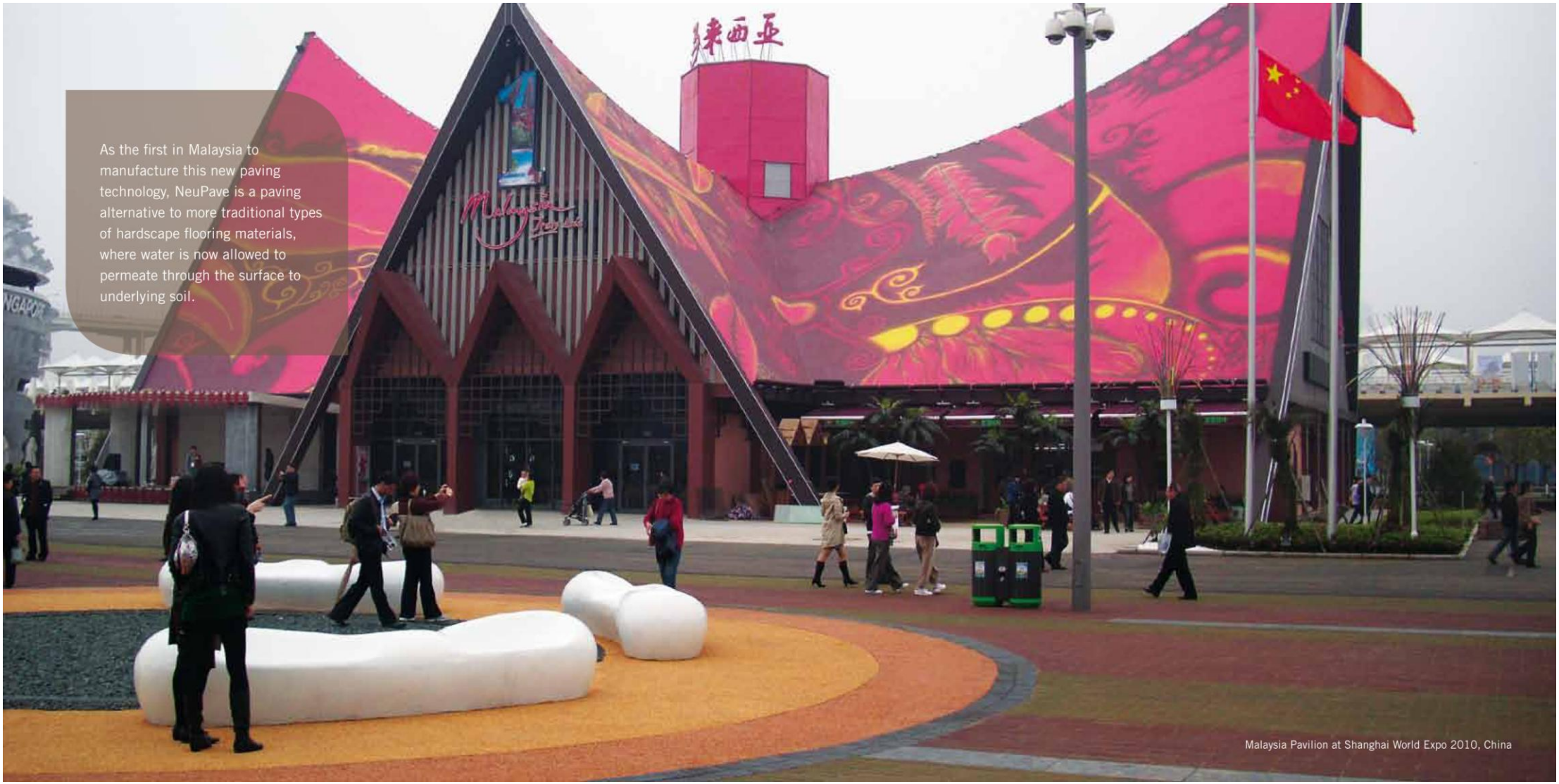
