

Murfor®



**Masonry reinforcement
for
Seismic constructions**

Murfor®

THE CONSTRUCTIVE IDEA

Earthquake dramas



- ✓ Human lives in danger
- ✓ Severe damage to the buildings.

Murfor® reinforced masonry can seriously reduce the ravage



Murfor® is a steelwire reinforcement to be embedded in the horizontal bed.



Murfor® is very adequate in reducing the damage of earthquakes.

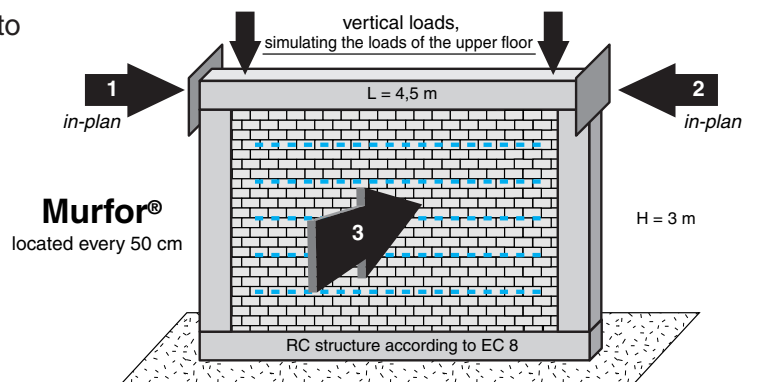
- ✓ Murfor® reinforced masonry
- ✓ reduces the risk of cracking
- ✓ increases the structural strength

Nine seismic tests at the University of Pavia

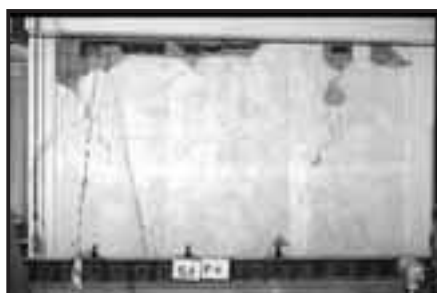
Murfor® reinforced walls were tested out, in order to obtain information about the in-plan behaviour (1 & 2) and out-of-plane behaviour 3



The tests were conducted by Prof. G.M. Calvi.



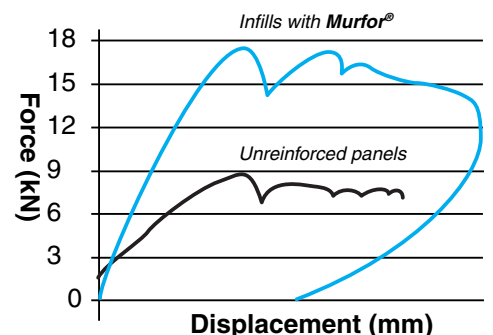
Results of the tests



Unreinforced panels were severely damaged. Parts of masonry blocks crashed down.



Panels with Murfor® withstand very well the tests.



