


Number BAF 10-349	 <p style="text-align: center;">BDA Agrément Nr. BAF 10-349</p> <p style="text-align: center;">Data Sheet Floor - Design</p> <p style="text-align: center;">To check the validity of this document please consult www.bda.nl</p>	Category Specific																																												
Date 2010.01.15		Phase Design																																												
Code 41MF99		Subject Multi-foil reflective thermal insulation for floors																																												
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 floor 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 layers 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 in floors of dwellings and buildings with similar temperature and humidity conditions, designed and constructed in accordance with the Agréments holder's instructions for solid concrete ground floors and suspended timber ground floors.</p> <ol style="list-style-type: none"> Directive for the issue of a BDA Agrément, May 2009 BDA Agrément Nr. BAF 10-350 Super Quilt 19 (phase: installation) BDA Agrément Nr. BAF 10-351 Super Quilt 19 (phase: regulations) BS-EN- ISO 6946:2003 <i>Building components and building elements – Thermal resistance and thermal transmittance – Calculation method</i> BS-EN-ISO 10211-2:2001 <i>Thermal bridges in building construction – Calculation of heat flows and surface temperatures – Part 2: Linear thermal bridges</i> BR 443:2006 <i>Conventions for U-value calculations</i> BS 5250: 2002 <i>Code of practice for control of condensation in buildings</i> BDA report 0036-L-09/2 Super Quilt 19: <i>Determination of the thermal performance (EN 12667)</i>, 2009.06.05 Deutsches Institut für Bautechnik, Allgemeine bauaufsichtliche Zulassung, Nr. Z-23.11-1723: <i>Mehrlagige Verbund-Wärmedämm-Matte "SuperQuilt" als Wärmedämmstoff</i>, 10. 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Floor insulation <ul style="list-style-type: none"> the building physical behaviour of floor structures incorporating the insulation on the underside of the floor deck must be analyzed by a specialist; floors will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2002, Section 8.5 and Appendix D⁷. The membranes with sealed joints have a water vapour resistance of greater than 1000 m. However, the product should not be used as a water vapour control layer as it is laid with unsealed joints; if ventilation openings are used they should be positioned 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 ^{8,11}	: 1.48	(m ² .K.W ⁻¹)	- calculation value ⁹	: 1.38	(m ² .K.W ⁻¹)	• thermal performance in combination with cavities	: see Tables 1 and 2		• 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 BAF 10-349
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BDA Agrément Nr. BAF 10-349

Data Sheet Floor - Design

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Category Specific
Phase Design
Subject Multi-foil reflective thermal insulation for floors

Points of attention (continued)

3. **Thermal performance aspects**
 - calculations of the thermal transmittance (U value) of specific floor constructions should be carried out in accordance with BS EN ISO 6946 : 2003⁴, BS-EN-ISO 10211-2:2001⁵ and BRE report BR 443 : 2006⁶, using an emissivity of 0.03 and an air space of 50 mm. Examples of calculated thermal resistances and U values are shown in Tables 1 and 2;
 - 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. BAF 10-351 Super Quilt 19 (phase: regulations³);
 - some examples of typical floor cross sections are given in figures 1 and 2.
4. **Condensation risk**
 - floors incorporating the product will adequately limit the risk of interstitial condensation when designed in accordance with BS 5250: 2002⁷;
 - when installed in accordance with BDA Agrément Nr. BAF 10-350 Super Quilt 19 (phase: installation²) the product will provide a convection-free envelope of high vapour resistance.
5. **Behaviour in relation to fire**
 - the product does not prejudice the fire-resistance properties of the floor. Therefore, the insulation will not contribute to the development stages of a fire or present a smoke or toxic hazard;
 - when properly installed, the product will not add significantly to any existing fire hazard;
 - the product will be contained within the floor by the overlay until the overlay itself is destroyed. Therefore, the boards will not contribute to the development stages of a fire or present a smoke or toxic hazard.
6. **Durability**
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.

Figure 1 - Solid Floor Buildup

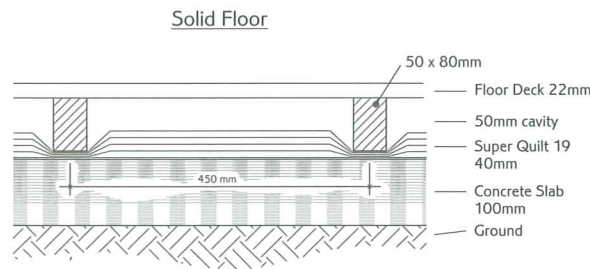


Figure 2 - Suspended Timber Floor Buildup

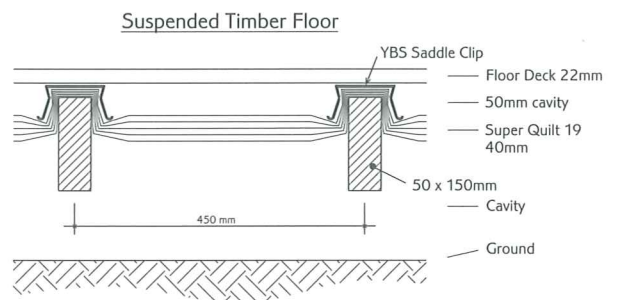



Table 1 – Calculated thermal resistances (R_{eq} -values) and U-values including the effect of thermal bridging¹⁰

