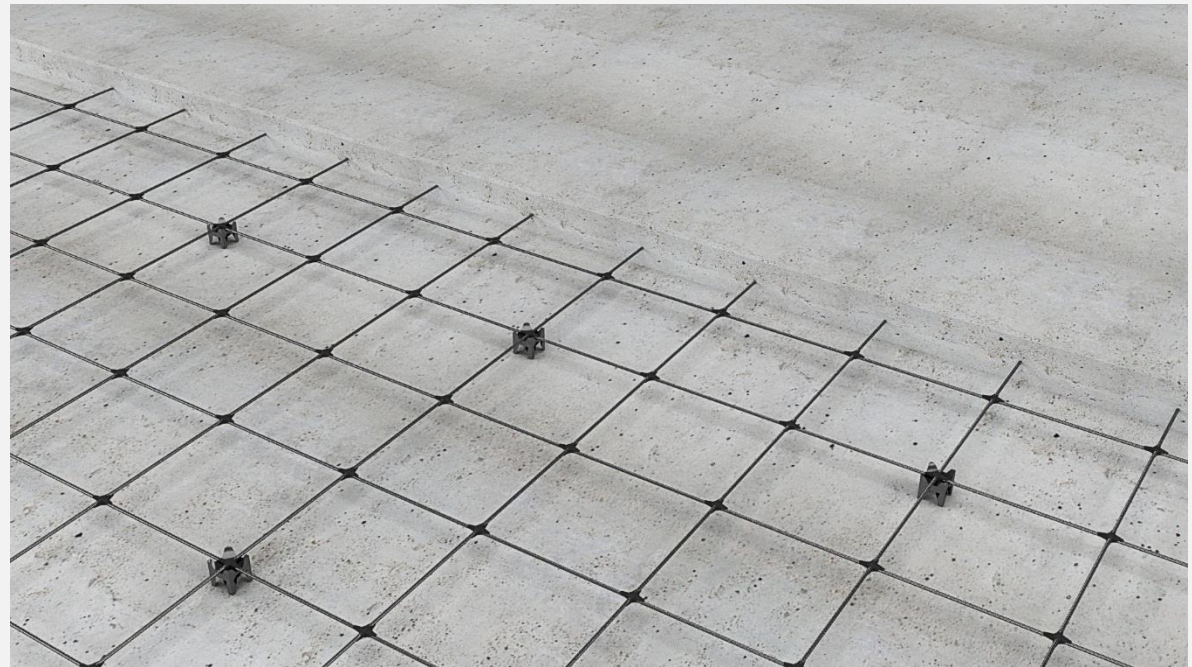
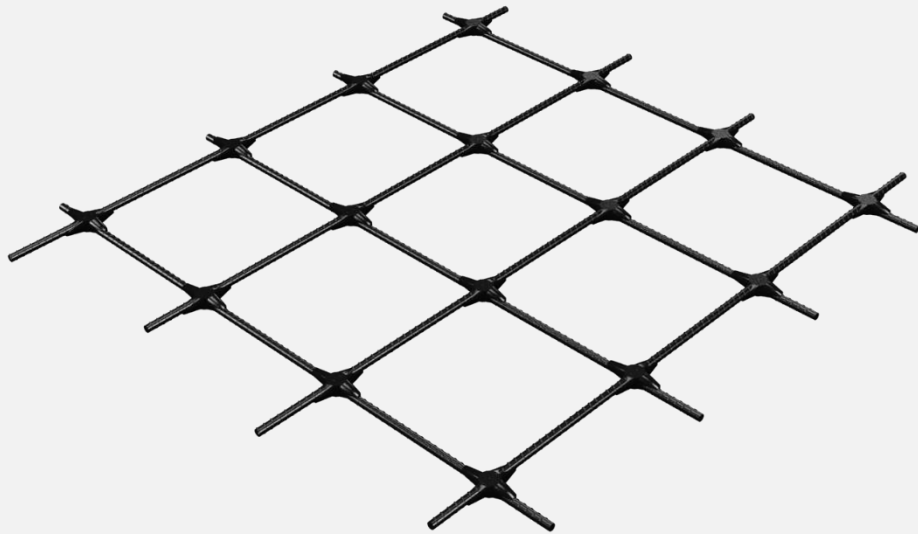


Fountain in the Tchaikovsky Park, Russia



Manufactured from composite bars ROCKBAR, arranged in two perpendicular directions with secure fixing at cross-points.

