





Number BAW 09-341	 <h2 style="text-align: center;">BDA Agrément Nr. BAW 09-341</h2> <h3 style="text-align: center;">Data Sheet Wall - Design</h3> <p style="text-align: center;">To check the validity of this document please consult www.bda.nl</p>	Category Specific																																												
Date 2009.12.15		Phase Design																																												
Code 41MF99		Subject Multi-foil reflective thermal insulation for walls																																												
Product Supplier Description Scope (objective) Frame of reference Product characteristics Ancillary items Points of attention	<p>Super Quilt 19</p> <p>Yorkshire Building Services (Whitwell) Ltd. The Craggs Industrial Park Morven Street UK-S80 4AJ Creswell Derbyshire T.: +44 (0) 1909 721662, F.: +44 (0) 1909 721442 E.: technical@ybsinsulation.com, I.: www.ybsinsulation.com</p> <p>Multi-layered wall insulation material made up of nineteen layers of metallic foil, flexible wadding and closed cell foam. The layers are spot wise connected by 40 mm long double T plastic clips in a regular pattern, avoiding thermal bridging and creating flat surfaces. The first and nineteenth layer consist of aluminium foil with polyethylene backing and reinforcing scrim. The core of the product consists of three layers of polyester fibre wadding and four double layers of closed cell foam separated by six metallized film layers.</p> <p>Thermal insulation for use on the inside of exterior walls of dwellings and buildings with similar temperature and humidity conditions, designed and constructed in accordance with the relevant clauses of BS 5628^{4,5}.</p> <ol style="list-style-type: none"> Directive for the issue of a BDA Agrément, May 2009 BDA Agrément Nr. BAW 09-342 Super Quilt 19 (phase: installation) BDA Agrément Nr. BAW 09-343 Super Quilt 19 (phase: regulations) BS 5268 <i>Code of practice for timber</i> BS 5628 Part 3:2001 <i>Code of practice for the use of masonry: materials and components, design and workmanship</i> BS 4016:1997 <i>Specification for flexible building membranes (breather type)</i> BS 5250: 2002 <i>Code of practice for control of condensation in buildings</i> BDA report 0118-L-09/1 Super Quilt 19: <i>determination of the thermal performance (EN 12667)</i>, 2009.04.22 Deutsches Institut für Bautechnik, Allgemeine bauaufsichtliche Zulassung, Nr. Z-23.11-1723: <i>Mehrlagige Verbund-Wärmedämm-Matte " SuperQuilt " als Wärmedämmstoff</i>, 10. September 2008 Fraunhofer-Institut für Bauphysik, Test Report P17-084e/2008: <i>Approval Testing of Thermal Insulation Composite Mat „SuperQuilt 19 layers“</i>, 27. May 2008 <table border="0"> <tr><td>• nominal length</td><td>: 10.00, 6.667</td><td>(m)</td></tr> <tr><td>• nominal width</td><td>: 1500</td><td>(mm)</td></tr> <tr><td>• nominal thickness</td><td>: 40</td><td>(mm)</td></tr> <tr><td>• nominal mass</td><td>: 0.80</td><td>(kg.m⁻²)</td></tr> <tr><td>• thermal performance core</td><td></td><td></td></tr> <tr><td>- measured value^{8,9}</td><td>: 1.48</td><td>(m².K.W⁻¹)</td></tr> <tr><td>- calculation value</td><td>: 1.38</td><td>(m².K.W⁻¹)</td></tr> <tr><td>• thermal performance in combination with cavities</td><td>: see table 1</td><td></td></tr> <tr><td>• dimensional stability (length)</td><td>: 1.5</td><td>(%)</td></tr> <tr><td>• dimensional stability (width)</td><td>: 2.3</td><td>(%)</td></tr> <tr><td>• tensile strength parallel to faces</td><td>: 142</td><td>(kPa)</td></tr> <tr><td>• water vapour diffusion factor μ (with seam)</td><td>: 1700</td><td>(-)</td></tr> <tr><td>• water vapour diffusion factor μ (without seam)</td><td>: 75000</td><td>(-)</td></tr> <tr><td>• emission coefficients of outer surfaces</td><td>: 0.03</td><td>(-)</td></tr> <tr><td>• reaction to fire classification</td><td>: E</td><td></td></tr> </table> <ul style="list-style-type: none"> YBS Insulation foil-backed tape with acrylic adhesive, width 75 mm 14 mm staples or nails vapour control layer breather membrane pre-treated studs and battens additional insulation where required <ol style="list-style-type: none"> The product is delivered in rolls packed in a protective sealed bag and should include product name, dimensions, the BDA identification mark and the number of this Agrément . Wall insulation <ul style="list-style-type: none"> the building physical behaviour of wall structures incorporating the insulation on the inside must be analyzed by a specialist; special attention should be given to the air tightness of the internal lining, being the most important measure to avoid excessive condensation in the space behind the insulation; if ventilation has been provided in the external cavity, there is no requirement for a vapour control layer behind the internal lining, provided that the Super Quilt layer is thoroughly sealed at all joints, resulting in an airtight layer; if ventilation openings are used they should be positioned at the top and bottom of the external lining in accordance with BS 5250: 2002⁷; ventilation openings should be arranged in such a way that blockage is prevented and also the ingress of rain, snow, birds and small mammals. 	• nominal length	: 10.00, 6.667	(m)	• nominal width	: 1500	(mm)	• nominal thickness	: 40	(mm)	• nominal mass	: 0.80	(kg.m ⁻²)	• thermal performance core			- measured value ^{8,9}	: 1.48	(m ² .K.W ⁻¹)	- calculation value	: 1.38	(m ² .K.W ⁻¹)	• thermal performance in combination with cavities	: see table 1		• dimensional stability (length)	: 1.5	(%)	• dimensional stability (width)	: 2.3	(%)	• tensile strength parallel to faces	: 142	(kPa)	• water vapour diffusion factor μ (with seam)	: 1700	(-)	• water vapour diffusion factor μ (without seam)	: 75000	(-)	• emission coefficients of outer surfaces	: 0.03	(-)	• reaction to fire classification	: E	
