

# Clay Brick TechniSheet No 1



## CLAY MASONRY WALLING – STANDS THE TEST OF TIME!

The growing trend of crafting landscapes into eco-sensitive built environments has encouraged the use of natural products like clay brick to be successfully utilised in applications where durability and versatility are critical to the overall aesthetic value and design.

Clay bricks are available in a wide selection of surface textures, shapes and natural hues. They can be used as stand alone structural elements, in multi-story building or as an attractive cladding material, or filler between structural elements. Natural aesthetics also make them a popular choice for face brick facades or for external features such as perimeter walling, which when combined with other materials like wrought iron railings create a spectacular effect.

The rigours of prolonged exposure to the sun, wind and rain call for more durable materials. The decision to use genuine clay bricks should emerge at the planning phase of the building process.

Durability relates to the high porosity features found in clay bricks, Clay bricks have a capillary pore system which positively influences moisture movement, allowing for moisture from rain or water vapour to be absorbed and then just as quickly released back into the atmosphere. This means that clay brick walls that become damp, dry out just as quickly as they become moist – making them extremely wind and weather resistant.

Even in wet conditions clay bricks seldom become too wet to work with. Their compatibility with all weather situations ensures productivity in construction, ultimately saving on time and labour too.

While some buildings may experience shrinkage due to temperature fluctuations and applied loading, resulting in compression strain that could cause cracking and potential structural damage, clay bricks have a very low deformation value, ensuring great dimensional stability.

Clay bricks also have well-known thermal and acoustic insulating properties, offering coolness in summer and warmth in winter. The density of clay means they resist the transmission of airborne sound waves, ensuring that the ever present noise of today's bustling urban environment will remain outside the walls. Built with clay, multi-dwelling buildings such as villas, townhouses, offices and apartments will not be subjected to excessive noise transmitted from adjoining buildings, or rooms.

Different building materials have different thermal transmittance and capacity ratings. Thermal transmittance refers to the material's ability to transmit or resist heat energy, while capacity refers to the amount of heat the building material will store. Clay bricks have excellent ratings in both, making them a superior choice for building in areas with high day-time and low night-time temperatures. Air humidity is also regulated, creating an ideal climate that is close to the preferred human comfort zone in both the coolest and hottest months.

While architects are attracted by their flexibility and ageless visual appeal, they also maximise on the energy efficiencies of clay brick, which have an ability to trap solar heat in during the day and then slowly release it through the building at night.

Says At Coetzee, the executive director of The Clay Brick Association, "Building materials make up a significant percentage of our energy use, both in their operation and lifestyle energy use. If the building material also adds significant value to the thermal efficiency of the building, so much the better. This is what makes clay brick a reliable choice in walling."

Since clay brick is incombustible it cannot contribute to the start or spread of fires nor can it add fuel to make a fire more intense. Therefore, clay brick walls obtain maximum fire ratings as they are able to withstand fully developed fires the longest.

Modern brick-making techniques ensure that clay brick products are stronger and more durable than what they were centuries ago. As manufacturers of a high performance walling material, members of the Clay Brick Association have a responsibility to ensure continuity of supply in order for architects, specifiers and builders to design, detail and build in clay masonry with absolute confidence.

Clay bricks have an impressively high load-bearing capacity and the highest dimensional stability and compressive strength of all building materials. These properties also minimise the risk of cracking, ensuring that the structural integrity of buildings are maintained even when the bricks are plastered.

Clay bricks vary in compressive strength according to the raw materials and manufacturing process. According to the requirements of SABS 227, the minimum compressive strength of a standard plaster brick should be 7 MPa. In most cases the average compressive strength of an NFP clay plaster brick exceeds 12 MPa with some face brick, engineering and paving products extending as much as 60MPa.

All masonry walling units absorb moisture during construction or from weathering, and undergo some degree of expansion. The benefit of clay bricks is that this expansion is never more than 0.2%, which minimally affects the design cost of the building.

"While some of the new and alternate building systems may be considered in an effort to curb costs, all in all good bricklaying, along with the correct selection of brick and mortar is still the proven method of building that endures the test of time." Concludes Coetzee.