



Go Green!



KOEL HOLDINGS LTD

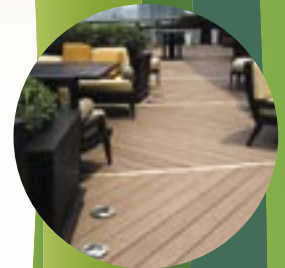
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## GREEN ROOF

### PRODUCT DESCRIPTIONS

**Roofs** are more than just “functional components” for the protection of the building structure. Roofs give character to individual buildings and entire city districts. Beyond that, roofs are considered as open resource areas. **Green Roofs** attract urban planners looking for socially responsible concepts that counteract the loss of natural living space and provide solutions for issues such as stormwater management and urban heat island effect in densely populated cities.

### TYPES OF GREEN ROOFS

<b>Extensive Green Roof:</b>	<b>Intensive Green Roof:</b>
<p><b>Minimal maintenance required</b></p> <ul style="list-style-type: none"> <li>- inspection 1-2 x / year</li> <li>- supply of water and nutrients mostly by natural processes</li> </ul>	<p><b>Regular maintenance required</b></p> <ul style="list-style-type: none"> <li>- garden maintenance such as mowing, fertilizing, watering, weeding etc.</li> </ul>
<p><b>Adapted plant communities</b></p> <ul style="list-style-type: none"> <li>- undemanding, drought-tolerant</li> <li>- self-regenerating</li> </ul>	<p><b>Weight and build-up height depending on plant selection</b></p> <ul style="list-style-type: none"> <li>- e.g. ornamental lawn, summer flowers, demanding shrubs, brushes and trees</li> <li>- substrate with a higher amount of organic material in layers &gt; 150 mm</li> <li>- weight &gt;150 kg/m<sup>2</sup></li> </ul>
<p><b>Little weight and shallow build-up height</b></p> <ul style="list-style-type: none"> <li>- mainly mineral substrate in layers up to 90 mm</li> <li>- weight approx. 60-150 kg/m<sup>2</sup> (saturated)</li> </ul>	

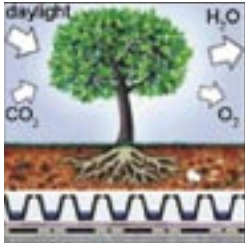


surface protection with ecological functions



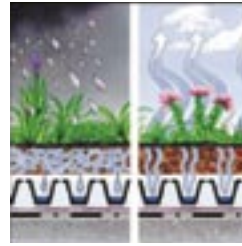
well kept Roof Garden

## BENEFITS OF GREEN ROOFS



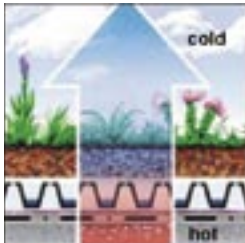
### Improve Microclimate

By cooling the surrounding air, Green Roofs make a valuable contribution to improve the microclimate especially in densely populated areas.



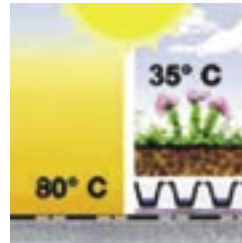
### Increase Water Retention

Rainwater run-off is reduced and delayed, diminishing the stress on the sewer system.



### Reduce Energy Costs

Green Roofs buffer temperature extremes and improve the building's energy performance.



### Reduce Renovation Costs

The waterproofing is protected from temperature extremes, UV exposure and mechanical damage. Therefore its life expectancy is increased.



### Bind Bust and Toxic Particles

A Green Roof filters out dust and smog particles, binding nitrates and other harmful substances within the substrate.



### Improve Noise Protection

Green Roofs reduce reflective sound by up to 3 dB and improve sound insulation of a building by up to 8 dB.



### Offer a Natural Habitat

Landscaped roofs compensate for green spaces lost to building development and provide a natural habitat for animals and plants.



### Provide Additional Space

Green Roofs offer additional space for numerous uses (social, recreational, parking etc.) without additional land costs.

## REPLICATING NATURE ON ROOFS

### The Challenge

When designing and installing a Green Roof, it is important to provide a growing environment as close as possible to the plant's natural environment. The most important factor is to compensate for the lack of subsoil.

