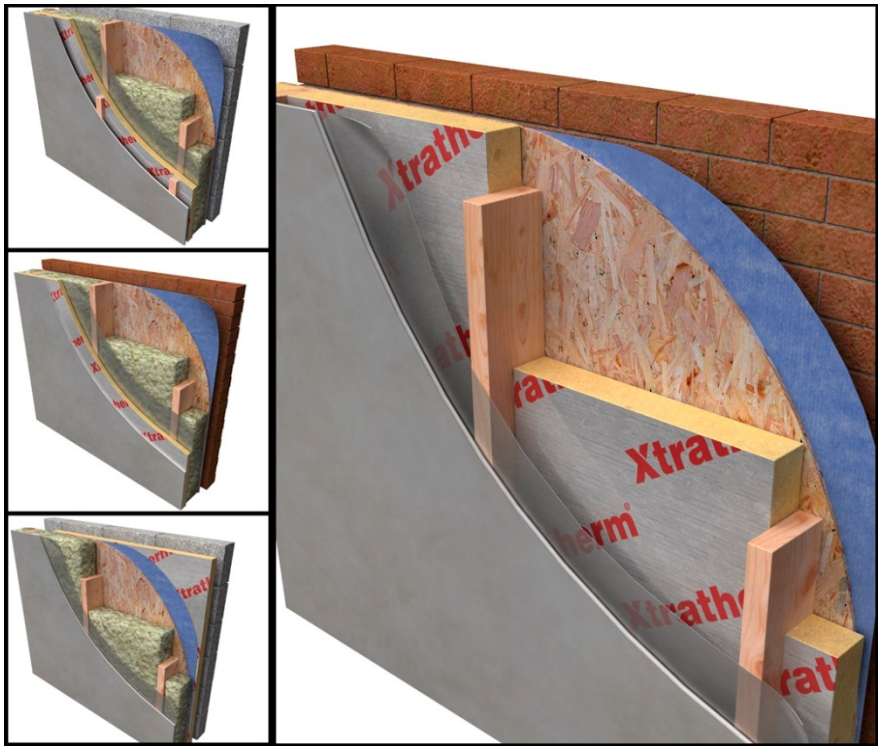
Xtratherm Thin-R Timber Frame Board (XT/TF Grade)



PRODUCT DESCRIPTION:
This Detail Sheet relates to Xtratherm Thin-R Timber Frame Board, as defined in NSAI Agrément Certificate 03/0183. Xtratherm Thin-R Timber Frame Board uses Polyisocyanurate (Polyiso), a thermoset closed cell rigid foam insulation manufactured in accordance with I.S. EN 13165:2012+A2:2016, *Thermal insulation products for buildings – Factory made rigid polyurethane foam (PU) products – Specification*, having regard to the description of Polyisocyanurate (PIR) in paragraph 1 of the scope of the standard. During the manufacturing process, liquid raw materials expanded by blowing agents are applied between trilaminate aluminium foil facings.

USE:
The product is used for the thermal insulation of timber framed walls by inserting between the studs and/or used as an insulated drylining or insulated sheathing insulation. It also facilitates the control of surface and interstitial condensation in walls.

Part One / Certification 1

1.1 ASSESSMENT
In the opinion of NSAI Agrément, Xtratherm Thin-R Timber Frame Board if used in accordance with this Detail Sheet, meets the requirements of the Building Regulations 1997 - 2017 as indicated in Section 1.2 of Certificate 03/0183.

1.2 BUILDING REGULATIONS 1997 to 2017
This matter is dealt with in NSAI Agrément Certificate 03/0183.

Part Two / Technical Specification and Control Data 2

2.1 PRODUCT DESCRIPTION

Xtratherm Thin-R Timber Frame Board consists of a rigid Polyiso foam core with low emissivity trilaminate aluminium foil facings both sides. The XT/TF board does not contain either CFC or HCFC gases and has zero Ozone Depletion Potential.

Table 1 shows the Xtratherm Thin-R Timber Frame Board product range.

Length	2400mm
Width	1200mm
Thickness	20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 90, 100, 110, 120, 140, 150, 165, 180mm
Grade	PIR
Other sizes are available subject to quantity	

Table 1: Product Range

2.2 INSTALLATION

2.2.1 Between Studs

Xtratherm Thin-R Timber Frame Board should be cut to fit tightly between the timber studding and positioned against the inner face of sheathing board. The insulation should be held in place by nails or timber battens to the warm side of the insulation. The void created by space between the inner surface of the Xtratherm Thin-R Timber Frame Board and the dry lining can be utilised as an insulated service duct.

2.2.2 Thermal Bridging

Careful consideration must be given to the area of solid timber that may present a significant area of cold bridging if not insulated correctly. The area of solid timber in a construction could amount to more than 18% of the total wall area, which would dramatically affect the overall U-value of the structure. Lining the surface of the wall with a second layer of Xtratherm Thin-R Timber Frame Board will effectively reduce the amount of thermal bridging and provide a robust construction.

