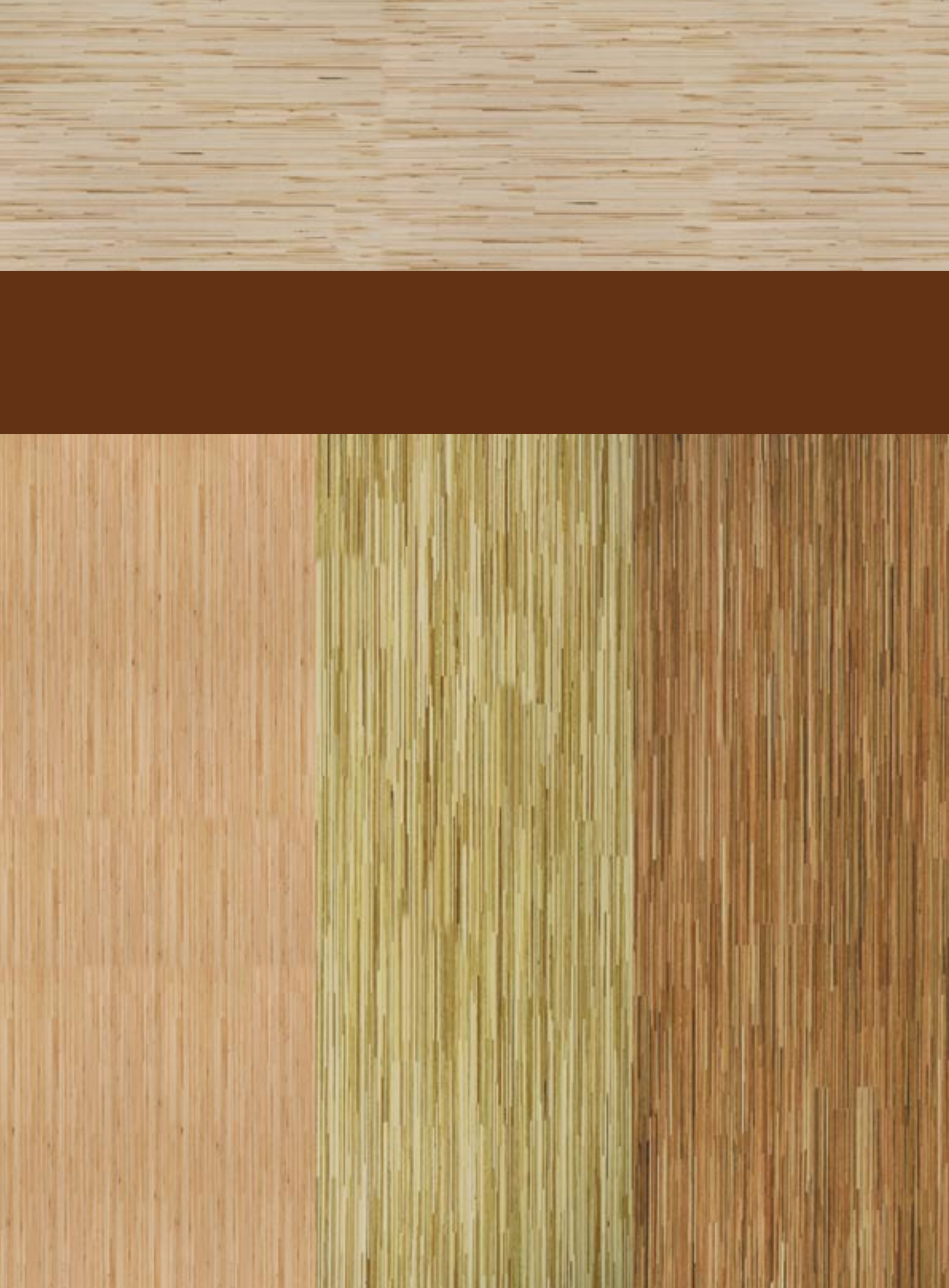
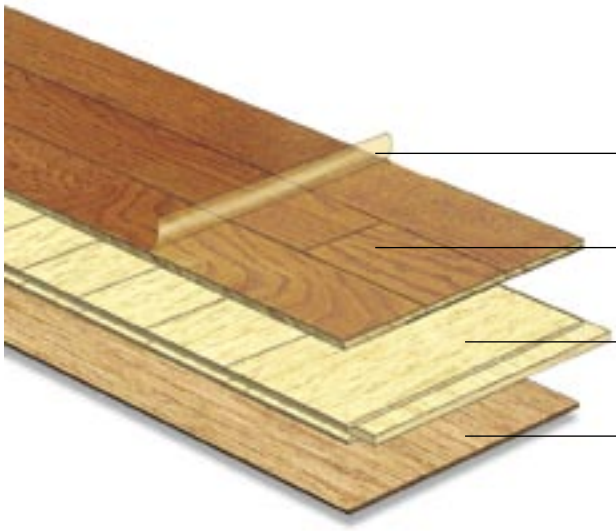

EKO WOOD®
A stylish way to live...



# contents>>

# product characteristics

## THE CONSTRUCTION OF EKOWOOD



Multi-layer of high quality finish

Hardwood surface : 3.6mm ($^{9}/_{64}$")

Solid wood middle layer : 8.4mm ($^{21}/_{64}$")

Solid wood base layer : 2.0mm ($^{3}/_{32}$")

### Origin of Species

| Hardwood Surface | |
|---|---|
| White Oak | USA/Europe |
| Red Oak | USA |
| Beech | Europe |
| Hard Maple | USA |
| Ash | USA/Europe |
| American Cherry | USA |
| Iroko/Kambala/African Teak | Africa |
| Doussie | Africa |
| Kempas | Malaysia |
| Merbau | Malaysia |
| Tasmanian Oak | Australia |
| Jatoba | Brazil |
| Hevea | Malaysia |
| Pecan | USA |
| Santos Mahogany | Brazil |
| Walnut | USA |
| Bamboo | China |

| Solid Wood Middle Layer | |
|---|---|
| Hevea | Malaysia |
| Pine | South Africa/New Zealand |

| Solid Wood Base Layer | |
|---|---|
| Eucalyptus or | Brazil |
| Spruce | Finland |

*Disclaimer : Origins of species indicated may change from time to time*

## SPECIFICATIONS

### Ekowood Luxury Series (1-Strip / Wideplank)

**Size** 14 x 136 x 2130 / 1820mm
$^{9}/_{16}$" x 5 $^{11}/_{32}$" x 7' / 6'

**Types** Premium, Unica or Classic

**Finish** Ultra violet cured acrylic lacquer, oil, unfinished and Aluminium Oxide.

### Ekowood Elegance Series (2-Strip)

**Size** 13.5 x 185 x 2200mm
$^{17}/_{32}$" x 7$^{9}/_{32}$" x 86$^{10}/_{16}$"

**Types** Premium, Unica or Classic

**Finish** Ultra violet cured acrylic lacquer, oil, unfinished and Aluminium Oxide.

### Ekowood Harmony Series (3-Strip)

**Size** 14 x 195 x 2200mm
$^{9}/_{16}$" x 7$^{11}/_{16}$" x 86$^{10}/_{16}$"

**Types** Premium, Unica or Classic

**Finish** Ultra violet cured acrylic lacquer, oil, unfinished and Aluminium Oxide.

## DIMENSIONS

| Type | Thickness (mm) | Width (mm) | Length (mm) | No. of pcs. per pack | Size per pack ($m^2$) | Weight per pack (kg) |
|---|---|---|---|---|---|---|
| **1-strip / T&G** | 14 | 136 | 1820 | 8 | 2.0 | 17.5 |
| **1-strip / Loc** | 14 | 136 | 1820 | 8 | 2.0 | 19.8 |
| **1-strip / T&G** | 14 | 136 | 2130 | 8 | 2.3 | 20.5 |
| **1-strip / Loc** | 14 | 136 | 2130 | 8 | 2.3 | 23.2 |
| **1-strip / T&G** | 22 | 136 | 1820 | 6 | 1.5 | 22.3 |
| **1-strip / T&G** | 22 | 136 | 2130 | 6 | 1.7 | 26.1 |
| **2-strip / T&G** | 13.5 | 185 | 2200 | 6 | 2.4 | 20.4 |
| **3-strip / T&G** | 14 | 195 | 2200 | 6 | 2.6 | 22.8 |
| **3-strip / Loc** | 14 | 195 | 2200 | 6 | 2.6 | 25.7 |
| **3-strip / T&G** | 22 | 195 | 2200 | 4 | 1.7 | 25.7 |

**Note:**
Ekowood 1-strip is available in either 1820mm or 2130mm length and in 125mm or 136mm width.
Ekowood 3-strips is available in 2200mm length and in 185mm or 195mm width.

