



Clayworks

PRODUCT DESCRIPTION, DATA & PERFORMANCE ATTRIBUTES

for Clayworks Smooth, Tonal,
Demi Rustic and Rustic Finishes

Natural Clay Plasters

OUR PRODUCTS

Clayworks Clay plasters are unique blends of unfired clays mixed with minerals and pigments to provide a healthy, breathable finish for internal walls and ceilings.*

Manufactured in Cornwall, UK from abundant raw materials, they are amongst the most sustainable wall finishes available. Recyclable, compostable, and containing no toxic ingredients, VOCs (harmful chemicals released during and after application) or synthetics they are healthy for the planet, the building fabric and the occupants.

PERFORMANCE ATTRIBUTES



absorbs toxins



non toxic



breathable



zero voc emission



100% compostable



UV resistant



humidity regulator



recyclable



passive regulator



absorbs odours



low embodied carbon



low embodied energy



acoustic absorber



seamless



durable



mold resistant



through body coloured



easily repaired



100% natural

*For a 3rd party overview of Clayplasters see Clay Plasters, by Neil May, Natural Building Technologies, April 2005
https://www.phstore.co.uk/PDF/NBT/NBT_Clay_Plasters_Overview.pdf

OUR RANGE OF FINISHES: CLASSIC & CUSTOM

SMOOTH & TONAL FINISHES

These are our smoothest finishes, created with the finest raw materials, and come with the option of a micaceous additive – Mica – which produces a subtle iridescent radiance in direct light.

DEMI RUSTIC FINISHES

A clay plaster with slightly larger aggregate grain sizes, thus providing a subtly courser finish and a slightly thicker application in one coat. The health and performance benefits are enhanced due to the additional material in use.

RUSTIC FINISHES

A single coat, robust and coarser finish ideally suited for artisanal finishes such as two-tone carving and relief work.

CUSTOM FINISHES

For the full range of Custom Finishes refer to our website: <https://clay-works.com/custom-finishes/>

PRODUCT DATA

STANDARD SHIPMENT QUANTITY 25kg bags.

COVERAGE (per 25kg bag):

Smooth Finish:	7-8m ² @ 2mm thickness.
Demi-Rustic Finish:	2.7m ² @ 5mm thickness.
Rustic:	1.25m ² @ 10mm thickness.
Heavy Texture Rustic:	1.25 m ² @ 10 mm thickness.
Base Coat:	1.25 m ² @ 10mm thickness.

LOOSE WEIGHT: 25 kg dry powder in brown paper bags.

Volume with water added (approx. 10 litres) to 25kg dry powder: Approximately 20 litres.

WALL SURFACE PREPARATION

Suitable for use on most stable internal surfaces when properly prepared with Clayworks Primer. Such surfaces include plasterboard or gypsum plaster surfaces. Rough surfaces require a straightening coat of lime or clay. Not to be used in areas in direct contact with liquid moisture, excessively damp areas or the elements, although can be used in areas of high humidity, such as bathrooms and kitchens.

Not suitable for floors or stair treads.

Clayworks Clay Plasters are suited to historic and eco-walling substrates such as cob, lime, hemp and strawbale due to their breathability and elasticity.

For a sustainable outcome, we recommend that Clayworks Clay Plasters are applied to a wholly compostable backing board so that the entire wall system may avoid landfill at end of life, contributing to the Circular Economy.

FIRE: NON COMBUSTIBLE BUILDING MATERIALS

Tested and Classified by BRE in accordance with BS476, part 7, 1997, achieved Class 1. Non Combustible, with no spread of flames. Certificates available upon request.

BREATHABILITY: MOISTURE ABSORPTION VALUE

1.28 for Smooth and 1.4 for Rustic [calculated by moisture change (g/m²) divided by relative humidity] where buffering was tested to be 9x that of painted plasterboard. (University of Bath figures).

HEALTH & SAFETY

Non caustic: can be handled without gloves. Wear a dust mask when mixing dry powder.

APPLICATION

Applied in the conventional manner with a hawk and laying on trowel. Can also be applied with a spray machine. Application is similar to gypsum with the exception of the finishing process. A smooth finish is preferred for durability and cleaning. This is achieved by hard polishing with a plastic trowel or a Japanese Trowel. However, an open grained, more textured finish can be achieved using a damp sponge to lose trowel marks. This is often a more suitable finishing approach for undulating surfaces. Please see our guidance notes for detailed application guidelines, downloadable from our website www.clay-works.com

FINISHING

Best finished with Clayworks protective glaze for maximum damage resistance. Can be painted with micro-porous paint or pigmented protective glaze for an interesting decorative effect.