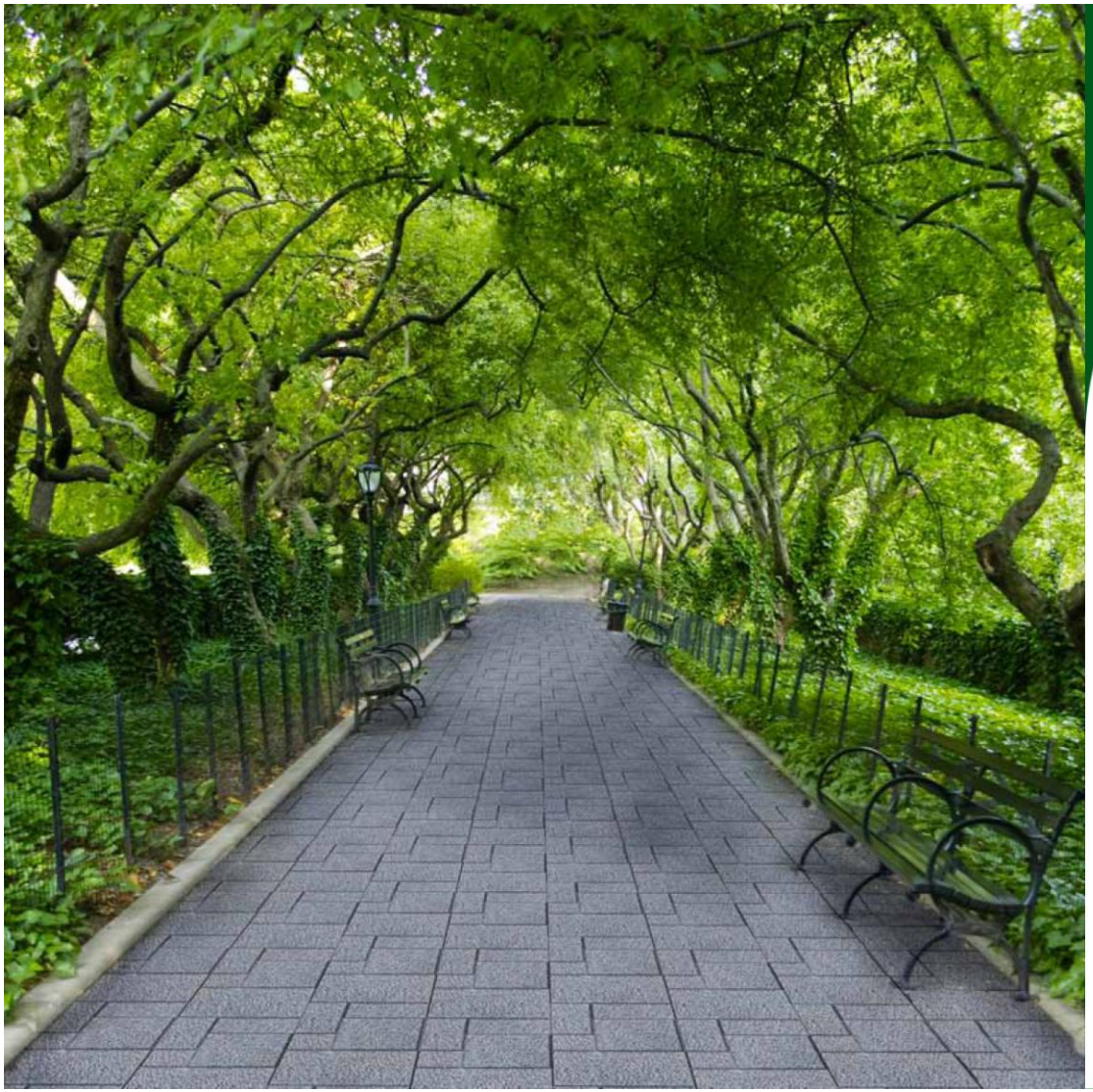