## PACKAGING INFORMATION

### 20′ CONTAINER

| Type | Thickness (mm) | Length (mm) | No. of packs per pallet | Weight per pallet (kgs) | Size per pallet ($m^2$) | No. of pallets per 20′ container | Weight per 20′ container (kgs) | Size per 20′ container ($m^2$) |
|---|---|---|---|---|---|---|---|---|
| **1-strip / T&G** | 14 | 1820 | 48 | 840 | 95 | 12 | 10,080 | 1,141 |
| **1-strip / Loc** | 14 | 1820 | 48 | 950 | 95 | 10 | 9,504 | 950 |
| **1-strip / T&G** | 14 | 2130 | 48 | 984 | 111 | 12 | 11,802 | 1,335 |
| **1-strip / Loc** | 14 | 2130 | 48 | 1,112 | 111 | 10 | 11,122 | 1,112 |
| **1-strip / T&G** | 22 | 1820 | 48 | 1,069 | 71 | 12 | 12,833 | 855 |
| **1-strip / T&G** | 22 | 2130 | 48 | 1,251 | 83 | 12 | 15,016 | 1,001 |
| **2-strip / T&G** | 13.5 | 2200 | 44 | 898 | 107 | 14 | 12,572 | 1,504 |
| **3-strip / T&G** | 14 | 2200 | 44 | 1,005 | 113 | 14 | 14,069 | 1,586 |
| **3-strip / Loc** | 14 | 2200 | 44 | 1,133 | 113 | 12 | 13,591 | 1,359 |
| **3-strip / T&G** | 22 | 2200 | 44 | 1,133 | 76 | 14 | 15,856 | 1,057 |

### 40′ CONTAINER

| Type | Thickness (mm) | Length (mm) | No. of packs per pallet | Weight per pallet (kgs) | Size per pallet ($m^2$) | No. of pallets per 40′ container | Weight per 40′ container (kgs) | Size per 40′ container ($m^2$) |
|---|---|---|---|---|---|---|---|---|
| **1-strip / T&G** | 14 | 1820 | 48 | 840 | 95 | 24 | 20,160 | 2,281 |
| **1-strip / Loc** | 14 | 1820 | 48 | 950 | 95 | 22 | 20,909 | 2,091 |
| **1-strip / T&G** | 14 | 2130 | 48 | 984 | 111 | 24 | 23,604 | 2,670 |
| **1-strip / Loc** | 14 | 2130 | 48 | 1,112 | 111 | 22 | 24,468 | 2,447 |
| **1-strip / T&G** | 22 | 1820 | 48 | 1,069 | 71 | 24 | 25,667 | 1,711 |
| **1-strip / T&G** | 22 | 2130 | 48 | 1,251 | 83 | 24 | 30,033 | 2,002 |
| **2-strip / T&G** | 13.5 | 2200 | 44 | 898 | 107 | 24 | 21,552 | 2,579 |
| **3-strip / T&G** | 14 | 2200 | 44 | 1,005 | 113 | 24 | 24,119 | 2,718 |
| **3-strip / Loc** | 14 | 2200 | 44 | 1,133 | 113 | 24 | 27,181 | 2,718 |
| **3-strip / T&G** | 22 | 2200 | 44 | 1,133 | 76 | 24 | 27,181 | 1,812 |

## PRODUCT DETAILS

| | Grade | | | Type | | |
|---|---|---|---|---|---|---|
| | Premium | Unica | Classic | Luxury Series (1 strip) | Elegance Series (2 strips) | Harmony Series (3 strips) |
| American Cherry | ◆ | ◆ | ◆ | ◆ | | ◆ |
| Ash | ◆ | | ◆ | ◆ | | ◆ |
| Ash White Sand | ◆ | | ◆ | ◆ | | ◆ |
| Cambridge | ◆ | | | ◆ | | ◆ |
| Doussie | ◆ | ◆ | | ◆ | | ◆ |
| Gunstock | ◆ | | | ◆ | | |
| Hard Maple* | ◆ | ◆ | ◆ | ◆ | | ◆ |
| Hevea | ◆ | ◆ | | | ◆ | ◆ |
| Iroko | ◆ | ◆ | | ◆ | | ◆ |
| Jatoba | ◆ | ◆ | | ◆ | | ◆ |
| Kempas | ◆ | ◆ | | ◆ | ◆ | ◆ |
| Lightly Steamed Beech* | ◆ | ◆ | ◆ | ◆ | | ◆ |
| Merbau | ◆ | ◆ | | ◆ | ◆ | ◆ |
| Oak Russet | ◆ | | | ◆ | | ◆ |
| Oak Safari | ◆ | | | ◆ | ◆ | |
| Oak White Sand | ◆ | ◆ | ◆ | ◆ | | ◆ |
| Pecan | | | ◆ | ◆ | | |
| Red Oak | ◆ | | ◆ | ◆ | | ◆ |
| Santos Mahogany | | ◆ | | ◆ | | |
| Smoked Oak | ◆ | | | ◆ | | |
| Tasmanian Oak | | | ◆ | ◆ | ◆ | ◆ |
| Teak | ◆ | | | ◆ | ◆ | ◆ |
| Walnut | ◆ | ◆ | ◆ | ◆ | | ◆ |
| Wenge Ash | ◆ | | | ◆ | | ◆ |
| White Oak** | ◆ | ◆ | ◆ | ◆ | ◆ | ◆ |
| Winchester Cider | hand crafted | | | ◆ | | |
| Winchester Coffee | hand crafted | | | ◆ | | |
| Winchester Jatoba | hand crafted | | | ◆ | | |
| Winchester Mesquite | hand crafted | | | ◆ | | |
| Winchester Pecan | hand crafted | | | ◆ | | |
| Winchester Suede | hand crafted | | | ◆ | | |
| Winchester Walnut | hand crafted | | | ◆ | | |
| Bamboo (Flat Grain Carbonized) | premium | | | available in 195mm width | | |
| Bamboo (Flat Grain Natural) | premium | | | available in 195mm width | | |
| Bamboo (Vertical Grain Carbonized) | premium | | | available in 195mm width | | |
| Bamboo (Vertical Grain Natural) | premium | | | available in 195mm width | | |
| Fine Autumn | fine line | | | available in 195/185mm width | | |
| Fine Cherry Blossom | fine line | | | available in 195/185mm width | | |
| Fine Mocha | fine line | | | available in 195/185mm width | | |
| Fine Spring | fine line | | | available in 195/185mm width | | |
| Fine Summer | fine line | | | available in 195/185mm width | | |
| Fine Sunrise | fine line | | | available in 195/185mm width | | |
| Fine Sunset | fine line | | | available in 195/185mm width | | |
| Fine Winter | fine line | | | available in 195/185mm width | | |

**Note:** * Hard Maple and Steamed Beech are also available in country grade.
** White Oak is also available in arte, natural and country grade.

## QUALITY

Ekowood is ISO 9001:2000 certified.

SGS Certificate SG06/1067


ISO 9001:2000 Certification

Ekowood is also certified by National Productivity Corporation for implementing and achieving the standard requirements of **5S PRACTICES:**

- **Seiri** - Sorting,
- **Seiton** - Simplifying,
- **Seiso** - Sweeping,
- **Seiketsu** - Standardized and
- **Shitsuke** - Self Disciplined


5S Practices Certification

## PRE-FINISHED TO PERFECTION

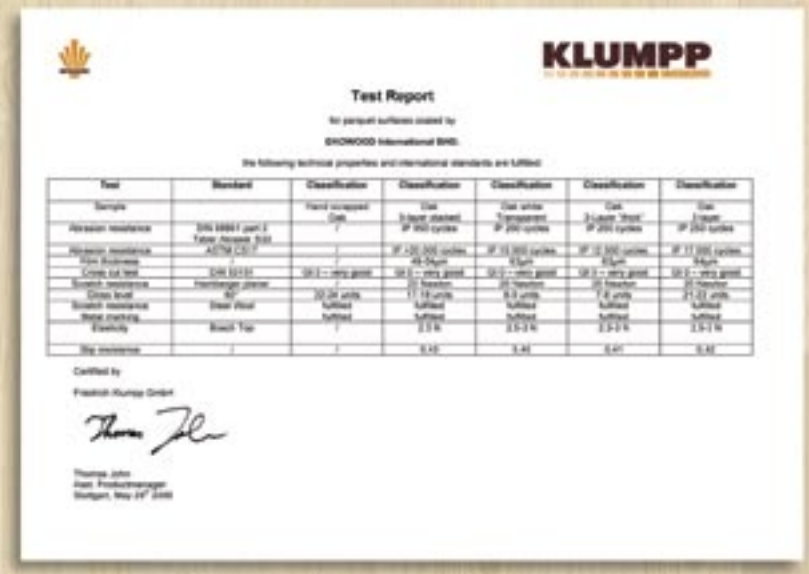
Ekowood is pre-finished in tongue-and-groove (T&G) or interlocking profile (Ekoloc) and with 6 layers of UV-cured acrylic lacquer.

Ekowood UV-lacquer coating is free of formaldehyde, organic solvents, halogenated hydrocarbons, heavy metals, pesticides, herbicides and insecticides.

Ekowood floors can be coated with Anti-scratch Agent (Aluminium Oxide - AO) for extra protection for high traffic and commercial areas.

As a result, Ekowood floors have high resistance against scratch and abrasion and fulfill high international environment standards.

