CE MARKING
UK APPLICATION GUIDE

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

No 07/G006

This Guide forms a link between the CE Marking and UK Building Regulations and construction practice.

SUDATI PINE PLYWOOD

Holder/ Mill

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Generic type of construction product and use

Wood-based panel for use in construction.

This Guide relates to Sudati Pine Plywood, a plywood for internal use as a structural component in humid conditions as defined in EN 13986 : 2004. Additional information is provided to aid use in accordance with BS 5268-2 : 2002.

Basis of this Guide

This Guide gives information supporting the CE Marking to enable the product to be incorporated satisfactorily into the construction works according to UK requirements. This Guide must be read in conjunction with the CE Marking and its accompanying information.

It covers regulatory compliance and voluntary aspects where appropriate. The presentation by the manufacturer of the information underwriting CE Marking has been taken as valid and requiring no further corroboration in accordance with the Construction Products Directive.

A Declaration of Conformity against the relevant technical specification has been provided by the manufacturer and as a condition of the issue of this document the BBA requires the manufacturer to confirm the Declaration of Conformity at six-monthly intervals.

Users must satisfy themselves that the product's performance fulfils their requirements and that the product is being used correctly. Readers are advised to check the current validity of the CE Marking with the Application Guide holder and the validity of this document with the BBA website: www.bbacerts.co.uk

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Part 1 Product Summary

1.1 Sudati Pine Plywood is an untreated coniferous plywood made from timber of the species *pinus elliotti* and *pinus taeda*.

1.2 The product is available in thicknesses of 12 mm (four-ply) and 18 mm (seven-ply). The panels are square edged and either sanded or unsanded, the 18 mm panel is also available tongue-and-grooved. Details of the product range are given in Table 1.

Table 1 Product range

Thickness (mm)	Surface finish	Edge detail	Grade
12.0	sanded	square edge	E/III, I/III, II/III, III/III, III/IV
12.0	unsanded	square edge	III/IV
18.0	sanded	square edge	E/III, I/III, III/III, III/IV
18.0	unsanded	square edge	III/III, III/IV
18.0	sanded	tongue-and-groove	II/III, III/III, III/IV

1.3 The CE Marking covers the panels for internal use as structural components in humid conditions. Additionally the 12 mm thick plywood is for use as internal structural roof decking and internal structural wall sheathing and the18 mm thick plywood is for use as internal floor decking. However, designers should be aware that when dealing with built-up felt roofs or flat roofs with continuously supported coverings, it is recommended in BS 8217 : 2005 that plywood roof decks should be designed in accordance with BS 6229 : 2003 and BS 8103-3 : 1996, with a minimum thickness of 15 mm for joist spacing up to 450 mm and 18 mm for spacings up to 600 mm.

1.4 Additional preservative treatment can be applied which will enable other use outside the scope of this Guide.

Part 2 CE Marking — Overview

2.1 CE Marking includes technical information in the form of declared values. It enables a product to be legally placed on the market in any EC Member State. However, this does not necessarily mean the product will be suitable for all end uses in all Member States. A judgement must be made on whether the product is suitable for a particular intended use according to the relevant regulations.

2.2 Technical information given by the CE Marking and the related harmonised standard is indicated in this Guide by the prefix CE

2.3 BBA opinions on the suitability of the product in relation to UK regulations and construction practice relates to the information as given in the CE Marking and the manufacturer's declaration and are indicated by the prefix

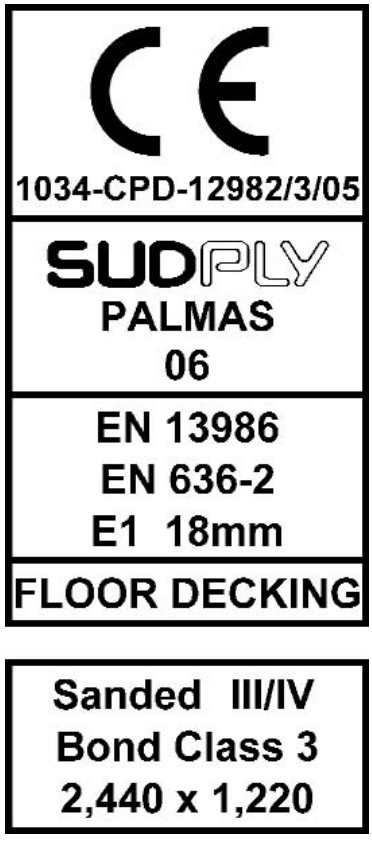
2.4 The CE Marking (see Figure 1) is indelibly marked on the product. The complete technical information is contained in the manufacturer's declaration of conformity and data sheet.

