

# Movement in Block Work Walls

Research into movement in block work walls has been very detailed, particularly with regard to Block work, commonly called 'breeze blocks'. Please see the attached correspondence and note its contents, especially BS 6073 and the maximum shrinkage allowed. The percentage shrinkage's of 0.06% and 0.09% may not appear to be very high. What these shrinkage percentages mean in actual fact is this: 0.06% of a metre is 0.6mm, 0.09% of a metre is 0.9mm.

**0.6mm is just over 1/2000 and 0.9mm is just under 1/1000**

Again this doesn't sound much. In relation to the highly stable ceramic tile these shrinkage factors of block work must be considered a very high-risk substrate on which to fix ceramic tiles.

Deflection caused by drying shrinkage or thermal movement creates a shear stress which develops causing the ceramic tiles to compress (edge on) to the neighbouring tiles, once these stresses achieve a certain level the compression causes the final stress tensile, blowing the tiles off the tile bedding. Deflection also happens in floors, which can experience the same stresses, but with different causes.

## Movement and Angle of Deflection

Using the above BS 6073 maximums for argument, a shrinkage factor (0.09%) 0.9mm per meter would result in a deflection of 8.703mm at the maximum arc caused by the shear stress, and a shrinkage factor of (0.06%) 0.6mm would result in a deflection of 5.802mm. See sketch for explanation.

**The distance between chord = 1000mm  
The distance of arc = 1000mm**

A reduction of 0.9mm between chords represents shrinkage and the effect in linear deflection, which measures 8.703mm.

The greater the distance between chords affects the angle of deflection, the ratio and the arc. The 'T' distance remains more or less constant.

## Sources

Building Research Establishment: Movement and Principal Causes

Amendment Clause 17.2.1 General AMD 7058.

? \* British Standard 6073

## Precast Concrete and Masonry Units.

Robotect Engineering, Stoke on Trent (Practical Tests).

## Conclusions

A small amount of movement can create very high stresses which manifest themselves in failures usually indicating tiled walls and floors bowing or tiles blown off their bedding materials. Block work walls should be left for at least 6 weeks after construction before rendering, thereafter a minimum of 2 weeks prior to any tiling. \* As recommended in the above BSI.

This is clear evidence that all tiling must have open grouting joints and under no circumstances is it advisable to use closed joints, particularly in internal corners