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Points of attention (continued)	<p>3. Thermal performance aspects</p> <ul style="list-style-type: none"> - for the purpose of U-value calculations to determine if the requirements of the Building (or other statutory) Regulations are met, the thermal resistance of the product in combination with a non-ventilated air cavity on both sides of the Super Quilt layer of at least 25 mm may be taken as given in table 1; - the requirement for limiting the heat loss through the building fabric, including the effect of thermal bridging can be satisfied if the U-values of the building elements do not exceed the maximum values in the relevant Elemental Methods given in the National Building Regulations of England and Wales (Approved Documents L), Scotland (Technical Standards J) and Northern Ireland (Technical Booklet F); further information on regulations is given in BDA Agrément Nr. BAW 09-343 Super Quilt 19 (phase: regulations²); - some examples of typical wall cross sections are given in BDA Agrément Nr. BAW 09-342 Super Quilt 19 (phase: installation²). <p>4. Condensation risk</p> <ul style="list-style-type: none"> - walls incorporating the product will adequately limit the risk of interstitial condensation when designed in accordance with BS 5250: 2002; - when installed in accordance with BDA Agrément Nr. BAW 09-342 Super Quilt 19 (phase: installation²) the product will provide a convection-free envelope of high vapour resistance; - when installed against the external side of the studs or battens a vapour control layer could be considered in certain cases, this is to be judged by a specialist; - when installed against the internal side of the studs or battens the product will perform as a vapour barrier and should be used in conjunction with a suitable breather membrane against the sheathing on the external side of the studs or battens, see also ref.2. <p>5. Behaviour in relation to fire</p> <ul style="list-style-type: none"> - when installed with an internal lining board, e.g. 12.5 mm thick plasterboard, the insulation will be contained between the external part of the wall and internal lining board, until one is destroyed. Therefore, the insulation will not contribute to the development stages of a fire or present a smoke or toxic hazard. - the insulation must not be carried over junctions between walls and walls required to provide a minimum period of fire resistance. - the continuity of fire resistance must be maintained, for example as described in: England and Wales- Approved Document B, Volume 1, Sections 5.11 to 5.12; Scotland-Mandatory Standard 2.2, clause 2.2.10; Northern Ireland-Technical Booklet E, paragraph 3.21. - the use of the product will not affect the fire rating obtained by brick or block walls when evaluated by assessment or test to BS 476-3: 1958. <p>6. Durability</p> <p>The product is stable, rot-proof and durable and will remain effective as an insulant for the life of the building in which it is installed. There is no risk for moth or beetle infestation.</p> <p><i>Table 1 – Possible thermal resistances (R_{eq} in $m^2.K.W^{-1}$) of a combination of Super Quilt 19 with cavities, as measured under an angle of 90° (vertical) under different heat flow conditions⁹</i></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Combination</th> <th>Winter conditions (heat flow from inside to outside)</th> <th>Summer conditions (heat flow from outside to inside)</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • High emissivity surface • 25 mm air cavity • Super Quilt 19 • 25 mm air cavity • High emissivity surface </td> <td style="text-align: center;">2,44</td> <td style="text-align: center;">2,57</td> </tr> </tbody> </table>	Combination	Winter conditions (heat flow from inside to outside)	Summer conditions (heat flow from outside to inside)	<ul style="list-style-type: none"> • High emissivity surface • 25 mm air cavity • Super Quilt 19 • 25 mm air cavity • High emissivity surface 	2,44	2,57
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Z-23.11-1723: Mehrlagige Verbund-Wärmedämm-Matte " SuperQuilt " als Wärmedämmstoff, 10. September 2008 Fraunhofer-Institut für Bauphysik, Test Report P17-084e/2008: Approval Testing of Thermal Insulation Composite Mat „SuperQuilt 19 layers“, 27. 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Should damage occur, holes in the product should be repaired with suitable tape, as provided by the Agrément holder; the product should be attached to the studs and battens by using staples or nails of at least 14 mm length; the width of overlap joints must be at least 50 mm; the joints must be taped over the full length with suitable tape, as provided by the Agrément holder; when the product is cut to fit around openings or connections, gaps must be minimized; any exposed cut edges should be sealed with suitable tape, as provided by the Agrément holder. 	• nominal length	: 10.00, 6.667	(m)	• nominal width	: 1500	(mm)	• nominal thickness	: 40	(mm)	• nominal mass	: 0.80	(kg.m ⁻²)	• thermal performance core			- measured value ^{6,7}	: 1.48	(m ² .K.W ⁻¹)	- calculation value	: 1.38	(m ² .K.W ⁻¹)	• thermal performance in combination with cavities	: see table 1		• dimensional stability (length)	: 1.5	(%)	• dimensional stability (width)	: 2.3	(%)	• tensile strength parallel to faces	: 142	(kPa)	• water vapour diffusion factor μ (with seam)	: 1700	(-)	• water vapour diffusion factor μ (without seam)	: 75000	(-)	• emission coefficients of outer surfaces	: 0.03	(-)	• reaction to fire classification	: E	
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Installation procedure (continued)

