ORLIMEX
Composite systems

# PRODUCT CATALOG

Distributor UK

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# COMPOSITE MESH

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## Intended use

Composite mesh is designed to replace conventional metal mesh used for reinforcement of various construction structures.

## Design

- Composite mesh consists of the following components:
- BFRP bars, arranged in the perpendicular pattern to each other
  Plastic fixings in the bars cross points

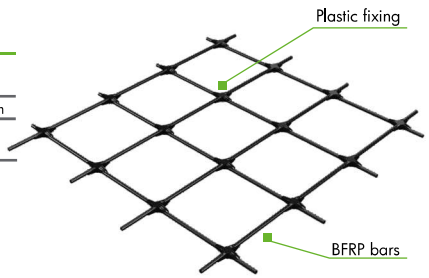
## Marking

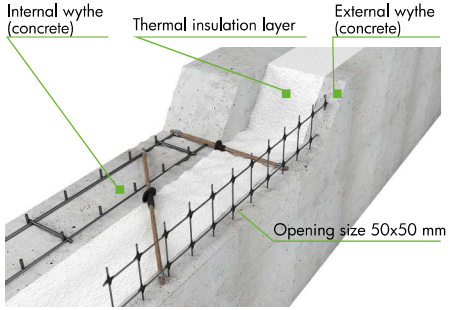
Composite mesh (2,2-50)/(2,2-50)*50*150, where:
Composite mesh – composite BFRP mesh,
(2,2-50)/(2,2-50) – bar diameter and length of each opening side, mm;
50 – mesh width, cm;
150 – mesh length, cm.

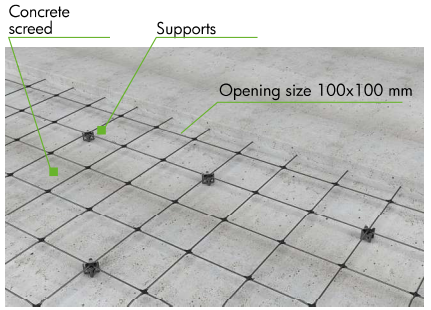
## Dimensions

| Bar (wire) diameter | 2,2 mm | 2,2 mm | 3 mm |
|---|---|---|---|
| Opening sizes | 50x50 mm | 100x100 mm | 100x100 mm |
| Weight per 1 sq.m. | 360 g/m$^2$ | 170 g/m$^2$ | 316 g/m$^2$ |

Various bar diameters and opening sizes are available upon customer request.




## Technical characteristics in comparison

| Characteristic | Mesh type | |
|---|---|---|
| | Composite mesh | Metal mesh from wire Bp-1 GOST 23279 |
| Opening size | 50x50 mm | |
| Bar (wire) diameter | 2,2 mm | 4,0 mm |
| Bar (wire) tensile strength, not less than | 1 200 MPa | 570 MPa |
| Bar (wire) tensile force | 760 kgf | 720 kgf |
| Bar (wire) elongation | 2,50 % | 2,50 % |
| Thermal conductivity coefficient, not more than | 0,46 W/(m°C) | 56,00 W/(m°C) |
| Weight per mesh area | 360 g/m$^2$ | 2 220 g/m$^2$ |
| Electrical conductivity | non-conductive | conductive |
| Corrosion and chemical resistance | very high | low |
| Magnetic characteristic | non-magnetic | magnetic |
| Fixing strength - shear | 30 kgf | not rated |
| Fixing strength - pull | 20 kgf | not rated |
| Delivery in sheets | no deformation | possible deformation |
| Delivery in coils | No deformation. Unrolled mesh regains its initial form. | Severe deformation in coils. Unrolled mesh needs additional treatment. |

## Regulatory documents

- Technical specifications «Composite mesh from BFRP rebars» TU 5714-011-13101102-2012
- Trademark certificate № 483878 ROCKMESH

## Advantages

- LOW THERMAL CONDUCTIVITY of the composite material prevents “thermal bridging” between building's wall and environment, retains moisture conditions of a structure
- CORROSION AND CHEMICAL RESISTANCE of the composite material prevents destruction of a structure
- STRENGTH of the composite material ensures increased reliability of an entire structure
- LOW WEIGHT of the composite material allows for reduction of transportation costs, storage, handling, facilitates installation works

# COMPOSITE BARS

ORLIMEX Composite systems

## Intended use

Composite bars are designed for reinforcement of prestressed and non-prestressed construction structures and components.

