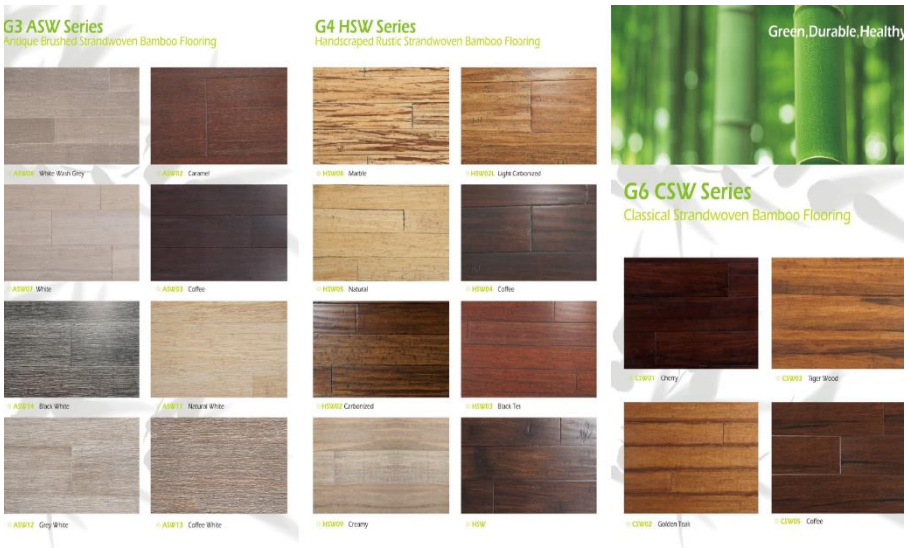
Name and Address of the Certificate Holder: **M/s KAARA Décor Pvt. Ltd.** A-16, Green Park, New Delhi – 110 016 Email:contact@kaaradecor.com	Performance Appraisal Certificate No. PAC No.: **1053-P/2020** Issue No.: **01** Date of issue: **13/01/2020**

BAMBOOWOOD FLOORING & WALL CLADDING



User should check the validity of the Certificate by contacting Member Secretary, BMBA at BMTPC or the Holder of this Certificate.

Building Materials & Technology Promotion Council
Ministry of Housing & Urban Affairs
Government of India
Core 5A, First Floor, India Habitat Centre,
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PERFORMANCE APPRAISAL CERTIFICATE

FOR

Bamboowood Flooring & Wall Cladding

ISSUED TO

M/s KAARA DÉCOR PRIVATE LIMITED

STATUS OF PAC NO: 1053-P/2020

S. No	Issue No.	Date of Issue	Date of renewal	Amendment No.	Amendment Date	Valid up to (Date)	Remarks	Signature of authorized signatory
1	2	3	4	5	6	7	8	9
1	1	13/01/2020	13/01/2021			12/01/2021	--	
			13/01/2021			12/01/2022		

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PART 1 CERTIFICATION

1.1 Certificate Holder: **M/s KAARA Décor Pvt. Ltd.**
A-16, Green Park,
New Delhi – 110 016
Email: contact@kaaradecor.com

1.2 Description of System

1.2.1 *Name of the Product*– Bamboowood Flooring & Wall Cladding

1.2.2 *Brand Name* – KAARA

1.2.3 *Brief Description* –KAARA Bamboowood flooring is made from Strand woven bamboo. It is a conversion of bamboo to wood. Bamboowood flooring is an eco-friendly product made from bamboo, the fastest growing plant on earth. Bamboo travel through boiling process or burn it under high pressure stream to remove starch and sugar content to make it termite resistant. Further, voc compliant phenolic resin is used as binder and 9 layers of UV coating is applied on it. Bamboo is one of the natural materials available for flooring and is an alternative to hard wood flooring. Bamboo has a higher fibre rating than any other hard wood which gives it exceptional hard wearing qualities. Flooring and wall paneling are coated with UV coat while decking shall be coated with oil.

1.2.4 *Types of KAARA Bamboowood*

1.2.4.1 *Flooring*
It is suitable for the indoor areas.

1.2.4.2 *Cladding (wall paneling)*
It is suitable for the walls.

1.2.5 *Size & thickness and Accessories of KAARA Bamboowood are as follows:*

1.2.5.1 *Size and thickness*

S. No.	Description	Thickness (mm)	Size W x L (mm)
1.	KAARA Bamboowood Flooring	14	133 x 1880
2.	KAARA Bamboowood Flooring	12	133 x 1880
3.	KAARA Bamboowood Flooring	10	133 x 930
4.	KAARA Bamboowood Cladding	8	135 x 1900
5.	KAARA Bamboowood Cladding	8	65 x 1900

1.2.5.2 *Accessories*

S. No.	Description	Thickness (mm)	Size (mm) W x L
1.	Skirting	14/12/10	85 x 1900
2.	Reducer	1412/10	44 x 1900
3.	T- mould	14/12/10	44 x 1900
4.	Threshold	14/12/10	44 x 1900
5.	Stair-nose	20	85 x 1900
6.	Quarter Round	18	18 x 1900

1.3 Manufacturing Process

1.3.1 The strand woven bamboo is hand selected from the cultivation areas by a team of experts of the firm. The bamboo is then carefully transported to the factory. The four stages of manufacturing process are as follows:

1.3.1.1 *Primary*

The bamboo is cleaned while its skin and knots are removed. It is then sliced into strips and crushed into strands – fibres that will come together for further treatment.

