We are Part of the Thomas Armstrong Group

THOMAS ARMSTRONG
(CONCRETE BLOCKS) LTD

U Values

Using our range of concrete blocks

A series of example wall and floor constructions
using our blocks to meet a range of target u-values

June 2023

Serving the construction industry since 1830

Founded in 1830 in Cumbria as a timber and sawmill operation we have grown and expanded our operations into quarrying, construction and the manufacturing of concrete blocks and other building products.

We produce a comprehensive range of masonry building and paving blocks compliant to all of the latest technical and environmental standards for use in foundation walls, internal walls, acoustic separating walls, thermally insulating walls and paving solutions for driveways.

We continually strive to further enhance the sustainability credentials of our operations and products through the increased use of recycled material in our blocks and with a commitment to minimise our impact on the environment by reducing energy use throughout our operations and continue to produce high-quality products for the low carbon homes of the future.

Our group of 10 block manufacturing plants are located across the North of England offering a flexible and comprehensive supply network. Our block manufacturing group consists of very well established and respected companies. See back cover of this brochure for further details.

All of the products in our concrete block and block paving ranges are manufactured and sold in compliance with UKCA-marking requirements. UKCA Certificates and Declarations of Performance certificates for each of our products are freely available to download from our website www.thomasarmstrongconcreteblocks.co.uk

We are full members of the UK's leading industry associations; the Concrete Block Association (CBA), the Aircrete Products Association (APA) and the Mineral Products Association (MPA).

Contents

Calculations are made in good faith and are based upon the data provided by insulation manufacturers at the time. However, such data is liable to change without prior notice from the manufacturer and we recommend that verification calculations are carried out at the design stage based upon the very latest available data.

The calculations shown here are intended for general guidance and indicative use only and Thomas Armstrong Limited and its associated companies cannot be held liable for any incidental or consequential damage or loss arising from the use of this data.

Overview of Part L 2021

Part L 2021 of the Building Regulations came into force in June 2022 as a stepping-stone to another round of significant changes in 2025 when the 'Future Homes Standard' takes effect.

The Future Homes Standard aims to significantly reduce carbon emissions from dwellings by focusing on, among other things, getting the fabric energy efficiency of the building as good as possible before relying on other technologies.

The transitional arrangements for Part L 2021 only apply to homes where building work has commenced on each individual plot before 15th June 2023. This is significant as previous Part L changes could be avoided if work had already started on a site. With Part L 2021 the new regulations apply to any plots that have not yet started.

Part L 2021 Requirements

There are now four separate targets for Part L 2021 supported by the new SAP 10 method of assessment:

1. Primary energy target
2. CO_2 emission rate
3. Fabric Energy Efficiency Standard (FEES)
4. Minimum standards for fabric and fixed building services

Fabric Energy Efficiency Standard (FEES)

Getting the fabric of the building right at the design stage will make achieving compliance easier. There are two u-value categories to be taken into account:

- **Notional u-values** (aka 'nominal' u-values)
- **Limiting u-values** (aka 'backstop' u-values)

The new SAP 10 method of assessment software creates a 'notional' dwelling based on the inputted information and calculates how much energy the proposed construction will use. By achieving the notional u-values, your dwelling should meet the requirements for CO_2 emissions and comply with the requirements.

In cases where notional building element u-values values cannot be achieved, the limiting / backstop u-values can be used. This will however make compliance far more difficult to achieve and must be offset elsewhere in the dwelling thereby adding cost and complexity to the overall design.

New Dwellings

Building Element	Notional (nominal) Value	Limiting (backstop) Value
External Walls	0.18 W/m²K	0.26 W/m²K
Floors	0.13 W/m²K	0.18 W/m²K
Party Walls	0.00 W/m²K	0.20 W/m²K
Roofs	0.11 W/m²K	0.16 W/m²K
Air Permeability	5.0 m³/hr/m²	8.0 m³/hr/m²

Achieving the 'Limiting Value' targets will pass Building Regulations but SAP compliance will be extremely unlikely. Aiming for the Notional Targets is strongly advised!

Existing Dwellings - Extensions

Building Element	Limiting Value
External Walls	0.18 W/m²K
Floors	0.18 W/m²K
Roofs	0.15 W/m²K

There are no limiting / backstop values for existing buildings / extensions and the limiting values shown in this table must be met!

Notes:

Party wall compliance is achieved by fully-filling the cavity and ensuring effective edge-sealing.

Air permeability testing must be carried out on each and every dwelling. A sampling approach is no longer allowed.

