# Basfiber<sup>®</sup> for construction





## **Alkali-resistant Basfiber®**

Basfiber® with KV-13, KV-42 and KV-41 sizings was developed specifically for construction applications. These grades provide excellent alkali resistance and good compatibility with matrix (concrete or resins).

Besides high alkali resistance these Basfiber® grades have much higher mechanical properties than E-glass and much lower price compared to all other alkali-resistant fibers.

All these advantages make these products excellent and affordable alternative to alkali-resistant fibers which are currently used on the market.



# **Applications**

Kamenny Vek offers a wide range of products for building and road construction:

- Wet or dry chopped strands for premix technology

- Gun-roving for spray-up and shotcrete technologies

- High strength roving for production of rebars and pultruded profiles

- Basalt mats and fabric for concrete reinforcement and buildings thermo insulation

- Reinforcing mesh for road construction

## **Basfiber®** advantages

Nowadays composite materials successfully replace steel in construction industry. But even among composite materials Basfiber is the product of choice for this application due to its unique combination of properties:

#### In comparison to steel:

- High strength to weight ratio: Basalt fiber is 3 times lighter and up to 2.5 times stronger in tensile strength than steel

- Chemical and corrosion resistance: Basalt fiber doesn't rust and is resistant to the action of salt ions, chemicals, and the alkalinity inherent in concrete

- Low thermal conductivity: Basalt fiber has extremely low coefficient of heat conductivity compared to steel. This advantage helps to reduce heat transfer from building exteriors to interiors and significantly improves energy efficiency

- Zero electrical and magnetic conduction:

Basalt fiber has much higher electrical resistance compared to steel and doesn't interfere in the operation of sensitive electronic devices

#### In comparison to E-glass:

- Tensile strength and modulus: Basfiber shows 25% higher tensile strength and 15% higher tensile modulus compared to E-glass

- Chemical resistance: Basalt fiber shows much better chemical resistance compared to E-glass

- Heat and fire resistance: Basfiber has 100°C higher extended range of operating temperature compared to E-glass





# **Basalt fiber reinforced rebars**

Reinforced concrete is a traditional building material for the construction. By far steel is the most common reinforcement in this application but basalt fiber is more and more used for that purpose.

Basalt fiber reinforced rebars significantly improve the durability of civil engineering structures especially under corrosion environment.

#### Technology:

Basalt rebars are produced by combining pultrusion and winding processes from high quality basalt fibers along with polyester, vinylester or epoxy resins.

#### Typical Basfiber® pr<mark>oducts fo</mark>r this appli<mark>cation:</mark>

Continuous fiber 13 to 17 µm, 2400 to 4800 tex, internal unwinding, alkali resistant KV-42 (epoxy compatible) or KV-41 (vinylester and polyester compatible) sizing.



Rebar's properties		Basfiber®	E-glass	Beton steel	
Tensile strength, MPa		800 - 1 <mark>200</mark>	<mark>500 - 800</mark>	550	
Tensile modulus, GPa		45 - <mark>55</mark>	40 - 46	200	
Thermal conductivity, W/mK		<0 <mark>.5</mark>	<0.5	60	
Density, g/cm3		2.2	2.3	7.85	

## Pultruded load-bearing profiles for bridges and buildings



Pultruded load-bearing profiles are widely used for construction of bridges and buildings.

Kamenny Vek provides high strength basalt roving specially designed for pultrusion. This product has high tex, low catenary and various sizings to meet customer's requirements.

#### Typical Basfiber® products for this application:

Continuous fiber 17  $\mu$ m, 4800 tex, internal unwinding, alkali resistant KV-42 (epoxy compatible) or KV-41 (vinylester and polyester compatible) sizing.

## External reinforcement in housing and infrastructure

The usage of unidirectional, biaxial and triaxial basalt fabrics as external reinforcement is cost-effective and reliable way to increase load-bearing capacity and provide earthquake protection in various applications for the construction industry.