1.3.1.2 *Secondary*

The bamboo strands are then cured, naturally and artificially, for strength. These strands shall then be compressed to create bamboowood beams.

1.3.1.3 *Tertiary*

The beams are then smoothened out and sliced into different thicknesses for flooring, decking or wall cladding. The bamboowood planks shall return to be seasoned naturally and artificially (kiln dried) for high grade stability.

1.3.1.4 *Finishing*

The planks are then coated with UV coating. This process is repeated 9 times for ensuring durability and robustness.

The manufacturing process Flow Chart is shown in **Annex. I**.

For detailed KAARA Bamboowood Flooring manufacturing process, reference shall be made to the Standard Operating Procedure of the PAC holder.

1.4 Assessment

1.4.1 *Scope of Assessment*

Scope of assessment included suitability of KAARA Bamboowood to the specified requirements for use in buildings, houses, offices etc. as:

i) Flooring
ii) Cladding

1.4.2 *Basis of Assessment*

Assessment of the suitability of Banboowood is based on:

i) Test Reports of Bamboowood flooring tiles for various characteristics by SCS Global Services, 2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA for Zhejiang Imac Furnishings Industry Co., Ltd. DBA, Hangzhou Zhengtian Industrial Co., Ltd, China
ii) Test Reports of Bamboowood flooring tiles to determine the formaldehyde content in the board by Perforator method by LU Junjie / PM, Shangai (China)
iii) Test Reports of Bamboowood flooring tiles for various characteristics by Shriram Institute for Industrial Research, Delhi.
iv) Quality Assurance Scheme followed by the Certificate holder for process control.

1.5 Uses of the KAARA Bamboowood and its Limitations

1.5.1 *Uses*

Bamboowood flooring shall be suited for the following uses:

1.5.1.1 *Indoor*

i) Home, office, mall etc. flooring with accessories
ii) Sport stadiums, Auditoriums etc. special floors with special installation requirements
iii) Panelling/cladding etc.

1.5.1.2 *Outdoor*

i) Canopy, lawn area
ii) Portico, entrance etc.

1.5.2 *Limitations*

i) Indoor products shall not be used for outdoor use and vice-versa
ii) There shall be difference in kind of finish for indoor and outdoor flooring

1.6 Conditions of Certification

1.6.1 *Technical Conditions*

1. Raw materials and the finished flooring shall conform to the requirements of the prescribed specifications.
2. The flooring to be installed shall be in accordance with the specifications, manufacturing & installation process prescribed by the manufacturer.

1.6.2 *Handling of User Complaints*

1.6.2.1 The Certificate holder shall provide quick redressal to consumer/user complaints proved reasonable & genuine and within the conditions of warranty, if provided by it to customer/purchaser.

1.6.2.2 As part of PACS Certification, data shall be maintained on such complaints with a view to assess the complaint satisfaction and suitable preventive measures taken.

1.6.3 *Quality Assurance*
The Certificate Holder shall implement & maintain a quality assurance system in accordance with Scheme of Quality Assurance (SQA).

1.7 Certification

On the basis of assessment given in Part III of this Certificate & subject to the conditions of certification, use & limitations set out in this Certificate and if selected, installed & maintained as set out in Part I & II of this Certificate, the Bamboowood flooring & cladding covered by this Certificate is fit for use set out in the Scope of Assessment.

PART 2 CERTIFICATE HOLDER'S TECHNICAL SPECIFICATIONS

2.1 General

2.1.1 The PAC holder shall manufacture the Bamboowood flooring in accordance with the specifications, manufacturing & installation process prescribed by the manufacturer.

2.2 Specifications for the KAARA Bamboowood Flooring & Design Information

2.2.1 T*echnical Specifications*
KAARA Bamboowood is made from Strand woven bamboo. It is a conversion of bamboo to wood. Bamboo has a higher fibre rating than any other hard wood which gives it exceptional hard wearing qualities. Flooring and wall paneling are coated with UV coat while decking shall be coated with oil.

2.2.2 *Raw Materials*

2.2.2.1 *Bamboowood*

(i) Bamboo shall be matured, fresh, have no pin holes, no decay, no de-colourisation
(ii) Boric acid shall be of 99.5% purity
(iii) Borax shall be of 99.5% purity
(iv) Phenol shall have 99.9% dry mass w/w
(v) Formaldehyde shall be of 37% concentration
(vi) Caustic soda shall have 99.9% dry mass w/w
(vii) Hydrogen peroxide shall be of 50% concentration

2.2.2.2 *Flooring*

i) Density shall be ≥ 1000 Kg/m^3 in accordance with IS 1708 (Part 2):1986
ii) Modulus of Rupture shall be ≥ 150 N/mm^2 in accordance with IS 1708 (Part 5):1986
iii) Modulus of elasticity shall be ≥ 17500 N/mm^2 in accordance with IS 1708 (Part 5):1986
iv) Flammability (time taken for second ignition) shall be ≥ 5 min in accordance with IS 1734 (Part 3):1983
v) Flame penetration (time taken for flame penetration from bottom to top surface) shall be ≥ 30 min in accordance with IS 1734 (Part 3):1983
vi) Rate of burning (time taken to lose weight from 70% to 30%) shall be ≥ 10 min in accordance with IS 1734 (Part 3):1983
vii) Thermal conductivity shall be ≤ 0.50 W/m-K in accordance with IS 3346:1980