Linear Thermal Bridging

- Thermal bridging at junctions account for 15-50% of heat losses through the fabric of a new home.
- To meet the TFEE, it is no longer feasible to use a default y-value.
- Heat losses from thermal bridges need to be accurately accounted for in SAP assessments.
- Designers must generally incorporate recognised details that have modelled thermal bridging psi values, or commission psi values to be calculated for a particular detail.
- The energy assessor must calculate the heat losses at these bridges.
- The builder must follow the construction details closely on site.
- We have a complete range of calculated y-values for our entire range of Airtec aerated, Ultralite, Insulite and Dense aggregate concrete blocks.

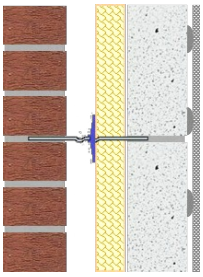

Table 01

Brick outer leaf, 50mm clear cavity

100mm block inner leaf using 10mm conventional mortar

Plasterboard dot & dab internal finish

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	35mm PIR/PU @ 0.018 45mm PIR/PU @ 0.022	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	85mm PIR/PU @ 0.018 100mm PIR/PU @ 0.022
Airtec Standard 3.6N	40mm PIR/PU @ 0.018 50mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	85mm PIR/PU @ 0.018 105mm PIR/PU @ 0.022
Airtec Seven 7.3N	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	90mm PIR/PU @ 0.018 110mm PIR/PU @ 0.022
Ultralite	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	75mm PIR/PU @ 0.018 90mm PIR/PU @ 0.022	95mm PIR/PU @ 0.018 115mm PIR/PU @ 0.022
Insulite	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	75mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022	95mm PIR/PU @ 0.018 115mm PIR/PU @ 0.022
Cellular Dense	50mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022	100mm PIR/PU @ 0.018 120mm PIR/PU @ 0.022
Solid Dense	50mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022	100mm PIR/PU @ 0.018 120mm PIR/PU @ 0.022

Note: The thickness of insulation quoted above is the minimum amount required to meet the target but may not be available. Therefore the next available size up should be used.

The figures shown are for guidance and indicative purposes only. Specific calculations must be carried out to verify the u-value. All calculations have been carried out in accordance with the latest methods as described in BS EN ISO 6946. A correction level of zero has been used which assumes all joints between the insulation batts are sealed up.

Partial Fill Cavity Walls

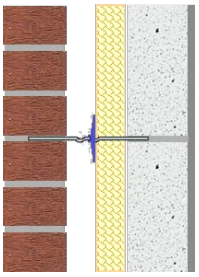

Table 02

Brick outer leaf, 50mm clear cavity

100mm block inner leaf using 10mm conventional mortar

Wet Plaster

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	40mm PIR/PU @ 0.018 50mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	85mm PIR/PU @ 0.018 105mm PIR/PU @ 0.022
Airtec Standard 3.6N	45mm PIR/PU @ 0.018 50mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	95mm PIR/PU @ 0.018 110mm PIR/PU @ 0.022
Airtec Seven 7.3N	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 90mm PIR/PU @ 0.022	90mm PIR/PU @ 0.018 115mm PIR/PU @ 0.022
Ultralite	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022	95mm PIR/PU @ 0.018 120mm PIR/PU @ 0.022
Insulite	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022	100mm PIR/PU @ 0.018 125mm PIR/PU @ 0.022
Cellular Dense	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 100mm PIR/PU @ 0.022	100mm PIR/PU @ 0.018 120mm PIR/PU @ 0.022
Solid Dense	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 90mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 110mm PIR/PU @ 0.022	100mm PIR/PU @ 0.018 125mm PIR/PU @ 0.022

Note: The thickness of insulation quoted above is the minimum amount required to meet the target but may not be available. Therefore the next available size up should be used.

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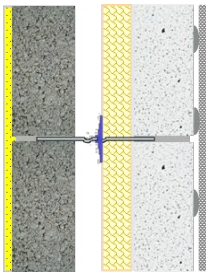

Table 03

Rendered 100mm Insulite block outer leaf, 50mm clear cavity

100mm block inner leaf using 10mm conventional mortar

Plasterboard dot & dab internal finish

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	35mm PIR/PU @ 0.018 45mm PIR/PU @ 0.022	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 100mm PIR/PU @ 0.022
Airtec Standard 3.6N	40mm PIR/PU @ 0.018 45mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	85mm PIR/PU @ 0.018 105mm PIR/PU @ 0.022
Airtec Seven 7.3N	45mm PIR/PU @ 0.018 50mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	90mm PIR/PU @ 0.018 110mm PIR/PU @ 0.022
Ultralite	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	75mm PIR/PU @ 0.018 90mm PIR/PU @ 0.022	95mm PIR/PU @ 0.018 115mm PIR/PU @ 0.022
Insulite	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	75mm PIR/PU @ 0.018 90mm PIR/PU @ 0.022	95mm PIR/PU @ 0.018 115mm PIR/PU @ 0.022
Cellular Dense	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	75mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022	95mm PIR/PU @ 0.018 115mm PIR/PU @ 0.022
Solid Dense	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022	95mm PIR/PU @ 0.018 120mm PIR/PU @ 0.022

Note: The thickness of insulation quoted above is the minimum amount required to meet the target but may not be available. Therefore the next available size up should be used.