#### The product range includes:

- Unidirectional basalt fabrics with surface density 400 to 1050 g/m2

 Biaxial and triaxial basalt fabrics with surface density 400 to 900 g/m2





Thermal properties	Basfiber®	E-glass	
Application temperature, °C	-260 up to + 560	-60 up to + 460	
Short-term maximum operation temperature, °C	up to + 700	up to + 550	
Heat conductivity, W/mK	0.031 - 0.038	0.034 - 0.04	

## **Reinforcing mesh**

Basalt reinforcing meshes are designed for reinforcing road and highway overlays to prolong the pavement life span by reducing the effects of reflective cracking caused by traffic loading, age hardening and temperature cycling.

Pavement life between maintenance can be prolonged significantly. Basalt reinforcing mesh makes it possible to reduce thickness of asphalt concrete pavement up to 20%. Typical paving temperatures will not cause any loss of strength or distortion which may occur with synthetic material.

Basfiber® significantly outperforms synthetic materials by their ability to withstand low temperatures that is extremely important for roads and highways in the north regions.



## **Basalt fiber reinforced concrete**





Basalt fiber reinforced concrete is a cement-based composite material. Use of chopped basalt strands in this application is an effective way to increase chemical, impact and cracking resistance of the mortar.

Basfiber® concrete grade is produced with a special sizing agent to provide good compatibility with different types of concretes, high alkali resistance and easy mixing even at high content.

Basalt fiber reinforced concrete can extend the life cycle of bridges, highways, railways, housing, sea structures, tunnels etc.

#### Technologies:

- Spray-up and shotcrete technologies

- Premix technology

Typical Basfiber® products for this application:

**For spray-up and shotcrete:** Continuous gun-roving 13 to 17 µm, KV-13 (cement compatible) alkali-resistant sizing.

**For premix:** Filament diameter 13 to 19  $\mu$ m, length 3 to 50 mm, wet chopped strands with KV-05/1 (hydrophilic) sizing or dry chopped strands with KV-13 (hydrophobic) alkali-resistant sizing.

Chemical resistance	Basfiber®	Alkali-resistant glass	E-glass
Fiber's weight loss after 3h boiling in cement saturated solution, %	0.3 <mark>5</mark>	0.15	4.5
Fiber's weight loss after 3 h boiling in 1N soluti <mark>on of HC</mark> I,%	7.1	No data	38.5

# **Basfiber**<sup>®</sup>





## Logistics advantages

- English speaking staff
  Packaging labels and shipment documents in English
- Door-to-door delivery all around the world
- Worldwide distribution network
- Regional warehouses in Europe and USA





## Ways of delivery

- 20' container, 11 pallets 120x80 cm (max net weight is 10 000 kg)
- 40' container, 23 pallets 120x80 cm (max net weight is 18 500 kg)
- Truck, up to 33 pallets (max net weight is 18 500 kg)

## **Distribution Network**

Kamenny Vek supplies its products on in<mark>ternatio</mark>nal market exclusively through its Global distributor Finborough Trading Company which is located in Canada.

Finborough supplies Basfiber products to customers through regional distributors in Europe, USA and Australia. Please find the list of these distributors below:

## USA

B & W Fiber Glass, Inc.

www.bwfiberglass.com 100 Glass Way, Shelby North Carolina 28152. USA

Mr. Brent Beason, President Tel: +1-704-434-8005. brentb@bwfiberglass.com

Mr. Miguel H. Ferré, Director of Strategic Growth Tel: +1-704-434-8005 ext 117, Mobile: +1-336-479-3849. miguelf@bwfiberglass.com

# **EUROPE**

#### **Basaltex NV**

www.basaltex.com Zuidstraat 18, 8560 Wevelgem, Belgium

Ms. Ilse De Roos Tel: +32 56 43 00 92, Fax: +32 56 42 42 34. info@basaltex.com

## **AUSTRALIA**

#### **BASALT FIBER TECH**

www.basaltft.com 85 Atherton Road, Oakleigh, Victoria, 3166, Australia

Mr. Chris Christodoulou Managing Director

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