2.5 The CE Marking accompanying this product indicates that it was affixed by the Guide holder at it's Palmas Factory and is under supervision of HFB Engineering GmbH (notified body number 1034). The marking includes the last two digits of the year in which the marking was affixed.

CE 2.6 EN 13986 : 2004 is the harmonised technical specification and specifies the relevant characteristics and appropriate test methods.

CE 2.7 EN 636-2 is the technical class. It signifies that the boards are for internal use in humid conditions in structural applications. Furthermore, the 12 mm thick panels are marked to show that the product is intended for use as roof decking and wall sheathing and the 18 mm thick panels for floor decking.

Figure 1 Typical CE Marking



2.8 The boards are classified as E1 with regard to release of formaldehyde.

2.9 The product meets the requirements for the Euroclass D-s2, d0 and D_{fl}-s1 for reaction to fire and has a PCP-content of less than 5 ppm. Consequently, in accordance with EN 13986 : 2004, the Euroclass and the PCP-content are not specified on the CE Marking.

2.10 Additional declared values appear on the accompanying manufacturer's data sheets, relating to:

- physical characteristics
- bending properties
- bonding quality
- reaction-to-fire class
- water vapour permeability
- airborne sound insulation
- thermal conductivity
- performance characteristics for structural use.

Part 3 CE Marking — Detailed interpretation

Of the six Essential Requirements under the Construction Products Directive (CPD), only the following are relevant to the UK in relation to plywood in the considered applications.

Essential Requirement 1 — Mechanical resistance and stability

3.1 The 12 mm thick panels are classified as type EN 636-2; wall sheathing and roofing.

3.2 The 18 mm thick panels are classified as type EN 636-2; flooring.

3.3 Both thicknesses of panel are marked with the legend EN 636-2, this technical class indicates that the panels are for internal use as structural components in humid conditions. For these structural applications design and detailing of the panel members should be carried out in accordance with BS EN 1995-1-1 : 2004 (Eurocode 5) together with its UK National Annex using the information given in Tables 2 and 3 relating to mechanical properties derived from EN 789 : 2004.

Table 2 Performance characteristics for structural use (for grades III/IV and higher)

Property[1] (Nmm^{-2})	12 mm panels				18 mm panel			
	Parallel		Perpendicular		Parallel		Perpendicular	
	Mean	L5%	Mean	L5%	Mean	L5%	Mean	L5%
Strength	31.4	17.3	20.0	9.3	39.3	16.9	20.7	11.4
Stiffness	9490	5240	2770	1840	8940	4500	3250	1850
Compression strength	21.2	16.0	26.9	20.3	28.8	20.4	22.1	16.6
Compression stiffness	5610	3400	5570	3590	6190	5110	4160	2440
Tension strength	14.9	6.6	21.2	9.1	24.1	14.1	17.7	8.4
Tension stiffness	4720	2450	5630	3630	6040	3660	3980	2060
Planar shear	1.83	1.38	2.64	2.25	2.7	2.1	2.3	1.8
Planar modulus of rigidity	71	53	86	69	98	74	89	69
Panel shear	5.67	4.4	5.25	3.95	8.03	6.84	7.7	6.36
Panel modulus	661	498	617	464	659	545	655	494

(1) Characteristics in accordance with EN 789 : 2004 and EN 1058 : 1995.

Table 3 Performance characteristics for structural use — Point load resistance[1] (BS EN 12871, EN 1195)

Property	12 mm panels square edge at mid-span			18 mm panel square edge at mid-span			18 mm panel tongue-and-groove at mid-span			18 mm panel tongue-and-groove at joint		
	L5% values at listed spans			L5% values at listed spans			L5% values at listed spans			L5% values at listed spans		
	400 (mm)	450 (mm)	600 (mm)	400 (mm)	480 (mm)	600 (mm)	400 (mm)	480 (mm)	600 (mm)	400 (mm)	480 (mm)	600 (mm)
Serviceability strength F_{use}(N)	1235	1824	2225	3634	4112	3485	3077	3802	3405	2795	2696	2464
Ultimate strength F_{max}(N)	3236	3528	2941	6003	5779	4915	4993	5297	5207	3551	3721	4059
Stiffness R(Nmm)	315	292	185	815	695	503	745	638	441	601	532	410

(1) 50 mm diameter for 12 mm thick panels and 25 mm diameter for 18 mm thick panels.