## Design

Composite bars are BFRP or GFRP bars of a round section, cut to length, sand coated or plain.

## Marking

BAR-G 12-P-8, where:
G – composite GFRP rebars;
12 – rebars diameter, mm;
P – rebars sand coating;
8 – rebars length, linear m.

BAR-B 10-100 coil, where:
B – composite BFRP rebars;
10 – rebars diameter, mm;
100 – rebars length, linear m;
coil – manufactured in coils.

## Areas of application

| | |
|---|---|
| RESIDENTIAL CONSTRUCTION AND CIVIL ENGINEERING | ■ Foundations of buildings and structures; ■ Repair and reinforcement of bearing capacity of brick and reinforced concrete structures. |
| INDUSTRIAL CONSTRUCTION | ■ Reinforcement of concrete reservoirs, storages of water treatment facilities, sewage lids; ■ Elements of the chemical industry infrastructure; ■ Reinforcement of concrete floors; ■ Hydraulic structures. |
| ROAD BUILDING | ■ Reinforcement of roads; ■ Overhead system poles; ■ Road and airfield slabs, sulfur concrete slabs. |
| BRIDGE CONSTRUCTION AND REPAIR | ■ Bridge deck slabs; ■ Bridge guards; ■ Sidewalks; ■ Reinforcement of shore facilities |
| RAILROAD CONSTRUCTION | ■ As a component of concrete sleepers for high speed trains and underground railway system |

## Independent test results

| Tensile Properties | BAR-G (GFRP Bars) | | | BAR-B (BFRP Bars) | | |
|---|---|---|---|---|---|---|
| | 16 mm | 20 mm | 25 mm | 16 mm | 20 mm | 25 mm |
| Ultimate Strength (MPa) | 1052 | 1043 | 873 | 1177 | 1060 | 900 |
| Tensile Modulus (GPa) | 47.7 | 48.7 | 48.1 | 47.8 | 48 | 47.2 |
| Ultimate Strain (%) | 2.21 | 2.14 | 1.81 | 2.46 | 2.21 | 1.90 |

According to study "Longitudinal Tensile Properties of Sand-Coated Glass & Basalt Fibre-Reinforced Polymer (GFRP & BFRP) RockBar(TM) Rebars of 16, 20, 25 mm diameter" by an independent laboratory of University of Sherbrooke, Canada, 2016

## Physical and mechanical properties depending on rebars' diameter

| Rebars' diameter | BAR-B (BFRP rebars) | |
|---|---|---|
| | Ultimate tensile stress, MPa, not less than | Bending stress, MPa, not less than |
| 2 | 1000 | 1000 |
| 4 | 1000 | 1000 |
| 5 | 1000 | 1000 |
| 6 | 1000 | 1000 |
| 8 | 1000 | 900 |
| 10 | 1000 | 900 |
| 12 | 900 | 900 |
| 14 | 800 | 900 |
| 16 | 800 | 800 |

BFRP bar with uniform sand coating

## Technical characteristics

| Characteristic | BFRP rebars BAR-B | GFRP rebars BAR-G |
|---|---|---|
| Length | up to 12 m (Ø up to 10 mm – in coils) | |
| Diameter | 2 -16 mm, upon request - up to 36 mm | |
| Tensile modulus, not less than | 50 000 MPa | 50 000 MPa |
| Density | 2.0 g/cm$^3$ | 2,0 g/cm$^3$ |
| Thermal conductivity coefficient | < 0.46 W/(m°C) | < 0.56 W/(m°C) |
| Tensile elongation | 2.2 % | 2.2 % |
| Heat resistance | 300 °C | 150 °C |
| Corrosion and chemical resistance | very high | high |
| Electrical conductivity | non-conductive | |
| Magnetic characteristic | non-magnetic | |

## Regulatory documents

- Technical specifications «GFRP rebars» TU 2296-014-13101102-2012
- Technical specifications «Composite rebars» TU 5714-007-13101102-2009,
- Trademark certification № 360598 "COMPOSITE BARS"

## Advantages

- ABSOLUTE CORROSION RESISTANCE, ALKALI RESISTANCE
- HIGH STRENGTH
- LOW WEIGHT
- ABSOLUTE ECO-FRIENDLINESS AND FIRE SAFETY
- DURABILITY
- DIELECTRIC
- NON-MAGNETIC
- LOW THERMAL CONDUCTIVITY