2.2.2.3 *Flooring Finish*

(i) Gloss value shall be 30 ± 5% in accordance with DIN EN ISO 2813:1994
(ii) Cross cut test shall be ≤ GT 2 in accordance with DIN EN ISO 2409:2007
(iii) Abrasion resistance – initial point shall be > 100 cycle in accordance with DIN EN 438-2:1991 (500g load per wheel S 33)
(iv) Abrasion resistance – initial point shall be > 6000 cycle in accordance with ASTM D 4060:1995 (500g load per wheel CS 17)
(v) Scratch resistance (pencil hardness) shall be ≥ 1H in accordance with ISO 15184:2012
(vi) Scratch resistance (coin test) shall be ≥ 20 N in accordance with Hamburger planner
(vii) Scratch resistance (surface) shall have No scratch as per Steel wool test, Type 2
(viii) Impact resistance shall be ≥ 2 N in accordance with DIN EN 438 Part 2-12:2005
(ix) Resistance to indentation shall be ≥ 1 N in accordance with DIN EN 438 Part 2-14:2005
(x) Chemical resistance shall be 5 in accordance with DIN 68861-1:2011
(xi) Heat resistance (cigarette test) shall be 6A in accordance with DIN 68861 – 6:2011
(xii) Inflammability shall be B1 in accordance with DIN 4102 Part 14:1990

2.2.3 *Design Parameters*

Data design parameters required for design where the product is used:

- Floor plan

- Dimensional details
- Construction type for product required
- Ventilation provisions
- Location
- Weather extreme high & low values of temperature and humidity

2.3 Installation Guidelines

2.3.1 The KAARA Bamboowood flooring shall be installed on the following types of sub-floor:

i) *Concrete sub-floor* – The desirable floor base shall be strong, dry and have no open cracks
ii) *Plywood sub-floor* -- The desirable floor base shall be free from emission and properly installed on graded floor
iii) *Other sub-floor* -- The desirable floor base shall be standard batten, treated and seasoned sub-floor

The sub-floor level shall be maintained at 'zero level'
There shall be no grease, oil, wax, dust and sand etc. on the sub-floor.

2.3.2 *Floating Floor Installation*

i) Floor shall be cleaned
ii) Underlay or high density foam shall be used
iii) The sheet shall be unrolled on the longest wall
iv) The sheet shall not be overlapped
v) The guide floor piece shall be placed first
vi) Expansion gap shall be left
vii) The guide shall be laid by nail down method
viii) Floor tiles shall be spread to normalise and colour sorting
ix) Rectangular alignment shall be checked
x) Floor tiles to be used next shall be aligned
xi) Two tiles shall be locked
xii) Same process shall be continued for next floor tile
xiii) The tiles shall be pushed to lock each other well by using controlled force
xiv) Floor tiles shall be laid & aligned continuously and locking process shall be repeated
xv) Guide shall be removed and tile placed in last
xvi) Skirting/moulding/quarter round shall be fixed
xvii) New floor shall be allowed to acclimatize for 24 hrs
xviii) The Bamboowood flooring can be fixed now.

2.3.3 *Nail Down Floor Installation*

i) Floor shall be cleaned
ii) Anti-friction poly sheet shall be laid
iii) Guide line expansion joints shall be marked 6mm from end and 15mm sideways
iv) Floor tiles shall be spread to normalise and colour sorting

v) The guide shall be laid by nail down method
vi) The tiles shall be arranged and laid in regular or other design
vii) The tiles shall be pushed into each other
viii) The floor nailer shall be used to nail down tiles
ix) Expansion guide strips shall be removed
x) Skirting/moulding/quarter round shall be fixed
xi) New floor shall be allowed to acclimatize for 24 hrs
xii) The Bamboowood flooring can be fixed now.

2.3.4 *Glue Down Floor Installation*

i) Floor shall be cleaned
ii) Guide line expansion joints shall be marked 6mm from end and 15mm sideways
iii) The guide shall be laid by nail down method
iv) Floor tiles shall be spread to normalise and colour sorting
v) Glue shall be applied by using trowel
vi) Glue shall be used below room temperature
vii) Glue shall be used gradually and tiles shall be laid outwards
viii) The tiles shall be cleaned/wiped in case any glue mark seen/noticed
ix) The tiles shall not be cut over glue spread area
x) Soft roller shall be used to get an even and good bond between subfloor and tiles
xi) The glue shall be cleaned/wiped if it comes out on top
xii) Guide shall be removed and tile placed in last
xiii) Skirting/moulding/quarter round shall be fixed
xiv) New floor shall be allowed to acclimatize for 24 hrs
xv) The Bamboowood flooring can be fixed now.

2.3.5 *Decking Installation*

i) Floor shall be cleaned
ii) Battens shall be placed with a gap of not more than 500mm
iii) Batten shall be nailed down into subfloor
iv) Clip shall be installed on the back of deck tile by 2.5mm dia. and 10mm long screw
v) First deck tile shall be installed
vi) Hole shall be drilled to fix 4mm screw
vii) Tile shall be fixed with batten by using clip and 2.5mm screw
viii) Same process shall be repeated to fix next deck
ix) New floor shall be allowed to acclimatize for 24 hrs
x) The Bamboowood flooring can be fixed now.