Ekowood can be resurfaced 3 times by removing the existing finish and recoating with a new compatible coating. However, professional service is required for this exercise.


KLUMPP

Test Report

High Quality Finishing


KLUMPP

QUALITY CERTIFICATE

This is to certify that for

Standard Miraphen® UV-Parquet coatings

applied on parquet surfaces by

EKOWOOD INTERNATIONAL BERHAD.

following technical properties and international standards are fulfilled

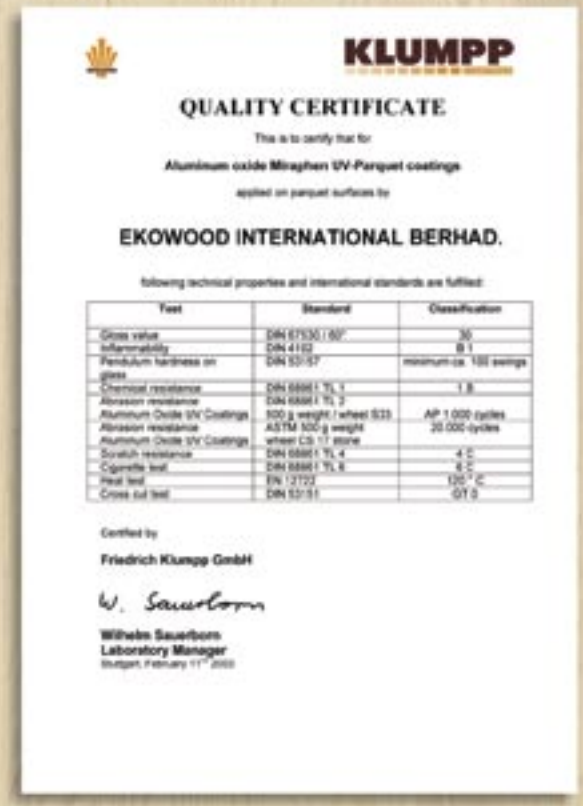
| Test | Standard | Classification |
|---|---|---|
| Gloss value | DIN 67530 / 60° | 30 |
| Inflammability | DIN 4102 | B 1 |
| Pendulum hardness on glass | DIN 53157 | minimum ca. 100 swings |
| Chemical resistance | DIN 68861 Part 1 | 1 B |
| Abrasion resistance Standard UV-Coatings | DIN 68861 Part 2 500 g weight / wheel: S33 | 150 cycles |
| Abrasion resistance Standard UV-Coatings | ASTM 500 g weight wheel CS 17 stone | 5.000 cycles |
| Scratch resistance | DIN 68861 Part 4 | 4 C |
| Cigarette test | DIN 68861 Part 8 | 5 C |
| Heat test | EN 12722 | 120 °C |
| Cross cut test | DIN 53151 | GT 0 |

Certified by

Friedrich Klumpp GmbH

W. Sauerborn

Wilhelm Sauerborn
Laboratory Manager
Stuttgart, December 07th 2004


KLUMPP

QUALITY CERTIFICATE

This is to certify that for

Aluminum oxide Miraphen UV-Parquet coatings

applied on parquet surfaces by

EKOWOOD INTERNATIONAL BERHAD.

following technical properties and international standards are fulfilled

| Test | Standard | Classification |
|---|---|---|
| Gloss value | DIN 67530 / 60° | 30 |
| Inflammability | DIN 4102 | B 1 |
| Pendulum hardness on glass | DIN 53157 | minimum ca. 100 swings |
| Chemical resistance | DIN 68861 TL 1 | 1 B |
| Abrasion resistance | DIN 68861 TL 2 | |
| Aluminum Oxide UV Coatings | 500 g weight / wheel S33 | AP 1.000 cycles |
| Abrasion resistance | ASTM 500 g weight | 20.000 cycles |
| Aluminum Oxide UV Coatings | wheel CS 17 stone | |
| Scratch resistance | DIN 68861 TL 4 | 4 C |
| Cigarette test | DIN 68861 TL 8 | 5 C |
| Heat test | EN 12722 | 120 °C |
| Cross cut test | DIN 53151 | GT 0 |

Certified by

Friedrich Klumpp GmbH

W. Sauerborn

Wilhelm Sauerborn
Laboratory Manager
Stuttgart, February 11th 2003

## DURABILITY AND SAFETY

Ekowood floors undergo strict tests to ensure that they are safe and lasting.

### 1. Floor Resilience - Climate Test

Engineered hardwood floorings are produced, shipped, transported and used in different parts of the world. Thus, it is important to ensure that the floorings could endure the procedures and stages from production, installation and usage.

To determine Ekowood's durability and stability, we have tested the flooring against strict international standards such as the British Standards (BS) and the American National Standards (ANSI) as below.

**BS 1204 MR**

| | |
|---|---|
| Sampling | Standardized laboratory pieces |
| Water soak | 3 hours, 67°C |
| Drying | No |
| Evaluating | Measure tearing force |

**ANSI**

| | |
|---|---|
| Sampling | Real flooring |
| Water soak | 2 hours, 70±3°C |
| Drying | 3 hours, 60±3°C |
| Evaluating | Measure delaminated glue-line |

However, the weather in Europe and other areas varies to great extent throughout the four seasons. The BS and ANSI tests did not fully simulate the actual conditions of the weather and the flooring endurance throughout its usage.

Therefore, a new Floor Resilience Climate Test was developed to measure Ekowood's resilience against the tough and changing climates.

**Floor Resilience Climate Test**

| | Duration | Condition |
|---|---|---|
| After first cycle | 1 week | 23°C 50% RH |
| After dry cycle | 3 weeks | 40°C 10% RH |
| After moist cycle | 3 weeks | 23°C 90% RH |
| After last cycle | 1 week | 23°C 50% RH |

**Conclusion**
Not only does Ekowood's quality surpass the BS and ANSI requirements but also the tougher Floor Resilience Climate Test.

### 2. Fire Test

A fire test was conducted on Ekowood floorings and it's quality surpasses the European M3 standard.

### 3. Sound Insulation Test

Ekowood surpasses the British Standard (UKAS Test of measurement for the reduction of transmitted impact noise by floor coverings on a heavyweight standard floor).

### 4. Formaldehyde Emission Test

Formaldehyde Chamber Test (E1) is a test to determine volume of formaldehyde emission from the board. The standard is set by the governing body in Europe.

**Formaldehyde Emission Allowed**

| | |
|---|---|
| European E1 Standard | 0.125mg/m3 |

**Conclusion**
Ekowood's quality surpasses the European E1 standard.

### 5. Slip Test

Ekowood surpasses the British Standard (UKAS STATS Test of determination of slip resistance of timber - UK Slip Resistance Group 2000).


AKZO NOBEL Casco Adhesives (Asia) Pte Ltd

Certificate of Excellence

*is hereby granted to:*

*Ekowood International Berhad*

*for completion & passing the Casco Climate Test on*

*Engineered Hardwood Flooring*

*Singapore, 31 August 2004*

*Bengt Carlsson, Director*

Floor Resilience - Climate Test


TEST REPORT No : 43/03/90

BRITISH STANDARD METHOD FOR MEASUREMENT OF THE REDUCTION OF TRANSMITTED IMPACT NOISE BY FLOOR COVERINGS ON A HEAVYWEIGHT STANDARD FLOOR BS EN ISO 140-8 : Part 8 : 1998

CLIENT:

Ekowood International Berhad
Lot 1-12, Jalan Industri 2/1,
Kawasan Perindustrian Gopeng,
KM 15 Jalan Gopeng,
31600 Perak, Malaysia