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Partial Fill Cavity Walls

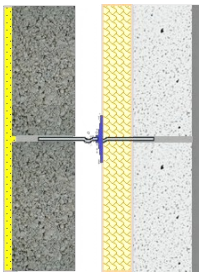

Table 04

Rendered 100mm Insulite block outer leaf, 50mm clear cavity

100mm block inner leaf using 10mm conventional mortar

Wet Plaster

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	40mm PIR/PU @ 0.018 45mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	85mm PIR/PU @ 0.018 105mm PIR/PU @ 0.022
Airtec Standard 3.6N	40mm PIR/PU @ 0.018 50mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	85mm PIR/PU @ 0.018 105mm PIR/PU @ 0.022
Airtec Seven 7.3N	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	75mm PIR/PU @ 0.018 90mm PIR/PU @ 0.022	90mm PIR/PU @ 0.018 110mm PIR/PU @ 0.022
Ultralite	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	75mm PIR/PU @ 0.018 90mm PIR/PU @ 0.022	95mm PIR/PU @ 0.018 115mm PIR/PU @ 0.022
Insulite	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022	100mm PIR/PU @ 0.018 120mm PIR/PU @ 0.022
Cellular Dense	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022	100mm PIR/PU @ 0.018 120mm PIR/PU @ 0.022
Solid Dense	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 100mm PIR/PU @ 0.022	100mm PIR/PU @ 0.018 120mm PIR/PU @ 0.022

Note: The thickness of insulation quoted above is the minimum amount required to meet the target but may not be available. Therefore the next available size up should be used.

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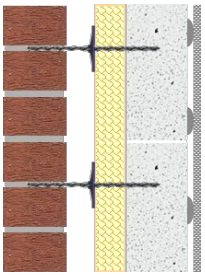

Table 05

Brick outer leaf, 50mm clear cavity

100mm block inner leaf using 2mm thin joint mortar

Plasterboard dot & dab internal finish

Note: The thickness of insulation quoted above is the minimum amount required to meet the target but may not be available. Therefore the next available size up should be used.

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	35mm PIR/PU @ 0.018 40mm PIR/PU @ 0.022	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022
Airtec Standard 3.6N	40mm PIR/PU @ 0.018 45mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	85mm PIR/PU @ 0.018 100mm PIR/PU @ 0.022
Airtec Seven 7.3N	45mm PIR/PU @ 0.018 50mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	90mm PIR/PU @ 0.018 110mm PIR/PU @ 0.022

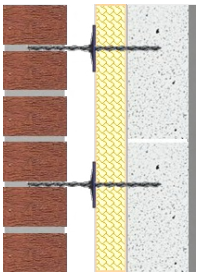

Table 06

Brick outer leaf, 50mm clear cavity

100mm block inner leaf using 2mm thin joint mortar

Wet plaster internal finish

Note: The thickness of insulation quoted above is the minimum amount required to meet the target but may not be available. Therefore the next available size up should be used.

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	35mm PIR/PU @ 0.018 45mm PIR/PU @ 0.022	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	85mm PIR/PU @ 0.018 100mm PIR/PU @ 0.022
Airtec Standard 3.6N	40mm PIR/PU @ 0.018 50mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	85mm PIR/PU @ 0.018 105mm PIR/PU @ 0.022
Airtec Seven 7.3N	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	75mm PIR/PU @ 0.018 90mm PIR/PU @ 0.022	90mm PIR/PU @ 0.018 110mm PIR/PU @ 0.022

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Partially-Filled Cavity Walls

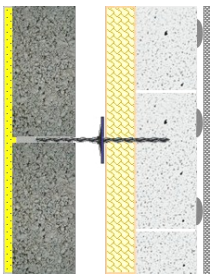


Table 07

Rendered 100mm Insulite block outer leaf, 50mm clear cavity

100mm block inner leaf using 2mm thin joint mortar

Plasterboard dot & dab internal finish

Note: The thickness of insulation quoted above is the minimum amount required to meet the target but may not be available. Therefore the next available size up should be used.