3.4 Additionally, the marking on the panels indicates that:

- 12 mm thick panels are for use as internal structural roof decking and that additional tests against the requirements of BS EN 12871 : 2001 for concentrated load and soft body impact have been met. However, designers should be aware that when dealing with built-up felt roofs or flat roofs with continuously supported coverings, it is recommended in BS 8217 : 2005 that plywood roof decks should be designed in accordance with BS 6229 : 2003 and BS 8103-3 : 1996, with a minimum thickness of 15 mm for joist spacing up to 450 mm and 18 mm for spacings up to 600 mm
- 12 mm thick panels are for use as internal structural wall sheathing and that additional tests against the requirements of BS EN 12871 : 2001 for soft body impact have been met.
- 18 mm thick panels are for use as internal floor decking and that additional tests against the requirements of BS EN 12871 : 2001 for concentrated load and soft body impact have been met.

3.5 The CE Marking indicates that the plywood meets the requirements of technical class EN 636-2 in relation to bonding quality and biological durability for internal use. As such, it meets the recommendations given in BS 5268-2 : 2002, Clause 4.6. The characteristic values derived from EN 789 : 2004 accompanying the CE Marking can be converted to grade strength and moduli values for permissible stress basis of design using the information given in BS 5268-2 : 2002, Clause 4.6; the information required and examples are given in Tables 4 and 5.

Table 4 Characteristic long-term(1) grade strength and moduli values(2)

		12 mm thick panels				18 mm thick panel			
		Parallel		Perpendicular		Parallel		Perpendicular	
		Service class		Service class		Service class		Service class	
		1	2	1	2	1	2	1	2
Strength	– L5%	6.4	6.4	3.4	3.4	6.3	6.3	4.2	4.2
Stiffness	– L5%	2911	2620	1022	920	2500	2250	1028	925
	– mean	5272	4745	1539	1385	4967	4470	1806	1625
Compression strength	– L5%	5.9	5.9	7.5	7.5	7.6	7.6	6.1	6.1
Compression stiffness	– L5%	1889	1700	1994	1795	2839	2555	1356	1220
	– mean	3117	2805	3094	2785	3439	3095	2311	2080
Tension strength	– L5%	2.4	2.4	3.4	3.4	5.2	5.2	3.1	3.1
Tension stiffness	– L5%	1361	1225	2017	1815	2033	1830	1144	1030
	– mean	2622	2360	3128	2815	3356	3020	2211	1990
Planar shear	– L5%	0.5	0.5	0.8	0.8	0.8	0.8	0.7	0.7
Planar modulus of rigidity	– L5%	29	27	36	35	41	37	38	35
	– mean	39	36	48	43	54	49	49	45
Panel shear	– L5%	1.6	1.6	1.5	1.5	2.5	2.5	2.4	2.4
Panel modulus of rigidity	– L5%	277	249	258	232	303	273	274	247
	– mean	367	331	343	309	366	330	364	328

(1) The design should be checked to ensure that the permissible stresses are not exceeded for any other condition of loading that might be relevant.

(2) Characteristic values should be converted into values for permissible stress basis of design using data from BS 5268-2 : 2002:

$X_d = k_{mod} X_k / (1{,}35\gamma_m)$

where:

X_d is the grade strength value

X_k is the characteristic strength value (5-percentile value)

k_{mod} is the modification factor for duration of loading and service class given in Table 5 (BS 5268-2 : 2002, Table 37)

γ_m is the material partial safety factor (eg 1.2 for plywood).

$E_d = E_k / (1+k_{def})$

where:

E_d is the grade modulus, 5-percentile or mean value

E_k is the characteristic modulus value (value as required)

k_{def} is the modification factor for creep deformation and service class given in Table 5 (BS 5268-2 : 2002, Table 38).

Table 5 Modification factors

Duration of loading	Modification factor k_{mod}		Modification factor k_{def}	
	Service class		Service class	
	1	2	1	2
Long-term	0.60	0.60	0.80	1.00
Medium-term	0.86	0.86	0.11	0.14
Test duration	1.02	1.02	0.00	0.00
Short-term	1.06	1.06	0.00	0.00
Very short-term	1.08	1.08	0.00	0.00
Safety factor (γ_m)	1.2	1.2	—	—

3.6 It should be noted that EN 13986 : 2004 includes reference to load categories, the method to derive these is not currently available.