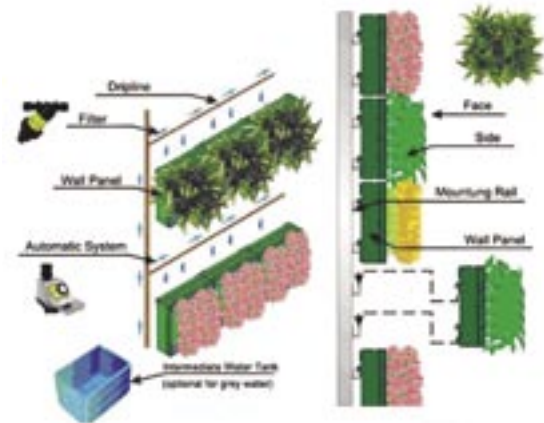




# VERTICAL GREEN WALL

## PRODUCT DESCRIPTIONS

**Vertical Green Wall** is designed to be durable and easy maintenance. Modules are framed by aluminium then hanged on rails following the container, light weight substrate and the plant which suitable for local weather. A programmed automatic irrigation system filters the water and control the best water usage to each module.



## SPECIFICATION

<b>Dimension (H x W):</b>	300 mm x 300 mm
<b>Depth:</b>	100 mm
<b>Material:</b>	100% recycled polypropylene
<b>Colour:</b>	Black
<b>No. of Corp :</b>	13-80 per module. 150-900 per m <sup>2</sup>
<b>Weight - Saturated:</b>	<500 kg/m <sup>3</sup>

## ADVANTAGES

- Lightweight
- Durable
- Easy to install
- Easy modules replacement
- Easy plant replacement
- Easy maintenance
- Wide range of plant selection

## APPLICATIONS





# RECYCLING WOOD (ECO WOOD)

## PRODUCT DESCRIPTIONS

**Recycling Wood** (Eco Wood) is a composite material lumber or imber made of recycled plastic and wood wastes. Recycling wood can be applied not only on flooring, but also on walls (both indoor and outdoor), pillars and ceiling. It is the result of the most innovative extrusion technology in recent decades and will replace wood, plastics and metals in many applications.

## FEATURES

### UV Protected



### Variety of colors



## ADVANTAGES

- Timber free
- Durable
- Safety
- Weather proof
- Bug, fungus and erosion free
- Easy install
- Easy maintenance

### Variety of Grain & Shape



# APPLICATION OF RECYCLING WOOD



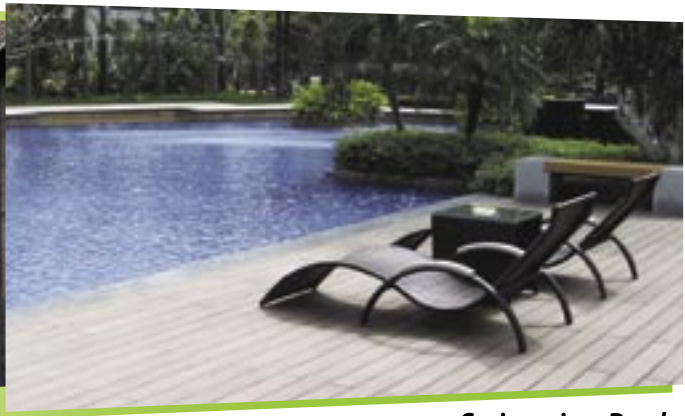
Shopping Mall



Exhibition Centre



Resort



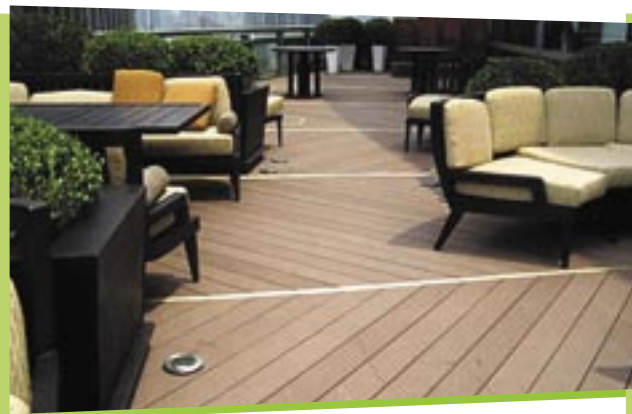
Swimming Pool



Building



Office



Restaurant



Domestic

See KOEL Recycling Wood Catalogue for more information.



