

# Safe-R

Superior Performance Phenolic Insulation

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



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Superior Performance Phenolic

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Thermal Conductivity as Low as 0.020 W/mK

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Low Smoke Obscuration

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Class 'O' Low Risk Fire Rating

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Manufactured without the use of CFC's/HCFC's

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Zero ODP and GWP < 5

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**Xtratherm**<sup>®</sup>  
More than insulation

# Safe-R | SR Partial Fill Cavity

Xtratherm Safe-R is a superior performance rigid insulation with enhanced fire performance, consisting of a Class 'O' phenolic foam core with negligible smoke obscuration. Safe-R is faced with low emissivity aluminium facings both sides, and has a thermal conductivity as low as 0.020 W/mK.

## Partial Fill Cavity Insulation

Xtratherm SR/CW Partial Fill cavity wall insulation is the solution of choice to achieve the lower U-values asked for under the building regulations whilst maintaining a residual cavity as a protection from wind driven rain.

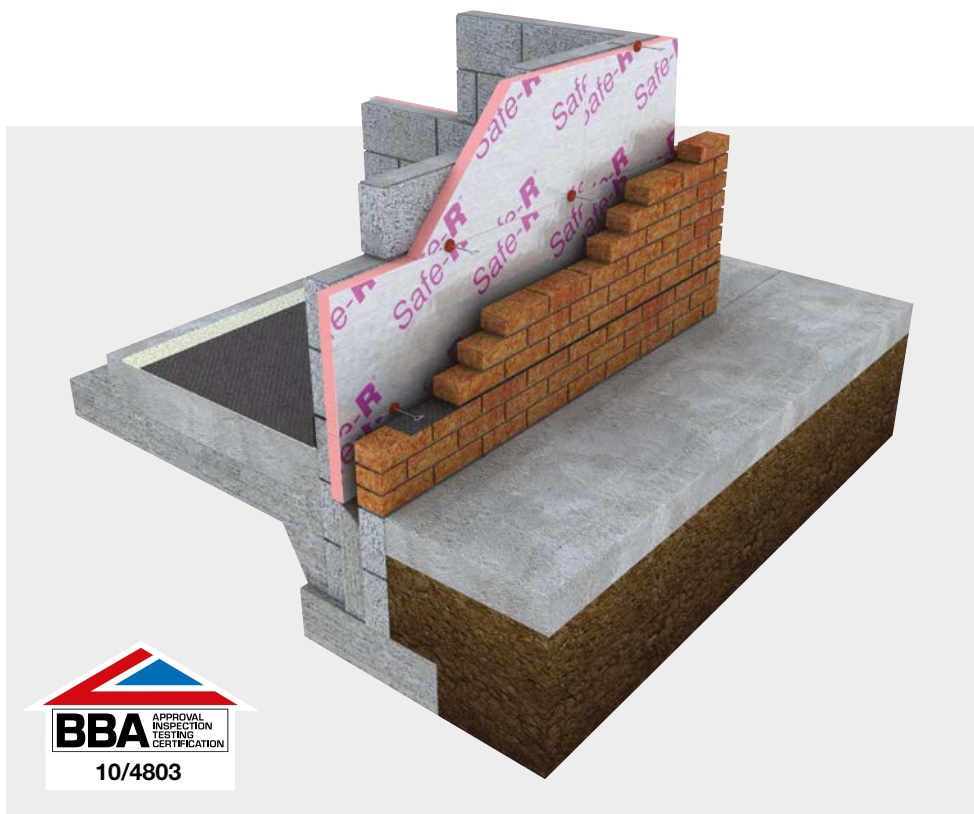
Masonry walls are the predominant construction method in the UK. Using superior performing Safe-R phenolic offers the solution when lower U-values are demanded. The high performance to thickness ratio of Safe-R allows for excellent U-values to be achieved within traditional constructions without increasing dramatically the overall width of the wall. Using SR/CW allows the residual cavity to be maintained, providing an effective method of preventing moisture ingress.

## Insulation value

SR/CW Partial Fill cavity wall insulation is a rigid phenolic insulation with low emissivity foil facings having a thermal conductivity as low as 0.020 W/mK.

## Specification Clause

The Partial Fill cavity wall insulation shall be Xtratherm Safe-R SR/CW \_\_ \_mm manufactured to BS EN 13166:2008 by Xtratherm, comprising a CFC/HCFC free rigid Phenolic core between low emissivity foil facings. To be installed in accordance with instructions issued by Xtratherm. Refer to NBS clause F30 151, F30 12.



## Property & Units

Density (Foam Core)  
45 (Kg/m<sup>3</sup>)

Compressive Strength  
>125 (kPa)

Water Vapour Resistivity  
>100 (MNs/gm)

Thermal Conductivity  
0.020 – 0.023 (W/mK)

Service Temperature  
-20 to +100 (°C)

## Xtratherm SR/CW

Length (mm)  
1200

Width (mm)  
450

Thickness (mm)  
50, 60, 75, 80, 100

*Other thicknesses may be available subject to MOQ and extended lead times.*

## Xtratherm Safe-R

Typical R-values

50mm  
R-value: 2.381

60mm  
R-value: 2.857

75mm  
R-value: 3.572

80mm  
R-value: 3.810

100mm  
R-value: 5.000



## Residual Cavity

A Residual cavity is the air space retained when the Xtratherm SR/CW Partial fill Cavity Wall insulation is placed in the cavity of a wall. For wall heights up to 12m a minimum 25mm cavity is recommended, and a minimum 50mm cavity for wall height greater than 12m, and up to and including 25m.

The minimum residual cavity width allowed is 25mm with partial fill wall insulation, however 50mm may be required by the designer, NHBC or Zurich.

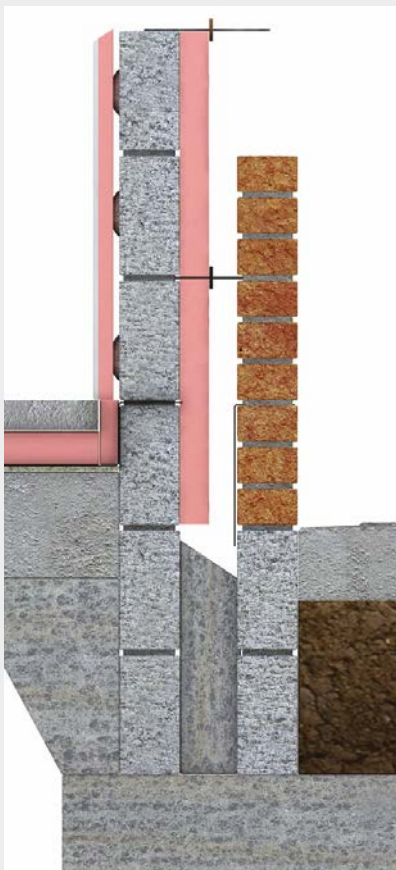
## Wall Ties

The insulation should be secured to the outer face of the inner leaf by a retaining clip on approved double drip type stainless steel wall ties that conform to BS EN 845-1:2003.