Detailed installation guidelines along with illustrations are given in **Annex II.**

2.4 Maintenance Guidelines

2.4.1 KAARA Bamboowood flooring shall be maintained by hardwood floor cleaners as recommended to ensure that floor stays looking good.It shall be ensured that hardwood floor cleaners are water base, non-

toxic cleaner which has been designed for finished hardwood floors. Cleaner shall be used as per manufacturer's instructions.

2.4.2 *Types of Drying Methods for the Floors are as follows:*

2.4.2.1 *Dry mop*

Dirt and grit shall always be removed prior to cleaning Bamboowood floors with an electrostatic dust control mop/ soft mop/ vacuum cleaner. Bristle broom shall be avoided.

2.4.2.2 *Dry spray*

The area of floor or the cleaning pad shall be mist with the hardwood floor cleaner.

2.4.2.3 *Wipe*

The floor shall be cleaned with a microfiber cloth or mop using a back and forth motion until it is dry. Soiled mop or cloth shall be replaced once it becomes soiled to avoid streaking.

2.4.3 *Do's and Don'ts*

2.4.3.1 *Do's*

i) The floor shall be cleaned regularly. Recommendations for cleaning the floor as a guide shall be as follows:
   - Low frequented area (residential) – about every 2-4 weeks
   - Medium frequented area (offices) – about every 1-2 weeks
   - High frequented area (public places) – about every 1-2 days

ii) Spills shall be removed promptly

iii) Mats at exterior and interior doors shall be placed to trap sand and grit from incoming traffic

iv) Heavy furniture or appliances shall always be picked rather than sliding them across the floor

v) Any minor scratches or damage shall be repaired using hardwood flooring cleaners

2.4.3.*2* *Don'ts*

i) Do not steam mop or wet mop floor surface area after installation. Excess water can cause swelling

ii) Do not let sand, dirt or grit build up. They act like sandpaper and actually abrade and dull the floor finish.

2.5 Sampling

2.5.1 *Lot*

2.5.1.1 In any consignment all the flooring tiles of the same type, shape, size and manufactured from the same raw materials under relatively similar conditions of production shall be grouped together to form a lot for inspection.

2.5.1.2 Samples shall be collected and inspected from each lot separately to ascertain its conformity or otherwise to the requirement of the specification.

2.5.2 *Scale of Sampling*

2.5.2.1 The number of samples to be selected for the sample from a lot shall depend upon the size of the lot and shall be in accordance with the col 1, 2 and 3 of Table 1.

2.5.2.2 All the tiles in the sample shall be selected at random from the lot. In order to ensure randomness of selection, procedures given in IS 4905:1968 may be followed.

2.5.3 *Number of tests and criteria for conformity*

2.5.3.1 The no. of tiles in the first sample shall first be subjected to the routine tests.

If in the first sample the no. of defective tiles i.e. those failing to satisfy any one or more of the acceptance tests is equal to the corresponding acceptance no. *a* (col 5), the lot shall be considered as conforming to the requirements of the routine tests. If the no. of defective tiles in the first sample is more than or equal to the corresponding rejection no. *r* (col 6), the lot shall be considered as not conforming. If the no. of defective tiles in the first sample lies between the corresponding values of *a & r*, a second sample (col 2 &3), shall be selected and subjected to the routine tests. If in the combined sample, the no. of defective tiles is less than or equal to the corresponding acceptance no. *a,* the lot shall be considered as conforming and if, the no. of defective tiles is more than or equal to the corresponding rejection no. *r*, the lot shall be considered as not conforming.

Table 1: Sample size

(Clause 2.5.3.1)

No. of tiles in the lot (1)	Sample (2)	Sample size (3)	Cumulative Sample size (4)	Acceptance Number (5)	Rejection Number (6)
Up to 100	First	5	5	0	0
	Second	10	15	1	2

2.6 Packing and Marking

2.6.1 Flooring tiles shall be packed in foam, one set of such tiles again wrapped in poly pack and expose to infrared shrinking tunnel for air tight packing. Pre-shrink wrapped tiles shall be placed into corrugated box which shall be made by using 180gsm, 3 ply, 13kg/cm^2, 20Bf paper; of wall thickness 4.5mm and 0.7kg/m^2 weight. Each box shall be marked with the following information:

a) Name of the manufacturer or trade mark
b) Lot or batch number; year of manufacture

c) Colour
d) Dimensions
e) Quantity in no., sqm or sqft

2.7 Choosing Size and Thickness

Appropriate size and thickness of the flooring shall be chosen to suit the requirement of the work.

2.8 Skilled /Training needed for Installation

KAARA Bamboowood flooring shall be installed by experienced carpenters in accordance with the technical literature and installation guidelines of the manufacturer.

2.9 Guarantees/Warranties provided by the PAC Holder

The manufacturer shall furnish a warranty for a period of 5 years from the date of completion of flooring to the original purchaser provided the flooring is installed strictly in accordance with the applicable specifications, instructions and guidelines of the manufacturer. A brochure giving relevant warrantee details shall be made available to the client.

2.10 Services provided by the PAC Holder to the Customer

In-house testing of formwork at regular intervals as per the Quality Control Assurance requirement shall be ensured by PAC Holder.

2.11 Manuals & Guidelines

All the manuals and guidelines etc. relating to Operation, Quality, Installation, Maintenance etc. shall be provided by the manufacturer.

2.12 Responsibility

Quality of installation of the flooring on site is the responsibility of the trade persons engaged by the agency.