2. **Delivery and site handling**
 - the product is delivered to site in rolls packed in a protective bag sealed with a plastic tie. Fitting instructions are placed in the bag;
 - the rolls should be stored in clean, dry conditions, not exposed to sunlight;
 - the product must be protected from being dropped or crushed by objects. Care must be exercised when storing large quantities on site;
 - the product must not be exposed to open flame or other ignition sources and must be stored away from flammable material such as paint and solvents;
 - to ensure maximum performance of the product when installed, on site precautions must be taken to protect it from mud and dirt.
3. **Wall insulation**
 - the product shall be cut equal to the width of the wall plus 100 mm;
 - installation should start from the bottom with the product being unrolled horizontally across the studs, after which it is fixed using staples or nails;
 - the product should be held in place using 32 mm by 25 mm wooden battens in such a way that there are air cavities on both sides of the product of at least 25 mm;
 - when installed against the external side of the studs or battens a vapour control layer could be considered in certain cases, this is to be judged by a specialist;
 - when installed against the internal side of the studs or battens the product will perform as a vapour barrier and should be used in conjunction with a suitable breather membrane against the sheathing on the external side of the studs or battens, see also figures 1, 2 and 3;
 - bricks or blocks shall be installed in accordance with BS 5628 Part 3: 2001⁵; recommendations of the brick/block manufacturer should be followed.
4. **Internal lining**
 - a foil-backed layer of plasterboard should be fixed to the battens in case of the wall insulation installed at the internal side of the studs; the batten size should be sufficient to ensure at least a 25 mm gap between the product and the plasterboard;
 - in case of the wall insulation installed at the external side of the studs, the foil-backed layer of plasterboard can be fixed directly to the studs;
 - further detail principles are given in figures 1, 2 and 3.
5. **Maintenance and repair**
 - once installed, the product does not require any maintenance. Small holes, rips or punctures in the outer layers should be repaired with YBS Insulation tape.
6. **Regulations**