## Typical U-values

Safe-R Cavity Walls						
Safe-R/CW Thickness Required (mm)						
	50	60	75	80	100	
U-value W/m <sup>2</sup> K	<b>0.11</b>	0.23	0.21	0.18	0.17	0.15
	<b>0.51</b>	0.27	0.24	0.20	0.19	0.16
	<b>1.15</b>	0.28	0.24	0.21	0.20	0.16

## Installation Guidelines



### Cavity Wall

Insert wall ties max 600mm cs one block course below DPC.

Secure cavity boards tight against inner leaf with retaining clip on approved stainless steel wall ties.

Maintain a 50mm residual cavity to suit all exposure zones. Ensure a minimum 25mm residual cavity is maintained. This may have to be increased to suit conditions. (e.g. NHBC)

Place wall ties at max 900 x 450 centres; each board secured with a minimum of 3 wall ties.

Ensure block joints are fully bonded with unbroken mortar.

Fix wall ties 225mm vertically and 150mm horizontally from face of unbonded jamps.

Ensure wall ties (Cavity) are kept clean of mortar and are sloped towards outer leaf. A cavity board should be used to keep cavity clean.

Form Xtratherm Safe-R boards to insulate reveal openings to provide robust detailing.

Lower U-values can be achieved with the addition of an internal lining of Xtratherm Safe-R on adhesive dabs or timber battens.

## Standards

Xtratherm Safe-R range is manufactured to EN ISO 13166 under Quality Systems approved to EN ISO 9001:2008 Quality Management, EN ISO 14001:2004 Environmental Management and BS OHSAS 18001 Health and Safety Management System.

## Storage

Xtratherm Safe-R should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure.

## Cutting

Xtratherm Safe-R can be readily cut using a sharp knife or fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for in accredited details.

## Work Interruptions

During breaks in the build process and at the end of each working day, board edges and joints should be protected from inclement weather. Boards that have been allowed to get wet should not be used.

## Packaging

Xtratherm Safe-R is wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack. The packaging should not be considered as protection for the elements.

## Availability

Xtratherm products are available through builder's merchants and specialist distributors throughout the UK and Ireland. For the location of your nearest stockist please contact Xtratherm.

## Environmental

Xtratherm Safe-R is manufactured under ISO 14001:2004 Environmental Management with all major components sourced under 14001 accredited suppliers. It is manufactured without the use of CFC's or HCFC's and has Zero Ozone Depletion Potential with a GWP of less than 5.

## Durability

Xtratherm Safe-R products are stable, rot proof and will remain effective for the life span of the building, dependent on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil, when contact is made, clean materials in a safe manner before installation. Solvent based adhesive containing methyl ethyl ketone, should not be used.



# Safe-R | SR Insulated Plaster Board

Xtratherm Safe-R is a superior performance rigid insulation with enhanced fire performance, consisting of a Class 'O' phenolic foam core with negligible smoke obscuration. Safe-R is faced with low emissivity aluminium/glass tissue facings, and has a thermal conductivity as low as 0.020 W/mK.

## Thermal Lining Insulation

Xtratherm Safe-R Thermal Liner SR/TB is a composite insulated panel of Xtratherm Phenolic core with a composite tissue facing bonded to plasterboard for internal applications, fixed with propriety adhesive bonding. SR/TB is designed to provide high levels of thermal insulation and dry lining in one operation for masonry walls.

## General

The joints between Xtratherm ST/TB boards should be taped and filled in accordance with drylining good practice. The Safe-R Thermal Liner boards achieve a resistance greater than 100 MN.s/g. Improved vapour resistivity when required, can be provided with two coats of Drywall Sealer.

An important factor when dry lining a wall is to provide fire stops along the top and bottom of each sheet and around all openings (Doors & Windows etc.) These are provided by continuous plaster ribbons and prevent fire, penetrating behind the insulation layer, it also prevents Thermal Looping.

## Specification Clause

The insulated dry lining insulation shall be Xtratherm Safe-R SR/TB\_ \_ \_mm manufactured to BS EN 13166:2008 by Xtratherm, comprising a CFC/HCFC free rigid Phenolic core. To be installed in accordance with instructions issued by Xtratherm. Refer to NBS clause K10 205.



## Property & Units

Density (Foam Core)  
45 (Kg/m<sup>3</sup>)

Compressive Strength  
>125 (kPa)

Water Vapour Resistivity  
>100 (MNs/gm)

Thermal Conductivity  
0.020 – 0.023 (W/mK)

Service Temperature  
-20 to +100 (°C)

## Xtratherm SR/TB

Length (mm)  
2400

Width (mm)  
1200

Thickness (mm)  
Plasterboard 12.5mm+  
25, 40, 50, 60, 75, 80, 100

*\*Other thicknesses may be available subject to MOQ and extended lead times.  
Note: Standard product supplied UK - tapered edge - 12.5mm only*

## Xtratherm Safe-R

Typical R-values

40mm  
R-value: 1.739

50mm  
R-value: 2.381

60mm  
R-value: 2.857

75mm  
R-value: 3.572

80mm  
R-value: 3.810

100mm  
R-value: 5.000



## Installation Guidelines

### Plaster-dab Bonding SR/TB

Align the SR/TB Thermal Liner squarely on wall. Allow a 15mm expansion joint at the top and bottom of the panel, and fill with foam filler.

Mark the position of the panel on the wall.

Apply adhesive dabs to the wall in accordance with BS8212:1986 & BS 800: Part 8: 1994. Vertical dabs @ 300mm cs 25mm in from edge. Dabs 50-75mm wide approx 25mm deep to allow for tamping. Total contact with boards area should be 20%.

Max installation height for this system is 3m.

Ensure a 50mm continuous ribbon top and bottom and around any openings to provide firestops, and to achieve predicted U-value and airtightness performance. (See accredited details)

Lift the SR/TB Thermal Liner into position using wedges on the floor. Apply pressure to the board to level & embed in the adhesive.

Insulation should be cut back to accommodate an adjoining panel at external corners.

When the adhesive has dried, 3 mechanical fixings (thermally broken) should be fixed through the centre of the board. Setting out and planning is essential.

The Safe-R Thermal Liner boards achieve a resistance greater than 100 MN.s/g. Improved vapour resistivity when required, can be provided with two coats of Drywall Sealer.

### Typical U-values

**Xtratherm SR/TB Thickness (mm)**

Wall Type	50	60	75	80	100
300mm Cavity Wall Brick/Block	0.32	0.28	0.23	0.22	0.17
600mm Random Stone Wall	0.32	0.28	0.23	0.22	0.18
215mm Solid Brickwork	0.33	0.29	0.24	0.22	0.18

Contact Xtratherm Technical Support for specific U-value calculations.

### Standards

Xtratherm Safe-R range is manufactured to EN ISO 13166 under Quality Systems approved to EN ISO 9001:2008 Quality Management, EN ISO 14001:2004 Environmental Management and BS OHSAS 18001 Health and Safety Management System.

### Storage

Xtratherm Safe-R should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure.