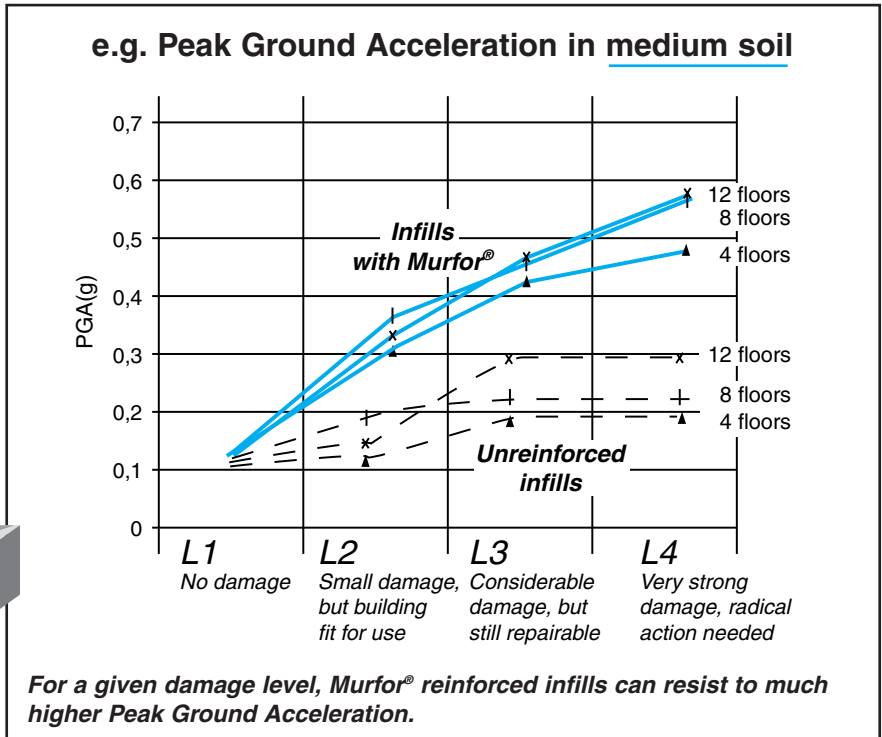
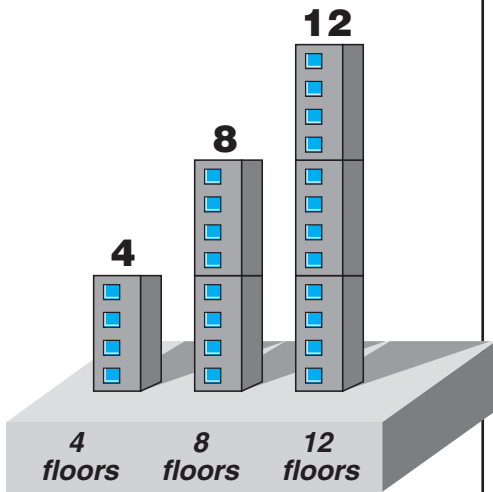
Panels reinforced with murfor score 2 times better.

Numerical Model

A simulation based on the finite elements method, allows to extrapolate the results of these tests towards different types of buildings:

- buildings with 4, 8, 12 floors
- build on soft, medium and hard rock soil. Example: 'medium soil'.

The Peak Ground Acceleration (PGA) obtained at different damage levels for infills reinforced with Murfor®, compared to unreinforced infills.

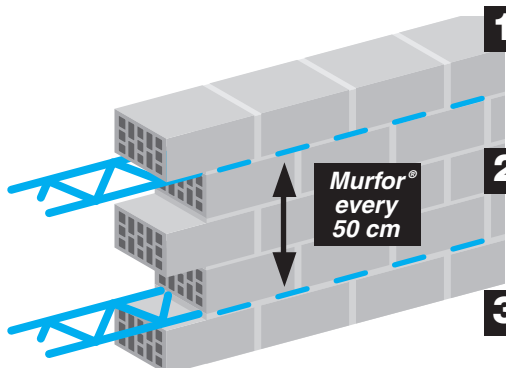


Advantages with Murfor®

- ✓ Prevention of the collapse of the blocks in the infill panel
- ✓ Considerable reduction of the crack width and pattern
- ✓ Increased resistance to the out-of-plane effect
- ✓ Murfor® reinforced panels highly absorb the tension and reduce the deformations



