ultrotherm®

Internal insulation system for solid walls

Product data sheet

Overview

Ultrotherm is an internal insulation system for solid walls. It allows walls to be insulated without costly alterations to skirting boards, windows, covings and radiators. Although only 12mm thick, Ultrotherm typically reduces heat loss through 9" solid walls by 40%, creating a more comfortable living environment and reducing energy bills. Ultrotherm meets Building Regulations for use where it is not functionally or technically possible to install thicker insulation systems.

Ultrotherm is supplied in convenient flexible tiles that allow it to be installed around awkward shapes and curves. Once applied, Ultrotherm is plastered to create a wall surface ready for decoration.

Quality control management system

Ultrotherm is manufactured in the UK under an ISO 9001:2008 certified quality management system.

System components

System components	Pack size	Weight	Typical coverage
12mm tile pack	10	7 kg	5m^2
8mm reveal tile pack	5	1 kg	1.15m^2
Insulated stop bead	1	-	2.5 linear metres
Angle bead	1	-	2.5 linear metres
10 litres of adhesive	1	10 kg	10m^2

Thermal resistance

Thermal resistance testing in accordance with ISO 8302:1991 (BS EN 12664: 2001).

12mm of Ultrotherm with a plaster skim finish has a thermal resistance of 0.307 m^2 K/W. Ultrotherm wall adhesive provides additional thermal resistance of approximately 0.02 m^2 K/W. Thermal resistance can be increased further by applying greater thickness of plaster, applying backing plaster before the finish coat or by using different types of plaster.

Improvement in thermal resistance of a	
Thermal resistance of 12mm Ultrotherm with plaster skim	0.307 m^2 K/W
Resistance of un-insulated 9" solid	0.476 m^2 K/W
Resistance with 12mm Ultrotherm (excluding adhesive)	0.783 m^2 K/W
'U' value of insulated 9" solid	2.1 W/m^2 K
'U' value of 9" solid brick	1.2 W/m^2 K
Typical % improvement in 'U' value	39-40%
Expected service life	Over 25 years

Thermal testing

National Physical Laboratories

Thermal resistance testing (UKAS approved)

The University of Nottingham

Energy efficiency calculations
Carbon reduction calculations
Thermal imaging
Heat conductivity testing

Lambda value

Ultrotherm Lambda (λ) Value (W/mK)	Depth of Insulation (mm)	Plaster Skim Value (λ) (W/mK)	Depth of Plaster Skim (mm)	R (W/m^2K)	R (0.05)	Typical annual HDd (domestic)	Typical ΔT
0.04	12.00	0.18	3.00	0.30	0.30	2200.00	16.00

From CIBSE Guide A Table 3.49	Existing Wall				Improved Wall			
Typical Wall Constructions	Thermal Resistance *R existing* ($m^2 K / W$)	Transmittance *U existing* ($W \cdot m^{-2} \cdot K^{-1}$)	Heat Loss Before ($kWh/m^2/yr$)	Heat Loss Before (kW/m^2)	Transmittance *U new* ($W \cdot m^{-2} \cdot K^{-1}$)	Reduction in U (%)	Heat Loss After ($kWh/m^2/yr$)	Heat Loss After (kW/m^2)
(a) 220 mm solid brick, 13 mm dense plaster	0.48	2.09	110.35	0.03	1.28	38.54	67.83	0.02

Lambda value calculated by the University of Nottingham.

Classification of reaction to fire performance in accordance with BS EN 13501-1:2018

Testing carried out by BRE Global. Report number PI 30784-1002

Reaction to Fire behaviour classification **B**
Smoke production **s1**
Flaming droplets/particles **d0**

Fire Behaviour		Smoke Production			Flaming Droplets	
B	-	s	1	,	d	0

i.e., B-s1, d0

Reaction to fire classification: B-s1, d0

References:

1. BS EN 13501-1: 2018. Fire classification of construction products and building elements. Part 1: Classification using data from reaction to fire tests. BSI, London. 2019.
2. EN 520: 2004 + A1: 2009. Gypsum plasterboards. Definitions, requirements and test methods. BSI, London. 2010.
3. BS EN ISO 11925-2: 2020. Reaction to fire tests - Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test. BSI, London. 2020.
4. BS EN 13823: 2020 + A1: 2022. Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item. BSI, London. 2023.