Designed to replace conventional metal mesh used for reinforcement of various construction structures.





Louvre, UAE, 2015



Louvre, UAE, 2015



Three storey parking, Moscow, 2017

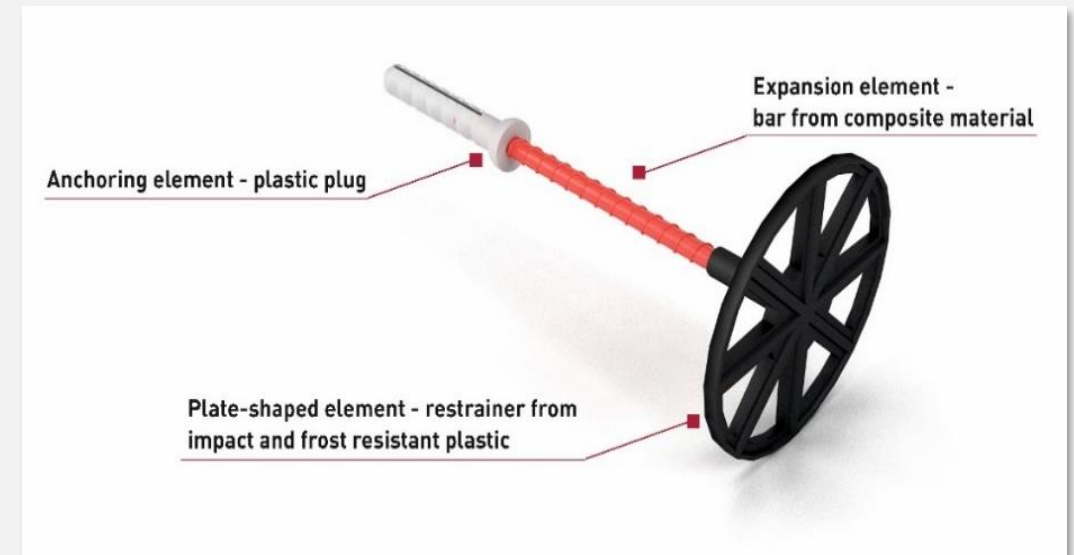
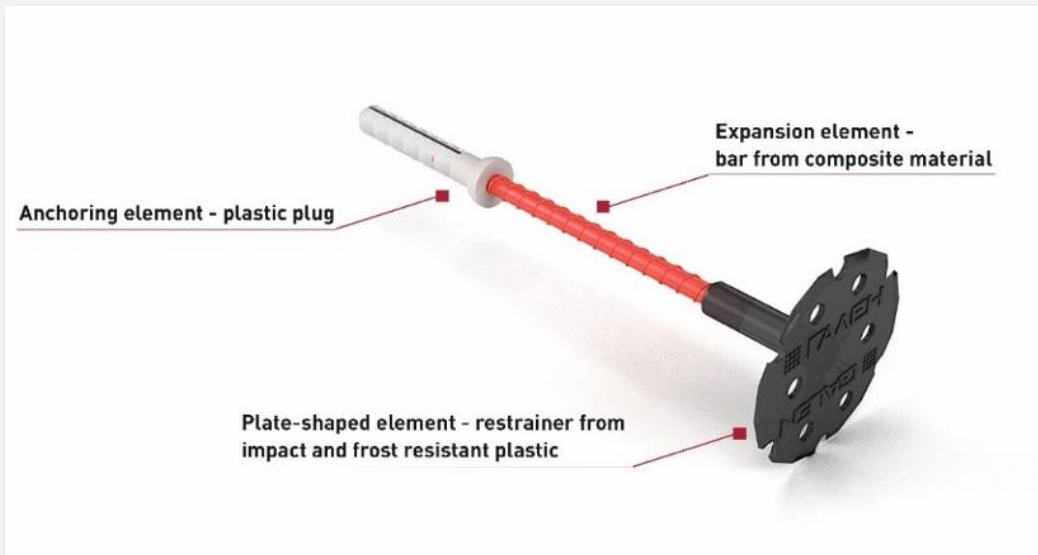


Wading pool, Czech Republic, 2017



The dowel for thermal insulation consists of an expansion element – BFRP bar, plate-shaped element and an anchoring element – polyamide dowel plug.

