Indústria de Compensados Sudati Ltda
Av. Pres. Getulio Vargas 1638
Palmas
PR 85555-000
Brazil
Tel: +55 46 3263-8400 Fax: +55 46 3263-8422
e-mail: fabiano@sudati.com.br
website: www.sudati.com.br

BBA APPROVAL INSPECTION TESTING CERTIFICATION
TECHNICAL APPROVALS FOR CONSTRUCTION

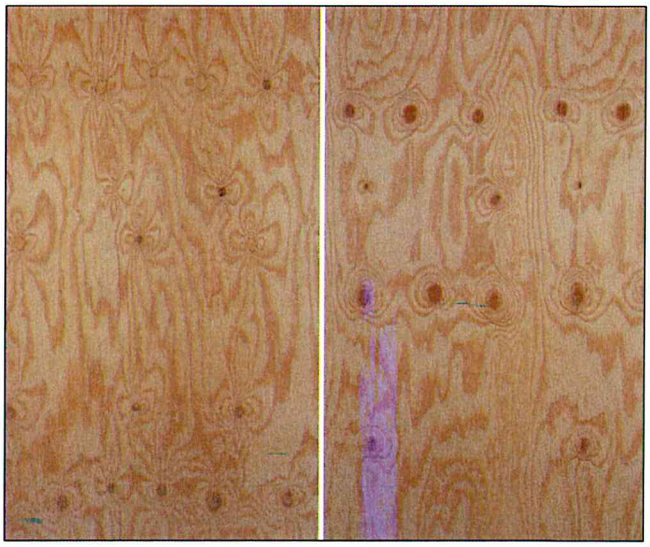
Agrément Certificate
16/5293
Product Sheet 3

SUDPLY PINE PLYWOOD

SUDPLY FOR SHEATHING

This Agrément Certificate Product Sheet[1] relates to Sudply for Sheathing, a plywood board for use in dry and humid conditions as sheathing in domestic and non-domestic buildings.

(1) Hereinafter referred to as 'Certificate'.



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

Structural performance — the product, when incorporated into a structure, can contribute to structural strength and stiffness by distributing the dead and imposed loads to the supporting structure (see section 6).

Behaviour in relation to fire — the product's reaction-to-fire classification has been determined (see section 7).

Resistance to moisture — provided adequate precautions are taken, the product has adequate moisture resistance (see section 8).

Durability — the sheathing will have a life equal to that of the building in which it is installed (see section 11).

The BBA has awarded this Certificate to the company named above for the product described herein. This 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

Date of First issue: 21 March 2016

Simon Wroe
Head of Approvals — Engineering

Claire Curtis-Thomas
Chief Executive

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.

Regulations

In the opinion of the BBA, Sudply for Sheathing, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):

The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	A1	Loading
Comment:		The product has sufficient strength and stiffness to sustain and transmit design loads to the primary structure without excessive deflection. See sections 4.1 and 6 of this Certificate.
Requirement:	B3(1)(2)(3)(4)	Internal fire spread (structure)
Comment:		The product can contribute to satisfying the regulatory requirements. See section 7 of this Certificate.
Requirement:	C2(b)(c)	Resistance to moisture
Comment:		The product can be incorporated into a wall structure, suitably designed to prevent excessive interstitial and surface condensation. See section 8 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See section 11 and the *Installation* part of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The use of the product satisfies the requirements of this Regulation. See section 11 and the *Installation* part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1(a)(b)	Structure
Comment:		The product has sufficient strength and stiffness to sustain and transmit design loads to the primary structure without excessive deflection, in accordance with clauses 1.1.1[1][2], 1.1.2[1][2] and 1.1.3[1][2]. See sections 4.1 and 6 of this Certificate.
Standard:	2.1	Compartmentation
Standard:	2.2	Separation
Standard:	2.3	Structural protection
Standard:	2.9	Escape
Comment:		The product can contribute to satisfying these requirements, with reference to clauses 2.1.1[2], 2.1.12[2], 2.2.1[1][2], 2.2.2[1][2], 2.2.3[1][2], 2.2.4[1][2], 2.2.5[2], 2.2.6[1], 2.2.8[1] and 2.3.2[1][2]. See section 7 of this Certificate.
Standard:	2.4	Cavities
Comment:		Cavity barriers must be provided in accordance with the regulatory requirements with reference to Annex 2C, clause 2, C.1, and clauses 2.4.1[1][2] and 2.4.2[1][2]. See section 7 of this Certificate.
Standard:	3.15	Condensation
Comment:		A vapour control layer must be provided on the room side of the construction to prevent damage arising from the passage of moisture vapour from the interior of the building, in accordance with clauses 3.15.3[1][2], 3.15.6[1][2] and 3.15.7[1][2]. See section 8 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for this product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1[1][2] and Schedule 6[1][2].