Further information on regulations is given in BDA Agrément Nr. BAW 09-343 Super Quilt 19 (phase: regulations³).

Table 1 – Possible thermal resistances (R_{eq} in $m^2.K.W^{-1}$) of a combination of Super Quilt 19 with cavities, as measured under an angle of 90° (vertical) under different heat flow conditions⁸

Combination	Winter conditions (heat flow from inside to outside)	Summer conditions (heat flow from outside to inside)
<ul style="list-style-type: none"> • High emissivity surface • 25 mm air cavity • Super Quilt 19 • 25 mm air cavity • High emissivity surface 	2,44	2,57

Figure 1 - Cavity Wall

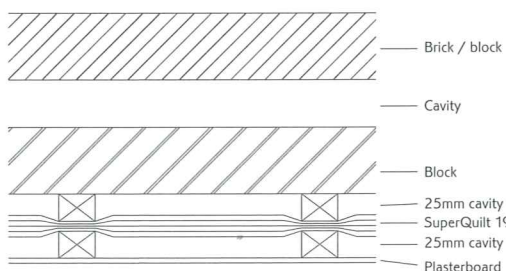


Figure 2 - Dry Lining

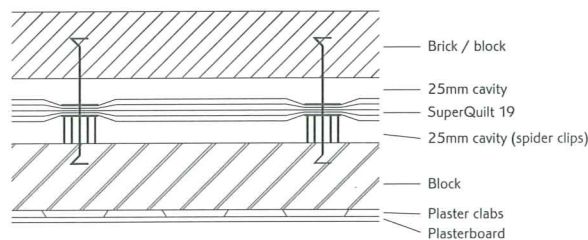
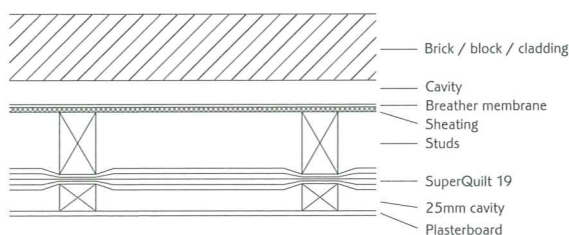