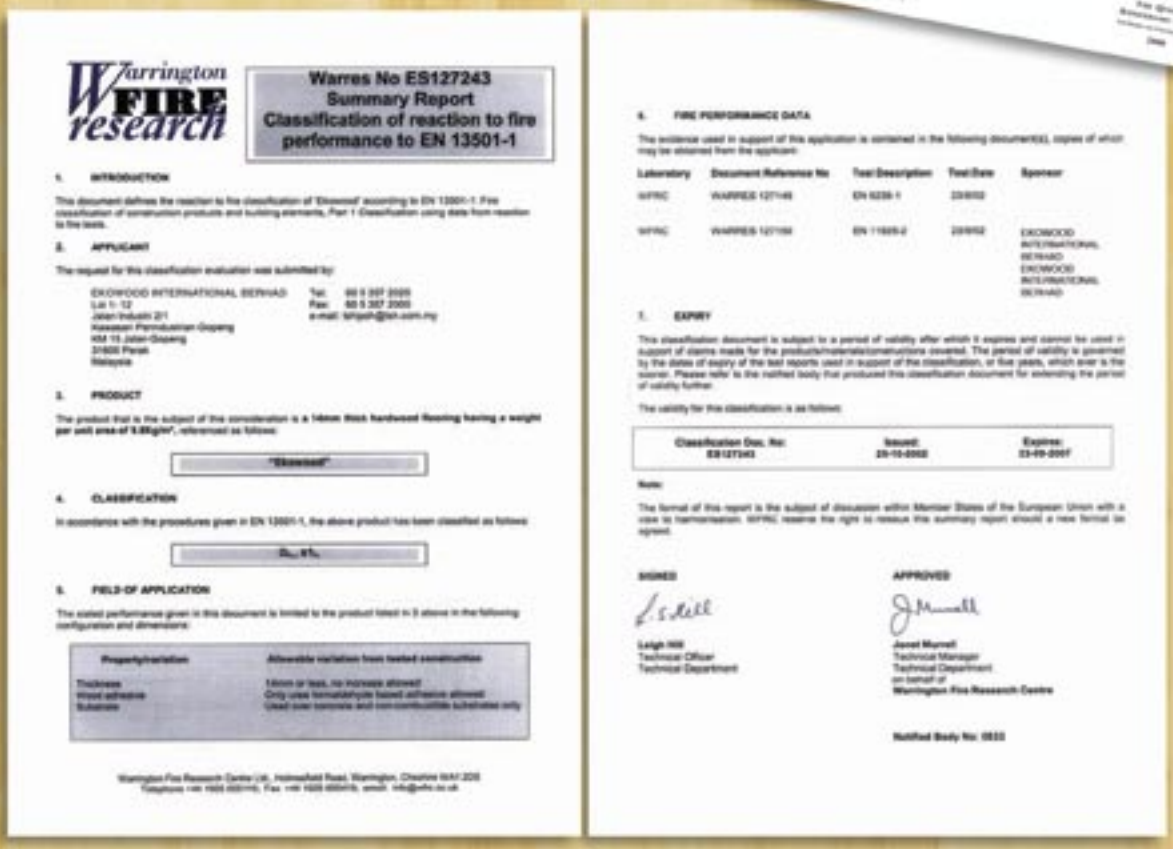
JOB NUMBER: A02/90
MANUFACTURER: Ekowood International Berhad
TEST SAMPLE: Parquet flooring floor with 2 variants of membrane
DATE RECEIVED: 5 November 2002
DATE OF TEST: 5 December 2002

Signed: D J McCaul, Laboratory Manager

Approved: Technical Manager

School of Acoustics and Electronic Engineering

Sound Insulation Test


Warrington FIRE research

Warres No ES127243
Summary Report
Classification of reaction to fire performance to EN 13501-1

1. INTRODUCTION

2. APPLICANT

EKOWOOD INTERNATIONAL BERHAD
Lot 1- 12
Jalan Industri 2/1
Kawasan Perindustrian Gopeng
KM 15 Jalan Gopeng
31600 Perak
Malaysia

Tel: 60 5 357 2005
Fax: 60 5 357 2005
e-mail: lahpoh@po.jaring.my

3. PRODUCT

"Ekowood"

4. CLASSIFICATION

5. FIELD OF APPLICATION

| Property/variation | Allowable variation from tested construction |
|---|---|
| Thickness | 14mm or less, no increase allowed |
| Wood adhesive | Only uses formaldehyde based adhesive allowed |
| Substrate | Used over concrete and non-combustible substrates only |

6. FIRE PERFORMANCE DATA

| Laboratory | Document Reference No | Test Description | Test Date | Sponsor |
|---|---|---|---|---|
| WFRC | WARRES 127149 | EN 9239-1 | 23/8/02 | |
| WFRC | WARRES 127150 | EN 11925-2 | 23/8/02 | EKOWOOD INTERNATIONAL BERHAD / EKOWOOD INTERNATIONAL BERHAD |

7. EXPIRY

| Classification Doc. No: | Issued: | Expires: |
|---|---|---|
| ES127243 | 29-10-2002 | 23-09-2007 |

Note:

SIGNED

Leigh Hill
Technical Officer
Technical Department

APPROVED

Janet Murrell
Technical Manager
Technical Department
on behalf of
Warrington Fire Research Centre

Notified Body No: 0833

Fire Test

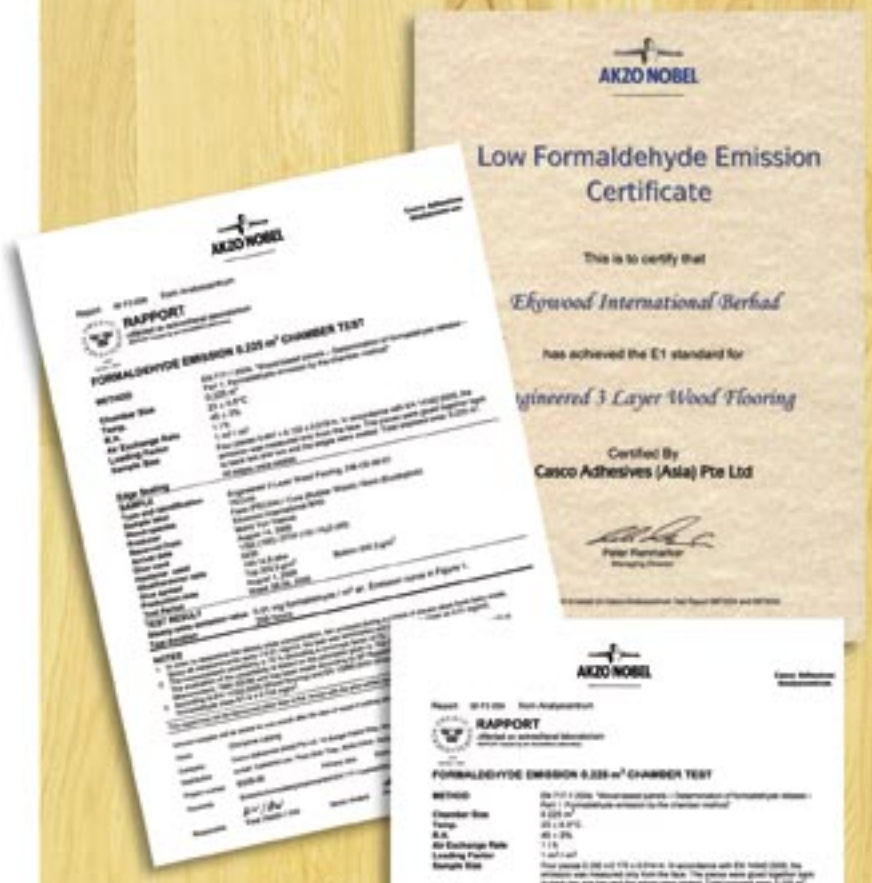
## HARDNESS

Test are carried out according to Brinell and Janka standards to determine the hardness of the woods. The data shows the comparative figures of different types of woods:

| Species | Brinell Hardness | Janka Hardness |
|---|---|---|
| American Cherry | 3.6 | 950 |
| Ash | 4.0 | 1320 |
| Bamboo Carbonized | 4.0 | 1180 |
| Bamboo Natural | 4.1 | 1380 |
| Cambridge | 3.7 | 1360 |
| Doussie | 4.3 | 1770 |
| Gunstock | 3.7 | 1360 |
| Hard Maple | 4.8 | 1450 |
| Hevea | 3.9 | 1260 |
| Iroko | 3.8 | 1260 |
| Jatoba | 7.0 | 2350 |
| Kempas | 5.3 | 1854 |
| Merbau | 4.9 | 1925 |
| Pecan | 5.2 | 1820 |
| Red Oak | 3.8 | 1290 |
| Santos Mahogany | 6.3 | 2200 |
| Steamed Beech | 3.8 | 1300 |
| Tasmanian Oak | 3.4 | 1010 |
| Teak | 3.2 | 1000 |
| Walnut | 3.4 | 1010 |
| White Oak | 3.7 | 1360 |

The Janka Hardness is a test which measures the pounds of force it takes to drive a .44" diameter steel ball 1/2 its depth into wood. The higher the number the harder the species.

The Brinell Hardness test is an industry standard that reflects the PSI tolerance of a surface. This test is commonly used to identify the hardness of hardwood flooring. The higher the number, the harder and more scratch/dent resistant the wood.




Formaldehyde Emission Tests


Slip Test

## EKOWOOD ENGINEERED HARDWOOD FLOORS VERSUS SOLID WOOD FLOORS

| | EKOWOOD ENGINEERED HARDWOOD FLOORS | SOLID WOOD FLOORS |
|---|---|---|
| **Dimensional stability** | The cross grain technology in Ekowood engineered hardwood floors makes them dimensionally 70% more stable than conventional solid wood floors.<br><br>This technology minimizes tension in wood and results Ekowood flooring to be more resistant to shrinkage, gapping and warping. | Very prone to expansion, warping, cupping and shrinkage, to a significant degree when exposed to temperature changes. |
| **Resistance to moisture and heat** | Ekowood engineered hardwood floors are more resistant to both moisture and heat if compared to solid wood floors. | Solid wood is unsuitable for applications at any location with increased moisture or high temperatures such as below-grade installations and over radiant heat. |
| **Resistance to climatic changes** | Ekowood engineered hardwood floors are more resistant to higher moisture levels than solid flooring and thus a better choice for installation over radiant heat sources, damp basements, and at locations in rainy climates. | Solid wood generally expands and contracts a lot more than engineered wood during climatic changes, especially extremes in heat and cold and rainy season. |
| **Real wood** | Ekowood engineered hardwood floors are not laminates. They are made from 100% real wood and so they exude the natural beauty and warmth of which is expected of solid wood floors. | Solid wood floors are made of real wood. |
| **Precision in pre-finished** | Ekowood engineered hardwood floors are pre-finished in the factory. This results a higher precision and even application (±1gm/m2) as compared to finishing at site.<br><br>Ekowood floors have 6 layers of lacquer cured by UV light; which is only possible with machine application and thus, making them more durable and highly scratch and stain resistance.<br><br>Pre-finished floors make installation 3 times faster as compared to unfinished solid floors. | Most solid wood floors are finished manually at site resulting non-precision results and this also makes the floors less durable and more prone to scratches and stains. In addition, the entire installation duration is also lengthened. |
| **Frequency in re-sanding** | Ekowood floors can also be sanded up to 3 times. | Solid wood floors can be sanded up to 3 times. They cannot be re-sanded once you get down to the "tongue". |


# environmentally friendly

## COUNCIL CERTIFICATION

The Forest Stewardship Council (FSC) and Malaysian Timber Certification Council (MTCC) certify Ekowood is harvested from well managed forests.