Type of construction	R_{total} $m^2.K.W^{-1}$	R_{ground} $m^2.K.W^{-1}$	R_{floor} $m^2.K.W^{-1}$	U_{floor} $W.m^{-2}.K^{-1}$
Solid concrete floor	2,123	0,250	1,873	0,49
Suspended timber floor	3,292	0,250	3,042	0,31

Table 2 – Calculated thermal resistances (R_{eq} -values) and U-values excluding the effect of thermal bridging¹⁰

Type of construction	R_{total} $m^2.K.W^{-1}$	R_{ground} $m^2.K.W^{-1}$	R_{floor} $m^2.K.W^{-1}$	U_{floor} $W.m^{-2}.K^{-1}$
Solid concrete floor	2,522	0,250	2,272	0,41
Suspended timber floor	5,572	0,250	5,322	0,18

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However, the product should not be used as a water vapour control layer as it is laid with unsealed joints; if ventilation openings are used they should be positioned in accordance with BS 5250: 2002⁴; ventilation openings should be arranged in such a way that blockage is prevented and also the ingress of rain, snow, birds and small mammals. <ol style="list-style-type: none"> General <ul style="list-style-type: none"> installation of Super Quilt 19 and additional products should be in accordance with the Agrément holder's instructions and current good building practice; during installation care must be taken to avoid damaging of the product. Should damage occur, holes in the product should be repaired with suitable tape, as provided by the Agrément holder; in case of joists the product should be attached to these by using YBS saddle clips and fixed by galvanized nails; the width of overlap joints must be at least 100 mm; 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 ^{6,9}	: 1.48	(m ² .K.W ⁻¹)	- calculation value ⁷	: 1.38	(m ² .K.W ⁻¹)	• thermal performance in combination with cavities	: see Tables 1 and 2		• 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. **Solid concrete ground floors**
 - the product shall be cut equal to the width of the floor plus 150 mm;
 - the product should be rolled out on the concrete floor, leaving enough edge overlap for a 75 mm lip to be left behind the skirting;
 - timber battens/joists (minimum 50 mm by 80 mm) are then laid on top of the product, spaced at centres to suit the particular flooring to provide an air space;
 - the decking is then fixed with screws (at 200 mm centres) providing 25 mm penetration into the 50 mm wide battens/joists;
 - a possible edge detail is given in figure 1.
4. **Suspended timber ground floors**
 - the product should be rolled out continuously across to the timber joists;
 - the product must be brought up behind the skirting board to 75 mm;
 - the product is attached to the sides of the joists by YBS saddle clips, four per m² and fixed with galvanized nails;
 - horizontal joints are overlapped by 100 mm and left open to allow any moisture to dissipate;
 - the decking is then fixed with screws (at 200 mm centres) providing 37 mm penetration into the joists;
 - a possible edge detail is given in figure 2.
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. BAF 10-351 Super Quilt 19 (phase: regulations³).

Figure 1
Edge detail for Solid Concrete Floor Applications

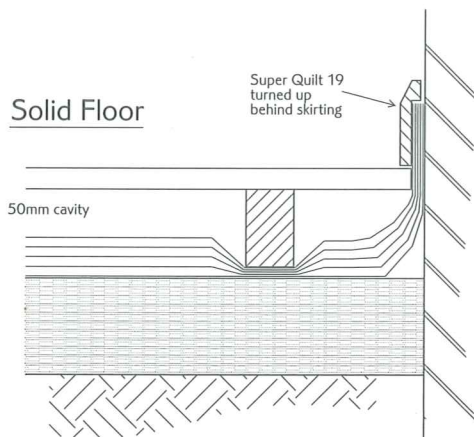


Figure 2
Edge detail in Suspended Timber Floor Applications

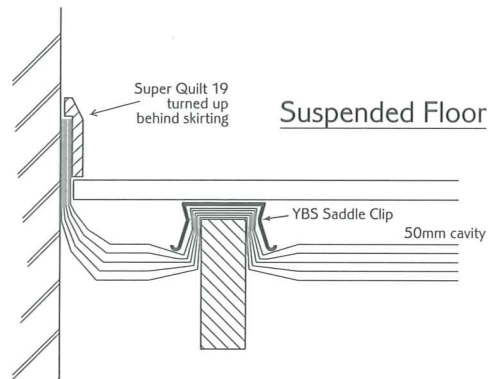




Table 1 – Calculated thermal resistances (R_{eq} -values) and U-values including the effect of thermal bridging¹⁰