Figure 3 - Timber frame



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BAW 09-342 Super Quilt 19 (phase: installation) BS 5250: 2002 <i>Code of practice for control of condensation in buildings</i> BS 5268 <i>Code of practice for timber</i> BS 5628 Part 3:2001 <i>Code of practice for the use of masonry: materials and components, Regulations and workmanship</i> BS 4016:1997 <i>Specification for flexible building membranes (breather type)</i> <table border="0"> <tr><td>• nominal length</td><td>: 10,00, 6.667</td><td>(m)</td></tr> <tr><td>• nominal width</td><td>: 1500</td><td>(mm)</td></tr> <tr><td>• nominal thickness</td><td>: 40</td><td>(mm)</td></tr> <tr><td>• nominal mass</td><td>: 0.80</td><td>(kg.m⁻²)</td></tr> <tr><td>• thermal performance core</td><td></td><td></td></tr> <tr><td>- measured value</td><td>: 1.48</td><td>(m².K.W⁻¹)</td></tr> <tr><td>- calculation value</td><td>: 1.38</td><td>(m².K.W⁻¹)</td></tr> <tr><td>• thermal performance in combination with cavities</td><td>: see table 1</td><td></td></tr> <tr><td>• dimensional stability (length)</td><td>: 1.5</td><td>(%)</td></tr> <tr><td>• dimensional stability (width)</td><td>: 2.3</td><td>(%)</td></tr> <tr><td>• tensile strength parallel to faces</td><td>: 142</td><td>(kPa)</td></tr> <tr><td>• water vapour diffusion factor μ (with seam)</td><td>: 1700</td><td>(-)</td></tr> <tr><td>• water vapour diffusion factor μ (without seam)</td><td>: 75000</td><td>(-)</td></tr> <tr><td>• emission coefficients of outer surfaces</td><td>: 0.03</td><td>(-)</td></tr> <tr><td>• reaction to fire classification</td><td>: E</td><td></td></tr> </table> <p>• YBS Insulation foil-backed tape with acrylic adhesive, width 75 mm</p> <ul style="list-style-type: none"> • 14 mm staples or nails • vapour control layer • breather membrane • pre-treated studs and battens • additional insulation where required <ol style="list-style-type: none"> Requirements: The Building Regulations (England and Wales) 2000 (as amended) <ul style="list-style-type: none"> - B3(4) Internal fire spread (structure) – combustible materials are permitted by the regulation. Super Quilt 19 has a Class 1 surface spread of flame rating. Cavity barriers must be used to limit the extent of large cavities and to ensure integrity at junctions. - C4 Resistance to weather and ground moisture – Super Quilt 19 can adequately resist the passage of moisture to the underlying structure, provided the wall is constructed in accordance with BS 5628:Part 3: 2001⁶ and the requirements of BDA Agrément nr. BAW 09-334 Super Quilt 19 (phase: installation³). - J3 Protection of the building from heat-producing appliances – in order to comply with this Regulation Super Quilt 19 must be adequately separated or shielded from a chimney, flue, fireplace recess, heat-producing appliance or heath. 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 – walls constructed using Super Quilt 19 can be designed and constructed to provide a U-value of no greater than 0.35 W.m⁻²K⁻¹. - Regulation 7 Materials and workmanship – Super Quilt 19 is manufactured from suitably safe and durable materials for their application and can be installed to give a satisfactory performance. 	• nominal length	: 10,00, 6.667	(m)	• nominal width	: 1500	(mm)	• nominal thickness	: 40	(mm)	• nominal mass	: 0.80	(kg.m ⁻²)	• thermal performance core			- measured value	: 1.48	(m ² .K.W ⁻¹)	- calculation value	: 1.38	(m ² .K.W ⁻¹)	• thermal performance in combination with cavities	: see table 1		• dimensional stability (length)	: 1.5	(%)	• dimensional stability (width)	: 2.3	(%)	• tensile strength parallel to faces	: 142	(kPa)	• water vapour diffusion factor μ (with seam)	: 1700	(-)	• water vapour diffusion factor μ (without seam)	: 75000	(-)	• emission coefficients of outer surfaces	: 0.03	(-)	• reaction to fire classification	: E	
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Number BAW 09-343 Date 2009.12.15 Code 41MF99	 <h2 style="margin: 0;">BDA Agrément Nr. BAW 09-343</h2> <h3 style="margin: 0;">Data Sheet Wall - Regulations</h3> <p style="margin: 0;">To check the validity of this document please consult www.bda.nl</p>	Category Specific Phase Regulations Subject Multi-foil reflective thermal insulation for walls						