3.7 The deflection or deformation of a structural member subject to a combination of loads of different duration should be determined by considering the load in each category as acting separately and calculating the deflections or deformations induced by each, using the appropriate moduli values.

Essential Requirement 2 — Safety in case of fire

Reaction to fire

3.8 No marking in relation to reaction to fire.

3.9 The Euroclass is not specified on the CE Marking, therefore, in accordance with EN 13986 : 2004, it can be assumed that the product meets the reaction to fire requirements for Euroclass D-s2, d0, excluding floorings and class D_{fl}-s1 for floorings.

3.10 The classification relates to a 9 mm thick (minimum) panel, mounted without an air gap directly against class A1 or A2-s1, d0 products with a minimum density of 10 kgm^{-3} or at least class D-s2, d0 products with a minimum density of 400 kgm^{-3}. The classification is for unjointed panels, tongue-and-groove jointed panels and fully supported joints installed in accordance with ENV 12872 : 2000.

3.11 This classification may limit the allowable exposed surface and when exposed within a cavity, the use of cavity barriers may be required to meet regulatory requirements.

Resistance to fire

3.12 The resistance to fire of the plywood cannot be given in isolation. An appropriate assessment or test of the assembly in which the plywood is incorporated must be carried out by a UKAS (United Kingdom Accreditation Service) approved fire testing laboratory.

Essential Requirement 3 — Hygiene, health and environment

3.13 The formaldehyde (HCHO) classification is E1.

3.14 No marking in relation to PCP-content.

3.15 Formaldehyde and pentachlorophenol are not subject to control under UK Building Regulations for this product and use. Boards of class E1 can be used without causing an indoor air concentration greater than 0.1 ppm HCHO in conditions according to EN 717-1 : 2004. Therefore, the quantity of gas emitted from the board alone, in the context of use given in this Guide, should not increase the level of gas within the building to an extent which will affect habitability.

3.16 The pentachlorophenol (PCP) content is not specified on the CE Marking, therefore, in accordance with EN 13986 : 2004, it can be assumed that the product contains less than 5 ppm PCP.

3.17 The water vapour resistance factors (μ) are: wet cup 70, dry cup 200.

3.18 Assessment of the risk of interstitial condensation should be carried out in accordance with BS 5250 : 2002. The dry cup μ value can be used for the panels in buildings in humidity classes 1 to 4. In humidity class 5 (for example in buildings such as laundries, breweries, swimming pools), specialist advice should be sought and the least favourable factors used in any calculations, depending on the panels' location. For example wet cup μ for panels on the warm side of the construction and dry cup μ for panels on the cold side of the construction.

Essential Requirement 5 — Protection against noise

3.19 In relation to resisting sound transmission, the mean surface mass of the panels can be taken as 6.9 kgm^{-2} for 12 mm thick panels and 10.4 kgm^{-2} for 18 mm thick panels.

3.20 These values can be used to contribute to meeting minimum weight per unit area requirements for parts of specified constructions.

3.21 When considering the sound absorbing properties of the panels, the coefficients shown in Table 6 should be taken into account.

Table 6 Sound absorption coefficients

Frequency range (Hz)	Coefficient
250 to 500	0.10
1000 to 2000	0.30

3.22 In general, where panels form cavities in a construction required to be sound resisting, an absorbent layer, such as mineral wool, should be included in the cavity.

3.23 The sound transmission loss (R) for the panels themselves can be estimated in accordance with section 5.10 of EN 13986 : 2004, where $R = 13 \times log_{10}(m_A) + 14$. This gives R values of 25 dB for the 12 mm thick panels and 27 dB for the 18 mm thick panels.

Essential Requirement 6 — Energy economy and heat retention

3.24 The thermal conductivity (λ) is 0.13 $Wm^{-1}K^{-1}$.

3.25 This value may be used in the calculation of U values in accordance with BS EN ISO 6946 : 1997.

Aspects of durability, serviceability and identification

3.26 The panels are classified as type EN 636-2.

3.27 Technical class EN 636-2 relates to internal humid climatic conditions equivalent to service class 2 in accordance with BS EN 1995-1-1 : 2004 (Eurocode 5) and BS 5268-2 : 2002. These conditions are characterised by moisture content in the material corresponding to a temperature of 20°C and a relative humidity of the surrounding air only exceeding 85% for a few weeks per year.

