

Pool Construction Material Comparison

Transparent calculations, assumptions and sources for a representative 10 m x 5 m x 1.5 m swimming pool.

~25% LESS

installed material by mass than the defined dense-block build-up

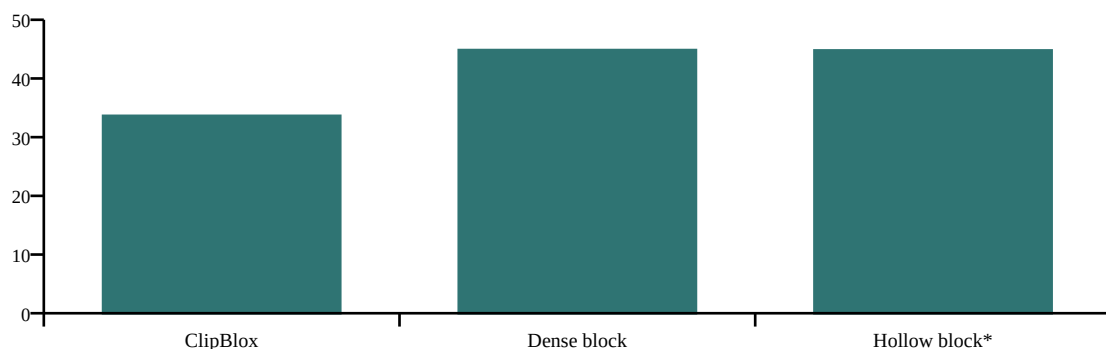
Headline result

For the defined comparison, the ClipBlox / Orbro build-up totals **33.63 tonnes** versus **44.84 tonnes** for the 4-inch dense concrete block alternative laid flat. That is **11.21 tonnes less installed material**, equivalent to **24.996%**.

The 215 mm hollow-block cross-check totals **44.78 tonnes**. Its concrete core-fill quantity uses a disclosed published proxy for a comparable 215 mm hollow masonry unit, rather than a Forterra-declared fill volume.

Metric	ClipBlox / Orbro	4" dense block laid flat	215 mm hollow block*
Wall area	45.00 m ²	45.00 m ²	45.00 m ²
Wall units (theoretical)	134.02	909.09	444.44
Formwork / block mass	469 kg	19,818 kg	12,667 kg
Wall concrete / core fill	15,310 kg	-	7,904 kg*
Masonry mortar	-	1,989 kg	1,176 kg
Pool wall render	-	1,665 kg	1,665 kg
Pool floor render / levelling	-	3,515 kg	3,515 kg
Common structural floor	17,850 kg	17,850 kg	17,850 kg
TOTAL INSTALLED MATERIAL	33.63 t	44.84 t	44.78 t*
CLIPBLOX REDUCTION	-	25.0%	24.9%*

Installed material (tonnes)



* Hollow-block result uses a disclosed 0.0738 m³/m² core-fill proxy from a comparable Forticrete 215 mm F3 hollow block.

This is a material-mass comparison, not a claim of 25% lower embodied carbon or whole-life environmental impact.

Inputs & Assumptions

Input	Value	Basis / source
Pool internal dimensions	10 m x 5 m x 1.5 m	Defined comparison
Structural floor slab	150 mm	Orbro construction assumption; applied equally
Ready-mix concrete density	2,380 kg/m ³	The Concrete Centre
Mortar / render density	1,850 kg/m ³	Upper published MPA Mortar value
Pool wall render	20 mm	Upper end of Sika pool/tank guidance
Pool floor render / levelling	38 mm	Upper end of Sika pool/tank guidance
Nominal mortar joint	10 mm	Brick Development Association
ClipBlox unit	605 x 555 x 150 mm; 3.5 kg	SolidPool / Orbro product evidence
ClipBlox fill reference	2.496 m ³ per 52 units	SolidPool / Orbro product evidence
Dense block	440 x 215 x 100 mm; 21.8 kg	Forterra Evalast
Hollow block	440 x 215 x 215 mm; 28.5 kg	Forterra Evalast
Hollow concrete fill	0.0738 m ³ /m ² wall	Forticrete 215 mm F3 proxy - disclosed

Scope and exclusions

Included: the defined wall system, concrete fill where applicable, masonry mortar, conventional pool render/levelling layers where applicable, and the common 150 mm structural floor slab.

Excluded: reinforcement, waterproof membranes/coatings, final decorative finish (tiles, liner or coating), coping, pipework, pool plant, excavation, backfill, transport and other site-specific works. These are excluded unless an equivalent specification can be defined for all systems.

Why the comparison uses upper conventional wet-material values

Where credible guidance gives a range, the model uses the upper end for conventional mortar/render thickness or density rather than selecting a favourable midpoint. The intention is to make every assumption visible and challengeable.