COLOURS

86 Standard colours and endless custom colours and aesthetic effects. Our colours are created with natural pigments throughout the material and hence the clay plasters will never require painting. This means significant savings in time, materials and also carbon.

DRYING TIMES

Dependent on ambient conditions in the room, and rates of absorption from the background material. In ideal conditions, the plaster should be fully dry within 24 hours, but can take up to 48 hours. Good air circulation is encouraged during and after application.

Low, even heat can be used in cold conditions, but must be used with caution as it can cause hairline cracks in the plaster if it dries too quickly.

WORKING CONDITIONS

Application should not proceed when temperatures fall below 5 degrees centigrade or rise above 30 degrees centigrade.

CLEANING

Wipe gently with a soft, damp sponge, if it has been finished previously with Clayworks protective glaze. On textured surfaces, such as the Arakabe or Sculpted, cleaning should be carried out with due care and attention avoiding rough treatment of the surface.

HANGING PICTURES

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

PHYSICAL PROPERTIES & COVERAGE

DENSITIES

Loose, dried Clayworks Clay Plasters as delivered in 25kg bags.

	low g/L	high g/L
Smooth Powder	1137.581	1573.407
Demi Rustic Powder	1132.041	1506.464
Rustic Powder	1240.536	1581.256

Applied Clayworks clay plasters.

	g/l	kg/m3	Thickness (mm)	kg/ m2
Smooth, applied Plaster	1270	1270	2mm	2.5
Demi Rustic applied Plaster	1682	1682	6mm	10.1
Rustic applied Plaster	1536	1536	10mm	15.4

IMPACT

Smooth and Tonal Finish:	BS EN 520 – Impact Diameter < 15mm
Demi-Rustic Finishes:	BS EN 520 – Impact Diameter < 15mm
Rustic Finishes:	BS EN 520 – Impact Diameter < 15mm

THERMAL CONDUCTIVITY

Smooth and Tonal Finish:	0.84 W/mK
Demi-Rustic Finishes:	0.97 W/mK
Rustic Finishes:	0.97 W/mK

MOISTURE BUFFER VALUE

Smooth and Tonal Finish:	1.28
Demi-Rustic Finishes:	1.4
Rustic Finishes:	1.4

THICKNESS WHEN APPLIED

Smooth and Tonal Finish:	2mm
Demi-Rustic Finishes:	5-7mm
Rustic Finishes:	7-15mm (standard is 10mm)

COVERAGE PER 25KG BAG

Smooth and Tonal Finish:	7-8sqm
Demi-Rustic Finishes:	2.7sqm (at 5mm thick)
Rustic Finishes:	1.25 sqm (at 10mm thick)

VOCs

Smooth and Tonal Finish:	Zero
Demi-Rustic Finishes:	Zero
Rustic Finishes:	Zero

EMBODIED CARBON

Smooth and Tonal Finish: 0.1162 Kg CO₂ eq/KG

ACOUSTIC ABSORPTION PROPERTIES

Smooth and Tonal Finish: Noise Reduction Coefficient (NRC): 0.10 NRC:
Sound Absorption Coefficient: 0.090N

Demi-Rustic Finishes: Noise Reduction Coefficient (NRC): 0.10 NRC:
Sound Absorption Coefficient: 0.090N

Rustic Finishes: Noise Reduction Coefficient (NRC): 0.10 NRC:
Sound Absorption Coefficient: 0.090N

ORIGIN

All Finishes: Cornwall, UK

MATERIAL PERFORMANCE

FLEXIBILITY

Seamless surfaces and flexibility accommodate movement of building elements.

ACOUSTIC ABSORPTION

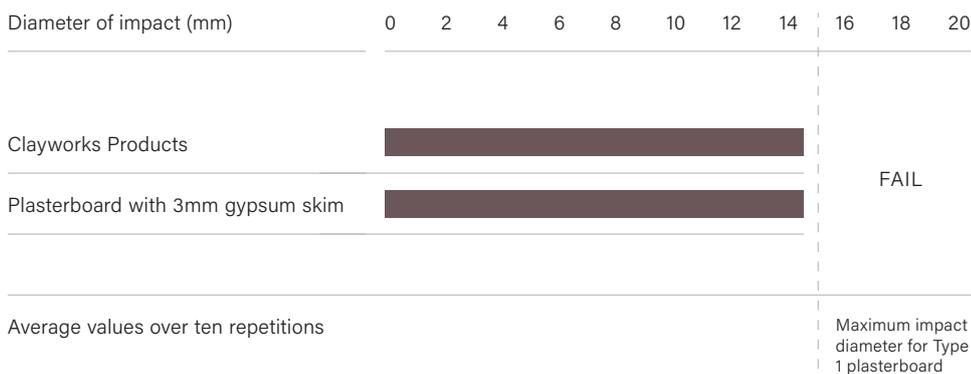
Sound Absorption Coefficient (α_s), were conducted in accordance with British Standard BS EN ISO 354 (ref 1). Single figure ratings of sound absorption performance, known as the Weighted Sound Absorption Coefficient (α_w) and Sound Absorption Class, are derived from these measurements in accordance with British Standard BS EN ISO 11654 (ref 2).