### Cutting

Xtratherm Safe-R can be readily cut using a sharp knife or fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for in accredited details.

### Work Interruptions

During breaks in the build process and at the end of each working day, board edges and joints should be protected from inclement weather. Boards that have been allowed to get wet should not be used.

### Packaging

Xtratherm Safe-R is wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack. The packaging should not be considered as protection for the elements.

### Availability

Xtratherm products are available through builder's merchants and specialist distributors throughout the UK and Ireland. For the location of your nearest stockist please contact Xtratherm.

### Environmental

Xtratherm Safe-R is manufactured under ISO 14001:2004 Environmental Management with all major components sourced under 14001 accredited suppliers. It is manufactured without the use of CFC's or HCFC's and has Zero Ozone Depletion Potential with a GWP of less than 5.

### Durability

Xtratherm Safe-R products are stable, rot proof and will remain effective for the life span of the building, dependent on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil, when contact is made, clean materials in a safe manner before installation. Solvent based adhesive containing methyl ethyl ketone, should not be used.





## Walls | Dry-lined Walls

# Safe-R | SR Insulated Plaster Board

Xtratherm Safe-R is a superior performance rigid insulation with enhanced fire performance, consisting of a Class 'O' phenolic foam core with negligible smoke obscuration. Safe-R is faced with low emissivity aluminium facings both sides, and has a thermal conductivity as low as 0.020 W/mK.

## Thermal Lining Insulation

Xtratherm Safe-R Thermal Liner SR/TB-MF is a composite insulated panel of Xtratherm Phenolic core with a foil face one side bonded to plasterboard for mechanically fixing to internal walls. SR/TB-MF is designed to provide high levels of thermal insulation and dry lining in one operation for suitable masonry walls, sloped rafters and ceilings in new build and refurbishment situations.

## General

The joints between Xtratherm ST/TB-MF boards should be taped and filled in accordance with drylining good practice. The Safe-R Thermal Liner boards achieve a resistance greater than 100MN.s/g. Improved vapour resistivity when required, can be provided with two coats of Drywall Sealer.

An important factor when dry lining a wall is to provide fire stops along the top and bottom of each sheet and around all openings (Doors & Windows etc). These are provided by the timber battens and prevent fire, penetrating behind the insulation layer, it also helps to prevent thermal looping.

## Specification Clause

The insulated dry lining insulation shall be Xtratherm Safe-R SR/TB (MF) \_\_\_mm manufactured to BS EN 13166:2008 by Xtratherm, comprising a CFC/HCFC free rigid Phenolic core between low emissivity foil facings. To be installed in accordance with instructions issued by Xtratherm. Refer to NBS clause K10 205.

## Property & Units

Density (Foam Core)  
45 (Kg/m<sup>3</sup>)

Compressive Strength  
>125 (kPa)

Water Vapour Resistivity  
>100 (MNs/gm)

Thermal Conductivity  
0.020 – 0.023 (W/mK)

Service Temperature  
-20 to +100 (°C)

## Xtratherm SR/TB-MF

Length (mm)  
2400

Width (mm)  
1200

Thickness (mm)  
Plasterboard 12.5mm+  
25, 40, 50, 60, 75, 80, 100

*\* Other thicknesses may be available subject to MOQ and extended lead times.  
Note: Standard product supplied UK - tapered edge - 12.5mm only*

## Xtratherm Safe-R

Typical R-values

40mm  
R-value: 1.739

50mm  
R-value: 2.381

60mm  
R-value: 2.857

75mm  
R-value: 3.572

80mm  
R-value: 3.810

100mm  
R-value: 5.000





## Installation Guidelines

### Mechanically Fixing SR/TB-MF

Fix a pre-treated timber batten horizontally at ceiling level and another 20mm above the finished floor level.

Fix vertical battens at max 600mm centres.

Ensure battens are wide enough to offer 20mm support to all four edges of the plasterboard.

Pack battens if necessary to level the wall.

Trim all openings and service penetrations with timber battens.

Insulation should be cut back to accommodate an adjoining panel at external corners.

Lift the SR/TB-MF Thermal Liner into position using wedges on the floor.

Screws should be fixed to the timber batten at 150mm centres, at least 12mm in from the board edge. The fixings should penetrate at least 25mm into the batten\*.

Installation must be in accordance with good dry lining practice. BS 8212:1988 should be considered, careful setting out and planning is essential, fill any gaps with foam filler.

Accredited details should be followed to ensure that calculated performance is achieved.

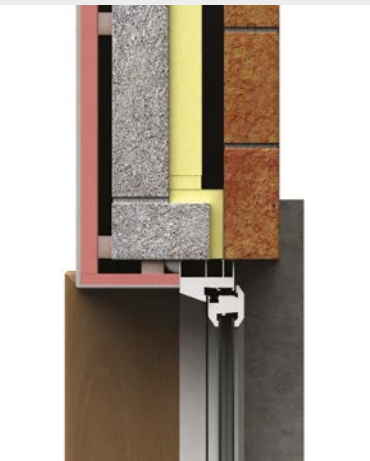
The Safe-R Thermal Liner boards achieve a resistance greater than 100 MN.s/g. Improved vapour resistivity when required, can be provided with two coats of Drywall Sealer.

### Typical U-values

**Xtratherm SR/TB-MF Thickness (mm)**

Wall Type	50	60	75	80	100
300mm Cavity Wall Brick/Block	0.28	0.25	0.21	0.20	0.16
600mm Random Stone Wall	0.28	0.25	0.21	0.20	0.17
215mm Solid Brickwork	0.29	0.25	0.22	0.21	0.16

Contact Xtratherm Technical Support for specific U-value calculations.



\*Fixings must be thermally broken

### Standards

Xtratherm Safe-R range is manufactured to EN ISO 13166 under Quality Systems approved to EN ISO 9001:2008 Quality Management, EN ISO 14001:2004 Environmental Management and BS OHSAS 18001 Health and Safety Management System.

### Storage

Xtratherm Safe-R should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure.

### Cutting

Xtratherm Safe-R can be readily cut using a fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for in accredited details.

### Work Interruptions

During breaks in the build process and at the end of each working day, board edges and joints should be protected from inclement weather. Boards that have been allowed to get wet should not be used.

### Packaging

Xtratherm Safe-R is wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack. The packaging should not be considered as protection for the elements.

### Availability

Xtratherm products are available through builder's merchants and specialist distributors throughout the UK and Ireland. For the location of your nearest stockist please contact Xtratherm.

### Environmental

Xtratherm Safe-R is manufactured under ISO 14001:2004 Environmental Management with all major components sourced under 14001 accredited suppliers. It is manufactured without the use of CFC's or HCFC's and has Zero Ozone Depletion Potential with a GWP of less than 5.

### Durability

Xtratherm Safe-R products are stable, rot proof and will remain effective for the life span of the building, dependent on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil, when contact is made, clean materials in a safe manner before installation. Solvent based adhesive containing methyl ethyl ketone, should not be used.