NEUPAVE
Permeable Pavers
A Permeable
Eco-Friendly Beauty



As the first in Malaysia to manufacture this new paving technology, NeuPave is a paving alternative to more traditional types of hardscape flooring materials, where water is now allowed to permeate through the surface to underlying soil.

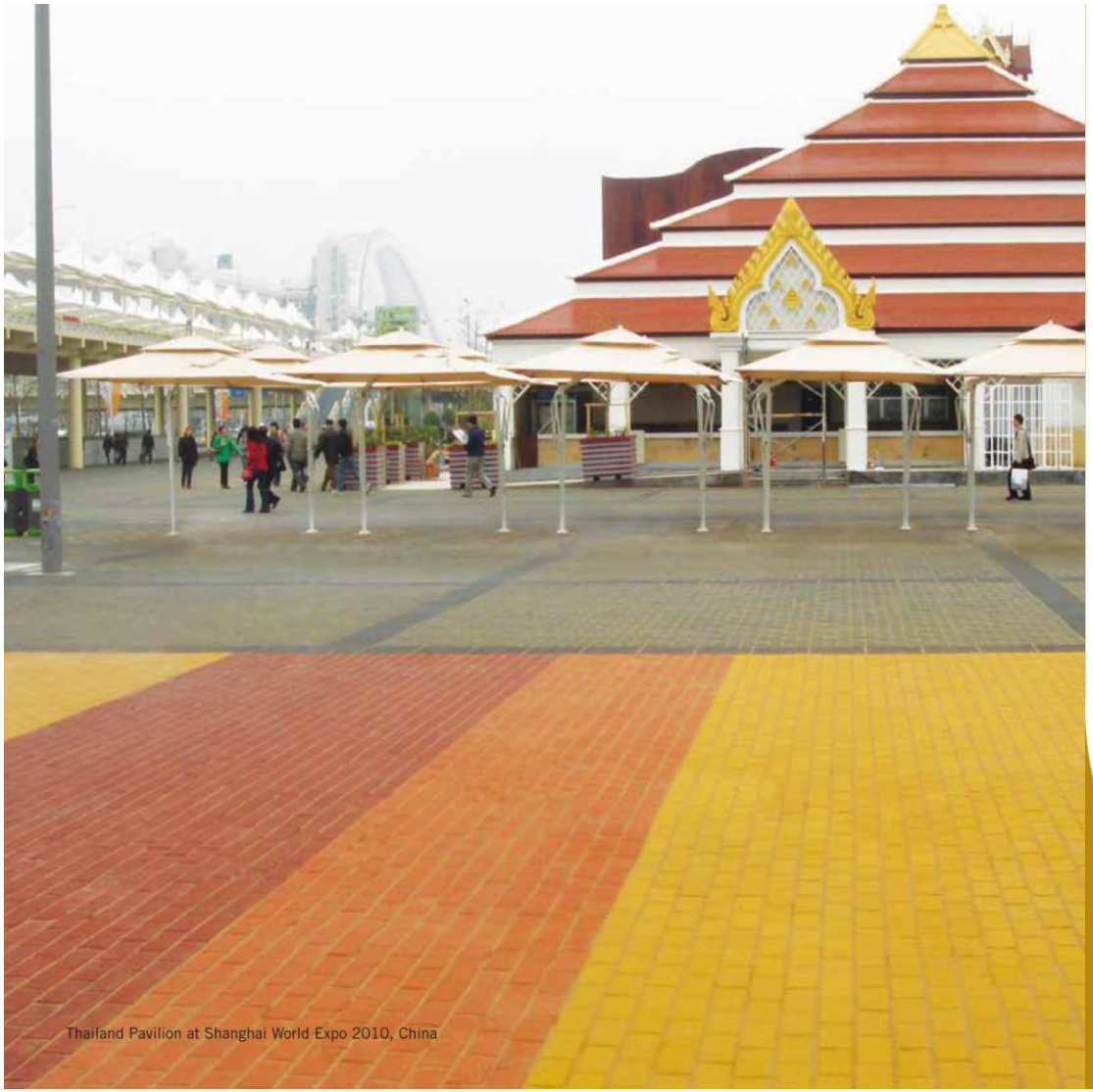
Malaysia Pavilion at Shanghai World Expo 2010, China



NeuPave

Normal concrete pavements do not allow much water to infiltrate particularly if they are mortared in place. The flowing water would normally hit the surface and then flow down to the nearest drainage channel, becoming storm water runoff.

NeuPave differs vastly from the above as its hard surfacing allows water to percolate to an underlying reservoir base. Permeable pavement can be used instead of standard concrete for surfacing sidewalks, driveways, parking areas and many types of pavement surfaces. As the usual concrete is considered to be impermeable, water that falls usually stays on the surface and cannot flow through the surface to the soils below, but rather runs to the lowest points to be drained away.



Thailand Pavilion at Shanghai World Expo 2010, China

The Numerous Advantages of NeuPave

- Reduces storm water runoff
- Reduces flooding
- Reduces erosion caused by flooding
- Increase storm water storage
- Promotes groundwater recharge
- Soil reinforcement and stabilisation
- Improving water quality by trapping and treating pollutants
- Irrigation techniques
- Landscaping techniques

Walkway at Shanghai World Expo 2010, China

Applications of NeuPave

- Public parking lots
- Pedestrian paths
- Lay-bys
- Bicycle paths
- Pool decks
- Jogging & buggy tracks
- Rest service area driveway
- Residential car park area
- Emergency vehicle access lanes

Subject to traffic volume and consultants specifications and requirements.

All permeable paving system designs are subjected to following criteria checking:

Slope
- Paving system slope should not exceed 1 in 20 (5%).

Traffic Volume
- Design traffic should be determined in advance, in order to avoid using permeable pavers in heavily trafficked roads.

Land-Use
- Permeable system should not be located downstream of high sediment generating activities.

Stability
- Infiltration from the base of permeable paving should not be undertaken where soils are susceptible to instability.

Discharge Type
- The 'no-infiltration' method of permeable paving is to be adopted, except in circumstances where site soils are identified as suitable for infiltration.

