

@ BEKAERT

better together

## Murfor® masonry reinforcement



Your proven solution for confident building

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## Building with confidence

A building project holds many challenges. Preventing or controlling cracking in your masonry is one of them. Bed-joint reinforcement is a proven method to prevent or control these cracks and to allow your walls to carry bigger loads. It enhances the durability and safety of your construction and ensures longer lifetime.

Bekaert Murfor® is a bed-joint reinforcement solution consisting of two parallel wires and one diagonal wire welded together to create an engineered reinforcement that will help you prevent crack formation and make more inspiring designs which are better able to withstand the forces of nature.

### In full control of your masonry

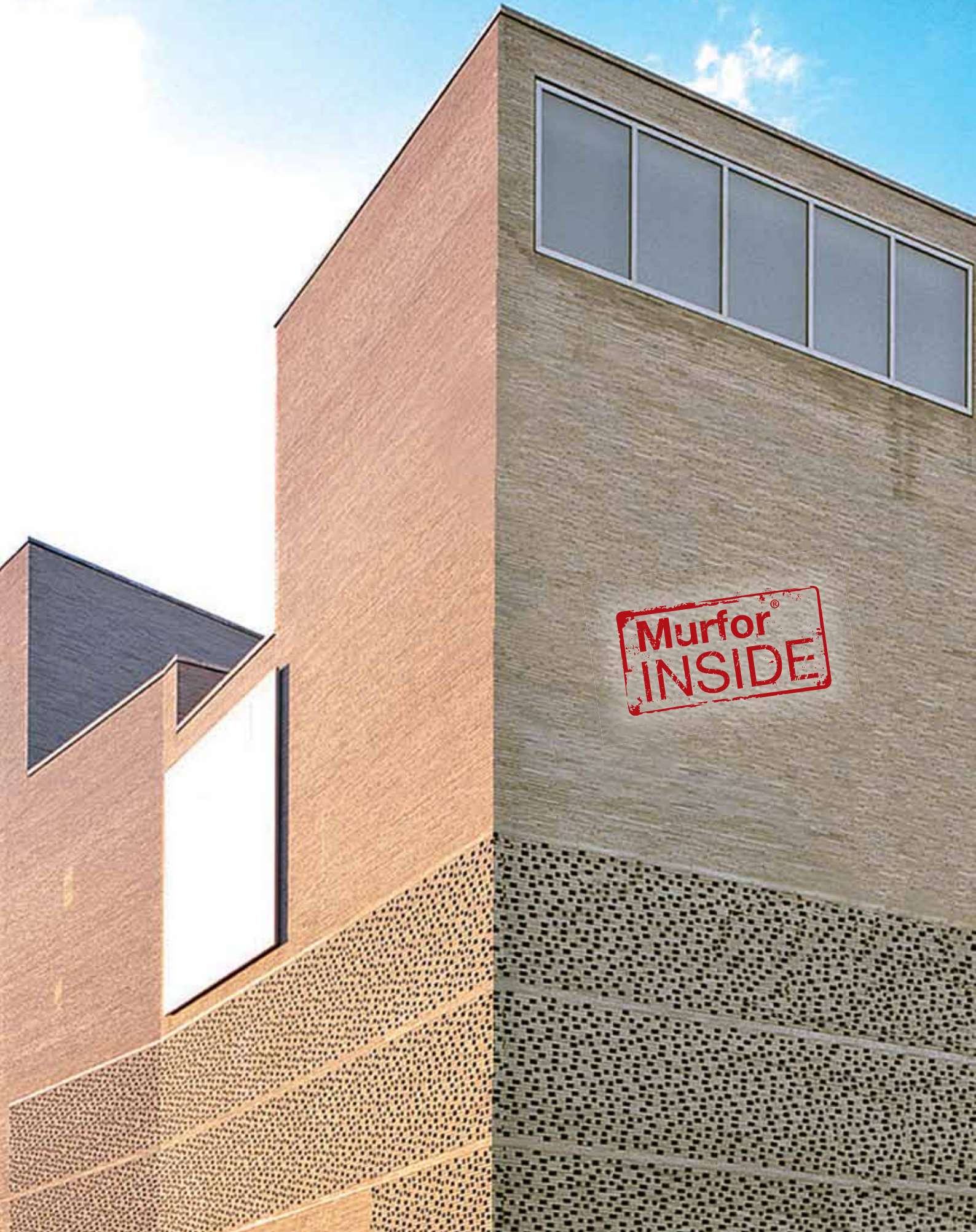
As a construction material, masonry has good compressive strength properties, but is weak in tension. Reinforcing your masonry with Murfor® however, provides additional strength and flexibility and gives you full control in design and performance of your work.