FSC Certification


MTCC Certification

FSC
SGS-COC-1265

mtcc
Certificate for Chain-of-Custody No. 060
© 2000 MALAYSIAN TIMBER CERTIFICATION COUNCIL

A member of
NWFA
Wood Flooring Association

## EKOWOOD GREEN POLICY

The color green in our logo is to show that Ekowood is an environmentally friendly product of which our wood is obtained from well managed forest resources.

We are dedicated to producing the highest quality products and to the sustainable management of our forests. Ekowood is proud to be involved in the protection of the earth's environment as it is our belief and obligation to keep the earth as natural, as clean as it is possible, as a legacy for the future. This testament can be seen from the activities carried out by Ekowood and the companies within the Group.

Ekowood, through our parent company, TSH Resources Berhad, is actively involved in sustainable forestry. In 1997, TSH was awarded with a 100-year timber concession to carry out conservation and plantation on 300,000 acres of forestry land in Ulu Tungud, Sabah, also known as Forest Management Unit 4 (FMU 4). Out of these 300,000 acres, 30% of the forest land has been designated for conservation purposes and a significant land area has been set aside for a 13-year forest plantation development program to plant a total of 5.5 million trees.

Apart from sustainable forestry, TSH is also involved in generating green energy in the form of biomass and biogas power. Both biomass and biogas are environmentally friendly and qualify as a Clean Development Mechanism (CDM) project under Kyoto Protocol.

Ekowood is extremely committed to the world environment. Consumers interested in obtaining products sensitive to the environment should be comfortable and well assured with Ekowood products.

# installation instructions

## INSTALLER RESPONSIBILITY

Prior to installation, proper inventory and inspection of all materials must be conducted. It is not the responsibility of the distributor, or the manufacturer, for defects related to improperly stored material. The installer assumes all responsibility for final inspection of product quality. If, for any reason, the material is defective, the installer should report the defective condition to the seller prior to installation. Ekowood will replace any defective material prior to installation. Failure to adhere to these conditions will result in the installer/home owner accepting full liability.

- Use stain or filler stick for touch up during installation
- Order an additional 5% for cutting and grading allowances.
- Use approved flooring grade leveling products, and follow the manufacturer's recommendations to correct low areas in the sub-floor. Grind or sand high areas.

## JOBSITE ENVIRONMENT

Prior to installation, the installer has the final responsibility to determine that the job-site conditions, and the substrate, meet or exceed acceptable standards. Manufacturer's recommendations for the construction and its materials, as well as local building codes, must be followed. Areas under wood sub-floors must be well ventilated and remain dry. All sub-floors should be dry, flat, and free from foreign debris.

**Exterior**

- Gutters, down spouts, grading, and all exterior work should be complete before installation.
- The grade should slope away form the foundation by at least 5% (roughly a fall of 3" in 10')
- In the case of above grade construction, a minimum of 18" from the ground to the bottom of the floor joist is required. Cover the ground with 6 to 8 mil polyethylene. Lap the edge by 6" and tape. Vents should be in adjacent areas of the foundation walls to allow for good circulation, and the total vent area should be equal to (at least) 1.5% of the square footage of the crawl space area. Where necessary, local regulations will prevail.

**Interior**

- Structure should be closed in with all outside doors and windows in place.
- All other trades (drywall, masonry, "wet work") must be complete.
- At all times, the temperature in the room should be between 18°C - 24°C and the recommended relative humidity in the room of such flooring should be 45% - 60%. Use the humidifier if the relative humidity drops. As a result, the flooring is more stable in reaction in humidity and temperature.

## SUB-FLOOR PREPARATION

**Wood**

- Plywood sub-floors should be sound and flat. The floor must be flat to within 3/16" over a 10' radius. Should there be low areas, they must be leveled with a cementitous flooring grade patching or leveling compound (except for mechanically fastened systems) using the manufacturer's recommended procedures. Use shims, additional plywood, or layers of builders felt to fill low areas beneath mechanically fastened systems.
- The moisture variance between sub-floor and flooring material should not exceed 4%-6%.
- OSB (minimum 5/8" (PS2 rated/ underlayment grade) is acceptable, but 3⁄4" plywood is preferred.
- Plywood should be dry and installed at right angles to the existing floor joists using suitable fasteners. The end joints of the sub-floor should break across different points throughout the floor. This will provide a more rigid substrate. Refer to panel manufacturer's recommendations for use as a sub-floor and its recommended fastening systems.
- 1" x 4" or 6" lumber may be used, however, the boards must be dressed, dry, and installed at no less than 45° angles to the floor joists. They should be secured with the appropriate nails, and by face nailing with 2 nails at each joist.

**NOTE:** Our hardwood flooring is dried to a moisture content (EMC) of 6-9%. Failure to maintain the 4%-6% variance between sub-floor and flooring can lead to dimensional instability. If job site geographical locations are expected to change the EMC significantly, it is the responsibility of the installer to make the proper adjustments for those variances.

**Concrete**

- Concrete sub-floors should be checked for flatness prior to installation. The floor must be flat to within 3/16" over a 10' radius. Should there be high areas, they must be grinded down. Should there be low areas, they must be leveled with a flooring grade patching or leveling compound using the manufacturer's recommended procedures

- All concrete slabs should be tested for allowable moisture levels prior to installation.

- A Calcium Chloride Test-moisture transfer cannot exceed 3 lbs. /1000 sq. ft. in a 24 hour period (2 lbs/1000 sq. ft. for radiant heat applications).

- A Tramex Moisture Meter-reading cannot exceed 4.5 on the upper scale.

- If excessive moisture is present, inexpensive sheet vinyl or slip sheet (PVC) may be installed as a vapor barrier. Use a premium grade, alkaline resistant, adhesive with a full spread application. Follow the manufacturers suggested installation procedures. Allow the barrier to set for 72 hours prior to installing the wood flooring.

**NOTE:** Our hardwood flooring is dried to moisture content (EMC) of 6-9%. Failure to maintain the 4%-6% variance between sub-floor and flooring can lead to dimensional instability. If job site geographical locations are expected to change the EMC significantly, it is the responsibility of the installer to make the proper adjustments for those variances.

**Radiant Heat Applications**

- When installing over radiant heat, always check with the designer of the network tube flooring system. It is important to know the layout of the tubes and their positions. Note all locations of tubing. Avoid using mechanical fasteners of a length that will penetrate the hydronic tubes.

- When tubing circuits are crossed over the center of the joist, make sure nail plates are in place to protect the tubes from possible puncture.

- Flooring can be installed over properly installed heated slabs that DO NOT heat to a temperature over 27ºC and have been activated for at least 3 weeks prior to installation

- Before installation, the floor heating must be switched off. It can only be switched on 2-3 days after installation to give time for glue to dry. The recommended installation method is floating. For other types of installations, please contact the distributor or manufacturer for further advice.

- Kindly take note the relative humidity (RH) of the environment.

- An outside thermostat should be used to anticipate any rapid temperature changes.

**NOTE:** Kempas, Maple, Pecan, Jatoba and Beech products are NOT approved for use over radiant heat.

## FLOATING FLOOR INSTALLATION METHOD

**Recommended Sub-floor**

Concrete slabs, ceramic tile, slate, terrazzo, marble, 3/4" OSB, 3/4" plywood, vinyl, resilient tile or existing wood flooring. The material must be solid, flat, structurally sound, and securely adhered to the substrate.

**Installation**

- All door jambs and doors should be cut to allow for the new elevation of the flooring. A jamb saw or hand saw can be used to cut the jambs. (Figure 1)

- For wood sub-floors, flooring should be installed at right angles to existing joist system if at all possible, and to the longest dimension of the room. If flooring has to be installed parallel to the joist, an additional layer of 1/2" sheathing should be applied at a minimum of 45 degree angle over the existing 3/4" sub-floor.

- Lay an approved absorbent, vapor barrier pad on the sub-floor or use the Eko Walk under-lay to control moisture from the sub-floor and absorb sound. The pad should extend 2" up all walls and edges under the flooring should be butted to each other and taped.