# Safe-R | SR Framing For Steel & Timber

Xtratherm SR/FB Framing Board is designed for use with timber frame and steel frame wall constructions. It is a superior performance rigid insulation with enhanced fire performance, consisting of a Class 'O' phenolic foam core with negligible smoke obscuration. Safe-R framing board is manufactured under the highest standards of ISO 9001 and 14001 Quality and Environmental Management Systems.

Superior performance Phenolic insulation

Class O fire rating

Thermal conductivity as low as 0.020 W/mK

HCFC/CFC Free

Suitable for use with timber frame or steel frame systems

For between studs or as an insulating sheathing

## Timber Framed System

Placing a lining of Safe-R Framing Boards SR/FB into the traditional cavity of the construction, and effectively insulating the thermal bridging caused by the timber studding drastically improves the insulation value of the walls over the traditional method of insulating between studs only.

## Steel Framed System

It is recommended that buildings constructed using a steel framed systems are insulated on the outer side of the construction creating a 'Warm frame'.

## Specification Clause

The wall insulation shall be Xtratherm Safe-R SR/FB manufactured to BS EN 13166:2008 by Xtratherm, comprising a CFC/HCFC free rigid Phenolic core between low emissivity foil facings. To be installed in accordance with instructions issued by Xtratherm. Refer to NBS clause F30 155, K10 15, K10 205, P10 210.



## Property & Units

Density (Foam Core)  
45 (Kg/m<sup>3</sup>)

Compressive Strength  
>125 (kPa)

Water Vapour Resistivity  
>100 (MNs/gm)

Thermal Conductivity  
0.020 – 0.023 (W/mK)

Service Temperature  
-20 to +100 (°C)

## Xtratherm SR/FB

Length (mm)  
2400

Width (mm)  
1200

Thickness (mm)  
50, 60, 75, 80, 100

*Other thicknesses may be available subject to MOQ and extended lead times.*

## Xtratherm Safe-R

Typical R-values  
(Steel Frame)

50mm  
R-value: 2.381

60mm  
R-value: 2.857

75mm  
R-value: 3.572

80mm  
R-value: 3.810

100mm  
R-value: 5.000

120mm  
R-value: 6.000





# Xtratherm®

More than insulation

## Installation Guidelines

### Timber Framed System

Glass fibre insulation or Xtratherm Safe-R should be accurately cut to fit snugly between the timber studding. If partially filling, ensure the insulation is securely held in place by treated timber battens to provide a stop, boards can be positioned front or back of the stud.

When using the Safe-R SR/FB as a sheathing board fix the insulation outside of any breather membrane or timber sheathing on the external surface (A second breather membrane may be added at this point for further protection) and temporarily fix with large headed clout nails. Ensure boards are closely butted and stagger jointed. Do not tape the outer surface of the SR/FB sheathing boards.

Place a sealed vapour control layer of polythene with lapped and sealed joints over the internal stud face.

Install cavity barriers into the cavity as normal practice.

Apply the internal finish as normal using fixings as recommended by timber frame supplier. Relevant accredited details should be followed to ensure calculated performance.

### Steel Framed System

As with timber framing, the Safe-R should be fixed to the outer face of the steel frame ensuring that vertical joints meet over a metal stud.

Fixings should be in accordance with the steel system manufacturers recommendations\*. Place a sealed vapour control layer with lapped and sealed joints over the inner stud face.

Install cavity barriers into the cavity as normal practice.

Ensure boards are closely butted.

Apply the internal finish as normal.

Fix wall ties as recommended by steel frame supplier.

### Ventilated Cladding

Place the breathable membrane over the insulation sheathing.

Treated timber battens are fixed vertically to the wall through the breathable membrane and insulation layer, ensuring that the battens are fixed securely to the framing system. Fixings should be appropriate for the weight of the cladding system, seek advice from the fixing manufacturer. Horizontal tiling battens can be fixed to the vertical battens if the cladding system is to be tile hung, or the cladding fixed directly to the vertical battens. Cladding system should be fixed in accordance with the manufacturer's recommendations.

### Standards

Xtratherm Safe-R range is manufactured to EN ISO 13166 under Quality Systems approved to EN ISO 9001:2008 Quality Management, EN ISO 14001:2004 Environmental Management and BS OHSAS 18001 Health and Safety Management System.

### Storage

Xtratherm Safe-R should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure.

### Cutting

Xtratherm Safe-R can be readily cut using a sharp knife or fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for in accredited details.

### Work Interruptions

During breaks in the build process and at the end of each working day, board edges and joints should be protected from inclement weather. Boards that have been allowed to get wet should not be used.

### Packaging

Xtratherm Safe-R is wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack. The packaging should not be considered as protection for the elements.

### Availability

Xtratherm products are available through builder's merchants and specialist distributors throughout the UK and Ireland. For the location of your nearest stockist please contact Xtratherm.

### Environmental

Xtratherm Safe-R is manufactured under ISO 14001:2004 Environmental Management with all major components sourced under 14001 accredited suppliers. It is manufactured without the use of CFC's or HCFC's and has Zero Ozone Depletion Potential with a GWP of less than 5.

### Durability

Xtratherm Safe-R products are stable, rot proof and will remain effective for the life span of the building, dependent on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil, when contact is made, clean materials in a safe manner before installation. Solvent based adhesive containing methyl ethyl ketone, should not be used.

## Typical U-values

### Timber Frame - Masonry Facing

Xtratherm Thickness of Sheathing (mm)

	50	60	75	80	100
<b>75</b>	0.16	0.15	0.13	0.13	0.11
<b>100</b>	0.16	0.15	0.13	0.13	0.11
<b>120</b>	0.14	0.13	0.12	0.12	0.10

Xtratherm Between Studs

### Steel Frame - Masonry Facing

Xtratherm Thickness of Sheathing (mm)

	50	60	75	80	100
<b>75</b>	0.18	0.16	0.15	0.14	0.12
<b>100</b>	0.17	0.16	0.14	0.14	0.12
<b>120</b>	0.15	0.14	0.13	0.13	0.11

Xtratherm Between Studs

### Timber Frame - Ventilated

Xtratherm Thickness of Sheathing (mm)

	50	60	75	80	100
<b>75</b>	0.17	0.15	0.14	0.13	0.12
<b>100</b>	0.16	0.15	0.14	0.13	0.11
<b>120</b>	0.15	0.14	0.12	0.12	0.10

Xtratherm Between Studs

### Steel Frame - Ventilated

Xtratherm Thickness of Sheathing (mm)

	50	60	75	80	100
<b>75</b>	0.19	0.18	0.16	0.15	0.13
<b>100</b>	0.19	0.17	0.15	0.14	0.13
<b>120</b>	0.17	0.16	0.14	0.13	0.12

Xtratherm Between Studs

\*Fixings must be thermally broken



CE Marking - Declaration of performance downloadable from [www.xtratherm.com](http://www.xtratherm.com)

Walls | Rainscreen

# Safe-R | SR Rainscreen

For buildings of 18 metres or more in height, Xtratherm SR/RS Rainscreen board has been tested by BRE Global to meet the BR135 performance criteria when tested to BS 8414-1/2.

