

Cl/SfB		(31.9)	Hn6	(M2)
--------	--	--------	-----	------

CERTIFICATE OF ASSESSMENT

CERTIFICATE NUMBER

032/96

DATE OF ISSUE

JUNE 1996

REVISION 1

JUNE 1999

PRODUCT

THERMA-BRIDGE PLUS
AND AIRTEC INSULATING
DAMP PROOF COURSE

SUPPLIED BY

Yorkshire Building Services (Whitwell) Limited
Units 5/6/7, Creswell Industrial Estate
Creswell, Derbyshire, S80 4BX
Tel: 01909 721662
Fax: 01909 721442

SUMMARY

Therma-bridge Plus and Airtec insulating damp-proof course have been assessed to confirm their suitability for use as an insulating damp proof course, to provide a damp-proof barrier and thermal insulation, at openings for windows or doorsets in masonry external cavity walls. Therma-Bridge Plus is a composite comprised of expanded polystyrene to BS 3837:Part 1, bonded to a polyethylene damp-proof course to BS 6515. Airtec is an aluminium foil faced polyethylene bubble film multilayer laminate.

Characteristics of the insulating damp-proof course have been reviewed with respect to the Building Regulations current in the United Kingdom. The assessment has referred to British Standards current in May 1999.

The assessment is described in the following pages, which form integral parts of this certificate.

LIMITATIONS OF USE

Therma-bridge Plus and Airtec insulating damp-proof course are each certified for use as a damp-proof barrier and thermal insulation for installation around masonry external cavity wall openings. The load imposed on and by the completed joinery element must be transferred directly to the structure. The insulating damp-proof course must be continuously supported and, either mechanically fixed onto the joinery frame, or held in place by the masonry at the point of closure. Therma-Bridge Plus must be positioned with the damp proof course facing outwards.

Therma-bridge Plus and Airtec must be installed strictly in accordance with the requirements of this certificate and the manufacturer's instructions as inspected by WIMLAS Limited. The manufacturer must continue to provide a technical consulting service.

1. TECHNICAL SPECIFICATION

1.1 Description of Product

1.1.1 Therma-Bridge Plus insulating damp-proof course is assembled from Grade SD/N expanded polystyrene foam FRA grade to BS 3837:Part 1, of 18 mm thickness and of 100 mm or 150 mm width, as appropriate, to suit 100 mm or 140 mm width return blocks. The insulation is centrally bonded along one face of a polyethylene damp-proof course to BS 6515 of 165 mm or 225 mm width. The resultant insulated damp-proof course are available in 1.42 m or 2.50 m prefabricated lengths of the composite. Other non-standard width and insulation thickness formats are available to order.

1.1.2 Airtec insulating damp-proof course consists of aluminium foil faced polyethylene sheet laminated to polyethylene bubble film in widths of 200mm, 225mm 300mm and 400mm for application either as a single or double layer.

1.2 Product Performance

1.2.1 Therma-bridge Plus and Airtec insulating damp-proof course is intended to provide a method to enhance the thermal insulation of new-build masonry external cavity walls, at window and doorset thresholds, jambs, sills and other positions where the cavity is closed. The insulating damp-proof course assists in avoiding cold bridging, by reducing local potential paths of high heat loss. The insulating damp-proof course provides a damp-proof barrier at the point of closure between the inner and outer wall leaves. It requires no maintenance when correctly installed.

1.2.2 Walls incorporating the insulating damp-proof course can be constructed to give a thermal resistance of at least 0.47 m²K/W interposed at the point of closure between the inner and outer wall leaves at the edges of openings. The thermal transmittance may be calculated in accordance with CIBSE Guide:Part A3:1986 "Thermal properties of building structures", or with Approved Document L (1995) supporting the Building Regulations (England and Wales) 1991, or with BRE Information Paper IP 12/94 "Assessing condensation risk and heat loss at thermal bridges around

openings". Calculations, undertaken following the procedures outlined in the latter document, have shown that R_{min} will be at least a minimum of 0.1 m²K/W and R_{mod} will be at least a minimum of 0.45 m²K/W, when examined as installed in a typical masonry construction.

1.2.3 When installed in accordance with this certificate and the appropriate Clauses of BS 5250, the insulating damp-proof course will not promote surface or interstitial condensation. Condensation is considered to be unlikely to occur with the constructions specified in this certificate. However, condensation risk calculations should be undertaken to ensure that it will not occur for the intended application.

