



# Clayworks

## RAMMED EARTH FINISHES

Product description, & data overview

Natural Clay Plasters

# RAMMED EARTH FINISHES

## PRODUCT DESCRIPTION AND DATA SHEET

Rammed Earth Finishes are pure, raw clay plaster wall finishes that can be used to create seamless and beautiful re-imaginings of one of the world's most ancient of building techniques.

Made - like the real thing, from 100% natural clays, minerals, sands and coloured with natural earth pigments - this surface material is able to achieve the authenticity and feel of monolithic rammed earth. With a depth of around 7 - 10mm it also contributes to the performance of the building fabric: softened acoustics and thermal variations, moisture control and breathability.

Rammed Earth Finishes can be created in endless possibilities of colours and textures, often in response to a desire by architects and designers to replicate local geological conditions or to evoke cultural connections from specific vernacular architecture from around the world. For inspiration please also see [www.rammedearthfinishes.com](http://www.rammedearthfinishes.com).



The hand-made nature, stratified colours and textures of raw clays perfectly express the beauty and authenticity of Earth Architecture. They are often used where the real thing is impractical such as city centres, in refits or for unique design interest. With textures ranging from silky smooth to coarse and craggy, the aesthetic is alive and expressive: at once light and dark, grey and brown or red and yellow, rough and smooth, old yet contemporary. The natural idiom of the materials endows interiors with an air of earthy softness.

Rammed Earth Finishes are warm, welcoming and atmospheric. Each interpretation represents an encounter with something deeply natural. Our planet has an extreme wealth and variety of soils and clays and when it comes to Rammed Earth Finishes there is no single solution – each is custom developed.

Made in Cornwall from abundant raw materials, Clayworks finishes are blended with minimal processing, using very little energy and no water resulting in very low embodied and whole life carbon: up to 2.4kg carbon savings per meter squared compared with some wall build ups.

Because all materials are earthen, there is no waste. Hence they amongst the most sustainable wall finishes available. They are recyclable, compostable, re-useable, and contain no toxic ingredients or VOCs (harmful chemicals released during and after application). Rammed Earth Finishes are also high performance. They regulate relative humidity, allow buildings to breathe, and absorb toxins, odours and acoustics, they can also passively regulate temperature and are easily repaired. They are applied with the same skills and tools as other wall plasters.



It is estimated that around half of the worlds population lives, works or worships in buildings constructed of raw earth. This makes it the most ubiquitous building material on the planet. Earth building has shaped the history of architecture and is now influencing the future of design.

The materials, the details of the process and equipment have evolved and refined over time, but the principles of the technique remain unchanged. Working at the limits of the material, at the threshold of what is possible with earth plasters while staying true to their raw imperfect and natural beauty, Clayworks has applied years of expertise with clay to create these surface finishes that evoke the beauty and simplicity of one of the most evolved and sophisticated building technologies in the world.

## PRODUCT DESCRIPTION & DATA OVERVIEW

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Overview:	A premixed, pre-pigmented interior wall & ceiling plaster, ready to mix with water and apply with traditional plastering skills and tools. 100% natural: all compostable.
Supply:	25Kg bags of dried plaster. Recyclable or compostable bags.
Sustainability:	Extremely low embodied carbon: 0.048 - 0.068 kgCO <sup>2</sup> e/kg. (LCA stages A1-A3. Full A1 - D assessment is available in our EPD).  Product and packaging are fully compostable at all stages of lifecycle.
Health:	100% natural, zero VOCs, formaldehydes, polymers or oils. Absorbs toxins, regulates humidity. No off-gassing. Health Product Declaration & VOC Emissions Certificates.
Other essentials:	Clayworks Wall Primer & Clayworks Glaze (supplied by Clayworks with all clay orders plaster for additional cost).
Application:	Only to be applied by an approved plasterer.
Colours:	UV resistant. Through pigmented.
Composition:	Unique blends of unfired clays mixed with natural minerals and pigments.
Substrate:	Most commonly applied directly onto gypsum plasterboard, masonry, blockwork, wood fibre board & wood wool carrier board. Can be applied directly onto plywood reinforced gypsum backing board suitably primed. Other substrates may require a backing coat. For details please also see our separate data sheet 'Clayworks Design Details'.  Cannot be applied directly onto wood, including plywood, MDF or OSB.
Restrictions on use:	Suitable for interior walls and ceilings and fixed furniture. Appropriate for bathrooms, but not wet or shower areas. We advise against use on items that will be moved around or doors. Not suitable for floors. Clayworks supply interior waterproof finishes and exterior grade finishes where a seamless match is required.
Country of origin:	UK. Manufactured in Cornwall.
Fire:	BS 476: Part 7: 1997 Surface spread of flame: achieved Class 1 BS 476: Part 6: 1989 + A1: 2009 Fire Propagation test: fire propagation index I = 0.5, i1 = 0.0  The results confirm that the plasters fulfil the following: UK Building Regulations: Class 0 Class 0 is defined as: BS 476-7 Surface spread of flame Class 1, and BS 476-6 Fire propagation index test (I < 12, i1 < 6)

Health & safety:	As a powdered product a dust mask should always be worn when handling the product. Non Caustic.
Acoustics:	Noise Reduction Coefficient (NRC): 0.20 - 0.25 NRC depending on backing board Sound absorption Coefficient tests conducted in accordance with British Standard BS EN ISO 354 available.
Maintenance:	Can be wiped clean with a non-toxic cleaner when glazed. Seamless. Easily repaired. Fixtures, fittings, wall hangings as per any other plaster.
Drying times:	2-3 hours each layer, depending on temperature & humidity.
Impact:	BS EN 520 – Impact Diameter < 15mm.
Moisture buffer value:	1.28 [calculated by moisture change (g/m <sup>2</sup> ) divided by relative humidity] where buffering was tested to be 9x that of painted plasterboard. (University of Bath figures).
Light reflective value:	Tested to BS.8493:2008+A1:2010. Data available on request.

#### MATERIAL DATA:

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Coverage per 25kg bag	1.2 sqm
Thickness	10mm
Moisture absorption value	1.4
Density: loose powder	1240.536 (low g/L) – 1581.256 (high g/L)
Density: Applied kg/m <sup>3</sup>	1536
Density: Applied kg/m <sup>2</sup>	15.4
Impact BS EN 520.	Impact Diameter <15mm
Thermal conductivity	0.97 W/mK
VOCs	ZERO
Acoustic absorption properties – sound absorption coefficient	0.25

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Hanging pictures: Observe the same protocol as for conventional plaster using picture hooks or screws.

Repairs: Any damage caused to a Clayworks surface will be inconspicuous due to their through bodied colouring. Chips, divots and scratches can be simply repaired through the addition of a small quantity of colour matched clay plaster, trowelling and replication of the protective glaze.

**FUNDAMENTAL MATERIAL SAFETY** Clayworks clay plasters contain no asbestos, lead, PCBs or mercury. They contribute to toxic material reduction targets because they contain no perfluorinated compounds (PFCs), no flame retardants or phthalates (plasticisers), or isocyanate based polyurethanes. Clayworks clay plasters contain no synthetic additions and emit zero VOCs or formaldehydes. There is evidence to suggest they may proactively mitigate the presence of formaldehydes in a space.

**THERMAL PROPERTIES OF CLAYWORKS CLAY PLASTERS** According to research by Tom Morton et al, the physical mass of clay plaster ( $20.6 \text{ kg/m}^2$ ) is 2.5 times that of gypsum plaster ( $8\text{kg/m}^2$ ).



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