## STRETCH CEILING

### *PRODUCT DESCRIPTIONS*

**Stretch Ceiling** is the fastest way of furnish. It does not demand preliminary preparation of a surface. It can hide any imperfections of existing ceiling, or a new face of the existing interior.

Stretch ceiling can be applied to conference room, lobby, showroom, mall, clubhouse, restaurant, boutique and convention centre, concert hall, swimming pool, house and apartment. With wide range of colours and finishes, these allow the unlimited creativity to make a classic, worth looking ceiling.





## MODELLING



### Aluminum Profile

The aluminum profile is semi-concealed and possible to create curves, domes, vaults and many other shapes. There are over a dozen of profile that help to achieve desire shapes.



### Membrane

The membrane is environmental friendly material. It can be painted or printed in any colour. It is durable with the features of waterproof, easy to clean, resistant to vapour, mold and fire.

## SPECIFICATION

<b>Available Finishes:</b>	Matt, Glossy, Satin, Metallic, Translucent, Suede
<b>Material Thickness:</b>	0.15 mm - 0.2 mm
<b>Material Width:</b>	1.5 m - 2.0 m
<b>Max. Size:</b>	40 sq. meter in one piece
<b>Weight:</b>	220 g/ m <sup>2</sup>
<b>Fire Resistance:</b>	B1 Class, GB 8624-1997
<b>Mold Resistance:</b>	Class 0, GB 1741-1989
<b>Tensile Strength:</b>	17Mpa, QB/T 2028-1994
<b>Acoustic Performance:</b>	Up to NRC 1.26, GBJ 47-1983
<b>Material Stabilization:</b>	Temperature range from 15°C – 45°C
<b>Translucent Film:</b>	Approximate 75% light transmission

# INSTALLATION

4-Steps Easy Installation:



*Supported Frame*



*Light-box & Main Frame*



*Lighting*



*Membrane*



**COMPLETE**

# ACOUSTIC & GLAZED OPERABLE WALL SYSTEM





## PRODUCT DESCRIPTIONS

Acoustic Operable Wall System offer a unique facility for utilizing available space in most practical manner and present a swift and efficient solution to space shortage. They allow a large space to be converted into smaller, separate areas. Flexible and efficient space utilization are becoming a must for offices, hotels, exhibition centres, studios and similar. Intelligent solutions are needed that facilitate multifunctional room configuration combined with openness and - when required - transparency as well.

## SOLID TYPE OPERABLE WALL PROFILE

Model 100	Model 86	Model 66	
			
<b>Thickness:</b>	100 mm	86 mm	66 mm
<b>Highest STC Rating Achieved:</b>	STC 52	STC 50	STC 32
<b>Maximum Height:</b>	15 m	5 m	3.5 m


## SURFACE FINISHING

Plastic Laminated Sheet	Wood Veneer	Fabric Foam	Custom
			

## GLAZED TYPE OPERABLE WALL PROFILE

Model G100	Model G86	Model G360	
			
<b>Thickness:</b>	100 mm	86 mm	40 mm
<b>Highest STC Rating Achieved:</b>	STC 45	STC 40	–
<b>Maximum Height:</b>	3.5 m	3.5 m	3.5 m

## OPTION - Inset Pass Door

(L-Type) Double Leaf	(U-Type) Single Leaf	Full Height (Pivot Door)
		

See KOEL Operable Wall Catalogue for more information.

# DEMOUNTABLE WALL SYSTEM

## PRODUCT DESCRIPTIONS

Demountable Wall System is a quick fitting, sturdy and aesthetically pleasing solution to office interiors, for the ultimate open space, a glass frameless system. The full office interior range consists of office partitions, glass walls, glass office partitions and plasterboard office fitouts.