The insulating damp-proof course may be considered as providing water vapour resistance to a degree equivalent to that of a damp-proof barrier, and can prevent the passage, within traditional masonry construction, of damp from external sources.

1.2.4 The insulating damp-proof course will not impair the fire resistance performance of the wall. The insulating damp-proof course must not be regarded as being a cavity barrier against the penetration of fire and smoke within the context of the Building Regulations. However, it is not required so to be for use within an external masonry cavity wall meeting the requirements of this certificate, provided that the cavity, if not totally filled with insulation, is sealed at the top, that either leaf is at least 75 mm thick, and that the top of the opening provision is closed with a component that can act as a cavity barrier.

Since the insulating damp-proof course is not considered to be non-combustible, it must be adequately separated from: heat-producing appliances, incinerators, hearths, fire backs, ash pit surrounds, ductwork for high temperature gases, flues, chimneys and fire places or recesses (see Section 2 below).

1.2.5 The insulating damp-proof course should remain effective for the design life of the assemblies for which it is specified, provided it is installed in accordance with the manufacturer's instructions and the requirements of this certificate.

2. BUILDING REGULATIONS

The relevant Building Regulations requirements for the product are:-

2.1 The Building Regulations (England and Wales) 1991 (as amended)

Requirement

B3(4) Internal fire spread (structure) - combustible materials are permitted in a masonry external cavity wall by these Regulations.

C4 Resistance to weather and ground moisture - the insulating damp-proof course can adequately resist the passage of moisture to the underlying structure, provided the wall is constructed in accordance with BS 5628:Part 3 and the requirements of this certificate. Advice is given in Section 3.3 below and in Section 4 of Approved Document C supporting these Regulations.

J3 Protection of the building from heat-producing appliances - in order to comply with this Regulation the insulating damp-proof course must be adequately separated or shielded from a chimney, flue, fireplace recess, heat-producing appliance or hearth. The separations recommended, where appropriate, are detailed in Approved Document J supporting these Regulations, to which reference must be made.

L1 Conservation of fuel and power - the edges of an opening in a wall, formed using the insulating damp-proof course, can be designed and constructed to provide an adequate thermal resistance and no undue condensation risk, interposed at the point of closure between the inner and outer external wall leaves, as calculated in accordance with BRE Information Paper IP 12/94. Reference should be made to Table D3 of Approved Document L supporting these Regulations.

Regulation

7 Materials and workmanship - Therma-bridge Plus and Airtec insulating damp-proof course is manufactured from suitably safe and durable materials for their application and can be installed to give a satisfactory performance.

2.2 The Building Standards (Scotland) Regulations 1990 (as amended)

Regulation

B2.1 Selection and use of materials and components - Therma-bridge Plus and Airtec insulating damp-proof course are manufactured from acceptable materials and considered to be adequately resistant to deterioration and wear under normal service conditions, provided it is installed in accordance with the requirements of this certificate.

D4.1 Cavity barriers - combustible materials are permitted in a masonry external cavity wall by these Standards, but they require the opening provision to be sealed all around.

F2 Heat-producing, solid fuel burning or oil- or gas-fired installations - a wall, incorporating the insulating damp-proof course, can be designed and constructed to comply with these Standards, provided that the Therma-bridge Plus and Airtec is isolated from the flue of a gas-fired, or solid fuel, or oil-fired heat-producing appliance by a separation. It must be adequately separated from a fire place opening, recess, hearth or flue pipe, or from any heat-producing appliance.

G3.1 Resistance to precipitation - the insulating damp-proof course is resistant to the passage of water, but must be continuous with any adjacent damp-proof membrane. Advice is given in Section 3.3 below.

G4 Condensation - the edges of openings in a wall, formed using the insulating damp-proof course in accordance with the requirements of this certificate and of BS 5250, can be designed and constructed to comply with these Standards.

J2.1 Conservation of fuel and power: the building fabric - details, incorporating the insulating damp-proof course interposed at the point of closure between the inner and outer external wall leaves, can be designed and constructed to provide a U-value of no more than 1.2 W/m²K. Reference should be made to Appendix B of this Standard

2.3 The Building Regulations (Northern Ireland) 1994

Regulation

B2 Fitness of materials and workmanship - Therma-bridge Plus and Airtec insulating damp-proof course is manufactured from materials which are considered to be suitably safe and acceptable for their intended use.