2.2.3 Insulated Dry Lining

Mineral wool quilt should be fitted snugly between the timber studs, ensure all services are fixed and any air gaps are filled with insulation. Temporarily fix the Xtratherm Thin-R Timber Frame Board to the inner face of the timber studding ensuring that the insulation makes contact or overlaps ceiling and floor insulation. Mark the line of the timber studs on the insulation to allow fixing of the dry lining plasterboard. Boards should be butted tightly against each other to prevent gaps. Fix the plasterboard lining over the Xtratherm Thin-R Timber Frame Board and secure with approved nails or screws to the appropriate length. Xtratherm Thin-R Timber Frame Boards are jointed and finished in accordance with standard dry lining practice offering a surface suitable for paper hanging and pain finishes. The fixing of Xtratherm Thin-R Thermal Liner boards should be in accordance with Detail Sheet 4 of this Certificate.

On-site trimming of boards is easily executed using a fine tooth saw or by scoring with a sharp builders knife and snapping the board face down over a straight edge and cutting the foil facing on the other side.

Good workmanship and appropriate site procedures are necessary to achieve expected thermal and air tightness performance.

Part Three / Design Data 3

3.1 GENERAL

Xtratherm Thin-R Timber Frame Board when installed in accordance with this Detail Sheet, is effective in reducing the U-value (thermal transmittance) of timber frame construction.

Buildings subject to the relevant requirements of the Building Regulations 1997 to 2017 should be constructed in accordance with BS 5628-2:1991 *Structural use of timber – Code of practice for permissible stress design, materials and workmanship* and BS 5628-6.1:1988 *Structural use of timber – Code of practice for timber frame walls – Dwellings not exceeding three storeys*, as appropriate. As with all types of wall insulation, the construction detailing should comply with good practice.

3.2 CE MARKING

The manufacturer has taken the responsibility of CE marking the products in accordance with harmonised standard I.S. EN 13165:2012+A2:2016, Thermal insulation products for buildings - Factory made rigid polyurethane foam (PU) products - Specification. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance. Reference should be made to the latest version of the manufactures DoP for current information on any essential characteristics declared by the manufacturer.

4.1 BEHAVIOUR IN FIRE

Xtratherm Thin-R Timber Frame Board of itself has a Class 1 rating in accordance with BS 476-7:1971. The plasterboard used to cover the product is deemed to be Class O in accordance with the Building Regulations 1997 to 2017, and so the insulated board qualifies as the highest product performance classification as defined in TGD to Part B of the Building Regulations 1997 to 2017 (Paragraph A10 of Annex A). The insulation component of the board should be isolated from possible sources of combustion. To achieve this, Xtratherm Thin-R Timber Frame Board should be installed in accordance with the following:

- Xtratherm Thin-R Timber Frame Board should be separated by a minimum distance of 150mm from an oil, solid fuel or gas heating appliance as indicated in Diagram 8 of TGD to Part J of the Building Regulations 1997 to 2017.
- Xtratherm Thin-R Timber Frame Board when installed with a residual cavity between the board and the wall, will require the provision of cavity barriers and may be used in buildings of any purpose group provided:
  (a) Cavity barriers in walls are provided at maximum distances apart of 10m unless a Class 1 material is exposed to the cavity when a spacing of 20m may be adopted.
  (b) Every such cavity shall be closed by a cavity barrier around the whole perimeter of the wall or ceiling element and around the perimeter of any opening through such elements.
  (c) Cavity barriers in spaces between a floor and ceiling are provided at maximum distances of 20m for any class of surface exposed to the cavity.
  (d) Where any wall or ceiling containing a cavity meets another such element, the cavities shall be closed so that they do not communicate with one another.
  (e) Direction on the provision and spacing of cavity barriers is given in Tables 3.2 and 3.3 of TGD to Part B of the Building Regulations 1997 to 2017.

Combustible wall insulation material shall generally be separated by solid non combustible material not less than 200mm thick, from any heating appliance or from any flue pipe or opening to a heating appliance. Particular details are given in Section 2 and Diagrams 2 – 8 of TGD to Part J of the Building Regulations 1997 to 2017. It should also be separated by 40mm from the external surface of a masonry chimney. For chimneys covered by BS 4543-1:1996 *Factory made insulated chimneys*, separation between this product and the external surface of the chimney shall be determined in accordance with Clause 2.17 of TGD to Part J of the Building Regulations 1997 to 2017.

4.2 WATER PENETRATION

Capillary Action – The closed cell structure does not allow water uptake by capillary action.
Xtratherm Thin-R Timber Frame Board, when used in accordance with this Detail Sheet, presents no significant risk of water penetration.