## TYPES OF DEMOUNTABLE WALL



*Tawa*



*ELI*



*SLI*



*FANTA*

## PROFILE



<b>Partition Thickness:</b>	Tawa 108 mm    ELI 86 mm    SLI 70 mm    FANTA 40 mm
<b>Standard Module Width:</b>	1200 mm Economical size (non-standard module width optional)
<b>Max. Height:</b>	3400 mm
<b>Surface Finishing:</b>	Double glazed / Single glazed (clear, frosted, tempered or featured) / MDF board / Calcium Board etc.
<b>Acoustic Performance:</b>	Solid: RW 50 dB    Glazed: RW 44 dB (Laboratory test data according to China GB/J75-84)
<b>Fire and Smoke Resistance:</b>	Grade-A GB/T9978-1999 China / CNS6532 Taiwan

## AVAILABLE OPTION



Venetian Blind (Electric or Manual)



**Timber Door (H x W x THK):**

40 mm x 2045 mm x 840 mm

**Glazed Door (H x W x THK):**

Single Leaf 12 mm x 2045 mm x 1400 mm

**Door Frame:**

38 mm W 80 mm THK

**Others Options:**

Automatic door closer / Door lock

Wall Decoration



See KOEL Demountable Wall Catalogue for more information.

## ACOUSTIC DOOR

### PRODUCT DESCRIPTIONS

**Acoustic Doors** are being installed to effectively control noise and fire-resisting in conference rooms, broadcasting studios, theatres, acoustic laboratories, music practice rooms and machine equipment rooms.

Tested in accredited laboratory, **Acoustic Doors** are equipped with compression seals around the periphery. Standard **Metal Doors** have an acoustic rating up to STC 48 and Standard **Timber Door** acoustic rating up to STC 45. Fire doors are tested to BS476- Part 22:1987 with fire rating up to two hours for stability and integrity. Door ranges incorporate the latest acoustic technology and optimum in mechanical engineering design with high quality standard and optional fittings such as windows, locks, closers, etc. are also available.

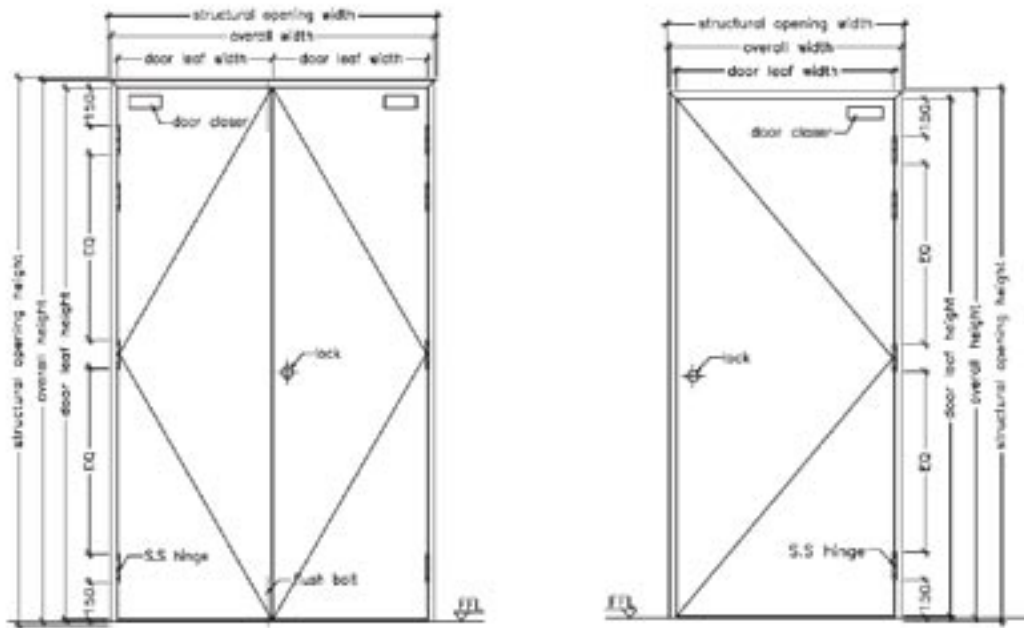
### ACOUSTIC METAL DOOR



### ACOUSTIC METAL DOOR PERFORMANCE

<b>Weighted Apparent:</b>	SRI R'w 39 - 49 (ISO-140-3)
<b>STC:</b>	39 - 48 (ASTM-E90)