Conclusions

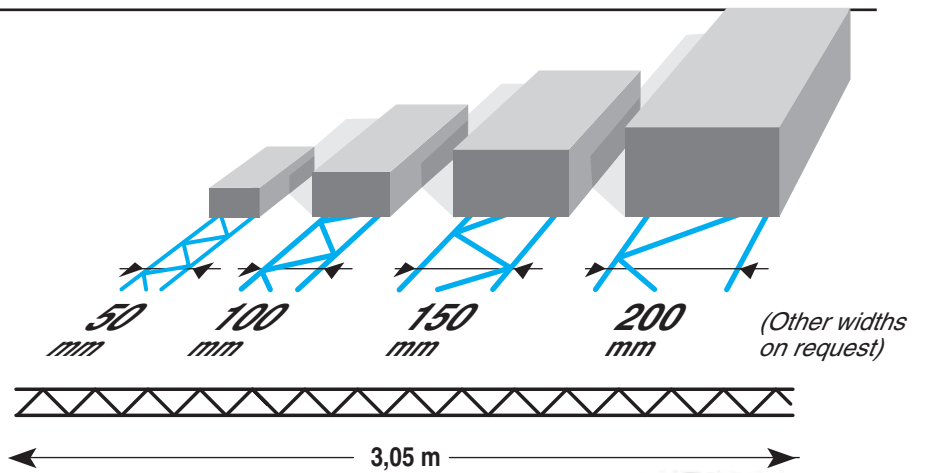


- 1** MURFOR® positioned every 50 cm cc is the best economical and easiest method to reduce the damages in masonry infills, caused by earthquakes.
- 2** MURFOR® reinforced panels contributes largely in the security of human lives as it reduces considerably the collapse of infills during a seismic event.
- 3** MURFOR® reinforced panels meet to the Eurocode - 8 recommendations.

(EC-8: art 1-3, 2.9.6. Exept in zones of low seismicity, appropriate measures should be taken in order to avoid brittle failure and premature disintegration of the infill walls, as well as the out-of-plane falling of masonry blocks)

Product range

Mortar joints



RND

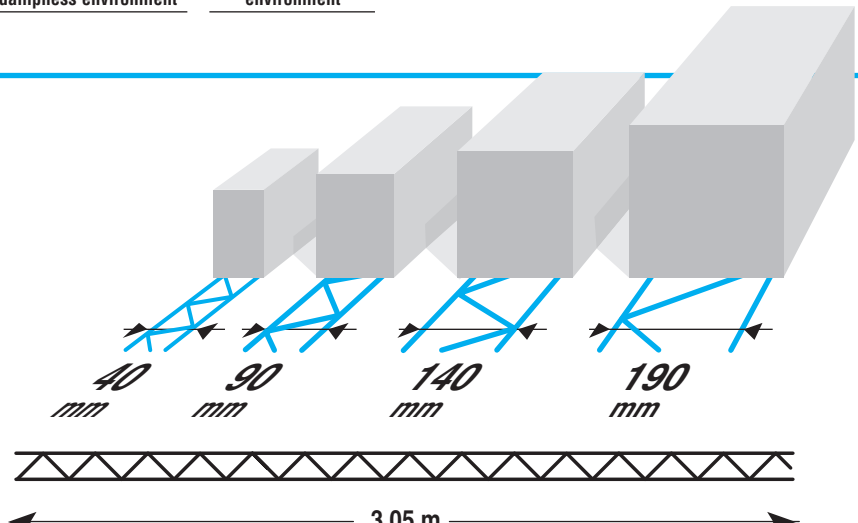
RND/Z
zinc coating of at least 70gr/m²
For masonry exposed to a dry environment

RND/E
Epoxy coating of at least 80 microns on galvanised wire
For masonry exposed to dampness environment

RND/S
Stainless steel
For masonry exposed to dampness or an aggressive environment



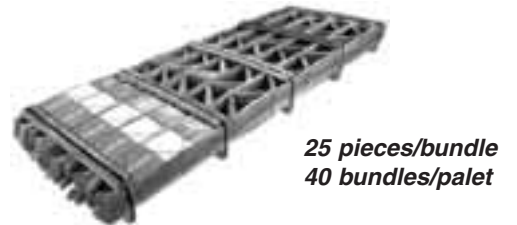
Thin bed joints



EFS

EFS/Z
zinc coated

EFS/S
stainless steel (on request)



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