PART 3 BASIS OF ASSESSMENT AND BRIEF DESCRIPTION OF ASSESSMENT PROCEDURE

3.1 Assessment

3.1.1 The assessment has been done as per provisions of the standards listed in Part V of this Certificate.

3.1.2 The assessment of the system is based on the Bamboowood flooring manufactured, used and installed as per statement given in the PAC. However, assessment of the suitability of flooring manufactured as flooring, decking and cladding in buildings, houses, offices etc. is based on:

i) Inspection of the Products and quality assurance of the product.

ii) Test Reports of Bamboowood flooring tiles for various characteristics by SCS Global Services, 2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA for Zhejiang Imac Furnishings Industry Co., Ltd. DBA, Hangzhou Zhengtian Industrial Co., Ltd, China

iii) Test Reports of Bamboowood flooring tiles to determine the formaldehyde content in the board by Perforator method by Centre for Testing & Evaluation of Wood Composites, IPIRTI, Bangalore.

iv) Test Reports of Bamboowood flooring tiles for various characteristics by Shriram Institute for Industrial Research, Delhi.

v) Quality Assurance Scheme followed by the Certificate holder for process control.

3.2 Laboratory Tests done for assessment

3.2.2 *Testing of Samples by Shriram Institute for Industrial Research, Delhi*

3.2.2.1 *Test to determine the formaldehyde content in the board by Perforator method as per IS 13745:1993*

i) Type of the board : Bamboowood flooring tile
ii) Thickness of the board : 14.18mm
iii) Moisture content at the time of testing :5.52%
iv) Bulk density : 1031.10 kg/m^3
v) Perforator value : 13.88 mg/100g of oven dry board

3.2.2.2 *Test to determine the mechanical properties*

S. No.	Tests	Indian Standard	Result
1.	Density	IS 1708 (Part 2 & 5):1986	*761 kg/m^3*
2.	Modulus of rupture	IS 1708 (Part 2 & 5):1986	*116 N/mm^2*
3.	Modulus of elasticity	IS 1708 (Part 2 & 5):1986	*10511 N/mm^2*

3.3 Usage of the Product

3.3.1 Details of the KAARA Bamboowood Flooring supplied by the manufacturer for use as flooring and cladding in buildings, houses, offices etc. is given below:-

- The Clardiges New Delhi
- Double Tree by Hilton Hotel Gurguram
- Himachal Pradesh Cricket Association , Dharamshala
- Multiple Residences across Pan India

PART 4 STANDARD CONDITIONS

This certificate holder shall satisfy the following conditions:

4.1 The certificate holder shall continue to have the product reviewed by BMBA.

4.2 The product shall be continued to be manufactured according to and in compliance with the manufacturing specifications and quality assurance measures which applied at the time of issue or revalidation of this certificate. The Scheme of Quality Assurance separately approved shall be followed.

4.3 The quality of the product shall be maintained by the certificate holder. Complete testing facilities shall be installed for in-process control.

4.4 The product user should install, use and maintain the product in accordance with the provisions in this Certificate.

4.5 This certificate does not cover uses of the product outside the scope of this appraisal.

4.6 The product is appraised against performance provisions contained in the standards listed in Part-V. Provisions of any subsequent revisions or provisions introduced after the date of the certificate do not apply.

4.7 Where reference is made in this Certificate to any Act of Parliament of India, Rules and Regulations made there under, statutes, specifications, codes of practice, standards etc. of the Bureau of Indian Standards or any other national standards body and the International Organization for Standardization (ISO), manufacturer's company standards, instruction/manual etc., it shall be construed as reference to such publications in the form in which they were in force on the date of grant of this Certificate (and indicated in Part V to this Certificate)

4.8 The certificate holder agrees to inform BMBA of their clients with details of construction on six monthly basis.

4.9 The certificate holder agrees to provide to BMBA feedback on the complaints received, the redressal provided, and the time taken to provide redressal on complaint to complaint basis as soon as redressal is provided. BMBA agrees to provide the certificate holder the user feedback received by it, if any.

4.10 If at any time during the validity period, PACH is unable to fulfill the conditions in his PAC, he should on his own initiative suspend using the PAC and notify Chairman, TAC the date from which he has suspended its use, the reason for suspension and the period by which he will be able to resume. He shall not resume without the prior permission of BMBA. He shall also inform, simultaneously, his agents, licensees, distributors, institutional, government, public sector buyers, other buyers and all those whom he has informed about his holding the PAC. He shall also inform all those who buy his product(s) during the period of suspension. He shall provide to BMBA at the earliest the list of who have been so informed by him.

4.11 In granting this Certificate, BMBA takes no position as to:

(a) The presence or absence of patent or similar rights relating to the product;

(b) The legal right of the Certificate holder to market, install or maintain the product;

(c) The nature of individual installations of the product, including methods of workmanship.

4.12 BMTPC and the Board of Agreement of BMTPC (BMBA) take no position relating to the holder of the Performance Appraisal Certificate (PACH) and the users of the Performance Appraisal Certificate (PAC) respecting the patent rights / copy rights asserted relating to the product / system / design / method of installation etc. covered by this PAC. Considerations relating to patent / copy rights are beyond the scope of the Performance Appraisal Certification Scheme (PACS) under which this PAC has been issued. PACH and users of this PAC are expressly advised that determination of the Claim / validity of any such patent rights / copy rights and the risk of infringement of such rights are entirely the responsibility of PACH on the one hand and that of the users on the other.