## DRAWING



## ACOUSTIC TIMBER DOOR



## ACOUSTIC TIMBER DOOR PERFORMANCE

<b>Weighted Apparent:</b>	SRI R'w 32 - 45 (ISO-140-3)
<b>STC:</b>	32 - 45 (ASTM-E90)



# ACOUSTIC WALL PANEL SYSTEM

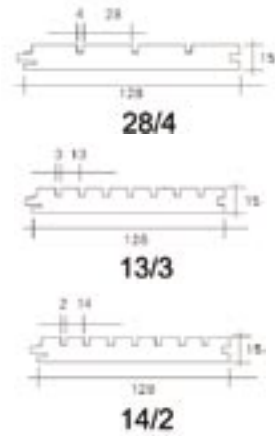
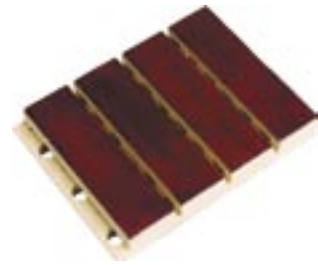
## PRODUCT DESCRIPTIONS

With the choice of size pattern, color and acoustic properties, **Acoustic Wall Panel** can easily blend in with other decorative features to suit wide range of acoustic requirements for boardroom, convention & exhibition venues, meeting areas, auditoria and other privacy-needed environments.

## TYPES OF ACOUSTIC PANEL

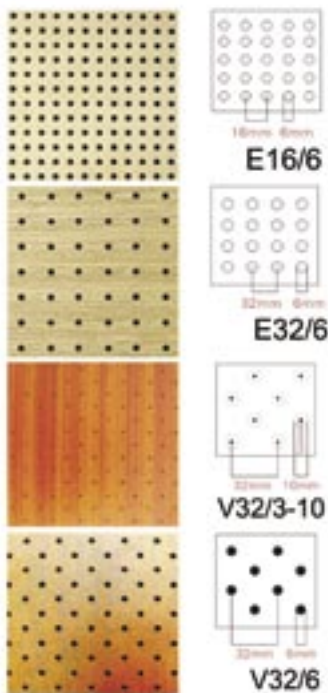
### Grooved Acoustic Panel

<b>Standard Pattern:</b>	Melamine / Veneer / Paint / Metal
<b>Base Material:</b>	MDF Board (Standard/ Fire-rated)
<b>Standard Dimension (L x W):</b>	2440 mm x 128 mm
<b>Standard Thickness:</b>	12 mm / 15 mm / 18 mm



### Perforated Acoustic Panel

<b>Standard Pattern:</b>	Melamine / Veneer / Paint
<b>Standard Series:</b>	E16/6/15      E16/3-10/15 V32/6/15      V32/3-10/15
<b>Standard Thickness:</b>	12 mm / 15 mm / 18 mm



## Fabric Acoustic Panel

<b>Standard Pattern:</b>	Cotton / Polyester / Leather / Velvet
<b>Base Material:</b>	Fire-rated Frame
<b>Standard Dimension (H x W):</b>	600 mm x 600 mm 600 mm x 1200 mm
<b>Standard Thickness:</b>	25 mm / 50 mm
<b>Cutting Edge:</b>	Right Angle / 1 cm Angle / 2 cm Angle