3.28 Plywoods of this type are for use in biological hazard classes 1 and 2 as given in EN 335-3 : 1995. This type of plywood is appropriate for protected external applications (eg behind cladding or under roof coverings), but is also capable of resisting weather exposure for short periods (eg when exposed during the construction). It is also suitable for interior situations where the service moisture condition is raised above humidity of dry conditions.

Attestation of conformity

3.29 The CE Marking has been affixed on the basis of compliance with the relevant requirements of EN 13986 : 2004. The attestation of conformity level associated with the CE Marking is system 2+. Attestation of Conformity is intended to ensure that the product is made and tested on a consistent basis. It involves tasks for the manufacturer and certification body:

3.30 Tasks for the manufacturer are:

- factory production control
- further testing of samples taken at factory
- initial type-testing or assessment.

3.31 Tasks for the certification body are:

- initial inspection of factory and the factory production control
- continuous surveillance
- assessment and approval of the factory production control.

These tasks have been carried out by HFB Engineering GmbH, notified body number 1034. It has issued Certificate of Conformity 1034-CPD-12981/4/05 for the 12 mm thick plywood and Certificate of Conformity 1034-CPD-12981/5/05 for the 18 mm thick plywood.

Part 4 Factors relating to UK Regulations

UK implementation of the CPD

4.1 Statutory Instrument 1991, No 1620. The Building and Building Construction Products Regulations 1991 as amended by the Construction Products (Amendment) Regulations 1994 (Statutory Instruments 1994, No 3051).

4.2 These Regulations implement Council Directive 89/106/EEC of 21 December 1988[1], modified by the Council Directive 93/68/EEC of 22 July 1993 and lay down the criteria for CE Marking of construction products. Where the stated performance values accompanying the CE Marking pass the minimum legal requirements for the intended use, if used appropriately and in satisfactory conditions, a product bearing CE Marking shall be presumed by the building control body to satisfy the relevant requirements unless there are reasonable grounds for suspecting otherwise.

(1) Known as the Construction Products Directive (CPD).

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

4.3 In the opinion of the BBA, the CE Marking indicates that Sudati Pine Plywood, if used in accordance with the provisions of this Guide and the conditions associated with CE Marking, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Requirement:	A1(1)	Loading
Comment:		When contributing to the structural strength and stability of a timber structure, the product is satisfactory, provided the design is in accordance with sections 3.1 to 3.6 of this Guide.
Requirement:	B2	Internal fire spread (linings)
Requirement:	B3(4)	Internal fire spread (structure)
Comment:		The panels have a reaction to fire class of Ds2, d0 excluding floors and class D_{fl}-s1 for flooring. See sections 3.7 to 3.17 of this Guide.
Requirement:	C2(c)	Resistance to moisture
Comment:		The water vapour resistance factors should be used in calculations of the risk of interstitial condensation. See sections 3.17 and 3.18 of this Guide.
Requirement:	E1	Protection against sound from other parts of the building and adjoining buildings
Requirement:	E2	Protection against sound within a dwelling-house etc
Comment:		The panels' mass will contribute to construction meeting these requirements. See sections 3.19 to 3.23 of this Guide.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The thermal conductivity value should be used in U value calculations. See sections 3.24 and 3.2.5 of this Guide.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The CE Marking shows that the product is acceptable. See sections 3.29 to 3.31 to 4.1 and 4.2 of this Guide.

The Building (Scotland) Regulations 2004 (as amended)

4.4 In the opinion of the BBA, the CE Marking indicates that Sudati Pine Plywood, if used in accordance with the provisions of this Guide and the conditions associated with CE Marking, will satisfy or contribute to satisfying the various Regulations and related Mandatory Standards as listed below.