4.13 It should be noted that any recommendations relating to the safe use of the product which are contained or referred to in this Certificate are the minimum standards required to be met with when the product is installed, used and maintained. They do not purport in any way to restate or cover all the requirements of related Acts such as the Factory Act, or of any other statutory or Common Law duties of care, or of any duty of care which exist at the date of this Certificate or in the future, nor is conformity with the provisions of this Certificate to be taken as satisfying the requirements of related Acts.

4.14 In granting this Certificate, BMTPC and BMBA 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 use of this product.

4.15 The certificate holder indemnifies BMBA, its officers and officials involved in this assessment against any consequences of actions taken in good faith including contents of this certificate. The responsibility fully rests with the certificate holder and user of the product.

4.16 The responsibility for conformity to conditions specified in this PAC lies with the manufacturer who is granted this PAC. The Board (BMBA) will only consider requests for modification or withdrawal of the PAC.

4.17 The PAC holder shall not use this certificate for legal defense in cases against him or for legal claims he may make from others.

Place: New Delhi
Date of issue: 13.1.2020

Chairman TAC & for and on behalf of
Member Secretary, BMBA

Dr. Shailesh Kr. Agrawal
Chairman, TAC
& Member Secretary, BMBA
Building Materials and Technology Promotion Council
Ministry of Housing and Urban Affairs, Govt. of India
Core 5A, 1st Floor, India Habitat Centre
Lodhi Road, New Delhi-110003

PART 5 LIST OF STANDARDS & CODES USED IN ASSESSMENT

5.1 Standards - These Standards are referred for carrying out particular tests only and do not specify the requirement for the whole product as such.

5.1.1 IS 1708 (Part 1):1986 – Method of testing of small clear specimens of timber – Determination of moisture content

5.1.2 IS 1708 (Part 2):1986 – Method of testing of small clear specimens of timber – Determination of specific gravity

5.1.3 IS 1708 (Part 5):1986 -- Method of testing of small clear specimens of timber – Determination of static bending strength

5.1.4 IS 1708 (Part 10):1986 – Method of testing of small clear specimens of timber– Determination of hardness under static indentation

5.1.5 IS 1734 (Part 3):1983 -- Methods of test for plywood – Determination of fire resistance

5.1.6 IS 2380:1981 -- Method of test for wood particle boards and boards from other lignocellulosic materials

5.1.7 IS 3346:1980 - Method of determination of thermal conductivity of thermal insulation materials

5.1.8 IS 13745:1993--Methods of determination of formaldehyde content in wood particle board by perforator method

5.1.9 DIN EN ISO 2409:2007 – Test method for determination of Cross cut adhesion tape

5.1.10 DIN EN ISO 2813:1994 – Test method for determination of specular gloss of paint film using a reflectometer

5.1.11 DIN EN 438-2:1991 – Test method for determination of Abrasion resistance

5.1.12 DIN EN 438 (Part 2 -12):2005 – Test method for determination of Impact resistance by impactor drop ball test

5.1.13 DIN EN 438 (Part 2 -14):2005 – Test method for determination of Resistance to indentation (water vapour)

5.1.14 DIN 4102 (Part 14):1990 – Floor covering systems using a radiant heat source

5.1.15 DIN 68861-1:2011 – Test method for determination of behavior at Chemical influence

5.1.16 DIN 68861-6:2011 – Test method for determination of behavior at glowing cigarette

5.1.17 ASTM D 1037:2006 – Standard rest method for evaluating properties of wood based fiber and particle panel materials

5.1.18 ASTM D 4060-10:1995 – Standard **t**est method for Abrasion resistance of organic coating by Taber Abraser tester

5.1.19 ASTM D 4442:2007 -- Standard **t**est method for direct moisture content measurement of wood & wood base materials

5.1.20 ISO 15184:2012 -- Determination of film hardness by pencil test

5.1.21 EN 12722:1997 – Furniture—assessment of surface resistance by dry heat

5.2 Company Standards of the PAC Holder – The branded design & specifications of the raw materials and finished product are as submitted by the manufacturer. The PAC holder has to make available the company standards to the consumers according to which testing have been done.

CERTIFICATION

In the opinion of Building Materials & Technology Promotion Council's Board of Agreement (BMBA), **Bamboowood Flooring & Wall Cladding** bearing the mark manufactured by M/s KAARA Décor Private Limited, is satisfactory if used as set out above in the text of the Certificate. This **Certificate PAC No.: 1053-P/2020** is awarded to **M/s KAARA Décor Private Limited, New Delhi.**

The period of validity of this Certificate is for a period of one year i.e. from 13/01/2021 to 12/01/2022 as shown on Page 1 of this PAC.

This Certificate consists of a cover page and pages 1 to 24.

Embossing Seal of BMBA

On behalf of BMTPC Board of Agreement, Chairman, Technical Assessment Committee (TAC) of BMBA & Member Secretary, BMTPC Board of Agreement (BMBA) under Ministry of Housing and Urban Affairs, Government of India

Place: New Delhi, India
Date: 14-01-21

PART 6 ABBREVIATIONS

Abbreviations

BMBA	Board of Agreement of BMTPC
BMTPC	Building Materials and Technology Promotion Council
CPWD	Central Public Works Department
ED	Executive Director of BMTPC
IO	Inspecting Officer
MS	Member Secretary of BBA
PAC	Performance Appraisal Certificate
PACH	PAC Holder
PACS	Performance Appraisal Certification Scheme
SQA	Scheme of Quality Assurance
TAC	Technical Assessment Committee (of BMBA)

PERFORMANCE APPRAISAL CERTIFICATION SCHEME - A BRIEF

Building Materials & Technology Promotion Council (BMTPC) was set up by the Government of India as a body under the Ministry of Housing &Urban Poverty Alleviation to serve as an apex body to provide inter-disciplinary platform to promote development and use of innovative building materials and technologies laying special emphasis on sustainable growth, environmental friendliness and protection, use of industrial, agricultural, mining and mineral wastes, cost saving, energy saving etc. without diminishing needs of safety, durability and comfort to the occupants of buildings using newly developed materials and technologies.

