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Agrément Certificate
09/4646
Product Sheet 1

PROMAT INSULATED SOFFIT BOARDS

PROMAT TL BOARD

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Promat TL Board, for use as soffit insulation to semi-exposed concrete floor decks in car parks, storage areas, loading bays and similar areas beneath habitable buildings.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Thermal performance — the product can contribute to limiting heat loss through exposed floors. The thermal conductivity ($\lambda_{90/90}$ value) of the product is declared by the Certificate holder (see section 5).

Behaviour in relation to fire — the product is unrestricted by the various regulatory provisions relating to fire behaviour of lining materials (see section 6).

Condensation — the product will adequately limit the risk of both surface and interstitial condensation (see section 7).

Mechanical resistance and stability — the product has sufficient strength to resist the loads likely to be encountered in service (see section 8).

Durability — the product will remain effective as an insulating material for the life of the building and will have adequate resistance to damage (see sections 8 and 10)

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. The product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Chris Hunt
Head of Approvals — Physics

Greg Cooper
Chief Executive

Date of First issue: 8 May 2009

Certificate amended on 5 October 2009 with a change to the U value thermal performances in Table 3.

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Promat TL Board, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2000 (as amended) (England and Wales)

Requirement:	B2	Internal fire spread (linings)
Comment:		The calcium silicate facing material is non-combustible and so its use is unrestricted under this Requirement. See section 6.2 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		Use of the product can contribute to limiting the risk of condensation. See sections 7.1 and 7.2 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The product can contribute to a building meeting the Target Emission Rate. See sections 5.3 to 5.6 of this Certificate.
Requirement:	7	Materials and workmanship
Comment:		The product is acceptable. See section 10 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		Use of the product satisfies the requirements of this Regulation. See sections 9 and 10 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	2.5	Internal linings
Comment:		The calcium silicate facing material is non-combustible and so its use is unrestricted under this Standard. See section 6.2 of this Certificate.
Standard:	3.15	Condensation
Comment:		Use of the product can contribute to limiting the risk of condensation with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.4 ⁽¹⁾ , and 3.15.5 ⁽¹⁾ . See sections 7.1 and 7.3 of this Certificate.
Standard:	6.1(a)(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The product can contribute to satisfying clauses, or parts of, 6.1.2 ⁽¹⁾⁽²⁾ , 6.1.3 ⁽¹⁾⁽²⁾ , 6.1.6 ⁽¹⁾ , 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾⁽²⁾ , 6.2.4 ⁽²⁾ , 6.2.6 ⁽¹⁾ , 6.2.7 ⁽¹⁾⁽²⁾ to 6.2.11 ⁽¹⁾⁽²⁾ and 6.2.12 ⁽²⁾ of these Standards. See sections 5.3 to 5.6 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for the product under Regulation 9, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾ and Schedule 6 ⁽¹⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 10 and the <i>Installation</i> part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The product is acceptable. See section 9 of this Certificate.
Regulation:	C5	Condensation
Comment:		Use of the product can contribute to limiting the risk of condensation. See section 7.1 of this Certificate.
Regulation:	E3	Internal fire spread – Linings
Comment:		The calcium silicate facing material is non-combustible and so its use is unrestricted under this Regulation. See section 6.2 of this Certificate.
Regulation:	F2(a)(i)	Conservation measures
Regulation:	F3(2)	Target carbon dioxide emission rate
Comment:		The product can contribute to a building these regulations. See sections 5.3 to 5.6 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section 2 *Delivery and site handling* (see sections 2.2 and 2.3)

Non-regulatory Information

NHBC Standards 2008

In the opinion of the BBA, the use of Promat TL Board, in relation to this Certificate, is not subject to the requirements of these Standards.

Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, the use of Promat TL Board, in relation to this Certificate, is not subject to the requirements of this Technical Manual.

General

Promat TL Board is a registered trademark.

This Certificate relates to Promat TL Board, for use as soffit insulation to semi-exposed concrete floor decks in car parks, storage areas, loading bays and other similar areas, beneath habitable buildings. It is for use in the conversion and refurbishment of existing buildings and in new-build applications

Technical Specification

1 Description

1.1 Promat TL Board comprises calcium silicate board adhesively bonded to rigid phenolic insulation board having a composite foil facing on one side and a wet-lay, coated glassfibre tissue on the other face.