- Lay out the first row of flooring so that the groove is facing the wall. Place a 9/16" shim at the end of the row to allow for expansion. Join the other boards along the room length, but do not glue them on the ends. It is important for the first row to be installed in a straight line. Use a control line to assure they are straight, and do not depend on the wall as a guide. If necessary, cut boards to fit up to the required 9/16" expansion space from the wall. (Figure 2)

- Insert 9/16" shims along the wall as you place the boards. This will allow you to push the next rows up tight without movement of the existing rows. Use a pinch bar or tapping block to squeeze the ends together. (Figure 3)

- Start the second row with the residual piece of the preceding row. Apply adhesive to the groves and engage the piece into the previous row. To glue the tongue and groove joints together, apply the adhesive evenly along the upper surface of the groove. Wipe off excess glue with a damp cloth. (Figure 4 & 5)

- The tapping block should be used to firm up the piece of flooring being installed. Do not hit the edge of the boards directly with a hammer or mallet. Always tap against the tongue, or use a taping block to keep from damaging the edges or finish. (Figure 6)

- Continue this process down the second row, and for each new row. Allow for at least a 6" variance between end joints on adjacent rows to improve the appearance of the finished floor. (Figure 7)

- Leave an expansion space around all vertical obstructions, including pipes and columns. Measure the position and size of the obstruction on the flooring and cut as shown in the figure. Leave a 9/16" expansion space to allow the flooring to expand or contract during seasonal changes. Saw through the hole at a 45 degree angle to allow re-gluing the cut-off piece (Figure 8)

- The width of the final row can be found by turning a piece of flooring (groove side to the wall) as a marking guide. Place the pieces to be installed on top of the second to last row and mark using the piece against the wall. After cutting, apply glue to the groove and install with a pinch bar. Insert 9/16" shims and leave them secure until the glue has properly dried. (Figure 9)

- Allow 24 to 48 hours for the glue to cure and remove the shims.

- Moldings should be used to cover the expansion spaces. Nail moldings into the wall and not into the floor. (Figure 10)

## STANDARD GLUE-DOWN INSTALLATION METHOD

**Recommended Sub-floor**

Concrete slabs, ceramic tile, slate, terrazzo, marble, 3/4" OSB, 3/4" plywood, vinyl, resilient tile. The material must be solid, flat, structurally sound and securely attached to the substrate.

**Installation**

- All door jambs and doors should be cut to allow for the new elevation of the flooring. A jamb saw or hand saw can be used to cut the jambs. (Figure 1)

- Apply adhesive across the sub-floor to cover the whole area in the room. Lay the 3mm thick Nonsliplay/ Firmalay rubber underlay on top of the adhesive layer.

- For wood sub-floors, flooring should be installed at right angles to existing joist system if at all possible, and to the longest dimension of the room. If flooring has to be installed parallel to the joist, an additional layer of 1/2" sheathing should be applied at a minimum of 45 degree angle over the existing 3/4' sub-floor.


Fig. 1

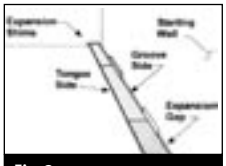


Fig. 2

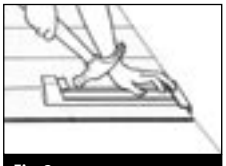


Fig. 3

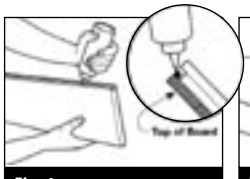


Fig. 4

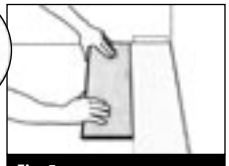


Fig. 5


Fig. 6

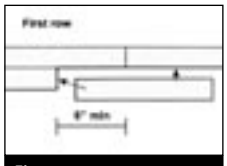


Fig. 7

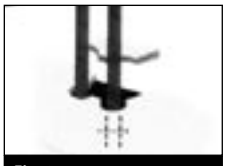


Fig. 8

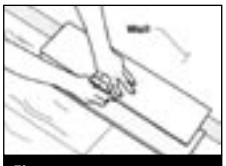


Fig. 9

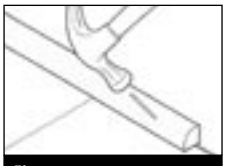


Fig. 10


Fig. 11

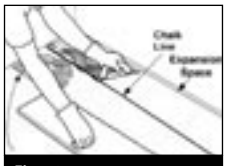


Fig. 12

- Snap a chalk line on the underlay. Chalk line should represent the width of one piece of flooring, plus an expansion space (thickness of the piece), next to the wall. It might be necessary to rip pieces of the first row as the wall might not be square and straight. (Figure 11)

- Remove the pieces and spread adhesive between the chalk line and wall, in accordance with the adhesive manufacturers recommended trowel size and instructions. An approved adhesive must be used. (Figure 12)

- Apply adhesive to the groove of the floor board. Set pieces of flooring onto the adhesive with the tongue side toward the wall and edge of the board on the control line. This will allow for an expansion space against the starting wall. The first piece should be placed to allow for an expansion space on the end wall as well. Move down the row placing pieces in the adhesive and firmly engaging the tongue and groove on the ends. Shims should be placed in-between the starting wall and flooring as well as the end walls. This will allow for pushing pieces into place without moving others out of position. (Figure 2)

- Continue spreading adhesive and placing rows into place. The cut from the far end can be used to start the next row. Use a tapping block or puller to make sure the pieces are fully engaged. Do not hit the edges with a hammer or mallet as the finish may be damaged. Do not spread more adhesive than can be reasonably worked during the open time specified by the manufacturer. (Figure 13)

- Continue this process down the second row and for each new row. Allow for at least a 6" variance between end joints on adjacent rows to improve the appearance of the finished floor. (Figure 7)

- Leave an expansion space around all vertical obstructions including pipes and columns. Measure the position and size of the obstruction on the flooring and cut as shown in the figure. Leave an expansion space to allow the flooring to expand or contract during seasonal changes. Saw through the hole at a 45 degree angle to allow re-gluing the cut-off piece. (Figure 8)

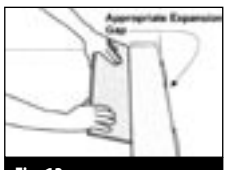


Fig. 13

- The width of the final row can be found by turning a piece of flooring (tongue side to the wall) as a marking guide. Place the pieces to be installed on top of the second to last row and mark using the piece against the wall. After cutting, apply glue to the tongue and install with a pinch bar. Insert shims and leave them secure until the glue has properly dried. (Figure 9)

- Allow 24 to 48 hours for the glue to cure and remove the shims.

- Moldings should be used to cover the expansion spaces. Nail moldings into the wall and not into the floor. (Figure 10)

## EKO-LOC INSTALLATION METHOD

### A. INTRODUCTION

Wood material movements follow the surrounding climate, mainly the relative humidity (RH, %).

High humidity means the wood expands; low humidity - it shrinks.

Due to these natural properties, you **must** attend to the instructions below.

### B. CHECKLIST - A GOOD STARTER - TOP 10!

You find additional information to each section (1-10) further below:

1. Store the packages in the future room climate and;
   Don't open the packages before you start.

2. This floor will be floating installed
   i.e. keep always a distance to all fixed construction parts.

3. Check your floor construction.
   It must be dry (measure always!), clean, firm and even;
   Eliminate always all wall-to-wall carpets.

4. Choose underlay materials (read carefully below!) and according to your own situation - all floors are unique!

5. Measure the room, decide installation direction.
   Note the limitations as per below - due to natural behavior of wood!

6. Floor heating - see special requirements.
   Follow the instructions from the system supplier!

7. Install according to section X - Work clean!

8. Check you floor continuously during the installation;
   Eliminate installed defect boards - it's easy!

9. Keep always the right room climate 45-60% RH at 18-24°C.

10. Maintain/clean your EKOWOOD floor correctly and you will enjoy the floor.

## C. GENERAL INFORMATION

### i) Preparation

Store your unopened floor packages in the same conditions (45-60% RH at 18-24°C) as it must have after installation, for at least 2 days.

Tools needed:
Distance wedges, a hand block, an installation support wedge, a hand saw or an el. jig-saw, a pencil, a measuring tape, a drill, a chisel + hammer.

Investigate your subfloor:
All wall-to-wall carpets must be eliminated. You can install on all kind of construction floors, if they are dry, flat, fixed and clean, for example on old wood floors, cement/concrete floors, ceramic tiles, PVC etc.

If other floor top layers, please contact your distributor.

**Dry:** Measure always cement screed/ concrete/anhydrite with adequate test instruments.

Cementscreed/Concrete need long time to dry!

Requirements, moisture content limits:
For concrete sub floors: < 2% CM / or < 85% RH at certain depth depending on thickness of concrete construction.

For anhydrite < 0.5 % CM;
PLEASE note that all types of cement screed/concrete/tiles subfloors require a moisture barrier - an agening resistant PE - plastic film, min. 0.2mm thick. Overlapping minimum 20cm and taped.