The dowel is used for fixing of thermal insulating materials and products (at maximal deviation from wall plane not exceeding 10 mm) to wall structures (from brick, concrete) of buildings, including façade systems.





Machynlleth, Wales



Lockerbie, Great Britain



Dunoon, Scotland



Moscow



Arkhangelsk

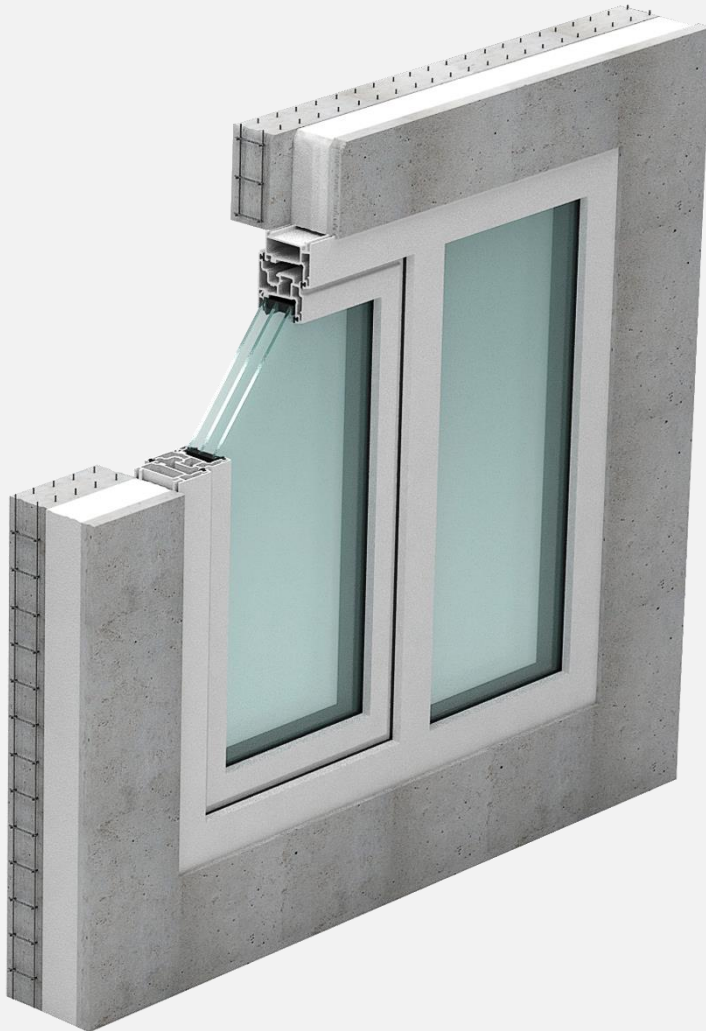


Cheboksary



Nizhny Novgorod





In June 2016 Galen launched a full cycle of production of window systems.