During the years government, public and private sector organizations independently or under the aegis of BMTPC have developed several new materials and technologies. With liberalization of the economy several such materials and technologies are being imported.

However, benefits of such developments have not been realized in full measure as understandably the ultimate users are reluctant to put them to full use for want of information and data to enable them to make informed choice.

In order to help the user in this regard and derive the envisaged social and economic benefits the Ministry of Housing &Urban Poverty Alleviation has instituted a scheme called Performance Appraisal Certification Scheme (PACS) under which a Performance Appraisal Certificate (PAC) is issued covering new materials and technologies. PAC provides after due investigation, tests and assessments, amongst other things information to the user to make informed choice.

To make the PACS transparent and authentic it is administered through a Technical Assessment Committee (TAC) and the BMTPC Board of Agreement (BMBA) in which scientific, technological, academic, professional organizations and industry interests are represented.

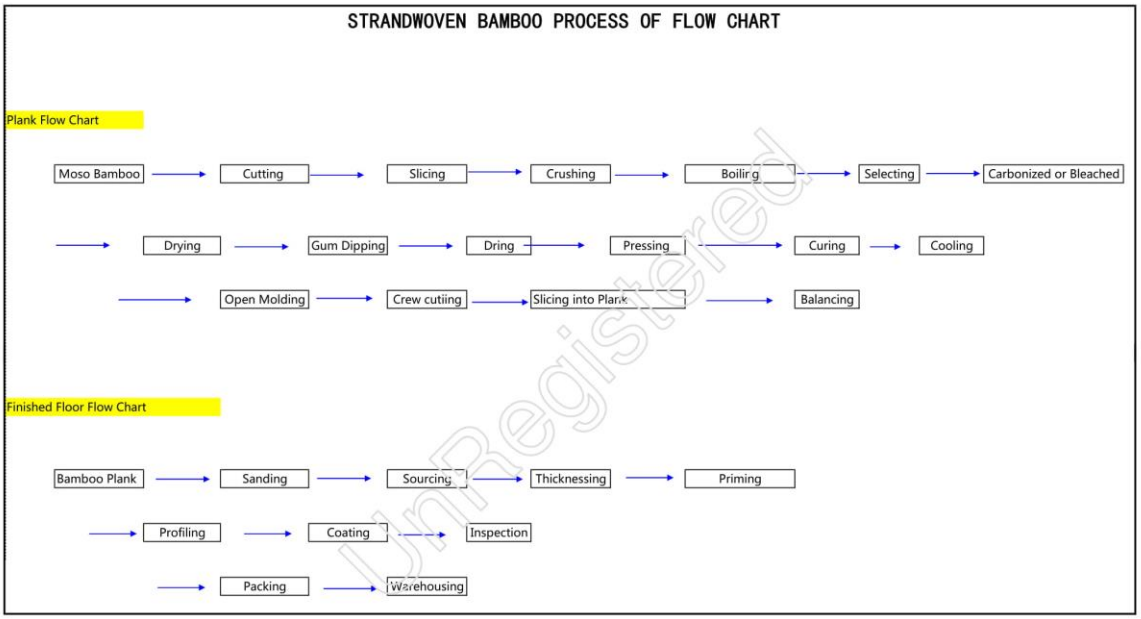
The Government of India has vested the authority for the operation of the Scheme with BMTPC through Gazette Notification No. 1-16011/5/99 H-II in the Gazette of India No. 49 dated 4th December, 1999.

Builders and construction agencies in the Government, public and private sectors can help serve the economic, development and environmental causes for which the people and Government stand committed by giving preference to materials and technologies which have earned Performance Appraisal Certificates.

Further information on PACS can be obtained from the website: www.bmtpc.org

Annex – I

Process Flow Chart

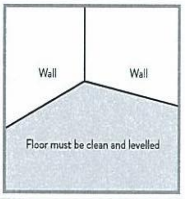
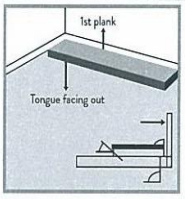
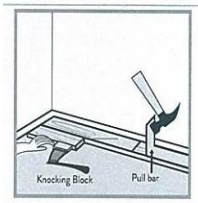


ANNEX II

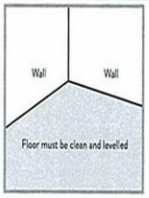
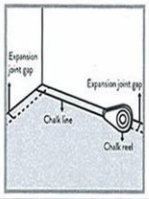
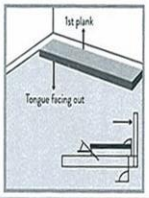
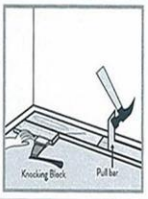
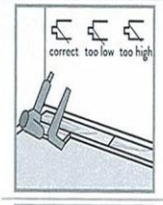
(Clause 2.3)