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	35mm PIR/PU @ 0.018 40mm PIR/PU @ 0.022	40mm PIR/PU @ 0.018 50mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 95mm PIR/PU @ 0.022
Airtec Standard 3.6N	35mm PIR/PU @ 0.018 45mm PIR/PU @ 0.022	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 100mm PIR/PU @ 0.022
Airtec Seven 7.3N	40mm PIR/PU @ 0.018 50mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	90mm PIR/PU @ 0.018 105mm PIR/PU @ 0.022

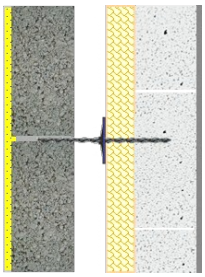


Table 08

Rendered 100mm Insulite block outer leaf, 50mm clear cavity

100mm block inner leaf using 2mm thin joint mortar

Wet plaster internal finish

Note: The thickness of insulation quoted above is the minimum amount required to meet the target but may not be available. Therefore the next available size up should be used.

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	35mm PIR/PU @ 0.018 45mm PIR/PU @ 0.022	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	80mm PIR/PU @ 0.018 100mm PIR/PU @ 0.022
Airtec Standard 3.6N	40mm PIR/PU @ 0.018 45mm PIR/PU @ 0.022	50mm PIR/PU @ 0.018 60mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 70mm PIR/PU @ 0.022	65mm PIR/PU @ 0.018 80mm PIR/PU @ 0.022	85mm PIR/PU @ 0.018 105mm PIR/PU @ 0.022
Airtec Seven 7.3N	45mm PIR/PU @ 0.018 55mm PIR/PU @ 0.022	55mm PIR/PU @ 0.018 65mm PIR/PU @ 0.022	60mm PIR/PU @ 0.018 75mm PIR/PU @ 0.022	70mm PIR/PU @ 0.018 85mm PIR/PU @ 0.022	90mm PIR/PU @ 0.018 110mm PIR/PU @ 0.022

The figures shown are for guidance and indicative purposes only. Specific calculations must be carried out to verify the u-value. All calculations have been carried out in accordance with the latest methods as described in BS EN ISO 6946. A correction level of zero has been used which assumes all joints between the insulation batts are sealed up.

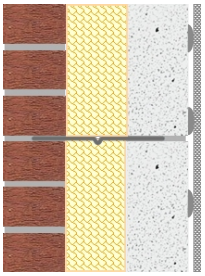


Table 09

Brick outer leaf

100mm block inner leaf using 10mm conventional mortar

Plasterboard dot & dab or insulated drylining internal finish

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	100mm batt @ 0.037	100mm batt @ 0.021 125mm batt @ 0.037	125mm batt @ 0.034	100mm batt @ 0.021 125mm batt @ 0.032	100mm batt @ 0.021 + 20mm insulated drylining
Airtec Standard 3.6N	100mm batt @ 0.034	125mm batt @ 0.037	125mm batt @ 0.032	100mm batt @ 0.021	100mm batt @ 0.021 + 20mm insulated drylining
Airtec Seven 7.3N	100mm batt @ 0.032	125mm batt @ 0.034	125mm batt @ 0.030	100mm batt @ 0.021	100mm batt @ 0.021 + 25mm insulated drylining
Ultralite	100mm batt @ 0.030 125mm batt @ 0.037	125mm batt @ 0.032	125mm batt @ 0.030	100mm batt @ 0.021	100mm batt @ 0.021 + 25mm insulated drylining
Insulite	100mm batt @ 0.030 125mm batt @ 0.037	125mm batt @ 0.032	100mm batt @ 0.021	150mm batt @ 0.030	100mm batt @ 0.021 + 30mm insulated drylining
Cellular Dense	125mm batt @ 0.037	125mm batt @ 0.032	100mm batt @ 0.021	150mm batt @ 0.030	100mm batt @ 0.021 + 35mm insulated drylining
Solid Dense	125mm batt @ 0.034	125mm batt @ 0.030	100mm batt @ 0.021	150mm batt @ 0.030	100mm batt @ 0.021 + 35mm insulated drylining

Note: In the examples where a "100mm batt @ 0.021" is used, this is a hybrid insulation batt whose thickness is 95mm (+5mm low-e air gap).

The figures shown are for guidance and indicative purposes only. Specific calculations must be carried out to verify the u-value. All calculations have been carried out in accordance with the latest methods as described in BS EN ISO 6946. A correction level of zero has been used which assumes all joints between the insulation batts are sealed up.