Regulation:	8	Fitness and durability of materials and workmanship
Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The CE Marking shows that the product can contribute to a construction satisfying this Regulation. See sections 3.29 to 3.31 and 4.1 to 4.2 of this Guide.
Regulation:	9	Building standards — construction
Standard:	1.1(a)(b)	Structure
Comment:		The product is deemed to have sufficient strength and stability to sustain and transmit the design loads and therefore can contribute to satisfying this Standard, with reference to clause 1.1.1[(1)(2)]. See sections 3.1 and 3.7 of this Guide.
Standard:	2.1	Compartmentation
Standard:	2.2	Separation
Standard:	2.3	Structural protection
Standard:	2.4	Cavities
Standard:	2.5	Internal linings
Standard:	2.6	Spread to neighbouring buildings
Comment:		The panels have a reaction to fire class D-s2, d0 excluding floorings and class D_{fl}-s1 for floorings and, therefore, is deemed to be combustible, classified as 'high risk' in relation to reaction to fire and able to contribute to satisfying these Standards, with reference to clauses 2.1.12[(2)], 2.2.4[(2)], 2.2.7[(1)], 2.3.2[(1)(2)], 2.5.1[(1)(2)], 2.6.5[(1)] and 2.6.6[(2)]. See sections 3.8 to 3.12 of this Guide.
Standard:	3.15	Condensation
Comment:		The water vapour resistance factors should be used in calculations of the risk of interstitial condensation, with reference to clauses 3.15.1[(1)] to 3.15.7[(1)]. See sections 3.17 and 3.18 of this Guide.
Standard:	6.2	Building insulation envelope
Comment:		The thermal conductivity value should be used in U value calculations, with reference to clause 6.2.0[(1)(2)]. See sections 3.24 and 3.25 of this Guide.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

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

4.5 In the opinion of the BBA, the CE Marking indicates that Sudati Pine Plywood, if used in accordance with the provisions of this Guide and the conditions associated with CE Marking, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The CE Marking shows that the product is acceptable. See sections 3.29 to 3.31 and 4.1 and 4.2 of this Guide.
Regulation:	C5	Condensation
Comment:		The water vapour resistance factors should be used in calculations of the risk of interstitial condensation. See sections 3.17 and 3.18 of this Guide.
Regulation:	D1	Stability
Comment:		When contributing to the structural strength and stability of a timber structure, the product is deemed to be satisfactory provided the design is in accordance with sections 3.1 to 3.7 of this Guide.
Regulation:	E3	Internal fire spread — Linings
Regulation:	E4(4)	Internal fire spread — Structure
Comment:		The panels have reaction to fire class of D-s2, d0 excluding floorings and class D_{fl}-s1 for floorings. See sections 3.8 to 3.12 of this Guide.
Regulation:	F2	Building fabric
Comment:		The thermal conductivity value should be used in U value calculations. See sections 3.24 to 3.25 of this Guide.

Construction (Design and Management) Regulations 2007

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

4.6 Information in this Guide is intended to assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section:	*Health and safety* (sections 6.4 and 6.5).

Part 5 Factors relating to UK home warranty providers

NHBC Standards 2007

5.1 In the opinion of the BBA, the CE Marking indicates that Sudati Pine Plywood, if used in accordance with the provisions of this Guide and the conditions associated with CE Marking, will satisfy or contribute to satisfying the various NHBC Standards in the following situations:

Chapter:	6.2	External timber framed walls	M4
Comment:		The product, when used as a sheathing material in timber frame construction, can contribute to the structural strength and stability of the building provided the design is in accordance with sections 3.1 to 3.7 of this Guide.	
Chapter:	6.4	Timber and concrete upper floors	M7
Comment:		The product, when used as a floor decking, can contribute to the structural strength and stability of a domestic floor, provided the design is in accordance with sections 3.1 to 3.7 of this Guide.	
Chapter:	6.6	Staircases	M3
Comment:		The product is suitable for use in forming the risers in domestic timber staircases.	
Chapter:	6.10	Light steel framed walls and floors	M5
Comment:		The product, when used as a sheathing material in light steel frame construction, can contribute to the structural strength and stability of the building, provided the design is in accordance with sections 3.1 to 3.7 of this Guide.	
Chapter:	7.2	Pitched roofs	M5 (e) rigid sarking
Comment:		The product, when used as rigid sarking material, can contribute to the structural strength and stability of a domestic roof, provided the design is in accordance with sections 3.1 to 3.7 of this Guide.	

5.2 In the opinion of the BBA, the CE Marking indicates that Sudati Pine Plywood, if used in accordance with the provisions of this Guide and the conditions associated with CE Marking, will satisfy or contribute to satisfying the various technical requirements as listed below.