INSTALLATION PROCEDURE

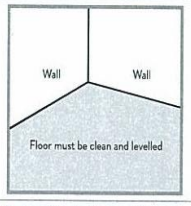
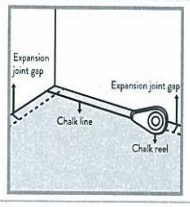
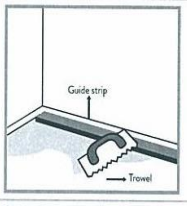
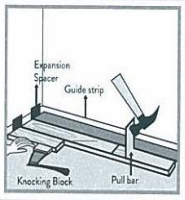
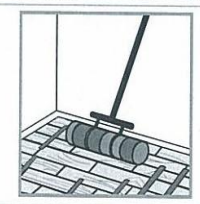
FLOATING FLOOR INSTALLATION :-

	▸ CLEAN FLOOR
	▸ USE UNDERLAY OR HIGH DENSITY FOAM ▸ UNROLL THE SHEET ON THE LONGEST WALL ▸ DO NOT OVERLAP THE SHEET
	▸ PLACE GUIDE FLOOR PIECE FIRST ▸ LEAVE EXPANSION GAP ▸ LAY GUIDE BY NAIL DOWN METHOD
	▸ SPREAD FLOOR TILES TO NORMALIZE AND COLOUR SORTING ▸ MAKE SURE RECTANGULAR ALIGNMENT
	▸ ALIGN NEXT FLOOR TILES ▸ LOCK TWO TILES AS SHOWN ▸ CONTINUE SAME FOR NEXT FLOOR TILE
	▸ PUSH TILES TO LOCK EACH OTHER WELL BY USING CONTROLLED FORCE ▸ CONTINUE LAY AND ALIGN FLOOR TILES AND REPEAT LOCKING PROCESS
	▸ REMOVE GUIDE AND PLACE TILE IN LAST ▸ PLACE SKIRTING/ MOULDING/ QUARTER ROUND

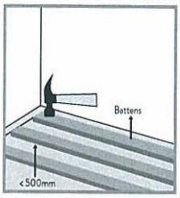
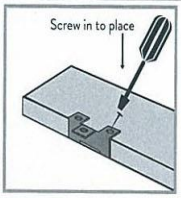
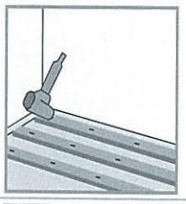
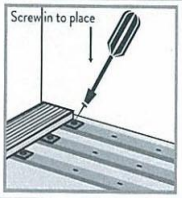
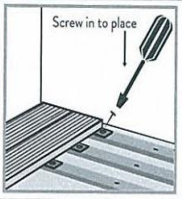
NAIL DOWN FLOOR INSTALLATION :-

	▸ CLEAN FLOOR ▸ LAY DOWN ANTI FRICTION POLY SHEET
	▸ MARK GUIDE LINE EXPANSION JOINTS 6MM FROM END & 15MM SIDEWAYS
	▸ SPREAD FLOOR TILES TO NORMALIZE AND COLOUR SORTING ▸ LAY GUIDE TILE BY NAIL DOWN
	▸ ARRANGE AND LAY TILES IN REGULAR OR CHOICE OF DESIGN ▸ PUSH TILES INTO EACH OTHER
	▸ USE FLOOR NAILER TO NAIL DOWN TILES
	▸ REMOVE EXPANSION GUIDE STRIPS ▸ PLACE SKIRTING/ MOULDING/ QUARTER ROUND

GLUE DOWN FLOOR INSTALLATION :-

	▸ CLEAN FLOOR
	▸ MARK GUIDE LINE EXPANSION JOINTS 6MM FROM END & 15MM SIDEWAYS ▸ LAY GUIDE BY NAIL DOWN METHOD
	▸ SPREAD FLOOR TILES FOR NORMALIZE AND COLOUR SORTING ▸ USE TROWEL TO APPLY GLUE AS SHOWN ▸ USE GLUE BELOW ROOM TEMPERATURE
	▸ SPREAD GLUE GRADUALLY AND LAY TILES OUTWARDS ▸ CLEAN/ WIPE TILES IN CASE ANY GLUE MARK SEEN/ NOTICED ▸ DO NOT CUT TILES OVER GLUE SPREAD AREA
	▸ USE SOFT ROLLER TO GET AN EVEN AND GOOD BOND BETWEEN SUB FLOOR AND TILES ▸ CLEAN/ WIPE GLUE IF COMES OUT ON TOP
	▸ REMOVE GUIDE AND PLACE TILE IN LAST ▸ PLACE SKIRTING/ MOULDING/ QUARTER ROUND

DECKING INSTALLATION :-

	▸ CLEAN FLOOR
	▸ PLACE BATTENS WITH A GAP OF NOT MORE THAN 500MM ▸ NAIL DOWN BATTEN INTO SUBFLOOR
	▸ INSTALL CLIP ON THE BACK OF DECK TILE BY 2.5MM DIA AND 10MM LONG SCREW
	▸ INSTALLATION OF FIRST DECK TILE ▸ DRILL HOLE TO FIX 4MM SCREW DOWN
	▸ USE CLIP TO FIX TILE WITH BATTEN DOWN ▸ USE 2.5MM SCREW ▸ REPEAT THE SAME TO FIX NEXT DECK
	▸ INSTALL NEXT DECK LIKE SHOWN HERE