Full Calculations

The table below mirrors the calculation workbook. Theoretical unit counts are used so that rounding to whole packs or site wastage does not distort the underlying construction comparison.

Calculation	ClipBlox	Dense block laid flat	215 mm hollow block	Unit
Internal perimeter	30	30	30	m
Wall area	45	45	45	m ²
Floor area	50	50	50	m ²
Units required	134.0183	909.0909	444.4444	units
Unit / formwork mass	469.0641	19,818.1818	12,666.6667	kg
Wall concrete / infill volume	6.432879	0	3.321	m ³
Wall concrete / infill mass	15,310.2524	0	7,903.98	kg
Masonry mortar volume	0	1.075	0.635444	m ³
Masonry mortar mass	0	1,988.75	1,175.5722	kg
Pool wall render volume	0	0.9	0.9	m ³
Pool wall render mass	0	1,665	1,665	kg
Structural floor concrete volume	7.5	7.5	7.5	m ³
Structural floor concrete mass	17,850	17,850	17,850	kg
Pool floor render volume	0	1.9	1.9	m ³
Pool floor render mass	0	3,515	3,515	kg
TOTAL INSTALLED MATERIAL	33,629.3165	44,836.9318	44,776.2189	kg
TOTAL INSTALLED MATERIAL	33.6293	44.8369	44.7762	tonnes
Difference vs ClipBlox	0	11,207.6153	11,146.9024	kg
ClipBlox reduction	-	24.9964%	24.8947%	%

Calculation notes

ClipBlox: face area = $0.605 \times 0.555 = 0.335775 \text{ m}^2/\text{unit}$. Concrete fill reference $2.496 \text{ m}^3 / 52 \text{ units}$ equates to $0.142953 \text{ m}^3/\text{m}^2$.

Dense block laid flat: nominal coordinating face module with 10 mm joints = 450 x 110 mm. Gross 215 mm wall envelope minus block envelopes gives 1.075 m^3 of mortar.

Hollow block: nominal coordinating face module = 450 x 225 mm. Core fill = $45 \text{ m}^2 \times 0.0738 \text{ m}^3/\text{m}^2 = 3.321 \text{ m}^3$. This fill rate is the disclosed Forticrete proxy.

References & Evidence Trail

The public comparison should always be read with these sources and disclosures. URLs are printed in full so the evidence can be independently checked.

Ref	Source	Evidence used
R01	SolidPool / Orbro	ClipBlox geometry, 3.5 kg unit mass and 2.496 m³ concrete fill per 52 units. Current product evidence.
R02	Forterra	Evalast Background Aggregate Block - 440 x 215 x 100 mm; 21.8 kg. https://www.forterra.co.uk/product/evalast-background-aggregate-block/
R03	Forterra	Evalast Background Hollow Block - 440 x 215 x 215 mm; 28.5 kg at 15% moisture. https://www.forterra.co.uk/product/evalast-background-hollow-block/
R04	The Concrete Centre	Generic ready-mixed concrete mean density 2,380 kg/m³. https://www.concretecentre.com/TCC/media/TCCMediaLibrary/PDF%20attachments/Concrete%20Density%20Fact%20Sheet.pdf
R05	The Concrete Centre	Normal-weight concrete density cross-check, 2,300-2,400 kg/m³. https://www.concretecentre.com/getmedia/6fe6caf5-6d0c-4f25-a1e1-1b7434b0e0e0/Concrete-Density-Fact-Sheet.pdf
R06	MPA Mortar	Mortar/render density range 1,700-1,850 kg/m³; model uses 1,850. https://mortar.org.uk/documents/MPA-Mortar-Data-Sheet-04.pdf
R07	Sika UK	SikaMix Integral Waterproofer: walls 18-20 mm; floor 35-38 mm. https://gbr.sika.com/en/distribution/building-supplies/admixtures-buildingchemicals/sikamix-integral-waterproofers
R08	Brick Development Association	10 mm nominal mortar joint. https://www.brick.org.uk/uploads/downloads/04.-Designing-to-brickwork-dimensions-Technical-Guide-2023.f167870d-2023.pdf
R10	Forticrete	Masonry Design Guide: 0.0738 m³/m² infill concrete for comparable 215 mm F3 hollow block. https://monocouche.co.uk/wp-content/uploads/2020/07/Masonry-Design-Guide.pdf

Recommended public wording

"For a defined 10 x 5 x 1.5 m pool comparison, our ClipBlox construction method uses approximately 25% less installed material by mass than the defined dense-block alternative."

Material mass is not embodied carbon. A separate like-for-like LCA/EPD calculation would be required before making a percentage carbon-reduction claim.