C5 Resistance to ground moisture and weather - where the insulating damp-proof course is installed within an external cavity wall, it can be so designed and constructed as to prevent the passage of moisture or water vapour through the wall. Advice is given in Section 3.3 below.

C7 Condensation - the edges of openings in a wall, built using the insulating damp-proof course in accordance with the requirements of this certificate and BS 5250, can be designed and constructed to prevent any harmful effect from moisture in the form of interstitial condensation.

E6 Internal fire spread: structure - combustible frame materials are permitted in a masonry external cavity wall.

F2 Conservation of fuel and power - details, incorporating the insulating damp-proof course interposed at the point of closure between the inner and outer external wall leaves, can be designed and constructed to provide a U-value of no more than 1.2 W/m²K.

L2 Heat-producing appliances and associated constructions - a wall, incorporating the insulating damp-proof course can be designed and constructed to comply with these Regulations, provided that it is isolated from the flue of a gas-fired, or solid fuel or oil-fired heat-producing appliance or an incinerator. It must be adequately separated from a chimney or fireplace recess, from a flue pipe, from a hearth or from the appliance.

3. INSTALLATION/PRACTICAL APPLICATION

3.1 Identification

Therma-bridge Plus and Airtec insulating damp-proof course is delivered to site in cardboard boxes containing prefabricated lengths. Each box is supplied with a label marked with the words Therma-Bridge Plus or Airtec, the date of manufacture, its dimensions, the number of insulating damp-proof

course in the box, the identity code of the packer and an instruction leaflet.

3.2 Storage and Handling

The boxes of insulating damp-proof course must be stored on a firm, level and dry base, stacked near to horizontal, away from excessive heat, no more than ten high and be fully supported so that they do not distort by twisting or bowing.

For additional weather protection, black polyethylene sheeting or similar opaque material should be used if the insulating damp-proof course are to be stored outside for a period of seven days or more.

The insulating damp-proof course are easily handled on site and they may be readily cut or trimmed. Reasonable precautions should be taken to prevent damage to the insulating damp-proof course before, during or subsequent to installation. In particular, they should not be exposed to an open flame, or other ignition sources; the advice presented in BS 6203 should be followed. It must be handled with care and be secured if outside in windy conditions. It must not be punctured, split, deformed or unduly impacted before use. It must not be directly exposed to any plastics material incorporating plasticizers, or to volatile organic solvents.

3.3 Installation

3.3.1 Therma-bridge Plus and Airtec insulating damp-proof course must be installed in accordance with the relevant requirements of the manufacturer's installation instructions. The handling and installation instructions have been inspected during the assessment. In the opinion of WIMLAS they provide satisfactory guidance for users of the product.

3.3.2 The Therma-bridge Plus and Airtec insulating damp-proof course must be held in place by the masonry at the point of closure, at a sill or threshold position. It should be installed into the wall as it is raised, with the insulating damp-proof course being draped over the cavity face of the one leaf as the other is being raised up against it. Alternatively it can be

tacked on to the back of the joinery item, with the inner masonry leaf subsequently raised up against it. The damp proof course of the Therma-bridge Plus must be positioned so that it faces outwards. The insulating damp-proof course laps the masonry cavity along one edge and, along the other, either laps the adjacent joinery frame or is trapped between it and the external masonry leaf. The insulating damp-proof course must be tight with either leaf, but the leaves must not exert so much pressure that they distort the insulating damp-proof course. Any external cavity wall, within which the insulating damp-proof course are to be installed, must be constructed in accordance with BS 5628:Part 3 and BS 8000:Part 3.

3.3.3 Joints in the Therma-bridge Plus insulant should be closely butted, so that there are no visible gaps that could lead to thermal bridging. Where the insulating damp-proof course is to be used both vertically and horizontally the bottom 100 mm of the Therma-bridge Plus insulation should be trimmed from the vertical insulating damp proof course prior to installation, to enable the damp-proof course of the vertical insulating damp proof course to overlap to the outside of the horizontal, where they are to be butted together. Any lapped joints of Therma-bridge Plus and Airtec must incorporate a minimum 100 mm overlap of damp proof course material. Care must be taken to ensure that the insulating damp-proof course is not damaged by subsequent operations. The insulating damp-proof course must not be bridged by mortar droppings or the like. Mortar must be carefully removed before it has had time to harden.