AERO Test No.	Test Specimen	α_w	Class
L/3512/1	6 mm Clayworks Demi Rustic on Gypsum Backing Board	0.15	E
L/3512/2	10 mm Clayworks Rustic on Gypsum Backing Board	0.20	E
L/3512/3	10 mm Clayworks Demi Rustic on Clayworks Clay Backing Board	0.25	E

SURFACE HARDNESS

Surface Hardness is Excellent. As there is currently no standard for testing the performance of clay plasters the impact resistance of Clayworks products was tested to BS EN 520, the standard for gypsum plasterboards. The impact resistance test drops a standard weight and measures the diameter of impact. Clayworks clay plasters achieved a surface hardness equivalent to Type I (enhanced surface hardness) plasterboard, with an average impact diameter less than 15mm. The performance was identical to gypsum rendered plasterboard tested in parallel.

Impact Test: BS EN 520



Clayworks have been used in Nandos restaurants around the world since 2010.

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 reapplication of the protective glaze.

FUNDAMENTAL MATERIAL SAFETY OF CLAYWORKS CLAY PLASTERS

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 kg/m²) is 2.5 times that of gypsum plaster (8kg/m²). According to Borer and Harris (see footnote 14) the denser building materials perform better in storing heat, with dense soil as the best performer in comparison with other building materials such as fired brick, concrete and stone (Borer and Harris, 1998). N.B. Clay Plaster has a density of 1900kg/m³ as opposed to the 1370kg/m³ of the clay plaster in these tests. The thicker the build up, the better the thermal properties of clay. Adding base coats can build up deeper layers of clay. The outcomes are:

- Reduce/replace use of ventilation systems/extractor fans and associated operating, maintenance/repair costs.
- Saving on energy/heating bills through the evening out of temperature swings (see below).
- Savings on resistance to building overheating through thermal mass effect. Even a 15mm plaster coat has significant thermal mass to store heat (see footnote 13) Morton T. et al.

BREATHABILITY & CLAYWORKS CLAY PLASTERS

For a comprehensive guide to the Indoor Air Quality benefits of breathable clay plasters see [HERE](#) [link to health page]. Other performance outcomes from their hygroscopic properties include:

- Hygroscopic materials contribute to thermal comfort thereby permitting smaller heating systems. The walls will absorb and store heat and moisture, buffering against temperature and humidity fluctuations. Mechanical ventilation systems can be eliminated. (Ruth Busbridge, MSc Jan 2009, footnote 9).
- A porous wall will absorb this moisture and release it when the room is aired during the day, giving a lower average RH. This will reduce the operating time of a dehumidifier or make it unnecessary. (Tim Padfield PhD, footnote 4).

CLAYWORKS AND WATER

Clayworks Clay plasters are very suitable for bathrooms and kitchens due to their moisture absorbing properties. They have such a strong ability to absorb peaks of air moisture after showers that they clear the air without surface condensation and 'the effect of the extractor fan was of no statistical significance' according to Tom Morton.

Clay Plasters are not, however suitable for areas where there is running water such as showers, wet rooms or exteriors for example. If there is a likelihood of fire sprinklers being tested onto walls finished with clay plasters, then we would recommend that our 100% clay plasters are not suitable. We are able to create products that are suitable for wet areas.

CEILINGS

Clayworks Clay Plasters are very suitable for ceilings. The Smooth and Tonal Finishes, at 2mm thick do not require a special build up. For Demi Rustic, Rustic or Custom Finishes please contact us to discuss ceiling build up for additional weight.

- (1) Materials World, Tom Morton, Jan 2006
<http://www.arc-architects.com/downloads/Materials-World-Article-Jan-2006.pdf>
- (2) <https://strawtec.com.au/clay/>
- (3) <http://www.homegrownhome.co.uk/pdfs/Energyassessmentofastrawbalebuilding.pdf>
- (4) Morton, T et al (2005) Low Cost Earth Brick Construction - 2 Kirk Park, Dalguise: Monitoring & Evaluation. Arc, Chartered Architects 69 Burnside, Auchtermuchty, Fife
<http://www.arc-architects.com/downloads/Low-Cost-Earth-Masonry-Monitoring-Evaluation-Report-2005.pdf>
- (5) Borer, P., Harris, C. (1998) The Whole House Book. The Centre for Alternative Technology. Machynlleth, Wales

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