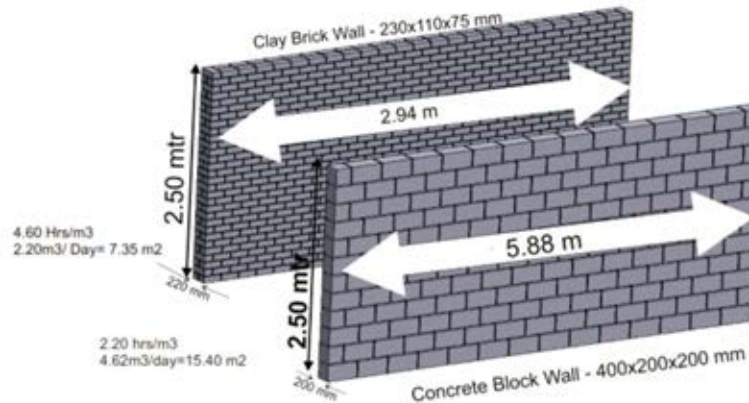


# Comparison of Concrete Blocks with Clay Bricks



Parameters	Concrete Masonry Blocks	Clay Bricks
Compaction during production	Perfect filling followed by compaction synchronized with vibration results in high density and strength	Good compaction without vibration
Basic raw materials and other inputs	Cement, Sand, Aggregates, Fly Ash along with Water	Top agricultural soil (Clay) & water
General applications	Load-bearing blocks, non-load bearing elements, special effect and textured pavers, flag tiles and other value added products	Clay Bricks are used only as filling materials, and the clay bricks are not suggested to be used in earthquake prone zones as the Strength and load bearing features are very low.
Dry Density (Kg/m <sup>3</sup> )	1500 to 2200 kg/m <sup>3</sup>	1800-1950
Compressive strength (N/mm <sup>2</sup> )	7.5 to 12.5 N/mm <sup>2</sup> for blocks and 30 to 49 N/mm <sup>2</sup> for pavers	2.5-6.5
Thermal Conductivity(W/m.k)	0.80-1.20	0.80-1.20
Thermal resistance: R value for 200/230 mm wall (m <sup>2</sup> OK/W)	0.83	0.59
Heat Transmission: U value (8" wall) (W/m <sup>2</sup> k)	1.2	1.98
Fire Resistance	2.0 hours (8" Hollow ) 4.0 Hours (8" Solid Load Bearing )	1.5-2.0 Hours
Water Absorption (% by volume)	5.0-7.0%	5.0-20.0%
Sound reduction Index Value (dB)	45(8" Hollow)- 55 (8" solid )	25-30 (8" Wall)
Energy consumed in production(KWH/ m <sup>3</sup> )	700	900-1100
Aging Impact	Accelerated compressive strength due to controlled curing process. 28 days strength achieved in less than 10 days	Firing Process of Clay Brick doesn't provide same compressive strength across brick
Precision in size	Concrete Blocks takes 1/3 <sup>rd</sup> time to complete wall construction	Clay Brick takes more time in construction and it is labor intensive

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Parameters	Concrete Masonry Blocks	Clay Bricks
Eco Friendliness	No smoke, No CO <sub>2</sub> emission and considered as pollution free system	Top soil used in clay brick production is banned in most of the countries as it is very good for agriculture purpose which affects the environment.
	Low energy is required. Energy efficient. Thermal Mass of concrete slows down the flow of heat	High energy required for burning the kilns and normally uses wood and carbon emission is very high in this scenario.
	No top soil consumption	Top soil is consumed as the use of mineral rich clay is major threat for agriculture.
	Controls seismic stress	No control on seismic stress
	Rejection is very less at 1.5% maximum	Rejection is very high, up to 12%
	Can be fully recycled in block production	Cannot be recycled. To go as land fill only.
	- Mold resistant -Rot & Termite proof	-Not mold resistant
Precision in Size	Variation: 3 3.0mm dimensional accuracy & uniform shape allows the fair face block as well as porous products which helps direct putty and paint saves time and cost.	Variation: 3 3-5 mm uneven shape and surface finish consumes more plaster and mortar which increases the cost and time.
Emission Hazards	1ft <sup>2</sup> of carpet area emits 14.0 Kgs of CO <sub>2</sub> No irritants during production	1ft <sup>2</sup> of carpet area emits 17.6 kgs of CO <sub>2</sub>
Ease of Working	Can be cut, nailed & drilled. Automated production pass through strict quality standards results in quality and ease of working.	Comparatively the wastage is high and difficult to work and additional cost for waste disposal should be considered.
Adaptation to Various surface finishes & Cast-in shaping	All kinds of coatings & paintings are possible. Paintings are relatively well with the block walls. Natural finishes with split blocks are possible. - Shaping & forming are not possible	All kinds of coating & painting are possible. Shaping & forming are not possible.
Maintenance	Low maintenance because of low efflorescence	Prone to impact damage. Hence maintenance cost is higher.
Render & Plaster consumption	Render as little as 5mm required due to uniformity in size and dimensional accuracy.	Due to size variation renders up to 30mm plastering may be required.
Consistency in Equality	Consistency due to control of production parameters	Inconsistency due to the unorganized nature of production
Architectural facade finish	Versatility, plain, fair faced, split face, fluted faced etc.	Only plain-faced bricks are manufactured
Enhancement of Tensile and Flexural strengths	Cavities in blocks could convert as provision for reinforcement for columns, beams and lintels which is considered as an advantage by major builders and architects.	Not possible with steel reinforcement. Vertical column reinforcement is separately required with forms, causes delay
Efflorescence	No efflorescence as water quality is controlled.	As soil contains many inorganic Impurities like sulfates etc., which results in efflorescence.