3.3.4 The Therma-bridge Plus and Airtec insulating damp-proof course must be continuous with any adjacent wall damp-proof course. Thermal bridging should be minimised, but the insulation must not bridge any adjacent damp-proof course This must all be in accordance with the relevant Clauses of BS 5250, BS 8000:Part 4, and BS 8215. Reference must also be made to BRE document BR 262 (1994) "Thermal insulation - avoiding risks". For Airtec insulating damp-proof course the window or door frame must be set back at least 10mm into the depth of the cavity.

3.3.5 The work should be so programmed that the insulating damp-proof course is left exposed for the minimum time.

3.3.6 The insulating damp-proof course must not be in direct contact with hot pipes or exposed to continuous working temperatures of in excess of 75°C.

3.3.7 No maintenance of the insulating damp-proof course is necessary provided that they remain installed strictly in accordance with the requirements of this certificate and of the manufacturer.

4. TECHNICAL APPRAISAL

4.1 Performance Tests

Assessment and site inspections have been effected of the procedures and practicality of installation in Britain. Buildings recently insulated with the insulating damp-proof course have been inspected, as has a building with directly comparable masonry walls. Tests and investigations have been undertaken to determine the properties of Therma-bridge Plus and Airtec as follows:-

- dimensional tolerances
- thermal properties
- resistance to water vapour
- condensation risk.

4.2 Quality Control

are maintained on file by the manufacturer.

The manufacturer carries out - In the opinion of quality control tests and inspections at WIMLAS the specification of the regular intervals, including checks on materials used and the quality control appearance and dimensions, to ensure procedures of the manufacturer are that the quality of Therma-bridge Plus suitable for the product. and Airtec is maintained within the product specification. Quality records

TABLE 1: Properties of Therma-Bridge Plus and Airtec

Property	Result
Thermal conductivity of insulant Therma-Bridge Plus BS874	0.0375 W/mK
Thermal Resistance of insulant Airtec BS874	0.104 m ² k/W
Water vapour resistance	<300MNs/g
Peel strength of composite BS5350 Part C12	>10N
Dimensional tolerances of product	± 1 mm

4.3 British Standards and other Documentation

The following British Standards have been referred to for this assessment:-

BS 874:Part 2:Section 2.1:1986 Methods of determining thermal insulating properties: tests for thermal conductivity and related properties: guarded hot-plate method.

BS 2782: Methods of testing plastics:

BS 3837:Part 1:1986 Expanded polystyrene board: specification for boards manufactured from expandable beads.

BS 4370:Methods of test for rigid cellular materials:

BS 5250:1989 Code of practice for control of condensation in buildings.

BS 5628:Part 3:1985 Code of practice for the use of masonry: Materials and components, design and workmanship.

BS 6399:Part 1:1984 Loadings for buildings: Code of practice for dead and imposed loads.

BS 6515:1984 Specification for polythene damp-proof courses for masonry.

BS 8000:Part 3:1989 Workmanship on building sites: code of practice for masonry.

:Part 4:1989 : code of practice for waterproofing.

:Part 5:1990 : code of practice for carpentry, joinery and general fixings.

BS 8215:1991 Code of practice for design and installation of damp-proof courses in masonry construction.

BS EN ISO 6946:1997 Building components and building elements. Thermal resistance and thermal transmittance. Calculation method.

5. CONDITIONS OF CERTIFICATE ISSUE

5.1 Validity

This certificate will be valid for a period of five years. It will remain valid in so far as:

- a) The materials and methods of manufacture are unchanged.
- b) The designs and specifications are unaltered from those examined by WIMLAS.
- c) Yorkshire Building Services (Whitwell) Limited continues to have the product checked by WIMLAS.

5.2 Health and Safety

This certificate and the recommendations herein do not purport in any way to restate the requirements of the Health and Safety at Work Act 1974 or any statutory or common law duty of care which exists now or in future; nor is compliance with these recommendations to be assumed as satisfying the requirements of the said Act or any existing or future statutory or common law duty of care.

5.3 Reference to other Documentation

Where reference is made in this certificate to any Act of Parliament, Regulation, Code of Practice, British or other Standard or other publications, it shall be construed as reference to such publication in the form in which it is in force at the date of the certificate.

5.4 Patents

WIMLAS makes no representational warranty that any patent or similar industrial property right is valid or that the manufacture, use, sale, lease or any other dealing or disposition of the products in whole or in part is not an infringement of any patent or industrial property right not owned by Yorkshire Building Services (Whitwell) Limited.