General Information & Specifications

Compressive Strength

Thickness (mm)	Strength (MPa)
60	30
80	

Infiltration Rate

The average infiltration rate is equal to:

Finishing	Liters/min/m^2
Fine	150 Liters/min/m^2
Rough	300 Liters/min/m^2

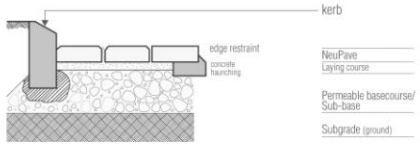
Tolerance

Thickness of any paver shall be ± 3mm Colours shown in this brochure are reproduced as close to the actual colours of the pavers as printing technology allows.

Efflorescence

This phenomenon is commonly found in most cement-based products. However, the effect is usually disappears over time due to weathering. Typically it takes about six to twelve months to clear the efflorescence through rain water, and in the worst case scenario it could take about two years.

Typical Pavement Cross-Section

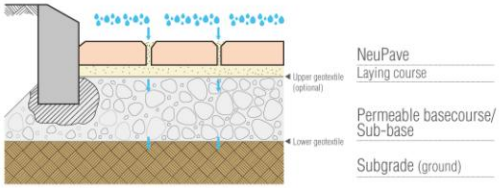


Available Colours & Profiles

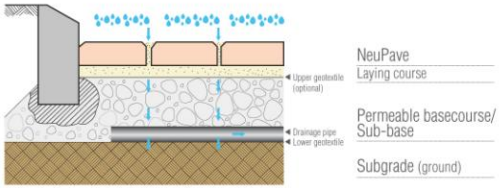
Colours can be custom-made to suit your design and requirement preferences. It is also available in all profiles of Interlocking Concrete Pavers and Prime Pavers.

Types of Permeable Paving Systems

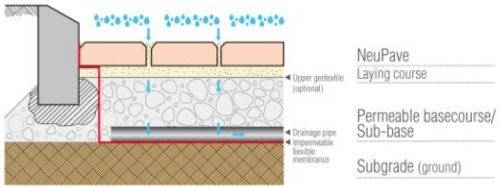
A System A – Full Filtration*



B System B – Partial Filtration*



C System C – No Filtration*



**Subject to traffic volume and consultants specifications and requirements.*

The illustrations above are adapted from Interpave, The Precast Concrete Paving And Kerb Association (January 2010).

System A – Full Infiltration*

Suitable for existing subgrade (ground) with good permeability, System A allows all water falling onto the pavement to infiltrate down through the constructed layers below and eventually into the subgrade. Some retention of the water will occur temporarily in the permeable sub-base layer allowing for initial storage before it eventually passes through. No water is discharged into conventional drainage systems, completely eliminating the need for pipes and gulley, and making it a particularly economic solution.

System B – Partial Infiltration*

Used where the existing subgrade (ground) may not be capable of absorbing all the water. A fixed amount of water is allowed to infiltrate – which, in practice, often represents a large percentage of the rainfall. Outlet pipes are connected to the permeable sub-base and allow the excess water to be drained to other drainage devices, such as swales, ponds, water courses or sewers. This is one way of achieving the requirement for reducing the volume and rate of runoff and will most likely remove the need for any long term storage.

System C – No Infiltration*

Where the existing subgrade (ground) permeability is poor or contains pollutants, System C allows for the complete capture of the water. It uses an impermeable, flexible membrane placed on top of the subgrade level and up the sides of the permeable sub-base to effectively form a storage tank. Outlet pipes are constructed through the impermeable membrane to transmit the water to other drainage devices, such as swales, ponds, watercourses or sewers. Importantly, the outlet pipes are designed to restrict flow so that water is temporarily stored within the pavement and discharge slowed. System C is particularly suitable for contaminated sites, as it prevents pollutants from being washed further down into the subgrade where they could reach groundwater.

Infiltration Test

Normal Paver

Water does not infiltrate but flows sideways, becoming runoff.

NeuPave

Water permeates through the surface.

Installation Procedure

1. Basecourse

Taking the existing sub-grade/soil conditions and the anticipated traffic loading into consideration, and adequate thickness of well compacted base course must be provided to ensure good pavement performance. Existing bitumen or concrete surfaces need not be removed and can act as good sub-grade.

2. Sand Bedding Layer

A layer of sand should be loosely spread and screeded to uniform thickness such that its compacted thickness would be approximately 30mm - 50mm. The sand bedding should be compacted prior to installation of the pavers.

3. Laying The Blocks

Paving blocks are placed side by side on the sand bed with gaps of approximately 2mm between adjoining blocks. Fine sand is then spread and swept into the joints. Paving blocks can be cut to fit edges and awkward corners.

4. Pavers Compaction

The pavement is compacted with a hand-guided plate vibrator until it is firmly embedded.

Note: For permeable (fine) finishes, a gunny sack (burlap) sheet is placed on top of the pavement before the compaction is done.

5. Completion

The permeable pavement is now completed and fully functional.