

## Maderas Arauco SA

Los Horcones s/n  
P O Box 167  
Arauco  
Chile

Tel: 00 56 41 2260600

e-mail: Cristian.chacana@arauco.com

website: www.araucopy.com



**Agrément Certificate**

**11/4845**

Product Sheet 2

### PANELES ARAUCO BOARDING

### ARAUCOPY FOR ROOFING

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to AraucoPly for Roofing, a loadbearing softwood plywood panel suitable for internal use in humid conditions, as roof decking and sarking 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 roofing 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 does not achieve a reaction to fire classification of C-s2, d3 or better in accordance with BS EN 13986: 2004, Table 8, depending on end use (see Section 7).

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

**Durability** — the product, incorporated into the completed roofing, 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 Second issue: 3 December 2021

Originally certificated on 11 October 2011

Hardy Giesler  
Chief Executive Officer

*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](http://www.bbacerts.co.uk)*

*Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

*Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.*

#### British Board of Agrément

Bucknalls Lane  
Watford  
Herts WD25 9BA

©2021

tel: 01923 665300  
[clientservices@bbacerts.co.uk](mailto:clientservices@bbacerts.co.uk)  
[www.bbacerts.co.uk](http://www.bbacerts.co.uk)

## Regulations

In the opinion of the BBA, AraucoPly for Roofing, 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)

<b>Requirement:</b>	<b>A1</b>	<b>Loading</b>
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, 4.2 and 6 of this Certificate.
<b>Requirement:</b>	<b>B3(1)(3)</b>	<b>Internal fire spread (structure)</b>
Comment:		The product can contribute to satisfying this Requirement. See sections 7.2 to 7.4 of this Certificate.
<b>Requirement:</b>	<b>C2(c)</b>	<b>Resistance to moisture</b>
Comment:		The product can contribute to a roof structure, suitably designed to prevent excessive condensation. See section 8 of this Certificate.
<b>Regulation:</b>	<b>7(1)</b>	<b>Materials and workmanship</b>
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



### The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b>	<b>8(1)</b>	<b>Durability, workmanship and fitness of materials</b>
Comment:		The use of the product satisfies the requirements of this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>9</b>	<b>Building standards applicable to construction</b>
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 clause 1.1.1 <sup>(1)(2)</sup> , 1.1.2 <sup>(1)(2)</sup> and 1.1.3 <sup>(1)(2)</sup> of this Standard. See sections 4.1, 4.2 and 6 of this Certificate.
Standard:	2.3	Structural protection
Comment:		The board can contribute to satisfying this Standard with reference to clauses 2.3.1 <sup>(1)(2)</sup> . See section 7.2 to 7.4 of this Certificate.
Standard:	2.4	Cavities
Comment:		The product is restricted by this Standard with reference to Clause 2.4.2 <sup>(1)(2)</sup> . See section 7.1 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 <sup>(1)(2)</sup> . See section 8 of this Certificate.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



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

<b>Regulation:</b>	<b>23(a)(i)</b>	<b>Fitness of materials and workmanship</b>
<b>Comment:</b>	<b>(iii)(b)(i)</b>	The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>29</b>	<b>Condensation</b>
		A vapour control layer must be provided on the room side of the construction to prevent damage due to interstitial condensation. See section 8 of this Certificate.
<b>Regulation:</b>	<b>30</b>	<b>Stability</b>
<b>Comment:</b>		The product has sufficient strength and stiffness to sustain and transmit design loads to the primary structure without excessive deflection. See sections 4.1, 4.2 and 6 of this Certificate.
<b>Regulation:</b>	<b>35(1)(3)</b>	<b>Internal fire spread — Structure</b>
<b>Comment:</b>		The product can contribute to satisfying this Requirement. See section 7.2 of this Certificate.
<b>Regulation:</b>	<b>35(4)</b>	<b>Internal fire spread — Structure</b>
<b>Comment:</b>		The product may be restricted by this Regulation. See section 7.1 of this Certificate.

## Construction (Design and Management) Regulations 2015

## Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 1 *Description* (1.2 and 1.3), 3 *Delivery and site handling* (3.5) and 12 *General* (12.1 and 12.2) of this Certificate.

### Additional Information

#### NHBC Standards 2021

In the opinion of the BBA, AraucoPly for Roofing, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 7.1 *Flat roofs and balconies* and 7.2 *Pitched roofs*.

#### CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13986 : 2004.

### Technical Specification

#### 1 Description

1.1 AraucoPly for Roofing comprises thin layers of pinewood with a thickness between 2.54 and 3.50 mm before pressing, and 2.4 and 3.0 mm after pressing, bonded together with phenolic resins (class 3 in accordance with BS EN 314-2 : 1993). The panel is manufactured to the specification detailed in BS EN 13986 : 2004.

1.2 The panel is produced in a range of thicknesses and is available in sizes depending on the thickness and edge treatment: square or tongue-and-groove edge (see Table 1). The panel is sanded or unsanded.