(1) Technical Handbook (Domestic).
(2) Technical Handbook (Non-Domestic).

The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23(a)(i)(iii)(b)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 11 and the *Installation* part of this Certificate.
Regulation:	29	Condensation
Comment:		A vapour control layer must be provided on the room side of the construction to prevent damage owing to interstitial condensation. See section 8 of this Certificate.
Regulation:	30	Stability
Comment:		The product has sufficient strength and stiffness to sustain and transmit design loads to the primary structure without excessive deflection. See sections 4.1 and 6 of this Certificate.
Regulation:	35	Internal fire spread — structure
Comment:		The product can contribute to a construction satisfying the regulatory requirements. See section 7 of this Certificate.

Construction (Design and Management) Regulations 2015

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

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

See sections: 1 *Description* (1.2 and 1.3), 3 *Delivery and site handling* (3.3) and 12 *General* of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of Sudply for Sheathing, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Part 6 *Substructure (excluding roofs)*, Chapter 6.2 *External timber framed walls* and Chapter 6.3 *Internal walls*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13986 : 2004. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Sudply for Sheathing are untreated coniferous plywood boards comprising softwood flakes/veneers bonded together with phenol-formaldehyde resin.

1.2 Sudply sheathing boards are available with the characteristics shown in Table 1.

Table 1 Board characteristics

Surface finish	Grades[1]	Edge type	Board size (mm x mm)	Board thickness (mm)	No. of plies
Rough Touch Sanded Sanded Overlaid	C/C CP/C C+/C B/C Film-faced	Square	2440 x 1220 2400 x 1200	9 11 12 12.5 15 18 18 21 24 24 30	3 3 5 5 5 5 7 7 7 9 11
	C+/C CP/C B/C	Tongue-and-groove (2 long edges)	2440 x 1220 2440 x 610 2400 x 1200 2400 x 600	12 12.5 15 18 18 21	5 5 5 5 7 7
		Tongue-and-groove (4 edges)	2440 x 610 2400 x 600	18 21	7 7

(1) Visual appearance of face veneers.

1.3 The nominal density of the boards ranges from 502 to 590 kg·m^{-3}.

1.4 The boards have a nominal moisture content of 8.4%.

2 Manufacture

2.1 The product is manufactured in Brazil by Indústria de Compensados Sudati Ltda in Palmas, Ibaiti and Ventania.

2.2 Logs are fed into soaking chambers and peeled into thin layers in lathe machines. The layers are dried and sorted into different grades prior to application of glue. Layers are cold- and hot-pressed to bind together into boards. Boards are water-sprayed (to avoid warping), trimmed, sanded and profiled (eg tongue-and-groove if necessary).

2.3 Quality control includes checks on raw materials, the production process and on the finished product.

2.4 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process

- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

3 Delivery and site handling

3.1 Handling, storage and delivery of the product should be carried out in accordance with the requirements of PD CEN/TR 12872 : 2014 and BS 8103-3 : 2009.

3.2 The panels should be stored in a dry environment and, to prevent distortion, stacked flat and clear of the floor on level bearers at centres not exceeding 600 mm.

3.3 Each board carries a label bearing the product name, grade, size, thickness and production date, and ordering number and ID for traceability.

3.4 For delivery, boards should be covered in transit to protect from weather and minimise changes in moisture content. Care should be taken to protect the edges and corners, and the protective cover must not be removed until boards are ready for installation.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Sudply for Sheathing.

Design Considerations

4 General

4.1 Sudply for Sheathing is satisfactory for use in dry and humid conditions as wall sheathing as specified for plywood in PD CEN/TR 12872 : 2014.

4.2 Fabrication and installation of the sheathing boards, including the provision of moisture movement gaps, must be in accordance with PD CEN/TR 12872 : 2014 and BS EN 1995-1-1 : 2004. Exposure to the elements should be minimised during installation.