### Building without compromise

As an architect or designer, you sometimes have to sacrifice your freedom for the strength of your construction. Murfor® enhances your freedom of design and reconciles the competing interests of aesthetics and performance.

### The safe choice

Building in seismic areas can be challenging. As a construction professional, it can be hard to prepare for earthquakes or heavy winds. Murfor® is a smart and economical way to protect buildings subject to high wind conditions and in seismic areas.



# Reinforcing your masonry with a crack-free solution

With Bekaert Murfor®, you can prevent and control crack formation more efficiently.

Murfor® allows you to create longer walls and reduce the number of movement joints, as described in the Eurocode 6 rules. In short, you expand your architectural freedom, and your customers will enjoy a more durable construction.

## Enhance the distance between movement joints

Temperature changes and shrinkage introduce stress points in masonry walls. As walls are normally restrained, any stresses occurring will lead to the appearance of cracks. To avoid these, vertical movement joints are used. Eurocode 6 recommends maximum span distances for unreinforced masonry walls. As the standard points out, these span distances can be significantly increased when using Murfor®. This brings new possibilities for **aesthetical facades**, as disturbing vertical lines can be avoided.

## Prevent cracks in stress areas

Specific construction details will lead to stress concentrations in certain areas, such as **windows and door openings**, gable ends, or at changes in elevation. Murfor® successfully mitigates stress effects in these areas.

## Enjoy a lasting, aesthetic result

Wide cracks in masonry walls spoil the appearance and affect the durability of the construction. Murfor® controls cracking by distributing stresses and limits crack widths to a minimum, which leads to a **more durable** construction and **aesthetically appealing** wall.



Cathedral of the Resurrection in Evry (France)

“With reinforced brickwork you can realize harmonic constructions.”



Mario Botta, architect



Bekaert Murfor® offers excellent crack control support for the **Atlantis Hotel**, which is built on the unstable soil conditions of the man-made island of Palm Jumeirah near the coast of **Dubai**.



In Belo Horizonte (Brazil) the number of traditional reinforced concrete tie beams and columns could be reduced thanks to the use of Bekaert Murfor® for the building of a Telhanorte megastore, designed by Otávio Nascimento (2007). The execution phase of 12.000 m<sup>2</sup> of masonry was shortened from five to three months, and the owner realized savings of more than 30%.

# Exploring new structural possibilities without compromise

If you feel like exploring the limits of design, then Bekaert Murfor® offers the support you need.

## Create masonry lintels in facade walls

Masonry lintels reinforced with Murfor® take up the **bending moment** above window and door openings. This leads to an aesthetically appealing masonry facade wall without disturbing visible steel or concrete beams.

## Reinforce to sustain horizontal & vertical wall deformation

Murfor® strengthens your masonry wall, supporting **higher wind loads**.

Murfor® allows you to build **longer and higher** than average walls, thanks to its capacity to take up horizontal bending forces.

On bending floors, Murfor® creates self-supporting, crack free walls.

## Save costs by reducing the number of supporting columns and beams

Murfor® strengthens your wall, enabling higher and longer walls. With Murfor®, you can reduce the number of auxiliary reinforced concrete or steel posts (columns) and belts (beams). This leads to significant **time and money savings** and makes Murfor® a very economical solution.

## Stack-bonded masonry

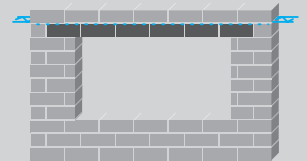
Stack-bonded masonry lacks flexural bending capacity, and can only safely be created when reinforced with Murfor®.

“We saved more than 30 % by using Murfor® steel wire masonry reinforcement.”