Fully Filled Cavity Walls

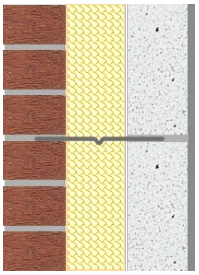


Table 10

Brick outer leaf

100mm block inner leaf using 10mm conventional mortar

Wet Plaster (insulated drylining is not an option)

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	100mm batt @ 0.034	100mm batt @ 0.030 125mm batt @ 0.037	125mm batt @ 0.032	100mm batt @ 0.021 150mm batt @ 0.032	
Airtec Standard 3.6N	100mm batt @ 0.032	125mm batt @ 0.034	125mm batt @ 0.030	100mm batt @ 0.021	
Airtec Seven 7.3N	100mm batt @ 0.030 125mm batt @ 0.037	125mm batt @ 0.032	100mm batt @ 0.021	150mm batt @ 0.030	Cavities wider than 150mm are required to achieve u-values of 0.15W/m2K. Please contact our technical department for specific calculations.
Ultralite	125mm batt @ 0.037	125mm batt @ 0.030	100mm batt @ 0.030 150mm batt @ 0.032	150mm batt @ 0.030	
Insulite	125mm batt @ 0.034	125mm batt @ 0.030	150mm batt @ 0.030	Cavities wider than 150mm are required to achieve u-values of 0.15W/m2K. Please contact our technical department for specific calculations.	
Cellular Dense	125mm batt @ 0.034	150mm batt @ 0.034	150mm batt @ 0.030		
Solid Dense	125mm batt @ 0.034	125mm batt @ 0.034	150mm batt @ 0.030		

Note: In the examples where a "100mm batt @ 0.021" is used, this is a hybrid insulation batt whose thickness is 95mm (+5mm low-e air gap).

The figures shown are for guidance and indicative purposes only. Specific calculations must be carried out to verify the u-value. All calculations have been carried out in accordance with the latest methods as described in BS EN ISO 6946. A correction level of zero has been used which assumes all joints between the insulation batts are sealed up.

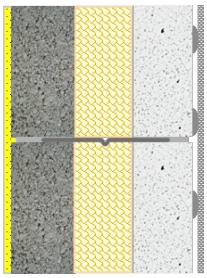


Table 11

Rendered 100mm Insulite block outer leaf

100mm block inner leaf using 10mm conventional mortar

Plasterboard dot & dab or insulated drylining internal finish

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	100mm blown	100mm batt @ 0.032 125mm batt @ 0.037	100mm batt @ 0.021	100mm batt @ 0.021 125mm batt @ 0.030	100mm batt @ 0.021 + 20mm insulated drylining
Airtec Standard 3.6N	100mm batt @ 0.037	100mm batt @ 0.021	100mm batt @ 0.021 125mm batt @ 0.030	100mm batt @ 0.021	100mm batt @ 0.021 + 25mm insulated drylining
Airtec Seven 7.3N	100mm batt @ 0.032	125mm batt @ 0.034	100mm batt @ 0.021 125mm batt @ 0.030	100mm batt @ 0.021 + 15mm insulated drylining	100mm batt @ 0.021 + 25mm insulated drylining
Ultralite	100mm batt @ 0.032	125mm batt @ 0.034	125mm batt @ 0.030	100mm batt @ 0.021 + 15mm insulated drylining	100mm batt @ 0.021 + 30mm insulated drylining
Insulite	100mm batt @ 0.021 125mm batt @ 0.037	125mm batt @ 0.032	100mm batt @ 0.021	100mm batt @ 0.021 + 15mm insulated drylining	100mm batt @ 0.021 + 35mm insulated drylining
Cellular Dense	125mm batt @ 0.037	125mm batt @ 0.030	100mm batt @ 0.021	100mm batt @ 0.021 + 15mm insulated drylining	100mm batt @ 0.021 + 35mm insulated drylining
Solid Dense	125mm batt @ 0.034	125mm batt @ 0.030	100mm batt @ 0.021	100mm batt @ 0.021 + 15mm insulated drylining	100mm batt @ 0.021 + 35mm insulated drylining

Note: In the examples where a "100mm batt @ 0.021" is used, this is a hybrid insulation batt whose thickness is 95mm (+5mm low-e air gap).

The figures shown are for guidance and indicative purposes only. Specific calculations must be carried out to verify the u-value. All calculations have been carried out in accordance with the latest methods as described in BS EN ISO 6946. A correction level of zero has been used which assumes all joints between the insulation batts are sealed up.

Fully Filled Cavity Walls

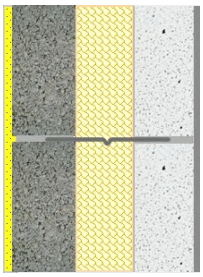


Table 12

Rendered 100mm Insulite block outer leaf

100mm block inner leaf using 10mm conventional mortar

Wet Plaster (insulated drylining is not an option)