1.2 Boards have the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Nominal characteristics	
Length	2400 mm
Width	1200 mm
Insulation thickness	50 mm to 120 mm (in 10 mm increments)
Thickness of calcium silicate	6 mm
Edge profile	bevel
Minimum compressive strength for the insulation at 10% compression	150 kPa
Nominal density of insulation	50 kgm ⁻³

1.3 Ancillary items used include:

- all steel fixings:
 - shank diameter 5.2 mm
 - head diameter 13 mm
 - washer diameter 25 mm
- steel fixings with plastic coated heads
 - metal head diameter 15 mm
 - plastic coated head diameter 25 mm

2 Delivery and site handling

2.1 The product must be stored under cover on a flat, even base and the boards should always be lifted and not dragged across each other.

2.2 When moving the product, protective gloves and footwear should be worn.

2.3 When using power saws and sanders for cutting, dust extraction equipment must be used to control dust levels (see Table 2).

Table 2 Occupational exposure limit to dust particles⁽¹⁾

Material	Work place exposure limit in mgm ⁻³	
Calcium silicate	inhalable dust	10
	respirable	4
Glass tissue/foil faced		5

(1) EH40/2005: Workplace exposure limits

2.4 The product must be fully supported across its width at no more than 600 mm intervals with a minimum 100 mm bearing.

2.5 The product must be carried on edge and care should be taken to avoid corner damage and scratching

2.6 The product must not be stored on edge or leaned upright.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Promat TL Board.

Design Considerations

3 Use

3.1 Promat TL Board is effective in reducing the thermal transmittance (U value) of new or existing semi-exposed concrete floor decks.

4 Practicability of installation

The product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

5 Thermal performance

5.1 Calculations of the thermal transmittance (U-value) of specific external floor constructions (which are not ground floors) should be carried out in accordance with BS EN ISO 6946 : 2007 and BRE⁽¹⁾ report (BR 443 : 2006)

Conventions for U-value calculations. U-values should be calculated using a declared thermal conductivity as follows:

- for the Phenolic board:
 - 0.021 Wm⁻¹K⁻¹ for thicknesses < 45 mm
 - 0.020 Wm⁻¹K⁻¹ for thicknesses ≥ 45 mm
- for calcium silicate layer:
 - 0.35 Wm⁻¹K⁻¹ for the thickness = 6 mm.

(1) Building Research Establishment

5.2 Alternatively, the U-values given in Table 3 may be used for the specified constructions.

Table 3 Thermal performance of Promat TL Board

Insulation thickness (mm)	U value (Wm ⁻² K ⁻¹) ⁽¹⁾
50	0.38
60	0.33
70	0.29
80	0.26
90	0.23
100	0.21
110	0.20
120	0.18

Note: Values include reduction due to mechanical fixings causing bridging
 — $\Delta U/U > 3\%$ of U-value. 4.2 fixings/m², $\lambda=50\text{Wm}^{-1}\text{K}^{-1}$ and cross sectional diameter of 4.8 mm.

(1) Construction (internal to external): 100 mm concrete and Promat TL Board (Insulation + 6 mm Calcium Silicate).



5.3 Subject to the selection of an appropriate construction, and insulation thickness, the product can contribute to a floor construction achieving the following design U-values (see Tables 4 and 5):

Table 4 Typical design U values for floors — England, Wales and Northern Ireland

Wm ⁻² K ⁻¹	Construction type
0.22	Mean for new extensions ⁽¹⁾
0.25	'Notional' mean in SAP and SBEM and limit mean for new build
0.25	Mean for replacement, renovated and retained floors and non-domestic consequential improvements ⁽¹⁾
0.70	Individual limit for new build and flexible approaches ⁽¹⁾

(1) Refer to relevant document supporting the national Building Regulations for alternative or flexible approaches.

Table 5 Typical design U values for floors — Scotland

Wm ⁻² K ⁻¹	Construction type
0.20	'Notional' mean for new dwellings in SAP and the 'simplified' approach: – solid fuel, packages 3 and 6
0.22	
0.22	Mean for conversion of unheated buildings and stand alone buildings of less than 50 m ²
0.22	Mean for extensions and alterations ⁽¹⁾
0.25	'Notional' mean for non domestic in SBEM and limit mean for all new build and stand alone buildings of 50 m ² or more
0.70	Individual limit for new build, new extensions, and alterations ⁽¹⁾ and conversions of heated buildings and stand alone buildings of less than 50 m ²

(1) Refer to relevant documents supporting the national Building Regulations for alternative or flexible approaches.

5.4 Floors with U values lower than (or the same as for Scottish dwellings) the relevant 'notional' value as specified in section 5.2 will contribute to a building meeting its target overall reduction in carbon dioxide emissions of about 20% (or 18% to 25% in Scotland) for dwellings and 23% to 28% for buildings other than dwellings. Floors with higher U values will require additional energy saving measures in the building envelope and/or services.