For wood floors the moisture content must be ca 8% (equivalent to ca 50% RH/20°C.

**Flat:** Measure always with a vertical floor plank. Unevenesses + 2mm over 2m must be leveled.

Tip: use flooring paper or newspapers to level your subfloor – never use foams or other soft materials. Check always the floor.

**Firm and Clean:** Cross check wood floors, nail/ screw to eliminate squeaking.

Brush or vacuum clean your floor - work clean!

### ii) Sound insulation

Sound insulation material must be installed (over the PE-plastic film, if so required).

Use flooring paper, 2mm cork, HD-foams (over 30kg/m$^3$) max 2mm or other approved underlay materials.

### iii) Floor heating

Installation over subfloor heating - some important issues.

Max allowed temperature on top of the wood floor is 27°C.

Please note that normal loose carpets insulate i.e. increase the floor surface temperature about 2°C!

Important: Follow the heating regulation recommendations given by the system supplier.

Floor heating always require a 0.2mm PE-plastic film on top of the construction floor either made of cement screed /concrete, etc or wood!

Separate floor areas that are not having subfloor heating with expansion joints.

## D. INSTALLATION PREPARATIONS

### i) Measure the area to be installed and define the installation direction.

It is recommended to install the length direction of the planks parallel to the main light direction. The board width of last row shall not be less than

ca 70mm, If so, adjust the width of the first row to be installed.

When measuring take the free gap requirement of about 10mm of the floor perimeter into account. In narrow hallways, install the floor parallel to the lengthway. See (ii) below.

**ii) Floating installation**

Your EKOWOOD floor is made to be installed floating without glue:

Leave an open expansion gap of min 10 mm around the whole perimeter (use the distance wedges), i.e also at pipes, stairs, columns, door frames and thresholds. In large rooms, calculate 2mm/m floor around. Install maximum 10m length /width; over this: allow for an expansion gap, to cover with a profile of wood or metal.

The floor must be able to move free – do not connect or install close to any construction part.

Rooms with off square areas like for example L-, F-, T-, U- shapes, separate the areas with an expansion joint and especially always in door openings.

At any question contact your distributor for further information, installation at doors, glue down, etc.

Claims regarding visible defective floor panels must be made prior to installation.

Each board should be inspected to ensure that the quality is acceptable. No claims relating to surface defects can be accepted after installation.

## E. INSTALLATION OF EKOLOC

Your EKOLOC floor can very easy be disassembled, which enables replacement during installation and also during use.

You can use the floor immediately after installation.

The skirtings must be fixed to the walls (never to the floor)

- Start in a left-hand corner of the room with the locking strip (groove) facing the room. Remember to leave a 10mm gap between the wall and the board. It is practical to adjust the gap between the long sides and the wall later, when three rows have been laid. (Figure 14)

- Press the next floorboard at an angle to the first one and lay it down. Complete the first row in the same way. Cut the last board to size. (Figure 15)


Fig. 14

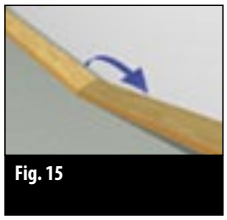


Fig. 15

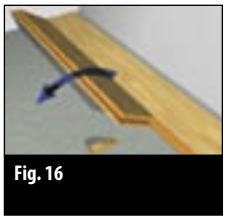


Fig. 16


Fig. 17

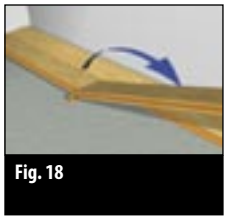


Fig. 18

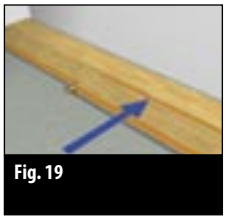


Fig. 19

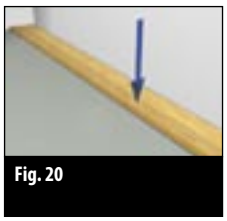


Fig. 20

- Start the next row with the piece left over from the previous row. It must be at least 50cm long. If the piece is too short, start with a new board, cut in half. Always ensure that the end joints are staggered at least 50cm. Place the floorboard at an angle against the floorboard in the previous row, push forward and press down at the same time. Put an installation wedge under the board. (Figure 16 & 17)

- Press the next floorboard at an angle to the previous one and lay it down to the same level. (Figure 18)

- Use a hard, sturdy striking block to close the long side joint. Do not force the boards together. Move out the Wedges and place it under the next board. Continue to install the whole row. (Figure 19)

- When the whole row is completed, remove the wedge and press the boards firmly down. (Figure 20)

**Installation Around Pipes**

- For installation around pipes, drill holes and saw as illustrated. The holes must be at least 20mm greater in diameter than the pipes. Install plank and glue sawn piece into place.

**Installation Under Door**

- Chisel-off 2/3 of the locking edge. Apply glue and install as illustrated.

## F. AFTER THE INSTALLATION

### i) Room climate

Humidifier or dehumidifier needed?

At all times, the recommended room relative humidity (RH) of 45-60% and temperature of 18-24°C should be kept. If necessary install a humidyfier/dehumidifier to ensure the best climate for yourself, furniture and your floor.

If the climate is not kept or floor is not correctly installed, by natural properties, the floor will show fine gaps, squeak, etc.

### ii) Cleaning and maintenance

The Ekoloc floor should be cleaned by using a vacuum-cleaner (attachment for woodfloors) or brushed. If required, wipe with a damp-dry (well squeezed) cloth.

Use a mild soap or similar. Any water spilled accidentally must be wiped off immediately.

### iii) Floor protection furniture, entrances

Stick felt pads to chair and other pieces of furniture legs. Place doormats at outdoor entrances.

## FINAL INSTALLATION TIPS

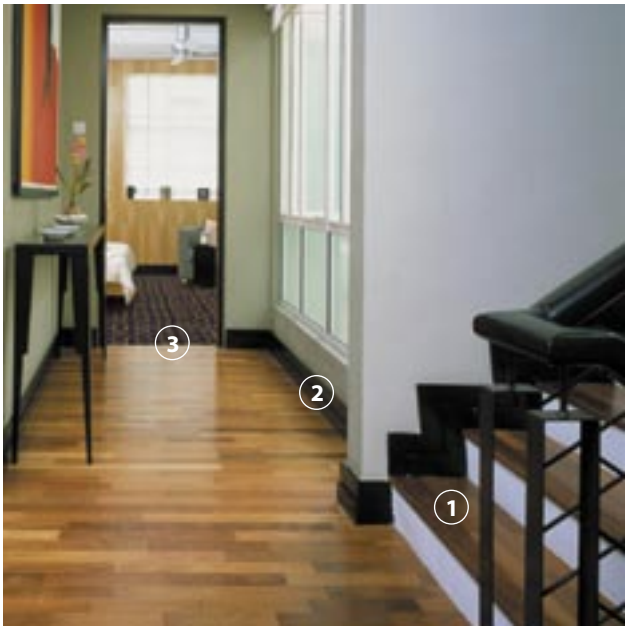
- Wood is a natural product and variance and color and shade should be considered normal.
- Do not install any product with visible defects. Notify your distributor immediately so the product can be replaced.
- In a Glue-Down or Floating Installation, using unfinished products, DO NOT FINISH PRODUCT UNTIL ADHESIVE HAS COMPLETELY CURED.
- The use of putty or stain repairing sticks should be considered part of the normal installation.
- If installation is to take place over an existing underlayment i.e. vinyl or asbestos, please check with the manufacturer of the adhesives used before applying. Existing vinyl floors must be secured by full spread adhesive installation method. It is recommended that vinyl floors be thoroughly cleaned, and they should be lightly sanded to ensure good adhesion. New vinyl may have plasticizers that need to be sealed with a seal coating specified by the adhesive manufacturer.
- Check nailer and staplers to make sure that base plates do not damage the finish.
- Square the room using a 3'x4'x5' method (Pythagorean Theorem). Flooring should be squared to the room and not the existing walls.
- Use 3M Company #20900 long blue masking tape if needed to hold boards together. Other products might damage the finish on any pre-finished floor.
- When installing floors using the Glue-Down Installation Method, applying glue used for the floating floor application will make the tongue and grove easier to engage.

The Ekowood flooring system is equipped with a comprehensive range of accessories to cater for all sorts of flooring design.

These accessories include skirting boards, stairs profile, finishing profile, transition profile, divider profile and underlay materials.

The result is the perfect floor to suit any interior.

The flooring system and accessories indicated in this photo include:




**1. Stairs Profile**

In this picture, the half-round profile is used. However, the bull-nose or flat profile can also be used for stairs. All stairs profile is made of a different type of timber but stained to match the floor.

**2. Skirting Boards**

Although made of different type of timber, the skirting boards will be stained to match the floor. However, skirting boards of a contrasting colour can also be opted (such as in the picture) to give a more dramatic effect.

**3. Joining with Other Floor Finishes**

When Ekowood wood flooring is installed with other floor finishes namely carpet, several methods can be used for the adjoining sections:

i) **Method 1**

A finishing profile such as a quadrant is used.