External walls – Timber frame	Page 186	The product, when used as a sheathing material in timber frame construction, can contribute to the structural strength and stability of the building provided the design is in accordance with sections 3.1 to 3.7 of this Guide.
External walls – Steel frame Upper floors Internal works – Floors	Page 207 Page 221 Page 275	The product, when used as a decking material, can contribute to the structural strength and stability of the floor provided the design is in accordance with sections 3.1 to 3.7 of this Guide.
Pitched roofs	Page 246	The product, when used as a sarking material, can contribute to the structural strength and stability of a domestic roof, provided the design is in accordance with sections 3.1 to 3.7 of this Guide.
	Page 250	The product, when used as a sheathing material in timber roof construction, can contribute to the structural strength and stability of the roof provided the design is in accordance with sections 3.1 to 3.6 of this Guide.
	Page 252	The product is suitable for use in forming a tank base in domestic timber roofs.
Flat roofs	Page 269	The product, when used as a flat roof decking material, can contribute to the structural strength and stability of the roof provided the design is in accordance with sections 3.1 to 3.7 of this Guide.
Internal works – Ceilings	Page 288	The product, when used as a decking material, can contribute to the structural strength and stability of the floor provided the design is in accordance with sections 3.1 to 3.7 of this Guide.
Timber roofs	Page 376	The product, when used as a plate material in timber roof construction, can contribute to the structural strength and stability of the roof provided the design is in accordance with sections 3.1 to 3.7 of this Guide.

Part 6 Additional factors

Installation

6.1 The board is cut and fixed using conventional woodworking techniques.

6.2 The hygroscopic properties of plywood differ from those of solid timber, and under the same exposure conditions its equilibrium moisture content can be 2% to 3% less than, and the time taken to reach its equilibrium moisture content greater than, that for solid timber.

6.3 Where a building construction is likely to be sensitive to the relative movement of the panels, it is recommended that the panels should:

- be checked for moisture content at the time of the installation; the determination of moisture content by a calibrated moisture meter will be sufficiently accurate for this purpose
- have a moisture content at the time of installation close to the moisture content they will attain in service.

Health and safety

6.4 Normal precautions should be exercised to avoid inhalation of wood dust when cutting, drilling and sanding the boards.

6.5 Depending on size and thickness the panels can be handled by one or two operatives. Normal precautions should be observed when handling large panels. Handling difficulties may be experienced in high winds.

Part 7 Bibliography

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

BS 5268-2 : 2002 *Structural use of timber — Code of practice for permissible stress design, materials and workmanship*

BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*

BS 8103-3 : 1996 *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 EN 1995-1-1 : 2004 *Eurocode 5 : Design of timber structures — General — Common rules and rules for buildings*

BS EN 12871 : 2001 *Wood-based panels — Performance specifications and requirements for load bearing boards for use in floors, walls and roofs*

BS EN ISO 6946 : 1997 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

EN 335-3 : 1995 *Durability of wood and wood-based products — Definition of hazard classes of biological attack — Application to wood-based panels*

EN 717-1 : 2004 *Wood-based panels — Determination of formaldehyde release — Formaldehyde emission by the chamber method*

EN 789 : 2004 *Timber structures — Test methods — Determination of mechanical properties of wood-based panels*

EN 1058 : 1995 *Wood-based panels — Determination of characteristic values of mechanical properties and density*

EN 1195 : 1997 *Timber structures — Test methods — Performance of structural floor decking*

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

ENV 12872 : 2000 *Wood-based panels — Guidance on the use of load-bearing boards in floors, walls and roofs*

Part 8 Terms and Conditions

Conditions

8.1 This Guide:

- relates only to the product that is named, described, installed, used and maintained as set out in this Guide;
- is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Guide;
- 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.

8.2 References in this Guide to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Guide.

8.3 This Guide will remain valid for an unlimited period provided that:

- the product, the manufacture and/or fabrication remain unchanged;
- the CE Marking remains valid;
- it is reviewed by the BBA as and when it considers appropriate: and
- the manufacturer confirms the Declaration of Conformity at six-monthly intervals.

8.4 In granting this Guide, the BBA is not responsible for:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product;
- the right of the Guide holder to market, supply, install or maintain the product;
- the actual works in which the product is installed, used and maintained, including the nature, design, methods and workmanship of such works: and
- the accuracy and validity of the information relating to the CE Marking.

8.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Guide are the minimum standards required to be met when the product is used. They do 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 Guide or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Guide, 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 installation and use of this product.

On behalf of the British Board of Agrément

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