

## Technical 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 brick 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.

### Typical physical properties of 'Ultrotherm' foam

Density	75-90 kg/m <sup>3</sup> . Tested by weight calculation daily.
Tensile Properties	Requirement = >70 kg /m <sup>2</sup> . Tested to BS EN 1798:2000. Typically 85 kpa.
Tear strength	Tested to BS EN 8067:1995. Typically 0.14N/mm.
Compression set	Requirement = <12%. Tested to BS EN 1856:2001. Typically 7%.
BS EN 3385	Constant load pounding test: pass for extremely severe rating after 240 000 cycles.

### System components

System components	Pack size	Weight	Typical coverage
12mm tile pack	10	7 kg	5m <sup>2</sup>
8mm reveal tile pack	5	1 kg	1.15m <sup>2</sup>
Insulated stop bead	1	-	2.5 linear metres
Angle bead	1	-	2.5 linear metres
10 litres of adhesive	1	15 kg	10m <sup>2</sup>
300ml Detail adhesive	1	0.4 kg	0.3m <sup>2</sup>

### 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<sup>2</sup> K/W. Ultrotherm wall adhesive provides additional thermal resistance of approximately 0.02 m<sup>2</sup> K/W. Thermal resistance can be increased by adding greater thickness of plaster, applying backing plaster before the finish coat or by using different types of plaster.

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

## Fire resistance

Ultrotherm has a 'Class 0' fire rating in accordance with Building Regulation Approved Document B.

Testing classification based on:

BS 476: Part 6 1989 + A1:2009 (Fire propagation)

BS 476: Part 7 (Surface spread of flame)

The polyurethane foam used in the manufacture of Ultrotherm also meets the following British Standards:

BS 5852 Ignition source crib 7

BS 6853 Annex B.2 Toxic fume

BS 853 Smoke density (3 metre cube test).

## 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

Cost savings in representative properties:

		Fuel cost savings (£ p.a.)	
Property type	Bedrooms	Gas	Electricity
End terrace house	2	136	444
Semi-detached house	3	115	376
Detached house	4	414	1350

Fuel	Cost (p/kWh)
Electricity	14.5
Gas	4.45

## Effects of condensation and other building moisture

Ultrotherm is manufactured from a 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 ideally be controlled inside the property through appropriate ventilation. Where additional ventilation is required an 'Ultrovent' should be installed. 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 or a similar product.

### Controlling reverse condensation

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

### Installation instructions

Full installation instructions are provided on or within the packaging of the main Ultrotherm components. A printed step-by-step installation guide is also available separately. A video guide to installation and electronic version of the step-by-step installation guide are available on the Ultrotherm website.

### Types of plaster that can be applied to Ultrotherm

Thistle Board-finish plaster is most suitable for skim coat plastering. Thistle Multi-finish may also be used. 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 and wallpaper coverings once the plaster finish has dried. Manufacturer's instructions should be followed.

### 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 used to repair minor damage 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.

### Environmental

Ultrotherm foam is recyclable as chip foam for use in non-cosmetic product applications.

### Intellectual property

The Ultrotherm logo is a registered trademark. Ultrotherm is a European Community Registered Design 001992983-0001/2/3/4. Patent pending.

## **Independent testing**

### Building Research Establishment

Fire resistance testing:

BS 476 Part 6: 1989 + A1: 2009 (Spread of flame)

BS 476 Part 7: 1997 (Surface spread of flame)

### The University of Nottingham

Energy efficiency calculations

Carbon reduction calculations

Thermal imaging

Heat conductivity testing

### University of Salford

Thermal resistance testing (UKAS approved)

### National Physical Laboratories

Thermal resistance testing (UKAS approved)

## **Further enquiries**

Telephone 01298 687269

[www.ultrotherm.com](http://www.ultrotherm.com)

Technical data sheet version 2 issued: May 2015.

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