Type of construction	R_{total} m ² .K.W ⁻¹	R_{ground} m ² .K.W ⁻¹	R_{floor} m ² .K.W ⁻¹	U_{floor} W.m ² .K ⁻¹
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Super Quilt 19 has a Class 1 surface spread of flame rating. C4 Resistance to weather and ground moisture – Super Quilt 19 can adequately resist the passage of moisture, provided the floor is constructed in accordance with BS 8102: 2009⁵ and the requirements of BDA Agrément nr. BAF 10-350 Super Quilt 19 (phase: installation³). L1 Conservation of fuel and power – solid concrete ground floors and suspended timber ground floors constructed using Super Quilt 19 can be designed and constructed to provide a U-value of no greater than 0.35 W.m²K⁻¹; The product, when used in solid concrete ground floors and suspended timber ground floors, can contribute to a building meeting the Target Emission Rate. 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. Requirements: The Building (Scotland) Regulations 2004 <ol style="list-style-type: none"> Regulations 8 (1) Durability of materials and workmanship <ul style="list-style-type: none"> Super Quilt 19 is manufactured from acceptable materials and is considered to be adequately resistant to deterioration and wear under normal service conditions, provided it is installed in accordance with the requirements of BDA Agrément nr. BAF 10-350 Super Quilt 19 (phase: installation³). 	• 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 Tables 1 and 2		• 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 BAF 10-351	 <p style="text-align: center;">BDA Agrément Nr. BAF 10-351</p> <p style="text-align: center;">Data Sheet Floor - Regulations</p> <p style="text-align: center;">To check the validity of this document please consult www.bda.nl</p>	Category Specific																														
Date 2010.01.15		Phase Regulations																														
Code 41MF99		Subject Multi-foil reflective thermal insulation for floors																														
Regulations (continued)	<p>2.2 Regulation 9 Building Standards Construction</p> <p>Section 3 Environment</p> <ul style="list-style-type: none"> - 3.10 Precipitation – Super Quilt 19 can adequately resist the passage of moisture provided the floor is constructed in accordance with BS 8102: 2009⁵ and the requirements of BDA Agrément nr. BAF 10-350 Super Quilt 19 (phase: installation³). - 3.15 Condensation – a floor formed using Super Quilt 19 in accordance with the requirements of BDA Agrément nr. BAF 10-350 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 floor 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 - floors can be designed and constructed with Super Quilt 19 to provide a U-value of less than 0.35 W.m⁻².K⁻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 insulation for solid concrete ground floors and suspended timber ground floors. - C5 Resistance to ground moisture and weather – where Super Quilt 19 is installed within solid concrete ground floors and suspended timber ground floors, these floors 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 floor incorporating Super Quilt 19 can be designed and constructed to prevent any harmful effect from moisture in the form of interstitial condensation. - F2 Conservation of fuel and power – solid concrete ground floors and suspended timber ground floors, incorporating Super Quilt 19, can be designed and constructed to provide a U-value no greater than 0.35 W.m⁻².K⁻¹. <p><i>Table 1 – Calculated thermal resistances (R_{eq}-values) and U-values including the effect of thermal bridging</i></p> <table border="1" data-bbox="365 1003 1509 1133"> <thead> <tr> <th>Type of construction</th> <th>R_{total} m².K.W⁻¹</th> <th>R_{ground} m².K.W⁻¹</th> <th>R_{floor} m².K.W⁻¹</th> <th>U_{floor} W.m⁻².K⁻¹</th> </tr> </thead> <tbody> <tr> <td>Solid concrete floor</td> <td>2,123</td> <td>0,250</td> <td>1,873</td> <td>0,49</td> </tr> <tr> <td>Suspended timber floor</td> <td>3,292</td> <td>0,250</td> <td>3,042</td> <td>0,31</td> </tr> </tbody> </table> <p><i>Table 2 – Calculated thermal resistances (R_{eq}-values) and U-values excluding the effect of thermal bridging</i></p> <table border="1" data-bbox="365 1227 1509 1357"> <thead> <tr> <th>Type of construction</th> <th>R_{total} m².K.W⁻¹</th> <th>R_{ground} m².K.W⁻¹</th> <th>R_{floor} m².K.W⁻¹</th> <th>U_{floor} W.m⁻².K⁻¹</th> </tr> </thead> <tbody> <tr> <td>Solid concrete floor</td> <td>2,522</td> <td>0,250</td> <td>2,272</td> <td>0,41</td> </tr> <tr> <td>Suspended timber floor</td> <td>5,572</td> <td>0,250</td> <td>5,322</td> <td>0,18</td> </tr> </tbody> </table>		Type of construction	R _{total} m ² .K.W ⁻¹	R _{ground} m ² .K.W ⁻¹	R _{floor} m ² .K.W ⁻¹	U _{floor} W.m ⁻² .K ⁻¹	Solid concrete floor	2,123	0,250	1,873	0,49	Suspended timber floor	3,292	0,250	3,042	0,31	Type of construction	R _{total} m ² .K.W ⁻¹	R _{ground} m ² .K.W ⁻¹	R _{floor} m ² .K.W ⁻¹	U _{floor} W.m ⁻² .K ⁻¹	Solid concrete floor	2,522	0,250	2,272	0,41	Suspended timber floor	5,572	0,250	5,322	0,18
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