*Table 1 Panel sizes*

Panel thickness (mm)	Panel size (mm)		
	square edge	tongue-and-groove edge (on two sides)	tongue-and-groove edge (on four sides)
12	2440 x 1220	2440 x 1220 2400 x 1200	–
15	2440 x 1220	2440 x 1220 2400 x 1200	–
18	2440 x 1220	2440 x 1220 2400 x 1200	2440 x 610
21	2440 x 1220	2440 x 1220 2400 x 1200	–

1.3 The nominal density of the panel is 450 kg·m<sup>-3</sup>.

## 2 Manufacture

2.1 The product is manufactured by Maderas Arauco S.A in Los Horcones and Paneles Arauco in Ranquil, in Chile.

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 (those with defects repaired in a patching machine) prior to the application of glue. The layers are bound together to form panels, pressed by machine and defects repaired before trimming into panels and sanding to size and thickness.

2.3 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 panels should be carried out in accordance with the requirements of PD CEN/TR 12872 : 2014 and BS 8103-3 : 2009.

3.2 To prevent distortion, panels should be stacked flat, clear of the floor, on level bearers, at centres not exceeding 600 mm.

3.3 The panels should be stored on a level surface in a dry environment.

3.4 Each panel carries a production and dispatch label. The production label bears the product name, grade, size, thickness, production date and product ID. The dispatch label contains product description, customer, destination and ID number (to enable the product to be traced, if required).

3.5 For delivery, panels 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 panels are ready for installation (see section 8.4).

## Assessment and Technical Investigations

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

### 4 General



4.1 AraucoPly for Roofing is satisfactory for use as decking on pitched roofs or on flat roofs<sup>(1)</sup> and can also be used as a pitched roof lining for tiles or slates (sarking) as defined in PD CEN/TR 12872 : 2014, BS 8103-3 : 2009 and BS 6229 : 2003.

(1) However, it should not be used as a flat roof decking in buildings where the insulation is installed above the supporting deck and the thermal design does not eliminate the possibility of condensation, or where occupancy conditions are likely to lead to high levels of humidity. In Scotland, cold deck roof systems are not recommended.

4.2 Roof structures incorporating the panels must be designed to resist the load requirements specified in BS EN 1991-1-1 : 2002 and BS EN 1991-1-4 : 2005 and their UK National Annexes.

4.3 Design and installation of the panel should be in accordance with BS EN 1995-1-1 : 2004 and its UK National Annex, and PD CEN/TR 12872 : 2014 or BS 8103-3 : 2009. Characteristic values for structural design may be taken from BS EN 12369-2 : 2011. During installation, the panel should be protected from the weather and should be dry when the weatherproof membrane is applied.

4.4 In accordance with BS EN 636 : 2012, the product is suitable 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 panel must be covered and fully protected from the elements. As a general rule, 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 ( $\lambda$  value) of plywood, given in BS EN 12524 : 2000, is  $0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$  and as such will not have a significant effect on the thermal transmittance (U value) of the roof constructions into which it is incorporated.

4.6 The permissible thickness of panel is dependent upon application and support centres, as defined in BS 8103-3 : 2009.

4.7 Roof timbers on which the product is supported should be designed and used in accordance with BS EN 1995-1-1 : 2004 and its UK National Annex, and/or the relevant national Building Regulations. Roof voids should be ventilated in accordance with BS 5250 : 2011.

4.8 On a flat roof, decking constructed from AraucoPly plywood provides a suitable substrate for waterproofing specifications of:

- built-up felt roofing to BS 8217 : 2005
- mastic asphalt roofing to BS 8218 : 1998
- other built-up roof waterproofing systems covered by a current BBA Certificate, when laid in accordance with that Certificate.

### 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



Plywood roof decks for flat roof decking without permanent access should be designed in accordance with BS 6229 : 2003 and BS 8103-3 : 2009, with the minimum panel thickness and maximum joist spacing given in Table 2 of this Certificate. The classification of the plywood is given in Table 3.

*Table 2 Thickness of plywood — Domestic loading for roof decking*

Edge detail on board	Characteristic for domestic loading	
	Minimum	Maximum
	board thickness (mm)	joist spacing (mm)
square and tongue-and-groove (two edges)	12	450
	15	450
	18	600
	21	600
tongue-and-groove (four edges)	18	600

*Table 3 Classification for strength and modulus of elasticity in bending to EN 12369-2 : 2011*

Board thickness	12		15		18		21	
Direction <sup>(1)</sup>	0	90	0	90	0	90	0	90
Bending strength	F30	F10	F25	F10	F25	F10	F15	F10
Modulus of elasticity	E60	E15	E60	E15	E50	E25	E50	E15

(1) 0 = parallel to grain, 90 = perpendicular to grain.

## 7 Behaviour in relation to fire



7.1 The panels do not achieve a reaction-to-fire classification of C-s2, d3 or better.



7.2 The fire resistance of roof constructions incorporating the boards may be calculated with reference to BS EN 1995-1-2 : 2004 or, where necessary, by undertaking an appropriate test at a UKAS or equivalent accredited laboratory for the test concerned.