4.3 Timber structures in which the product is incorporated must be designed and constructed to comply with BS EN 1995-1-1 : 2004.

4.4 In accordance with BS EN 636 : 2012, the product is satisfactory for use in environmental conditions covered by use classes 1 and 2 for wood and wood-based products, as defined in BS EN 335 : 2013. In such environments, the boards must be covered and fully protected from the elements. It is recommended that the moisture content of the product should not exceed 16% for any significant period, or 20% at any time. Prolonged exposure to an air temperature of 20°C and a relative humidity of 90% may result in the recommended moisture content being exceeded.

4.5 The design thermal conductivity (λ value) of plywood, given in BS EN 12524 : 2000, is 0.13 $W \cdot m^{-1} \cdot K^{-1}$* and as such will not have a significant effect on the thermal transmittance (U value) of the wall constructions into which it is incorporated.

5 Practicability of installation

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

6 Structural performance

6.1 The design racking resistance of a timber-frame wall incorporating plywood sheathing nailed to studding should be calculated in accordance with the guidance given in BS EN 1995-1-1 : 2004 and its UK National Annex, by a chartered structural engineer or similarly experienced and qualified person, based upon the vertical design load on the wall and the nail spacing and nail characteristics used to attach the sheathing.

6.2 As a guide, when calculated in accordance with BS EN 1995-1-1 : 2004, Method B, the basic racking resistance of a timber-frame wall(1) without vertical loading and with 9 mm thick sheathing fixed with nails(2) at 100 mm spacing is 3.62 $kN \cdot m^{-1}$ and, at 150 mm spacing, 2.77 $kN \cdot m^{-1}$.

(1) Studs: timber grade C16, minimum size 38 mm by 75 mm and spaced at a maximum of 600 mm.

(2) Nails: minimum diameter 3.1 mm, minimum length 50 mm and ultimate tensile strength 700 $N \cdot mm^{-2}$.

6.3 When tested for soft body impact resistance in accordance with BS EN 596 : 1995, the 12 mm and 12.5 mm boards with supports at 600 mm centres achieved adequate impact resistance. Therefore, they are suitable for use as sheathing on walls with soft body impact class III, classified in accordance with BS EN 12871 : 2013. Thicker boards with supports up to 600 mm centres can achieve an impact classification at least equal to that of the 12 mm and 12.5 mm boards tested. Other board thicknesses and support centres are suitable for use where the wall will not be subject to impact for the life of the building, excluding the period of construction.

7 Behaviour in relation to fire

7.1 The boards have a reaction-to-fire classification of D-s2, d0* in accordance with BS EN 13986 : 2004 Table 8.

7.2 Where the product is incorporated in a wall construction which is subject to fire resistance requirements, an appropriate assessment or test must be carried out by a United Kingdom Accreditation Service (UKAS) laboratory accredited for the test concerned.

8 Resistance to moisture

8.1 In common with all timber products, plywood is subject to moisture movement. As a guide, an increase in moisture content of 1% increases the length by 0.02%, the width by 0.03% and the thickness by 0.5%.

8.2 Under similar environmental conditions, plywood will take longer to equilibrate and will attain an equilibrium moisture content approximately 2% to 3% lower than solid timber.

8.3 To avoid distortion and damage to finishes, movement gaps, in accordance with the recommendations of PD CEN/TR 12872 : 2014, should be provided when installing the boards.

8.4 To minimise subsequent movement, before installation the boards should be conditioned as close as is practicable to the environmental conditions likely to occur in service. To achieve this, the moisture content of the board prior to installation, determined with a properly-calibrated moisture meter, should be close to the service class equilibrium moisture content (emc) values given in PD CEN/TR 12872 : 2014, Table 1, an extract of which is reproduced in Table 2.

Table 2 Equilibrium moisture content and conditions of use

Service class	Approximate equilibrium moisture content (emc)	Conditions of use
1	4% ≤ emc ≤ 11%	dry installations, no risk of wetting in service
2	11% ≤ emc ≤ 17%	risk of wetting during installation and risk of occasional wetting in service
3	emc > 17%	risk of regular wetting in service

8.5 Damp-proof membranes (dpm's) and vapour control layers (VCL's) should be incorporated as necessary in accordance with the requirements of BS 5250 : 2011 and BS 8103-3 : 2009.