5.5 The product can maintain, or contribute to maintaining, continuity of thermal insulation at junctions between the floor and the exposed walls. Guidance in this respect, and on limiting heat loss by air infiltration, can be found in:

England and Wales — *Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings* TSO 2002 and Accredited Construction Details version 1.0.

Scotland — Accredited Construction Details (Scotland)

Northern Ireland — Accredited Construction Details (version 1.0).

5.6 Compliance with the guidance referred to in section 5.4 will allow the use of the default psi values from Table 3 of BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings* and Table K1 of *The Government's Standard Assessment Procedure for Energy rating of Dwellings* (SAP 2005), in Target Emission Rate calculations to SAP 2005 or the simplified approach in Scotland.

6 Behaviour in relation to fire

6.1 The calcium silicate board forming the exposed face of the product is non-combustible (Class A1 in accordance with BS EN 13501-1 : 2002). The underlying phenolic insulation material, with an aluminium foil facing has been shown to have a Class 0 surface rating, as defined in national building regulations. When the product is correctly installed, the phenolic insulation material itself will be protected and will not contribute to a fire.



6.2 Use of the product as soffit insulation to semi-exposed floor decks is unrestricted in relation to internal fire spread over linings.

7 Condensation

Interstitial condensation



7.1 Floors incorporating the product can limit the risk of interstitial condensation up to and including 'humidity class 3' (as defined in BS 5250 : 2002) (for dwellings with low occupancy) when they are designed and constructed in accordance with BS 5250 : 2002, Section 8.5 and Appendix D. When designing buildings with a higher humidity class than 'humidity class 3', an assessment will need to be made, using the values in Table 6, and the result will be construction and location specific. The calculation will be sensitive to the water vapour resistance of the concrete slab above the product and the overall floor construction.

Table 6 Material properties

Material	Thickness (mm)	Water vapour resistance (MNsg ⁻¹)	Water vapour resistivity (MNsg ⁻¹ m ⁻¹)
Glass tissue	0.37	3.4	–
Phenolic foam	50 – 120	–	434
Aluminium foil	0.26	111	–
Calcium silicate	6	1.05	–

Surface condensation



7.2 Floors incorporating the product will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 Wm⁻²K⁻¹ at any point, and the junctions with walls are designed in accordance with the relevant requirements of *Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings*, TSO 2002, or BRE Information Paper IP 01/06.



7.3 Floors will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $1.2 \text{ Wm}^{-2}\text{K}^{-1}$ at any point. Guidance may be obtained from BS 5250 : 2002, Section 8, and BRE report (BR 262 : 2002).

8 Mechanical resistance and stability

8.1 Installations incorporating the product can be designed to resist wind loads normally experienced in the UK.

8.2 The bond between the calcium silicate board and the insulation is of adequate strength.

8.3 The structural floor to which the board is fixed should be structurally sound and it is assumed constructed in accordance with the requirements of the relevant building regulations and national standards.

8.4 Wind loads should be calculated in accordance with BS EN 1991-1-4 : 2005, BS 8200 : 1985 and BS 6399-2 : 1997.

8.5 The maximum allowable 'pull-out' value of the fixing to be used for securing the board to the soffit should be determined by tests with a minimum safety factor of 4.0 on the characteristic value (This aspect is not covered by this Certificate).

8.6 For design purposes, the following mechanical properties of the board, and fastener⁽¹⁾, may be adopted:

- density of calcium silicate board 1300 kgm^{-3}
- density of phenolic insulation 50 kgm^{-3}
- allowable board flexural stress 100 kPa
- allowable fixing pull-through value 0.27 kN

(1) For a steel fixing with a minimum shank diameter of 5.2 mm and head (or washer) diameter of 25 mm and assuming no failure of the fixing head.

8.7 A standard (nominal size) 2400 mm x 1200 mm x 86 mm board, when fixed to a soffit with the specified fastener, uniformly spaced at maximum 600 mm across and 800 mm along the board at minimum edge distance of 50 mm, is capable of resisting negative wind pressures up to 0.3 kPa. For suction pressures greater than this, the fixing arrangement should be determined by design. See sections 8.5 and 8.6.

8.8 In situations where fire performance is an important consideration, all-steel fasteners should be used. For advice on specific types, the Certificate holder should be consulted.

8.9 The design of the installation should be checked by a suitably qualified person.

9 Maintenance



The product does not require maintenance. Minor surface damage can be repaired with proprietary fillers. Further advice should be sought from the Certificate holder. Major damage may require the replacement of panels.

10 Durability



The product will remain effective as a soffit insulation for the life of the building providing major damage does not occur during service.

Installation

11 General

11.1 Installation of Promat TL Board must be in accordance with the Certificate holder's installation instructions and the requirements of this Certificate.