Regulations (continued)	<p>2. Requirements: The Building (Scotland) Regulations 2004</p> <p>2.1 Regulations 8 (1) Durability of materials and workmanship</p> <ul style="list-style-type: none"> - Super Quilt 19 is manufactured from acceptable materials and are considered to be adequately resistant to deterioration and wear under normal service conditions, provided they are installed in accordance with the requirements of BDA Agrément nr. BAW 09-334 Super Quilt 19 (phase: installation³). <p>2.2 Regulation 9 Building Standards Construction</p> <p>Section 2 Fire</p> <ul style="list-style-type: none"> - 2.4 cavity barriers - combustible materials are permitted in the cavity but require any opening to be sealed. - 2.5 Heat-producing, solid fuel burning or oil- or gas-fired installations - a wall, incorporating Super Quilt 19 can be designed and constructed to comply with these Standards, provided that they are isolated from the flue of a gas-fired, or solid fuel, or oil-fired heat-producing appliance by a separation. The insulation must be adequately separated from a fire place opening, recess, hearth or flue pipe, or from any heat-producing appliance. <p>Section 3 Environment</p> <ul style="list-style-type: none"> - 3.10 Precipitation - Super Quilt 19 can adequately resist the passage of moisture to the underlying structure provided the wall is constructed in accordance with BS 5628: Part 3⁶ and the requirements of this Agrément. - 3.15 Condensation - a wall formed using Super Quilt 19 in accordance with the requirements of BDA Agrément nr. BAW 09-334 Super Quilt 19 (phase: installation³) and of BS 5250⁴, can be designed and constructed to comply with these Standards. <p>Section 6 Energy</p> <ul style="list-style-type: none"> - 6.1(b) Where a proposed wall U-value is not better than (or is greater than in Scotland) the relevant 'notional' value, additional energy saving measures will be required in the building envelope and/or services to achieve the required overall carbon dioxide emission rate reduction of about 20% in dwellings (18% to 25% in Scotland) and 23% to 28% in buildings other than dwellings. - 6.2.1. Conservation of fuel and power: the building fabric - external cavity walls can be designed and constructed with Super Quilt 19 to provide a U-value of less than 0.35 W.m²K⁻¹. <p>3. Requirements: The Building Regulations (Northern Ireland) 2000</p> <ul style="list-style-type: none"> - B2 Fitness of materials and workmanship - Super Quilt 19 is manufactured from materials which are considered to be suitably safe and acceptable for use as cavity wall insulation for an external wall. - C5 Resistance to ground moisture and weather - where Super Quilt 19 is installed within an external cavity wall, that wall can be designed and constructed so as to prevent the passage of moisture or moisture or water vapour through it. Advice is given in ref. 3. - C7 Condensation - a wall incorporating Super Quilt 19 can be designed and constructed to prevent any harmful effect from moisture in the form of interstitial condensation. - E6 Internal fire spread: structure - combustible materials are permitted in an external cavity wall. - F2 Conservation of fuel and power - External cavity walls, incorporating Super Quilt 19 between the inner and outer external wall leaves, can be designed and constructed to provide a U-value no greater than 0.35 W.m².K⁻¹. - L2 Heat-producing appliances and associated constructions - a wall, incorporating Super Quilt 19 can be designed and constructed to comply with these Regulations, provided that the insulation is isolated from the flue of a gas-fired, or solid fuel or oil-fired heat-producing appliance or an incinerator. They must be adequately separated from a chimney or fireplace recess, from a flue pipe, from a hearth or from the appliance. <p><i>Table 1 – Possible thermal resistances (R_{eq} in $m^2.K.W^{-1}$) of a combination of Super Quilt 19 with cavities, as measured under an angle of 90° (vertical) under different heat flow conditions</i></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;">Combination</th> <th style="width: 30%;">Winter conditions (heat flow from inside to outside)</th> <th style="width: 35%;">Summer conditions (heat flow from outside to inside)</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • High emissivity surface • 25 mm air cavity • Super Quilt 19 • 25 mm air cavity • High emissivity surface </td> <td style="text-align: center; vertical-align: middle;">2,44</td> <td style="text-align: center; vertical-align: middle;">2,57</td> </tr> </tbody> </table>		Combination	Winter conditions (heat flow from inside to outside)	Summer conditions (heat flow from outside to inside)	<ul style="list-style-type: none"> • High emissivity surface • 25 mm air cavity • Super Quilt 19 • 25 mm air cavity • High emissivity surface 	2,44	2,57
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