7.3 A roofs resistance to external fire exposure will depend significantly on the roof covering and can also be affected by other components of the roof, eg insulation materials, substrates/decking, and membranes. These constructions should therefore be evaluated by reference to the requirements of the documents supporting the relevant national Building Regulations and any consequent restrictions imposed by those documents, on a case by case basis. In the absence of a rating, the construction should not be used within 20 metres of a boundary (24 metres in Scotland).

7.4 Where the boards are to be carried over compartment walls, designers must ensure that the roof/wall junction detail provides sufficient resistance to fire penetrating into the neighbouring compartment.

## 8 Resistance to moisture



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

8.2 Under similar environmental conditions, softwood 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, must be provided when installing the panel.

8.4 To minimise subsequent movement, before installation all wet site operations should be completed and the panel conditioned as close as is practicable to the environmental conditions likely to occur in service. To achieve this,

the maximum moisture content of the panel at the time of installation or fixing, as determined using a properly calibrated moisture meter, should be as given in BS 8103-3 : 2009, Annex A, Table A.1 (ie 12% for flat roof sheathing and for sarking for pitched roofs).

8.5 In conventional construction of timber flat roof decking, a vapour control layer must be provided in cold roof designs to prevent damage to the structure due to the passage of moisture (vapour) from the interior of the building in accordance with BS 5250 : 2011.

8.6 In a roof construction, in calculations for interstitial condensation according to BS 5250 : 2011, the water vapour resistance factor ( $\mu$ ) of plywood can be taken as 187 (dry cup) and 65 (wet cup) from BS EN ISO 10456 : 2007, Table 3, depending on the construction.

8.7 Exposure to the elements should be minimised during installation. If wetted, the panel must be allowed to dry out thoroughly before applying any coverings or surface coatings, or applying the full design load.

## 9 Formaldehyde content

When tested for release of formaldehyde in accordance with BS EN 717-1 : 2004, the panel achieved a 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 panel alone will not raise the overall building level to an extent which will affect habitability.

## 10 Maintenance

As the product has suitable durability, will normally be confined within the building structure and, in most cases, will be 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 roof 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 panels.

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

## Installation

### 12 General

12.1 Product 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 product.

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

### 13 Procedure

13.1 Installation of AraucoPly plywood panels should be by use of conventional methods in accordance with PD CEN/TR 12872 : 2014 or BS 8103-3 : 2009 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 floor coverings or surface coatings, or subjecting them to the full design load.

### **14 Investigations**

14.1 An assessment was made of test reports relating to material characteristics in accordance with the requirements of BS EN 636 : 2012 for plywood.

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 + A1 : 2016 *Code of practice for control of condensation in buildings*
- BS 6229 : 2018 *Flat roofs with continuously supported flexible waterproof coverings — Code of practice*
- BS 8103-3 : 2009 *Structural design of low-rise buildings — Code of practice for timber floors and roofs for housing*
- BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*
- BS 8218 : 1998 *Code of practice for mastic asphalt roofing*
- BS EN 314-2 : 1993 *Plywood — Bonding quality — Requirements*
- BS EN 335 : 2013 *Durability of wood and wood-based products — Use classes: definitions, application to solid wood and wood-based products*
- BS EN 636 : 2012 + A1 : 2015 *Plywood— Specifications*
- BS EN 717-1 : 2004 *Wood-based panels — Determination of formaldehyde release — Formaldehyde emission by the chamber method*
- BS EN 1991-1-1 : 2002 *Eurocode 1 : Actions on structures — General actions— Densities, self-weight, imposed loads for buildings*  
NA to BS EN 1991-1-1 : 2002 UK National Annex to *Eurocode 1 : Actions on structures — General actions— Densities, self-weight, imposed loads for buildings*
- BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 : Actions on structures — General actions — Wind actions*  
NA to BS EN 1991-1-4 : 2005 + A1 : 2010 UK National Annex to *Eurocode 1 : Actions on structures — General actions— Wind actions*
- BS EN 1995-1-1 : 2004 + A2 : 2014 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*  
NA to BS EN 1995-1-1 : 2004 + A2 : 2014 UK National Annex to *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*
- BS EN 12369-2 : 2011 *Wood-based panels — Characteristic values for structural design — Plywood*
- BS EN 12524 : 2000 *Building materials and products — Hygrothermal properties — Tabulated design values*
- BS EN 12871 : 2013 *Determination of performance characteristics for load bearing panels for use in floors, roofs and walls*
- BS EN 13986 : 2004 + A1 : 2005 *Wood-based panels for use in construction — Characteristics, evaluation of conformity and marking*
- BS EN ISO 10456 : 2007 *Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values*
- PD CEN/TR 12872 : 2014 *Wood-based panels — Guidance on the use of load-bearing boards in floors, walls and roofs*

### 14 Conditions

14.1 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.

14.2 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.

14.3 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.

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

14.5 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.

14.6 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.