4.3 WATER VAPOUR PENETRATION AND CONDENSATION RISK

Xtratherm Thin-R Timber Frame Board has a vapour resistivity exceeding 100MNs/g. It has a significant resistance to the passage of water vapour. This obviates the risk of surface condensation and presents no significant risk of damage from interstitial condensation. However as in normal practice the insulation should not be regarded as a vapour barrier unless the joints between adjoining Xtratherm Thin-R Timber Frame Boards are sealed with aluminium foil tape to the 'warm' side of the board.

4.4 THERMAL INSULATION

The aged thermal conductivity '$\lambda_{90/90}$' value of Xtratherm Thin-R Timber Frame Board, when measured in accordance with IS EN 12667:2001, and calculated in accordance with Annex C of I.S. EN 13165:2012 is 0.022* W/m.K. The required maximum U-values for timber frame walls can be obtained with Xtratherm Thin-R Timber Frame Board constructions as indicated in Table 3.

4.5 DURABILITY

Xtratherm Thin-R Timber Frame Boards are rot proof and durable. Xtratherm Thin-R Timber Frame Board is judged to be stable and will remain effective as an insulation system for the life of the building, so long as it is installed in accordance with this Detail Sheet.

4.6 SERVICES

The maximum continuous working temperature of PIR is 100°C. Where heating systems are to be used, the advice of the Certificate holder is to be sought.

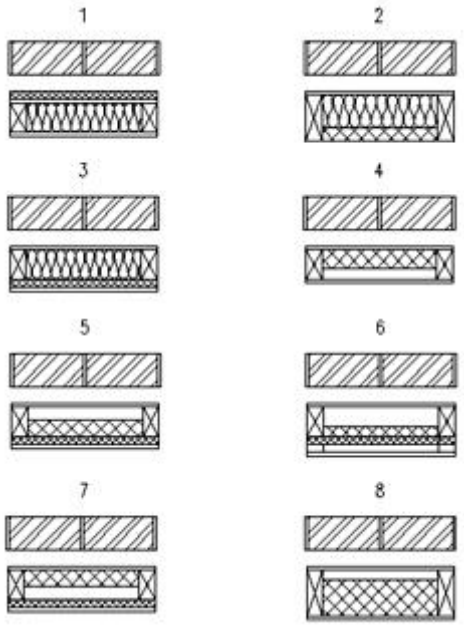
Property	Declared Value	Test Method
Reaction to Fire	NPD*	EN 13501
Dimensional Stability	DS(70,90)4*	EN 1604
Density	32 kg/m^3	EN 1602
Compressive Strength	CS (10/Y) 140*	EN 826
Thermal Conductivity	0.022* W/mK	EN 12667
Thermal Resistance - 20 mm - 25 mm - 30 mm - 35 mm - 40 mm - 45 mm - 50 mm - 55 mm - 60 mm - 65 mm - 70 mm - 75 mm	 0.91 m^{2}K/W 1.14 m^{2}K/W 1.37 m^{2}K/W 1.60 m^{2}K/W 1.83 m^{2}K/W 2.06 m^{2}K/W 2.28 m^{2}K/W 2.51 m^{2}K/W 2.74 m^{2}K/W 2.97 m^{2}K/W 3.20 m^{2}K/W 3.43 m^{2}K/W	

Table 2: Physical Properties of Xtratherm Thin-R Timber Frame Board

	Stud Size (mm)	External Wall	Polyiso in Cavity (mm)	Between Studs (mm) Polyiso XT/TF	Between Studs (mm) Liner (mm)	Thermal Mineral Fibre	U Value (W/m^{2}K)
1	89	Brick/concrete	25	-	-	89	0.26
2	140	Brick/concrete	-	40	-	100 (HD)	0.25
3	89	Brick/concrete	-	-	25	89	0.25
4	89	Brick/concrete	-	55	-	-	0.36
5	89	Brick/concrete	-	50	25	-	0.27
6	89	Brick/concrete	-	30	25*	-	0.27
7	89	Brick/concrete	-	50	25	-	0.26
8	140	Brick/concrete	-	110	-	-	0.27

Note: 25mm battens fixed over Thermal Liner and under Drylining to provide Service Duct.
Timber stud area taken as 15%.

Table 3: Timber Frame Wall Constructions – Typical U-values



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This Certificate No. **03/0183** is accordingly granted by the NSAI to **Xtratherm Ltd.** on behalf of NSAI Agrément.

Date of Issue: **July 2003**

Signed

Seán Balfe
Director of NSAI Agrément

Readers may check that the status of this Certificate has not changed by contacting NSAI Agrément , NSAI, 1 Swift Square, Northwood, Santry, Dublin 9, Ireland. Telephone: (01) 807 3800. Fax: (01) 807 3842. www.nsai.ie

Revisions: April 2010

- Inclusion of 4 Thin-R insulation products.

Revision: January 2018

- Product specification updated to reflect manufactures Declaration of Performance.

13th January 2021: General revision.