Modern methods of Construction offer many advantages on site. The speed and efficiency of the construction methods allow buildings to be erected faster, with precision components offering highly energy efficient wall, floor and roof elements.

Xtratherm has developed the Safe-R Rainscreen insulation board SR/RS to bring the thermal performance of external rainscreen cladding constructions methods towards the zero carbon standards aspired to in proposed building regulations.

Using Xtratherm Safe-R SR/RS can provide the most efficient U-values with minimal thickness of insulation providing effective thermal and fire performance in buildings using a rainscreen facade.

The lightweight product achieves a thermal conductivity as low as 0.020 W/mK and addresses the stringent safety requirements with a Class 'O' fire rated insulation core and negligible smoke obscuration.

## Specification Clause

The rainscreen insulation shall be Xtratherm Safe-R SR/RS \_\_\_mm manufactured to BS EN 13166:2008 by Xtratherm, comprising a CFC/HCFC free rigid Phenolic core. To be installed in accordance with instructions issued by Xtratherm. Refer to NBS clause M21, 210, M21 220, M21 230.



## Property & Units

Density (Foam Core)  
45 (Kg/m<sup>3</sup>)

Compressive Strength  
>125 (kPa)

Water Vapour Resistivity  
>100 (MNs/gm)

Thermal Conductivity  
0.020 – 0.023 (W/mK)

Service Temperature  
-20 to +100 (°C)

## Xtratherm SR/RS

Length (mm)  
2400

Width (mm)  
1200

Thickness (mm)  
50, 60, 75, 80, 100, 120

*Other thicknesses may be available subject to MOQ and extended lead times.*

## Xtratherm Safe-R

Typical R-values

40mm  
R-value: 1.739

50mm  
R-value: 2.381

60mm  
R-value: 2.857

75mm  
R-value: 3.572

80mm  
R-value: 3.810

100mm  
R-value: 5.000



## Installation Guidelines



### General

Xtratherm SR/RS Rainscreen board is a high performance external insulation system where a façade system is used as an external finish to the construction. The façade may consist of stone, ceramic, cementitious, metal or other material behind which the cavity may be ventilated.



### Fixings

Safe-R SR/RS boards can be fixed using a number of proprietary fixing systems including rail and brackets type systems. Thermal bridging can be minimized by the inclusion of thermal breaks (supplied by some manufacturers), advice should be sought from system suppliers. Fixings should be installed in accordance with the manufacturer's recommendations and should be appropriate for fixing of rainscreen insulation\*. Thermal performance can be greatly improved by the inclusion of a second layer of insulation to the inner face of the wall construction.

### U-values

The calculation of U-values should be done in accordance with BR443 2006 Conventions for U-value calculation. Because proprietary systems are used, Information from system suppliers should be passed onto Xtratherm Technical Support for U-value calculation.

### Vapour Control

Condensation control in highly insulated buildings is an important factor in the design and should be considered in relation to the heating and ventilation systems specified, as well as the U-values achieved within the building elements. An adequate vapour control layer to the inner face of the wall is recommended. Calculation should be carried out in accordance with BS5250:2002 (Code of practice for the control of condensation in buildings).

The provision of firestops should be in accordance with current Building Regulations and standards.

### Sitework

Fixing should be in accordance with fixing suppliers recommendations. Approved Rainscreen Cladding tape should be used to joint board edges to weatherproof the system.

### Standards

Xtratherm Safe-R range is manufactured to EN ISO 13166 under Quality Systems approved to EN ISO 9001:2008 Quality Management, EN ISO 14001:2004 Environmental Management and BS OHSAS 18001 Health and Safety Management System.

### Storage

Xtratherm Safe-R should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure.

### Cutting

Xtratherm Safe-R can be readily cut using a sharp knife or fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for in accredited details.

### Work Interruptions

During breaks in the build process and at the end of each working day, board edges and joints should be protected from inclement weather. Boards that have been allowed to get wet should not be used.

### Packaging

Xtratherm Safe-R is wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack. The packaging should not be considered as protection form the elements.

### Availability

Xtratherm products are available through builder's merchants and specialist distributors throughout the UK and Ireland. For the location of your nearest stockist please contact Xtratherm.

### Environmental

Xtratherm Safe-R is manufactured under ISO 14001:2004 Environmental Management with all major components sourced under 14001 accredited suppliers. It is manufactured without the use of CFC's or HCFC's and has Zero Ozone Depletion Potential with a GWP of less than 5.

### Durability

Xtratherm Safe-R products are stable, rot proof and will remain effective for the life span of the building, dependent on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil, when contact is made, clean materials in a safe manner before installation. Solvent based adhesive containing methyl ethyl ketone, should not be used.

\*Fixings must be thermally broken



## Roofs | Pitched Roofs

# Safe-R | SR Pitched Roofs

Xtratherm Safe-R is a superior performance rigid insulation with enhanced fire performance, consisting of a Class 'O' phenolic foam core with negligible smoke obscuration. Safe-R is faced with low emissivity aluminium facings both sides, and has a thermal conductivity as low as 0.020 W/mK.

Using Xtratherm Safe-R SR/PR on sloped roof areas can provide the most efficient U-values with minimal intrusion into valuable living space. **Warm Roof** construction is a particularly effective way of insulating complex roofs. Insulating above and between the roof timbers ensures that the structure is kept at, or near the internal environmental conditions, reducing thermal stress and condensation risk.

Placing Xtratherm Safe-R between and/or below the rafter creates a **Ventilated Roof**. A continuous 50mm ventilation space is required between the insulation and the roof tile underlay to allow any moisture to be vented out of the construction. The high performance to thickness ratio of Xtratherm Safe-R gives the maximum insulation values with minimal intrusion into the living area below.

The **Hybrid Roof** follows the same construction as the Ventilated Roof - but an approved Vapour Permeable underlay is used above the rafter allowing the 50mm ventilation space to be dispensed with. A 25mm unvented void should be maintained.

In a ceiling, typically fibre glass is placed between and over the joists - this hides the top of the joist and may lead to health and safety concerns when the roof space is being accessed. An Xtratherm solution to insulate the thermal bridge through the joists is to place a layer of Xtratherm SR/PR to the underside of the joist before the plasterboard is fixed. This allows for the roof space to be accessed in a safe manner - leaving the top of the joists exposed, allowing the roof space to be used for storage.

## Specification Clause

The pitched roof insulation shall be Xtratherm Safe-R SR/PR \_\_\_mm manufactured to BS EN 13166:2008 by Xtratherm, comprising a CFC/HCFC free rigid Phenolic core between low emissivity foil facings. To be installed in accordance with instructions issued by Xtratherm. Refer to NBS clause P10 140, K11 695, K11 55.