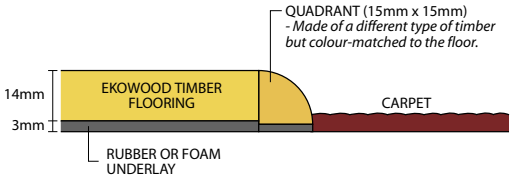



**Diagram 1**

ii) **Method 2**

A transition profile such as a reducer is used.

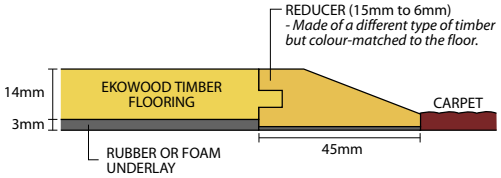



**Diagram 2**

iii) **Method 3**

A divider profile such as stainless steel or brass rod is used.

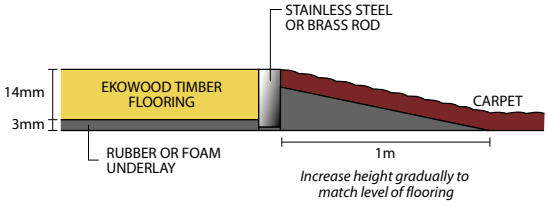
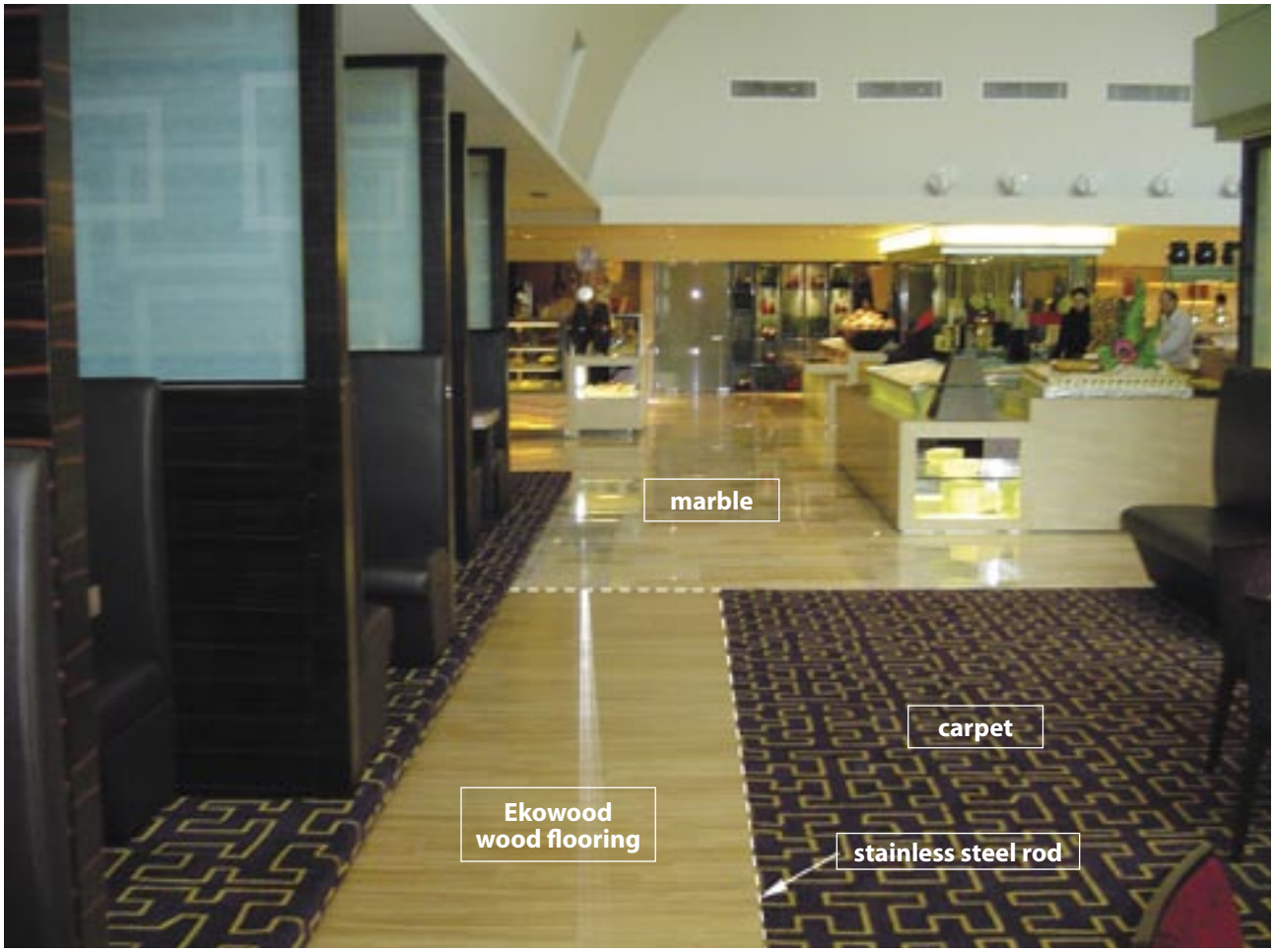



**Diagram 3**




The main restaurant in Traders Hotel, Kuala Lumpur has our Ekowood Fine Seasons range installed with both stone (marble) and carpet finishing. Stainless steel rods were interspersed into the joints creating a seamless elegant finish of marble, carpet and wood flooring.

# floor care guide

## GENERAL

- The limitations of Ekowood floors are few.
- Ekowood flooring is suitable for installation in almost any residential building.
- It can be installed over concrete slabs or hard surface floors.
- However, wooden floors are sensitive to wet, extreme humidity and extreme drought. At installation, the rule to apply in order to extend the lifetime of the floor, is that relative atmospheric humidity (RH) should be between 45% and 60%.

## USE WITH HEATED FLOORING

- It can be installed over properly installed heated slabs that do NOT heat to a temperature over 27°C, and have been activated for at least three weeks prior to installation.
- Before installation, the floor heating must be switched off. It can only be switched on 2-3 days after installation to give time for the glue to dry.
- Ekowood does NOT warrant Kempas, Maple, Pecan, Jatoba and Beech over a radiant heated sub-floor.

## USE IN KITCHENS

- Prevent direct water contact.

## AESTHETIC NATURE

- Ekowood is made entirely of genuine, aesthetic and beautiful natural wood.
- In order to maintain its beauty, placing a quality doormat on both the inside and outside of entrances is recommended to prevent scratches caused by abrasive grit and dirt.
- Being made of genuine wood, every board is unique and therefore no photographs or samples can be exactly reproduced with exact colors, grains and tint.

## DOs

- Support furniture and heavy appliances with wide-bearing, non-staining glides or casters.
- Move appliances and furniture into place by sliding them slowly over the floor on a clean piece of carpet turned upside-down.
- Place area rugs in high traffic concentrated areas to make long term maintenance easier and less expensive.

## DON'Ts

- Do not wax the floor.
- Avoid spiked heel shoes, pebbles, sand and other abrasives.
- Do not use steel wool on the floor.
- Do not use soap or detergents on the floor and never pour water directly onto the floor.
- Do not use ammonia-base cleaners.
- Do not wet mop the floor.

## FINISHING

- UV cured Acrylic Lacquer
- Also available in oil, unfinished and Aluminium Oxide

## RESISTANT

Resistant against:

- Acetone
- Coffee, Tea
- Fruit Juices
- Thinner
- Fat, Oil
- Alcoholic Beverages
- PVC-Sealants

## RECOMMENDED MAINTENANCE

- For general cleaning, use a dust mop or vacuum.
- Keep grit off the floor, dust, mop or vacuum regularly and keep doormats clean.
- Wipe up spills promptly with a dry cloth. Use a slightly dampened cloth for sticky spills.
- Should staining occur from food, ink, grease, lipsticks, cigarette burn, crayon, wax and nail polish, the following should be done:
    - Wipe with a damp cloth first.
    - If unsuccessful, use a mild detergent (PH 6-8)
    - If the stains still persist, then use acetone. Under normal circumstances, acetone should be able to remove the above mentioned stains.
    - Avoid scrubbing with abrasive material and using strong solvent or detergent.

## RE-FINISHING

- Ekowood floors can be re-sanded and re-finished up to 3 times.
- However, consultation with specialists is strongly recommended.


www.ekowood.com

**Ekowood International Berhad** (301735-D)

**New Corporate Office & Showroom:**
Menara TSH, 8 Jalan Semantan, 50490 Kuala Lumpur, Malaysia
E-mail: info@ekowood.com

*Corporate Office* Tel: +603-2084 0888 Fax: +603-2084 0818
*Showroom* Tel: +603-2084 0880 Fax: +603-2084 0881

**Factory:**
Lot 1-12, Jalan Industri 2/1
Kawasan Perindustrian Gopeng
KM 15 Jalan Gopeng
31600 Gopeng, Perak, Malaysia
Tel: +605-357 2020 Fax: +605-357 2000