8.6 The water vapour resistance factor (μ) of plywood, as given in BS EN 13986 : 2004, should be either taken as the design value given in BS EN 12524 : 2000 [70 (wet cup)*, 200 (dry cup)*] or determined in accordance with BS EN ISO 12572 : 2001. Such values may be used in any interstitial condensation calculations to BS 5250 : 2011.

8.7 In accordance with normal good practice for wood-based sheathing materials used in cold frame construction, external walls in which the product is incorporated must include an effective VCL on the room side, suitable weather protection on the outside surface, a ventilated cavity and a damp-proof course. The product should be treated as conventional sheathing board with regard to detailing at openings, eaves and sole plate, the fixing of wall ties and breather paper, and the effect of openings on racking strength.

8.8 The moisture content of sheathing material is affected by the humidity conditions existing in the cavity of which it forms one face. The cavity should be of conventional construction for timber-framed buildings, freely drained and ventilated. The outer masonry leaf should have adequate resistance to wind-driven rain, particularly in regions classified as severe exposure. Raked mortar joints or high-porosity masonry should be avoided, particularly in severe exposure regions.

9 Formaldehyde content

When tested in accordance with BS EN 717-2 : 1995, the product achieved Class E1* formaldehyde specification in accordance with BS EN 13986 : 2004. Therefore, when used in accordance with this Certificate, the quantity of formaldehyde gas emitted from the board alone will not raise the overall building level to an extent that will affect habitability.

10 Maintenance

As the product has suitable durability, is normally confined within the building structure and, in most cases, is covered with finishes, maintenance is not required.

11 Durability

11.1 The product has adequate durability and should have a life equal to that of the structure in which it is installed.

11.2 Care should be taken when designing, detailing and constructing buildings to ensure that moisture does not accumulate within the product.

11.3 Under normal conditions of use the product is unlikely to suffer damage but, if damage does occur, repairs can be carried out in accordance with the Certificate holder's instructions.

Installation

12 General

12.1 Sudply for Sheathing can be cut and fixed using conventional woodworking tools. Normal precautions should be taken to avoid inhalation of wood dust when cutting, drilling and sanding the boards.

12.2 The boards can withstand normal site handling and fixing. Damaged boards should not be used. Normal safety precautions should be observed when handling large boards.

13 Procedure

13.1 Installation of the boards is in accordance with PD CEN/TR 12872 : 2014 and the Certificate holder's recommendations.

13.2 Exposure to weather should be minimised during installation. If wetted, boards must be allowed to dry out thoroughly before applying any surface coatings, or subjecting them to the full design load.

Technical Investigations

14 Test and investigations

14.1 An assessment was made of test reports relating to:

- impact resistance
- density
- formaldehyde content
- bonding quality.

14.2 An assessment was made of the product's durability and behaviour in relation to moisture.

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

Bibliography

BS 5250 : 2011 *Code of practice for control of condensation in buildings*

BS 8103-3 : 2009 *Structural design of low-rise buildings — Code of practice for timber floors and roofs for housing*

BS EN 335 : 2013 *Durability of wood and wood-based products — Use classes — Definitions, application to solid wood and wood based products*

BS EN 596 : 1995 *Timber structures — Test methods — Soft body impact test of timber framed walls*

BS EN 636 : 2012 *Plywood — Specifications*

BS EN 717-2 : 1995 *Wood-based panels — Determination of formaldehyde release — Formaldehyde release by the gas analysis method*

BS EN 1995-1-1 : 2004 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

BS EN 12524 : 2000 *Building materials and products — Hygrothermal properties — Tabulated design values*

BS EN 12871 : 2013 *Wood-based panels — Determination of performance characteristics for load bearing panels for use in floors, roofs and walls*

BS EN 13986 : 2004 *Wood-based panels for use in construction — Characteristics, evaluation of conformity and marking*

BS EN ISO 12572 : 2001 *Hygrothermal performance of building materials and products — Determination of water vapour transmission properties*

PD CEN/TR 12872 : 2014 *Wood-based panels — Guidance on the use of load-bearing boards in floors, walls and roofs*

15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- 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.

15.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and 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.

15.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

15.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- 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
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

15.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal 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, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue 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.

British Board of Agrément
Bucknalls Lane
Watford
Herts WD25 9BA

tel: 01923 665300
fax: 01923 665301
clientservices@bba.star.co.uk
www.bbacerts.co.uk