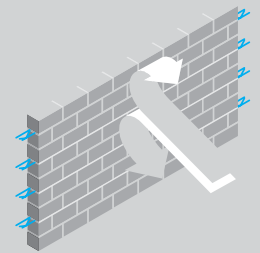


Paulo B. Lourenço,  
Professor at  
Universidade do Minho -  
Portugal

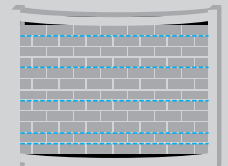
Lintels



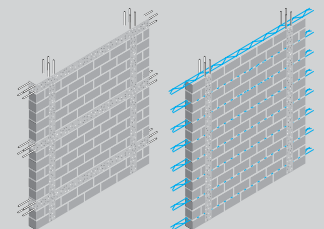
Wind loads



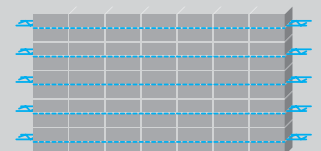
Bending floors



Reduce number of columns and beams



Stack bonded masonry





# Safeguarding your investment in seismic areas

Bekaert Murfor® significantly increases the displacement capacity of your construction. The worldwide seismic map is enlarging, and seismic regulations are becoming stricter every day. Murfor® is a very efficient solution to protect your buildings against earthquakes and heavy winds. It is also very economical as it removes the need for placing expensive intermediate reinforced concrete structures.

## Increasing the resistance

In extreme load situations, such as earthquakes, being able to **sustain large movements** is critical for the safety of the construction and its residents. Murfor® increases the displacement capacity and strength of your masonry walls, and significantly **reduces the damage** in the event of an earthquake.

## Avoiding out-of-plane failure

In the event of an earthquake, many casualties are caused by **out-of-plane collapsing** of masonry walls. Murfor® mitigates these risks dramatically. The Italian Norme Tecniche per le Costruzioni (NTC) recommends Murfor® at distances of no more than 50 cm for infill walls.

## Detailing

A building collapse can often be avoided by **proper detailing**. Murfor® strengthens the connections between walls, allows tying the construction together with Murfor® reinforced masonry ring beams, and anchors the masonry above openings to the supporting piers.



Residence of Eng. Salvatori in l'Aquila (Italy)

“Bekaert Murfor® might well have saved my home from ruin.”



Eng. Antonello Salvatori, Professor of Construction Science at l'Aquila University - Italy

## Italy opts for safety

Italy has a long history of earthquakes. That is why Italian authorities have imposed constructors with stringent regulations in terms of construction safety.

According to the Norme Tecniche per le Costruzioni (NTC), Bekaert Murfor® is recommended for infill walls. These regulations are based on extensive research performed among others by EUCENTRE, Europe's largest and most renowned earthquake research facility, based in Pavia, Italy.

# A solution for every need

## Why Bekaert Murfor®?

In contrast to traditional rebar reinforcement methods, Murfor® bed-joint reinforcement does not affect your usual bricklaying procedures and is much easier to install. In addition, Murfor® has corrosion protection with a choice of material finishes.

- Correct positioning and shorter anchorage length compared to rebar
- Choose from different finishings (galvanized, epoxy coated or stainless steel) for optimal corrosion resistance
- Conforms to worldwide quality

standards, for the product and its applications

- Collaboratively engineered by Bekaert and academic experts

### **Various widths and diameters, fitting any brick**

Murfor® reinforcement products are manufactured in various widths, shapes and diameters, so they will be able to fit virtually any brick available on the market.

### **Different shapes to suit any mortar type**

Murfor® comes standard as a round wire, for masonry with

normal mortar joints. Additionally, the Murfor® flat wire will help reinforce masonry with thin bed joints.

### **Exceeding worldwide quality standards**

Next to CE compliance for Murfor® products, Bekaert also seeks conformance for the products and their applications to additional local certification, such as ATG (Belgium), KOMO (the Netherlands) and ABZ (Germany).

## Why Bekaert?

Bekaert's wide portfolio of reinforcing products for the building industry ranges from concrete reinforcement, over stucco and masonry reinforcement to road reinforcement.

Bekaert always offers you a reinforcement solution that is safe and quality controlled.

That's why Bekaert has earned the trust of architects, designers and contractors worldwide.

- Trusted solutions from an international industry leader
- Extensive support services
- A company sharing expertise with its industry partners
- Continuous product innovation and improvement
- Advanced design software for fail-proof designs and calculations
- Worldwide Bekaert network of masonry experts at your service

### ***better together***

At Bekaert, we believe that joining forces often delivers the best results. That is why we stimulate collaborative product development with partners and customers, and work with global academic experts.

This way, we are always able to offer solutions based on the best available technologies.

## Just imagine what we can do together ...

Would you like to learn more about our solutions? Are you interested in our products or services? Then do not hesitate to get in touch. We'd be delighted to discuss our offering.

Bekaert will be happy to provide technical advice on the most suitable Bekaert Murfor® type, amount and positioning for your application. Contact us at [infobuilding@bekaert.com](mailto:infobuilding@bekaert.com)



Detailed product datasheets are available at our local sales offices and on [www.bekaert.com/building](http://www.bekaert.com/building)

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