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	100mm batt @ 0.037	100mm batt @ 0.030 125mm batt @ 0.037	125mm batt @ 0.032	100mm batt @ 0.021 125mm batt @ 0.030	
Airtec Standard 3.6N	125mm batt @ 0.034	125mm batt @ 0.034	125mm batt @ 0.032	100mm batt @ 0.021	
Airtec Seven 7.3N	100mm batt @ 0.032	125mm batt @ 0.034	100mm batt @ 0.021 125mm batt @ 0.030	100mm batt @ 0.021	Cavities wider than 150mm are required to achieve u-values of 0.15W/m2K. Please contact our technical department for specific calculations.
Ultralite	125mm batt @ 0.037	125mm batt @ 0.032	100mm batt @ 0.021	150mm batt @ 0.030	
Insulite	125mm batt @ 0.036	125mm batt @ 0.032	100mm batt @ 0.021	Cavities wider than 150mm are required to achieve u-values of 0.15W/m2K. Please contact our technical department for specific calculations..	
Cellular Dense	125mm batt @ 0.034	100mm batt @ 0.021 125mm batt @ 0.030	150mm batt @ 0.030		
Solid Dense	125mm batt @ 0.034	125mm batt @ 0.030	150mm batt @ 0.030		

Note: In the examples where a "100mm batt @ 0.021" is used, this is a hybrid insulation batt whose thickness is 95mm (+5mm low-e air gap).

The figures shown are for guidance and indicative purposes only. Specific calculations must be carried out to verify the u-value. All calculations have been carried out in accordance with the latest methods as described in BS EN ISO 6946. A correction level of zero has been used which assumes all joints between the insulation batts are sealed up.

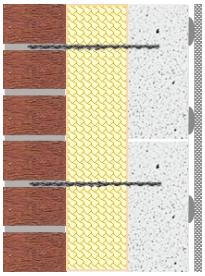


Table 13

Brick outer leaf

100mm block inner leaf using 2mm thin joint mortar

Plasterboard dot & dab or insulated drylining internal finish

Note: In the examples where a "100mm batt @ 0.021" is used, this is a hybrid insulation batt whose thickness is 95mm (+5mm low-e air gap).

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	95mm Blown	100mm batt @ 0.034	100mm batt @ 0.032	125mm batt @ 0.032	100mm batt @ 0.021 + 15mm insulated drylining
Airtec Standard 3.6N	100mm batt @ 0.037	100mm batt @ 0.032 125mm batt @ 0.037	125mm batt @ 0.034	125mm batt @ 0.030	100mm batt @ 0.021 + 20mm insulated drylining
Airtec Seven 7.3N	100mm batt @ 0.034	125mm batt @ 0.036	125mm batt @ 0.032	100mm batt @ 0.021	100mm batt @ 0.021 + 20mm insulated drylining

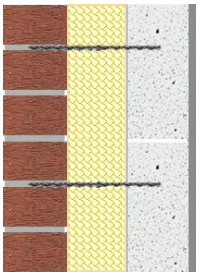


Table 14

Brick outer leaf

100mm block inner leaf using 2mm thin joint mortar

Wet plaster internal finish

Note: In the examples where a "100mm batt @ 0.021" is used, this is a hybrid insulation batt whose thickness is 95mm (+5mm low-e air gap).

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	100mm Blown	100mm batt @ 0.032	125mm batt @ 0.034	125mm batt @ 0.030 100mm batt @ 0.021	Cavities wider than 150mm are required to achieve u-values of 0.15W/m2K. Please contact our technical department for specific calculations.
Airtec Standard 3.6N	100mm batt @ 0.036	125mm batt @ 0.030	100mm batt @ 0.021	100mm batt @ 0.021 150mm batt @ 0.034	
Airtec Seven 7.3N	100mm batt @ 0.032 125mm blown	125mm batt @ 0.034	100mm batt @ 0.021 125mm batt @ 0.030	100mm batt @ 0.021	

The figures shown are for guidance and indicative purposes only. Specific calculations must be carried out to verify the u-value. All calculations have been carried out in accordance with the latest methods as described in BS EN ISO 6946. A correction level of zero has been used which assumes all joints between the insulation batts are sealed up.

Fully Filled Cavity Walls

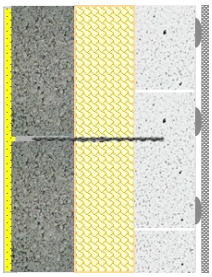


Table 15

Rendered 100mm Insulite block outer leaf

100mm block inner leaf using 2mm thin joint mortar

Plasterboard dot & dab or insulated drylining internal finish

Note: In the examples where a "100mm batt @ 0.021" is used, this is a hybrid insulation batt whose thickness is 95mm (+5mm low-e air gap).