Reduction in carbon emissions

Carbon emission savings in representative properties:

		Emission savings (kg CO2e p.a.)	
Property type	**Bedrooms**	**Gas**	**Electricity**
End terrace house	2	626	1806
Semi-detached house	3	530	1530
Detached house	4	1903	5493

Fuel	Emissions (kg CO2e/kWh)
Electricity	0.58982
Gas	0.20435

Cost savings

Based on typical UK energy usage patterns and recent cost data (as of 2025-2026), insulating a house to provide a ~39% improvement in thermal U-value (a common outcome for solid wall or improved cavity insulation) can lead to annual savings of roughly £300 to over £800, depending on the property size. Below are estimated annual gas and electricity costs (dual fuel) for 2025/2026, assuming uninsulated vs. improved insulation (approx. 30-40% savings on heating, which is generally 60-70% of a bill).

Estimated Annual Energy Bills (Gas & Electricity)

House Type	Uninsulated Annual Bill	With 12mm Ultrotherm	Estimated Annual Saving
2-Bed End Terrace	£1,700 - £2,000	£1,150 - £1,350	**~£550 - £650**
3-Bed Semi-Detached	£2,200 - £2,600	£1,500 - £1,800	**~£700 - £800**
4-Bed Detached	£2,800 - £3,500+	£1,900 - £2,400	**~£900 - £1,100+**

Note: These figures are estimates based on standard, non-electric heating, and 2-3 occupants, with energy prices around the 2025-2026 Ofgem price cap levels.

Savings when using Ultrotherm

Impact of U-Value Improvement: A 39% improvement in U-value implies a significant reduction in thermal transmittance (heat loss). While wall insulation reduces heat loss by up to 40%, overall household energy bill savings are typically in the range of 15% to 35% for the whole house (as some heat is lost through roofs and windows).

Solid vs. Cavity Walls: The largest savings are often realized in older, uninsulated solid wall properties (common in pre-1930s homes) where 35% of heat is lost through walls.
Highest Savings: 4-bed detached houses have the highest potential for savings because they have the largest surface area for heat loss.

Secondary Benefits: Improved insulation not only cuts bills but also raises EPC ratings and increases property value by 2-6%.

Effects of condensation and other building moisture

Ultrotherm is manufactured from a unique formulation of vapour-permeable polyurethane (PU) foam. Although Ultrotherm has a high resistance to damage from exposure to moisture it is not intended to be used as a waterproofing barrier.

Vapour barriers

Ultrotherm does not require the installation of a vapour barrier. Relative humidity and air vapour pressure should be controlled inside the property through appropriate ventilation. Under certain weather conditions, moisture in the fabric of a solid wall construction building may move towards internal surfaces (reverse condensation). A vapour-barrier may be problematic in such cases. Where a vapour barrier is required it should be installed on the surface of the insulated wall by applying vapour-barrier paint.

Controlling reverse condensation

Where reverse condensation is identified as a potential problem, external water repellent should be applied to the surface of the external brickwork. Applying external water repellent can increase thermal resistance by a further 0.16 m^2 K/W depending on the pre-treatment moisture content of the wall structure.

Installation instructions

Full installation instructions are provided on the Ultrotherm website. A video guide to installation and electronic version of the step-by-step installation guide are available online and on the Ultrotherm website.

Types of plaster that can be applied to Ultrotherm

Thistle Board-finish or Multi-finish plaster are most suitable for skim coat plastering. Built-up layers of lightweight gypsum plasters can be applied before the skim coat if required. Thistle Hardwall plaster increases impact resistance.

Decoration

Ultrotherm can be decorated with most paint types once the plaster finish as dried. Discolouration may occur which results in the plaster key showing through the finished coat of plaster. Should these transfer through to the decoration then 'Zinsser BIN' should be applied

Maintenance

Ultrotherm does not require any form of maintenance under normal conditions. Any damage can be repaired using components from the Ultrotherm product range. Decorator's filler can be use to the plaster finish.

Storage

Ultrotherm products have a minimum shelf-life of 12 months. Ultrotherm tiles should be stored flat and not in direct sunlight. Ultrotherm adhesives should be stored in a cool, dry location and not be exposed to frost.

Intellectual property

Patent number: GB2478331
Registered design numbers : 001992983-0001/2/3/4

Further enquiries

www.ultrotherm.com | 0800 169 1106

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