### Property & Units

Density (Foam Core)  
45 (Kg/m<sup>3</sup>)

Compressive Strength  
>125 (kPa)

Water Vapour Resistivity  
>100 (MNs/gm)

Thermal Conductivity  
0.020 – 0.023 (W/mK)

Service Temperature  
-20 to +100 (°C)

### Xtratherm SR/PR

Length (mm)  
2400

Width (mm)  
1200

Thickness (mm)  
25, 40, 50, 60, 75, 80, 100

*Other thicknesses may be available subject to MOQ and extended lead times.*

### Xtratherm Safe-R

Typical R-values

40mm  
R-value: 1.739

50mm  
R-value: 2.381

60mm  
R-value: 2.857

75mm  
R-value: 3.572

80mm  
R-value: 3.810

100mm  
R-value: 5.000

## Ventilated Roof

Allow for ventilation gaps normally 50mm. (May be reduced depending on breather membrane certification).

Cut Xtratherm SR/PR boards to fit tightly between rafters flush with rafter bottom.

An additional 2nd layer should be added to the underside of the rafter.

Run second layer transverse to the first.

Temporarily fix with nails.

Provide vapour control layer (Aluminium tape joints).

Finish with 12.5mm plasterboard fixed with drylining screws. Screw fix every 150mm, 12mm from edge of boards.

All board edges should be supported.



## Typical U-values (Warm Roof)

Safe-R Thickness	Rafter Centres	
	600mm	400mm
Between/Over Rafters		
60mm/60mm*	0.17	0.18
75mm/75mm*	0.14	0.15

\*Insulation thickness only

## Typical U-values (Vented Roof)

Safe-R Thickness	Rafter Centres	
	600mm	400mm
Between/Under Rafters		
75mm/50mm*	0.18	0.19
100mm/50mm*	0.15	0.16

\*Insulation thickness only

## Typical U-values (Hybrid Roof)

Safe-R Thickness	Rafter Centres	
	600mm	400mm
Between/Under Rafters		
75mm/50mm*	0.17	0.18
100mm/50mm*	0.14	0.15

\*Insulation thickness only

## Standards

Xtratherm Safe-R range is manufactured to EN ISO 13166 under Quality Systems approved to EN ISO 9001:2008 Quality Management, EN ISO 14001:2004 Environmental Management and BS OHSAS 18001 Health and Safety Management System.

## Storage

Xtratherm Safe-R should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure.

## Cutting

Xtratherm Safe-R can be readily cut using a sharp knife or fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for in accredited details.

## Work Interruptions

During breaks in the build process and at the end of each working day, board edges and joints should be protected from inclement weather. Boards that have been allowed to get wet should not be used.

## Packaging

Xtratherm Safe-R is wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack. The packaging should not be considered as protection from the elements.

## Availability

Xtratherm products are available through builder's merchants and specialist distributors throughout the UK and Ireland. For the location of your nearest stockist please contact Xtratherm.

## Environmental

Xtratherm Safe-R is manufactured under ISO 14001:2004 Environmental Management with all major components sourced under 14001 accredited suppliers. It is manufactured without the use of CFC's or HCFC's and has Zero Ozone Depletion Potential with a GWP of less than 5.

## Durability

Xtratherm Safe-R products are stable, rot proof and will remain effective for the life span of the building, dependent on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil, when contact is made, clean materials in a safe manner before installation. Solvent based adhesive containing methyl ethyl ketone, should not be used.

## Installation Guidelines

### Warm Roof

Ensure cavity wall insulation has continued to roof height to engage with roof insulation. Fix a timber stop rail to end of rafter at eaves.

Lay Xtratherm SR/PR insulation stagger jointed over rafters ensuring joints are supported by rafters.

Ensure boards are tightly butted fill any gaps with expanding foam.

A vapour permeable underlay should be fitted; refer to manufacturers Agrément certification.

Providing an unvented void under the membrane can improve the thermal performance.

Fix counter batten with approved fixings\*.

Ventilation may have to be provided subject to certification.

A second layer of insulation may be added between the rafters.

Provide vapour control layer in the form of aluminum taped joints or polythene sheeting.

Current Building Regulations/Standards should be considered with regard to the requirements for and/or provision of fire stops.



\*Fixings must be thermally broken

# Safe-R | SR Soffit Plus Board

Xtratherm Safe-R Soffit Plus Board SR/STP is a superior performance rigid insulation composite that provides effective thermal and fire protection solutions in structural ceiling applications in commercial and residential buildings. The Class 'O' phenolic foam core board with enhanced fire performance and negligible smoke obscuration is bonded to impact resistant 6mm building panel offering a secure finish for ease of maintenance that accepts decorated finish. Soffit Plus has a thermal conductivity as low as 0.020 W/mK.

## Efficient Insulation with Durable Facing

Using Xtratherm Safe-R Soffit Plus SR/STP on soffit areas, whether new build or refurbishment situations can provide the most efficient U-values with minimal thickness of insulation. The product achieves a thermal conductivity as low as 0.020 W/mK and addresses the stringent safety requirements with a Class 'O' fire rated insulation core and negligible smoke obscuration.

The bonded facing of non combustible medium density building panel is water and impact resistant providing a durable protection to which a decorative finish may be applied.

Xtratherm SR/STP can be fixed directly to the concrete slab, onto battens or used with proprietary fixing systems to provide an even surface. The lightweight rigid products is convenient to handle and allows for fast and easy fixing.

Soffit plus can be fixed directly to the concrete slab or to treated timber battening. Approved fixings should be used and installed in accordance with manufacturer's instructions and fitting pattern. Typically 12 steel fixings, min shank diameter of 5.2mm and head (or washer) diameter of 25mm, is used on a standard 86 mm board, uniformly spaced at max 600mm across and 800mm along the board 50 mm in from the edge. For specific suction pressures the fixing arrangement should be determined by manufacturers design. In situations where fire performance is a consideration, all-steel fasteners should be used. Account should be taken of any thermal bridging through the fixings as should the effect of any floor supporting beams. Fixing manufacturers: Ejot DDS 7.3 concrete anchor (steel fixings) or Fischer Hammerset DIPK 10mm (plastic fixings).



### Property & Units

Density (Foam Core)  
45 (Kg/m<sup>3</sup>)

Compressive Strength  
>125 (kPa)

Water Vapour Resistivity  
>100 (MNs/gm)

Thermal Conductivity  
0.020 (W/mK)

Service Temperature  
-20 to +100 (°C)

### Xtratherm SR/STP

Length (mm)  
2400

Width (mm)  
1200

Thickness\* (mm)  
56, 66, 81, 86, 106

\*includes 6mm building panel  
Other thicknesses may be available subject to MOQ and extended lead times.

### Xtratherm Safe-R

Typical R-values

50mm  
R-value: 2.381

60mm  
R-value: 2.857

75mm  
R-value: 3.572

80mm  
R-value: 3.810

100mm  
R-value: 5.000





# Xtratherm®

More than insulation

## Specification Clause

The soffit insulation shall be Xtratherm Safe-R SR/STP \_\_ \_mm manufactured to BS EN 13166:2008 by Xtratherm, comprising a CFC/HCFC free rigid Phenolic core bonded to 6mm building panel. To be installed in accordance with instructions issued by Xtratherm. Refer to NBS clause P10 42, P10 217.