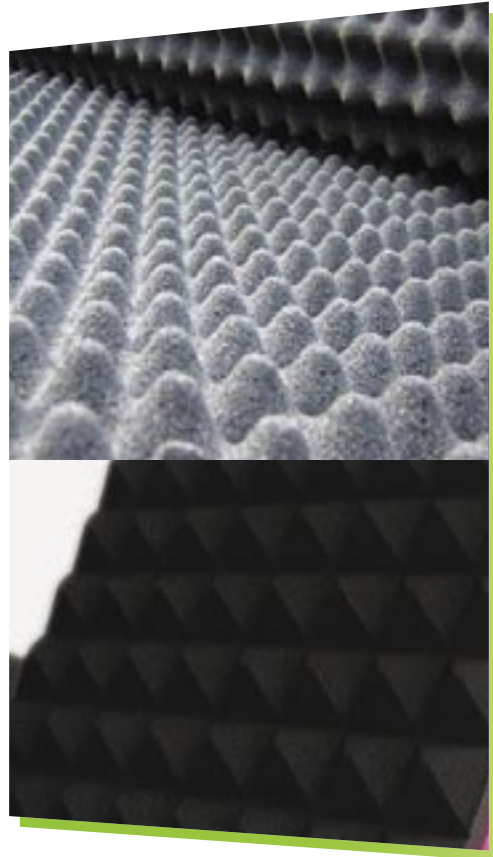
## Wood Wool Acoustic Panel

<b>Wool Wool Pattern:</b>	Straight / Curved
<b>Base Material:</b>	Wood Wool, Cement with Paint
<b>Standard Dimension (H x W):</b>	600 mm x 1200 mm 1200 mm x 2440 mm
<b>Standard Thickness:</b>	15 mm / 20 mm / 25 mm



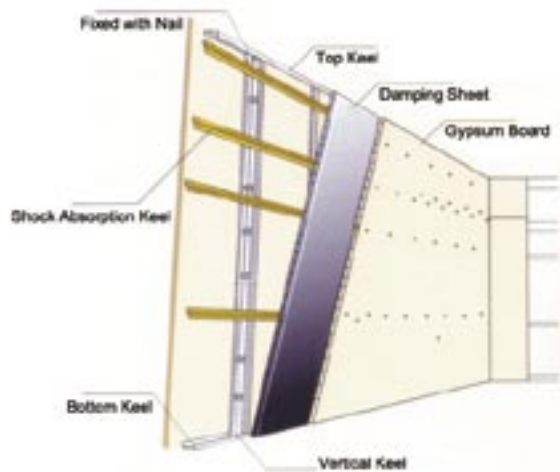
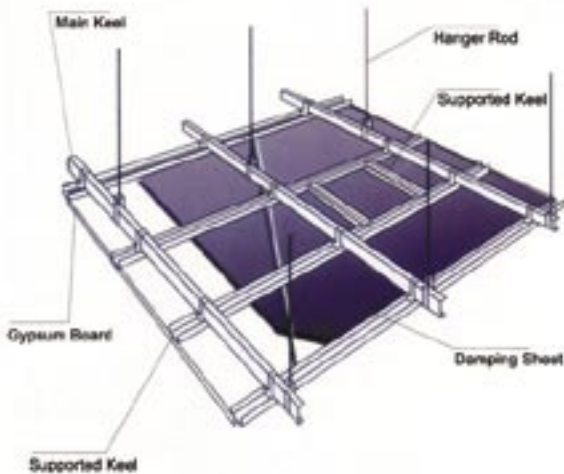
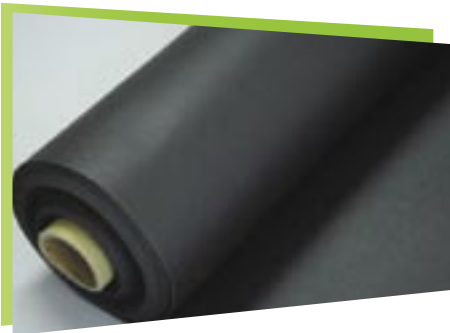
## Acoustic Foam

<b>Standard Pattern:</b>	Wave / Pyramid
<b>Base Material:</b>	Polyurethane (PU)
<b>Standard Dimension (H x W):</b>	1000 mm x 2000 mm
<b>Standard Thickness:</b>	30 mm / 50 mm / 75 mm



## Damping Sheet

<b>Base Material:</b>	Polymer and Metal Powder
<b>Standard Thickness:</b>	1.2 mm / 2 mm / 3 mm
<b>Standard Dimension (L x W):</b>	10 m x 1 m (for 1.2 mm & 2 mm) 5 m x 1 m (for 3 mm THK)





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