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	95mm Blown	100mm batt @ 0.034	100mm batt @ 0.030 125mm batt @ 0.037	125mm batt @ 0.032	100mm batt @ 0.021 + 15mm insulated drylining
Airtec Standard 3.6N	100mm Blown	100mm batt @ 0.032	125mm batt @ 0.034	125mm batt @ 0.030	100mm batt @ 0.021 + 15mm insulated drylining
Airtec Seven 7.3N	100mm batt @ 0.034	125mm batt @ 0.037	125mm batt @ 0.032	100mm batt @ 0.021	100mm batt @ 0.021 + 15mm insulated drylining

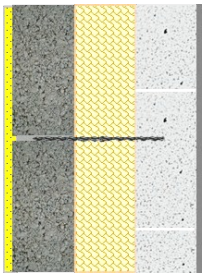


Table 16

Rendered 100mm Insulite block outer leaf,

100mm block inner leaf using 2mm thin joint mortar

Wet plaster internal finish

Note: In the examples where a "100mm batt @ 0.021" is used, this is a hybrid insulation batt whose thickness is 95mm (+5mm low-e air gap).

	0.26 W/m²K	0.22 W/m²K	0.20 W/m²K	0.18 W/m²K	0.15 W/m²K
Airtec XL 2.9N	100mm Blown	125mm batt @ 0.037	125mm batt @ 0.036	125mm batt @ 0.030 100mm batt @ 0.021	Cavities wider than 150mm are required to achieve u-values of 0.15W/m2K. Please contact our technical department for specific calculations.
Airtec Standard 3.6N	100mm batt @ 0.037	100mm batt @ 0.030 125mm batt @ 0.037	125mm batt @ 0.034	100mm batt @ 0.021 150mm batt @ 0.036	
Airtec Seven 7.3N	100mm batt @ 0.032	125mm batt @ 0.034	100mm batt @ 0.021 125mm batt @ 0.030	100mm batt @ 0.021	

The figures shown are for guidance and indicative purposes only. Specific calculations must be carried out to verify the u-value. All calculations have been carried out in accordance with the latest methods as described in BS EN ISO 6946. A correction level of zero has been used which assumes all joints between the insulation batts are sealed up.

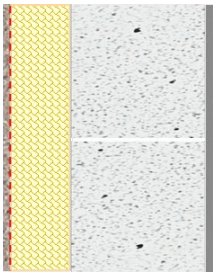


Table 17

Solid Airtec 215mm block wall using 2mm thin joint mortar

Wet plaster internal finish

Reinforced render system or brick slip external finish

	0.20 W/m²K	0.18 W/m²K	0.16 W/m²K	0.14 W/m²K	0.12 W/m²K	0.10 W/m²K
Airtec XL 2.9N	80mm @ 0.031 50mm @ 0.020	100mm @ 0.031 60mm @ 0.020	115mm @ 0.031 80mm @ 0.020	145mm @ 0.031 90mm @ 0.020	180mm @ 0.031 110mm @ 0.020	225mm @ 0.031 145mm @ 0.020
Airtec Standard 3.6N	90mm @ 0.031 60mm @ 0.020	110mm @ 0.031 70mm @ 0.020	130mm @ 0.031 80mm @ 0.020	155mm @ 0.031 100mm @ 0.020	190mm @ 0.031 120mm @ 0.020	240mm @ 0.031 150mm @ 0.020

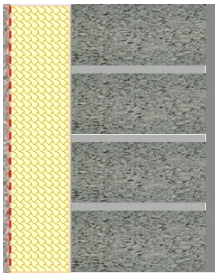


Table 18

Solid Insulite or Dense concrete blocks laid flat using 10mm conventional mortar

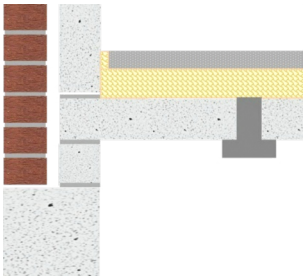
Wet plaster internal finish

Reinforced render system or brick slip external finish

	0.20 W/m²K	0.18 W/m²K	0.16 W/m²K	0.14 W/m²K	0.12 W/m²K	0.10 W/m²K
Insulite Block	135mm @ 0.031 80mm @ 0.020	155mm @ 0.031 95mm @ 0.020	175mm @ 0.031 110mm @ 0.020	200mm @ 0.031 125mm @ 0.020	235mm @ 0.031 150mm @ 0.020	285mm @ 0.031 180mm @ 0.020
Solid Dense Block	145mm @ 0.031 90mm @ 0.020	160mm @ 0.031 100mm @ 0.020	180mm @ 0.031 115mm @ 0.020	210mm @ 0.031 130mm @ 0.020	245mm @ 0.031 155mm @ 0.020	295mm @ 0.031 185mm @ 0.020

The figures shown are for guidance and indicative purposes only. Specific calculations must be carried out to verify the u-value. All calculations have been carried out in accordance with the latest methods as described in BS EN ISO 6946. A correction level of zero has been used which assumes all joints between the insulation batts are sealed up.