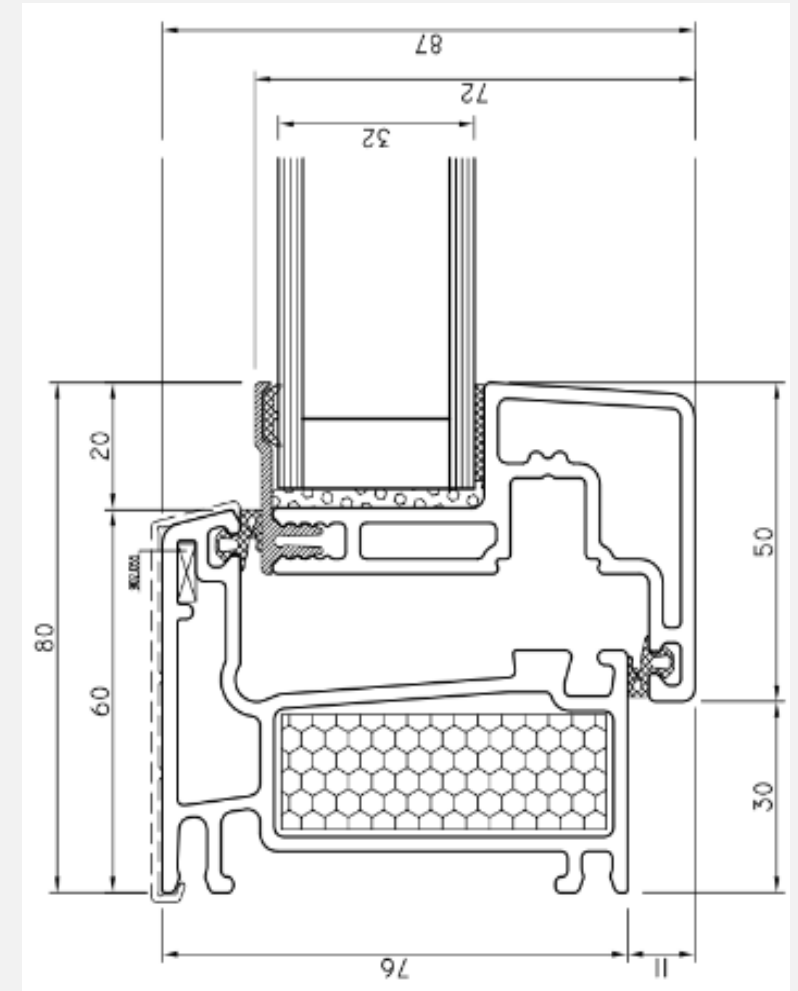
TRANSLUCENT STRUCTURES THERMOBREAK:

- COMPOSITE PROFILE
- ALUMINUM
- PVC



THERMOBREAK® window profile is manufactured by pultrusion.

- Window case width – 76 mm
- Casement profile width – 72 mm
- Double and triple pane glass – 32mm
- LG Decorative film lamination on both sides
- Siegenia hardware
- Exterior side can be finished with aluminum of any color according to RAL
- Profile's heat transfer resistance – up to $0.93 \text{ m}^2 \cdot ^\circ\text{C}/\text{W}$





	Composite pole	Composite post
Material	GFRP	
Method of manufacture	Centrifugal process	Pultrusion
Color	Standard RAL	
Shape	Tapered	Circular section
Height	5-13,6 m	1-15 m
Wall thickness	from 6 mm	5 mm



Pole type	Cost, 10 m, rub.	Weight, kg	Ageing and corrosion	Installation	Maintenance	Passive safety
Galen composite poles	28.000	Up to 100	No corrosion, no ageing	Manually	Not required	high
Galvanized	18.000	Up to 500	Corrosion	Special equipment required	Annually	Low
Reinforced concrete	12.000	Up to 1000	Severe corrosion	Special equipment required	Annually	Low
Wooden	7.000	Up to 100	Fast ageing	Manually	Annually	medium



Composite post



Metal post

Composite and metal posts on highway Alikovo-Ishaki after 3 years of operation.

Peeling of paint and corrosion were detected on metal posts.

No changes on Galen composite posts.



Galen poles on the federal highways





THE BEST WAY TO STAKE PLANTS



Composite Garden Stakes are designed to support growing trees, tomatoes, vegetables or blooming flowers.

Staking plants is an excellent way to improve the quality of the fruits & greens you will harvest and helps to keep plants healthier.



ADVANTAGES



- ✓ Eco-friendliness
- ✓ Light weight
- ✓ Easy to stake into the ground
- ✓ Hard to break
- ✓ Chemical- and UV-resistant coating protects against fading
- ✓ Weather resistant for indoor or outdoor use
- ✓ Absolute corrosion-resistant won't stain

- ✓ University of Sherbrooke, Canada
- ✓ American University of Sharjah, UAE
- ✓ University of Illinois at Chicago
- ✓ Budapest University of Technology and Economics
- ✓ University of Sheffield, UK
- ✓ Technical and Test Institute for Construction Prague
- ✓ Technical and Test Institute for Construction Slovakia branch



THANK YOU!

GALEN LLC

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