11.2 The product is fixed directly to a concrete soffit

11.3 The product may be cut using a fine-toothed saw with a hardened blade.

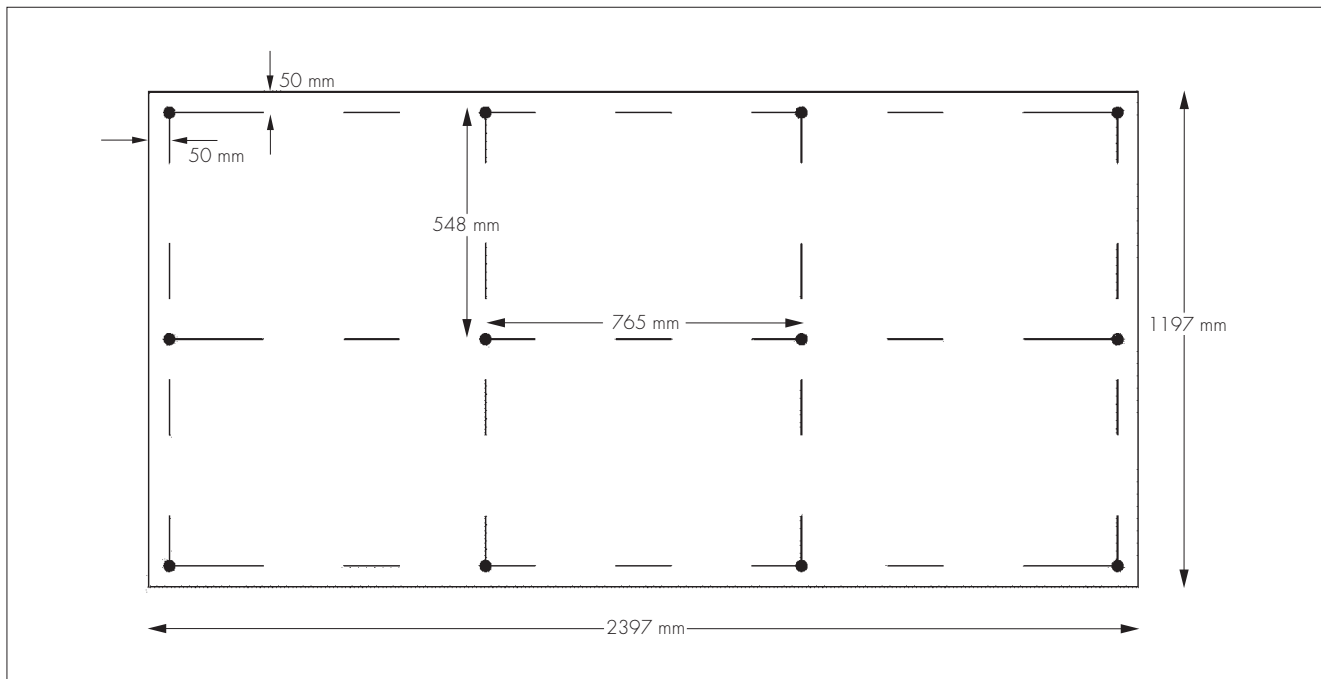
11.4 Board joints should preferably be staggered.

11.5 The board should be fixed to the soffit using the fasteners and their spacings as determined by designs. See example layout in Figure 1.

11.6 The distance between the fixings and the panel edge should not be less than 50 mm nor greater than 100 mm.

11.7 The fasteners must penetrate into the concrete soffit to a minimum distance as recommended by the fixing manufacturer and determined by design (see section 8).

Figure 1 Diagram of fastener layout



Technical Investigations

12 Tests

An examination was made of test data on Promat TL Board relating to:

- water vapour permeability of the calcium silicate board
- laminate bond strength between the insulation and the calcium silicate
- board flexural strength impact resistance
- pull through strength of the specified fixings.

13 Investigations

13.1 The manufacturing process was examined, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

13.2 The following investigations were also carried out:

- U value calculations and condensation risk analysis
- thermal conductivity
- behaviour in relation to fire
- dimensional accuracy
- wind suction resistance.

Bibliography

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 8200 : 1985 *Code of practice for design of non-loadbearing external vertical enclosures of buildings*

BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*

BS EN 13501-1 : 2002 *Fire classification of construction products and building elements. Classification using test data from reaction to fire tests*

BS EN ISO 6946 : 2007 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

14 Conditions

14.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English law.

14.2 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

14.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

14.4 In granting this Certificate, the BBA is not responsible for:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

14.5 Any information relating to the manufacture, supply, installation, use and maintenance of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.