Suspended Block & Beam Floors



Suspended Beam & Block Floor

150mm T-beam with 100mm thick block infill | Insulation slabs | Standard Screed, 65mm

Note: The thickness of insulation quoted is the minimum amount required to meet the target but may not be available. Therefore the next available size up should be used.

		0.18 W/m²K					0.13 W/m²K					0.11 W/m²K				
	P/A Ratio:	**0.70**	**0.60**	**0.50**	**0.40**	**0.30**	**0.70**	**0.60**	**0.50**	**0.40**	**0.30**	**0.70**	**0.60**	**0.50**	**0.40**	**0.30**
Airtec Large Format Block	Expanded Polystyrene (0.038)	135	130	125	115	100	210	210	205	195	180	260	255	250	245	230
	Extruded Polystyrene (0.033)	115	110	105	100	90	185	180	175	170	160	225	225	220	210	200
	Low-k Expanded Polystyrene (0.030)	105	100	100	85	80	170	165	160	155	145	205	205	200	195	185
	Polyurethane / PIR (0.022)	80	75	70	70	60	125	120	120	115	105	150	150	145	140	135
Insulite 7.3N	Expanded Polystyrene (0.038)	150	145	140	130	120	225	220	215	210	195	275	270	265	260	245
	Extruded Polystyrene (0.033)	130	125	120	115	105	195	195	190	180	170	240	235	230	225	215
	Low-k Expanded Polystyrene (0.030)	120	115	110	105	95	180	175	170	165	155	220	215	210	205	195
	Polyurethane / PIR (0.022)	90	85	80	80	70	130	130	125	120	115	160	160	155	150	145
Solid Dense 7.3N	Expanded Polystyrene (0.038)	155	150	145	135	125	230	225	220	210	233	280	275	270	260	250
	Extruded Polystyrene (0.033)	135	130	125	120	110	200	195	190	185	175	240	240	230	225	215
	Low-k Expanded Polystyrene (0.030)	120	120	115	110	100	180	180	170	170	160	220	215	215	205	195
	Polyurethane / PIR (0.022)	90	90	85	80	75	135	130	130	125	115	160	160	155	150	145

- The figures in the table show the thickness of insulation required to meet the target U-Values shown.
- The P/A values are intended to represent typical house types, from terraced to detached.
- The thermal values used for the insulation types are generic and may vary between manufacturers.

The figures shown are for guidance and indicative purposes only. Specific calculations must be carried out to verify the u-value. All calculations have been carried out in accordance with the latest methods as described in BS EN ISO 6946. A correction level of zero has been used which assumes all joints between the insulation batts are sealed up.

As a company, we are consistently striving to maximise the use of recycled and reclaimed raw material in our products. This is largely dependant on the local availability and quality of the materials to our manufacturing locations.

The majority of our products are certified to ISO 9001 Quality Management, ISO 14001 Environmental Management and BES 6001 Responsible Sourcing certification.

Insulite Lightweight Blocks

A large proportion of material used in our Insulite blocks is fully recycled or reclaimed. These products consist of over 40% by weight recycled or reclaimed raw materials.

Dense Concrete Blocks

Dense blocks require a proportion of quarried sand and gravel in order to achieve their exceptional toughness, durability and load-bearing capacity. These products consist of over 20% by weight recycled or reclaimed raw materials.

Airtec Aerated Concrete Products

Up to 80% of all raw material used in the production of Airtec blocks is recycled. Airtec is manufactured in the UK's most advanced facility using a unique process resulting in superior product performance and highly efficient energy recovery systems.

Reference Table of Our Block Types

NBS Clauses and BIM Objects for our blocks are available at:

www.source.thenbs.com

NBS Source PARTNER

	Airtec XL	Airtec Standard	Airtec Party Wall	Airtec Seven	Ultralite	Insulite	Solid Dense	Cellular & Hollow Dense
Compressive Strength(s) N/mm²	2.9	3.6	3.6	7.3	3.6, 7.3	4.2, 7.3 †	7.3, 10.4 †	7.3
Gross Dry Density kg/m³	460	530	600	730	1050 - 1150	1450 - 1550	1850 - 2100	1850 - 2100
Design Thermal Conductivity W/mK (External leaf)	0.09 (0.10)	0.11 (0.12)	0.13 (0.15)	0.17 (0.19)	0.32 (0.34)	0.49 (0.54)	1.17 (1.26)	0.88 (0.95)

† Higher strengths are available to order

Thomas Armstrong (Holdings) Limited

Workington Road, Flimby, Maryport, Cumbria. CA15 8RY

Established 1830

Our block manufacturing locations and regional sales offices

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Blackdyke, Silloth, Cumbria. CA7 4PD :	Tel: 01900 68114	Fax: 01900 66136	cumbriablocksales@thomasarmstrong.co.uk
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