## Typical U-values

### Xtratherm SR/STP Thickness (mm)

Solid Concrete

	86	106
200	0.23	0.19

Thickness includes 6mm building panel

## Standards

Xtratherm Safe-R range is manufactured to EN ISO 13166 under Quality Systems approved to EN ISO 9001:2008 Quality Management, EN ISO 14001:2004 Environmental Management and BS OHSAS 18001 Health and Safety Management System.

## Storage

Xtratherm Safe-R should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure.

## Cutting

Xtratherm Safe-R can be readily cut using a fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for in accredited details.

## Work Interruptions

During breaks in the build process and at the end of each working day, board edges and joints should be protected from inclement weather. Boards that have been allowed to get wet should not be used.

## Packaging

Xtratherm Safe-R is wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack. The packaging should not be considered as protection for the elements.

## Availability

Xtratherm products are available through builder's merchants and specialist distributors throughout the UK and Ireland. For the location of your nearest stockist please contact Xtratherm.

## Environmental

Xtratherm Safe-R is manufactured under ISO 14001:2004 Environmental Management with all major components sourced under 14001 accredited suppliers. It is manufactured without the use of CFC's or HCFC's and has Zero Ozone Depletion Potential with a GWP of less than 5.

## Durability

Xtratherm Safe-R products are stable, rot proof and will remain effective for the life span of the building, dependent on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil, when contact is made, clean materials in a safe manner before installation. Solvent based adhesive containing methyl ethyl ketone, should not be used.

## Installation Guidelines

### Directly to Concrete

Ensure cavity wall insulation has continued past the soffit insulation to avoid thermal bridging.

Fix Xtratherm SR/STP insulation stagger jointed onto the soffit ensuring all joints are supported.

Ensure boards are tightly butted.

Ensure approved fixings are used penetrating the soffit by a minimum of 40mm.

Generally 12 fixings per board are required\*.

Refer to manufacturer's instructions.

Fixings should have a head diameter of at least 35mm.

Boards joints can be covered with a suitable cover strip.

### Fixing to Timber Battens / Proprietary Systems

Timber battens may be used to provide an even surface when direct fixing to the soffit is not possible.

Timber battens min 50mm x 40mm should be placed at minimum 600mm centres.

Battens should be timber treated and enough time allowed to dry out.

Fix SR/STP to the timber battens using approved fixings at max 300mm centres, 10mm in from the edge of the boards.

When using proprietary metal grid systems refer to manufacturer for fixing instructions.

Boards joints can be covered with a suitable cover strip.

The colour and surface texture of the exposed facing of SR/STP are not guaranteed characteristics, but suitable for decoration.

\*Fixings must be thermally broken



CE Marking - Declaration of performance downloadable from [www.xtratherm.com](http://www.xtratherm.com)

# Safe-R | SR Solid & Suspended Systems

Xtratherm Safe-R is a superior performance rigid insulation with enhanced fire performance, consisting of a Class 'O' phenolic foam core with negligible smoke obscuration. Safe-R is faced with low emissivity aluminium facings both sides, and has a thermal conductivity as low as 0.020 W/mK.

Xtratherm Safe-R SR/UF Under floor insulation boards are used to reduce the thermal transmittance of ground supported and suspended concrete floors. Xtratherm Safe-R boards can also be used in suspended timber floors between the joists.

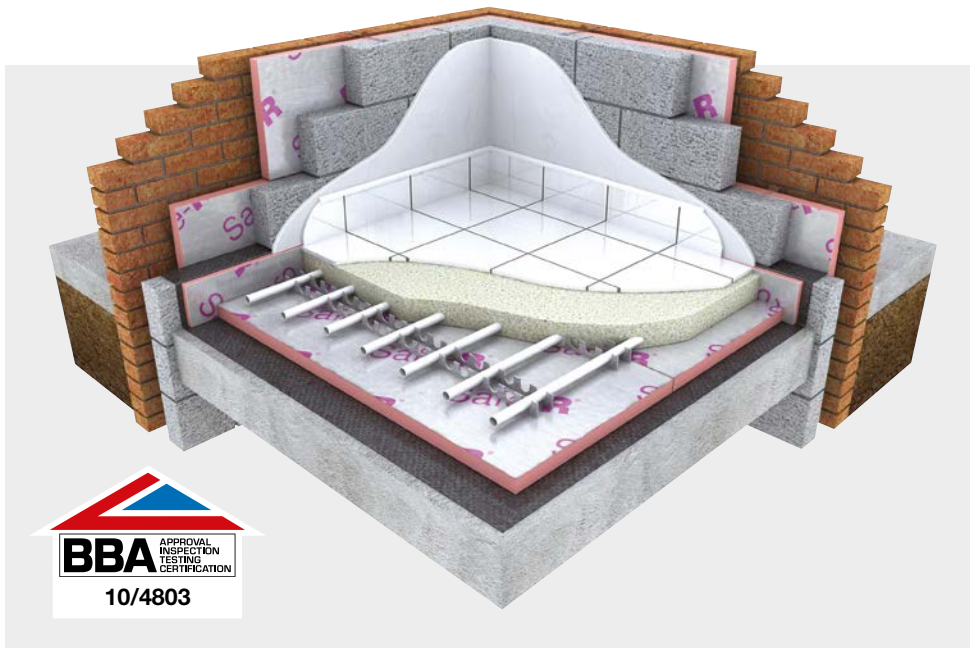
Xtratherm Safe-R SR/UF can be positioned below the slab or between the slab and the screed.

All ground supported floors including Xtratherm Safe-R SR/UF boards should include a suitable damp-proof membrane laid in accordance with CP 102:1973.

(Code of practice for protection of buildings against water from the ground) and BRE Good Practice Guides 104 & 145. The DPM should extend up, meet and seal with the DPC.

## Specification Clause

The floor insulation shall be Xtratherm Safe-R SR/UF manufactured to BS EN 13166:2008 by Xtratherm, comprising a CFC/HCFC free rigid Phenolic core between low emissivity foil facings. To be installed in accordance with instructions issued by Xtratherm. Refer to NBS clause E20 200, E20 30.



## Property & Units

Density (Foam Core)  
45 (Kg/m<sup>3</sup>)

Compressive Strength  
>125 (kPa)

Water Vapour Resistivity  
>100 (MNs/gm)

Thermal Conductivity  
0.020 – 0.023 (W/mK)

Service Temperature  
-20 to +100 (°C)

## Xtratherm SR/UF

Length (mm)  
2400

Width (mm)  
1200

Thickness (mm)  
25, 40, 50, 60, 75,  
80, 100

*Other thicknesses may be available subject to MOQ and extended lead times.*

## Xtratherm Safe-R

Typical R-values

40mm  
R-value: 1.739

50mm  
R-value: 2.381

60mm  
R-value: 2.857

75mm  
R-value: 3.572

80mm  
R-value: 3.810

100mm  
R-value: 5.000



## General

Vertical upstands of insulation 25mm thick should be placed at the floor perimeter to minimise thermal bridging. Care should be taken to avoid damage to the insulation or damp proof membranes as the slab is being poured and operatives should make use of barrow runs and walk ways whilst installation progresses.

## Typical U-values

### Solid Concrete Floor (UK)

Xtratherm SR/UF Thickness Required (mm)  
Perimeter/Area (P/A)

	0.5	0.6	0.7	0.8	0.9
<b>50</b>	0.25	0.26	0.27	0.28	0.29
<b>60</b>	0.22	0.23	0.24	0.25	0.25
<b>75</b>	0.19	0.20	0.21	0.21	0.21
<b>80</b>	0.18	0.19	0.20	0.20	0.20
<b>100</b>	0.15	0.16	0.16	0.16	0.16

U-value W/m<sup>2</sup>K



Safe-R Layed Below Concrete Floor Screed

## Standards

Xtratherm Safe-R range is manufactured to EN ISO 13166 under Quality Systems approved to EN ISO 9001:2008 Quality Management, EN ISO 14001:2004 Environmental Management and BS OHSAS 18001 Health and Safety Management System.

## Storage

Xtratherm Safe-R should be stored off the ground, on a clean, flat surface and must be stored under cover. The polythene wrapping is not considered adequate protection for outside exposure.

## Cutting

Xtratherm Safe-R can be readily cut using a sharp knife or fine toothed saw. Ensure tight fitting of the insulation boards to achieve continuity of insulation as asked for in accredited details.

## Work Interruptions

During breaks in the build process and at the end of each working day, board edges and joints should be protected from inclement weather. Boards that have been allowed to get wet should not be used.

## Packaging

Xtratherm Safe-R is wrapped in polythene packs and each pack is labelled with details of grade/type, size and number of pieces per pack. The packaging should not be considered as protection for the elements.

## Availability

Xtratherm products are available through builder's merchants and specialist distributors throughout the UK and Ireland. For the location of your nearest stockist please contact Xtratherm.

## Environmental

Xtratherm Safe-R is manufactured under ISO 14001:2004 Environmental Management with all major components sourced under 14001 accredited suppliers. It is manufactured without the use of CFC's or HCFC's and has Zero Ozone Depletion Potential with a GWP of less than 5.

## Durability

Xtratherm Safe-R products are stable, rot proof and will remain effective for the life span of the building, dependent on specification and installation. Care should be taken to avoid contact with acids, petrol, alkalis and mineral oil, when contact is made, clean materials in a safe manner before installation. Solvent based adhesive containing methyl ethyl ketone, should not be used.

## Installation Guidelines

### Laying Below Floor Slab

Where Xtratherm Safe-R Insulation is used below the floor slab, lay the hardcore in layers; min 150mm - max 225mm; each layer should be well compacted, with the surface blinded with quarry dust or sand to provide suitable surface for laying DPM.

A damp proof membrane e.g. 1200 gauge polythene or radon barrier subject to site conditions (architects specifications) should be laid over blinding with joints taped to prevent passage of ground moisture. The damp proof membrane should be carried up the wall until it meets and seals with the DPC.

Xtratherm Safe-R should be laid with closely butted joints, laid staggered with a break bonded pattern and fitted tightly at edges and around any service penetrations.

Boards can be cut using a trimming knife. In accordance with good practice, a polythene vapour control layer, minimum 0.125mm thick, should be laid over the boards with 150mm laps.

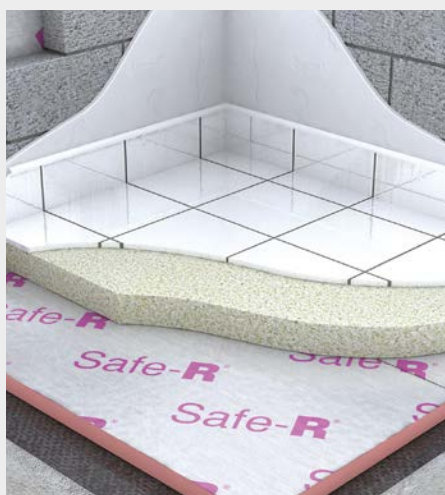
The concrete slab is laid to the correct thickness.

### Laying Below Floor Screed

Where Xtratherm Safe-R Insulation is used below the floor screed, the same procedure should be followed ensuring that the floor slab onto which the insulation is being laid is level.

The concrete floor over which the insulation is to be laid should be left as long as possible to maximise drying out, in accordance with BS8203:1996 Section 3.1.2.

The minimum thickness of sand and cement screed is 65mm for domestic construction and 75mm for most other buildings. However, architectural specifications should be consulted.



Safe-R Layed Below Floor Screed





# Total Envelope Solutions

**Our extensive range of foam insulation products with unique performance characteristics has been engineered to meet any project specification.**

Xtratherm's experience and expertise is in providing cost-effective, certified solutions to the construction industry. Xtratherm manufacture a range of generic insulation materials from the original expanded polystyrene EPS to PU/PIR Polyiso, and Phenolic foam products. Xtratherm is committed to providing cost-effective, certified solutions to the construction industry for new build and refurbishment projects that deliver affordable, sustainable solutions.





# Safe-R | Rainscreen

High Performance  
façade insulation  
approved for buildings  
over 18m in height.

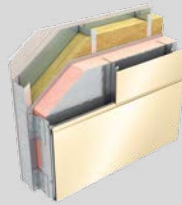
Compliance with Approved Document  
B2 and following guidance in Building  
Control Alliance (BCA) Technical Note: 18



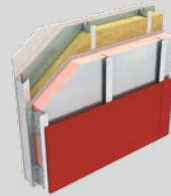
Cladding system  
with brick façade



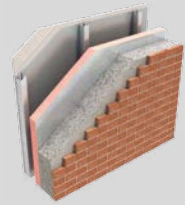
External wall  
system with  
an aluminium  
composite  
façade



Cladding system  
with Eternit  
panel



Cladding system  
with a  
concrete /  
brick façade



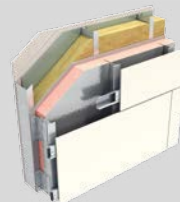
Cladding system  
with a Fibre C  
cladding tile  
façade



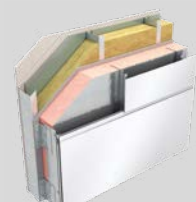
Cladding system  
with a terracotta  
tile façade



External wall  
system with a  
ceramic  
panel system



External wall  
system  
with a zinc cassette  
panel system



10/4803





# Xtratherm<sup>®</sup>

More than insulation



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

Good workmanship and appropriate site procedures are necessary to achieve expected thermal and airtightness performance. The example calculations are indicative only. Default values for components and cavities have been used. For specific U-value calculations contact Xtratherm Technical Support. Comprehensive guidance on installation should be consulted. Xtratherm technical literature and Agrément certifications are available for download on the Xtratherm website. The information contained in this publication is, to the best of our knowledge, true and accurate but any recommendations or suggestions which may be made are without guarantee since the conditions of use are beyond our control.