

Dotcon

**Toward a future
without flood damage**

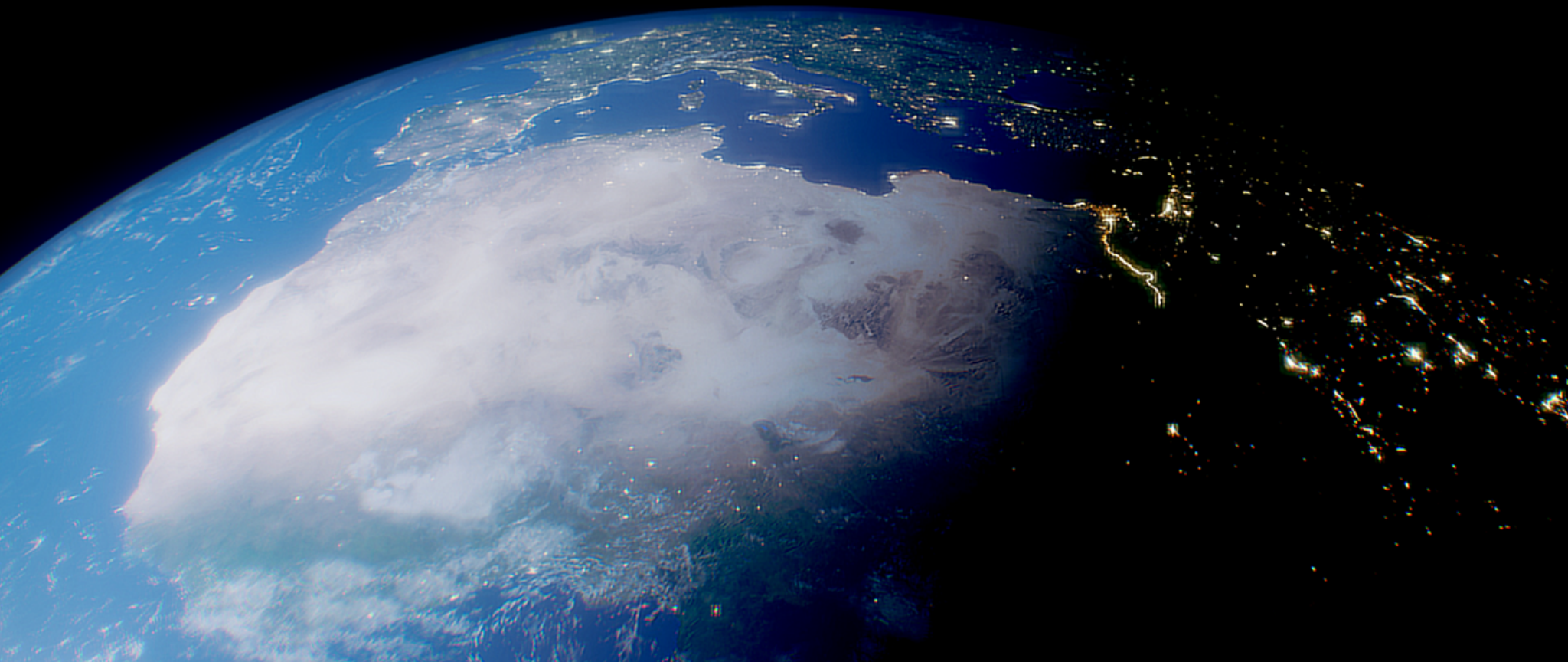
By
PUMPMAN Co., Ltd./
Original Garden Co., Ltd.

Earth is a water planet.

Unlike other planets, Earth has an abundant amount of water that allows the birth of a wide variety of organisms.

Thanks to this environment, human civilisation was able to be born.

But now, Global warming is severely disrupting the global water cycle.



Flood damage due to disruption of water circulation

Due to global warming, the temperature of seawater rises and the amount of water vapor increases.

This creates a big typhoon

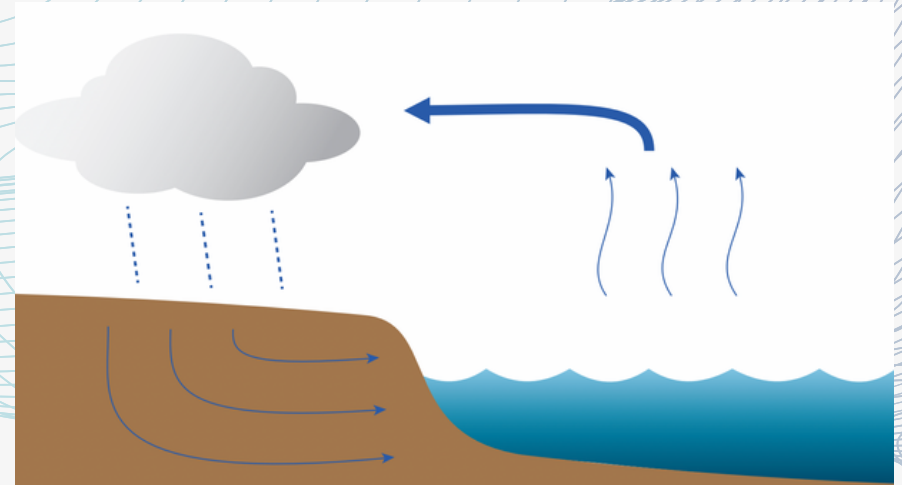


Flooding occurs

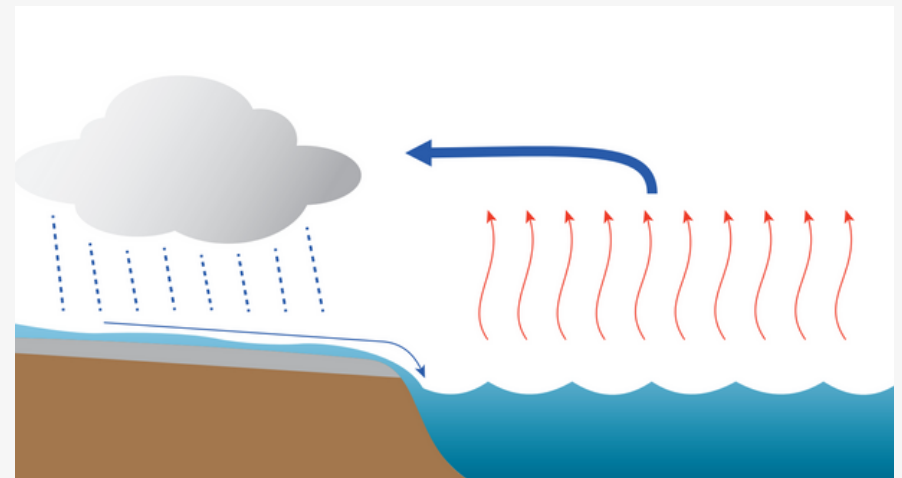
One of the causes of flood damage is :

"The asphaltting of the city"

The heavy rain caused by a typhoon is now unable to penetrate the asphalted and blocked ground, forcing it to flow into rivers and cause floods.



Rainy days before



Rainy days now

Flood damage



The sewage treatment plant today is unable to deal with the flooding.

It is currently being distributed as follows:

Domestic wastewater 30%; rainwater 70%.

When it rains, the amount of rainwater in the sewage pipe would be about 70 times the amount of what the sewage could handle,

Where it is impossible to treat that amount at the water reclamation center.

Furthermore, in order to protect the urban area from flooding when it rains heavily,

Unclean rainwater must not be kept.

Typhoon No. 19 which occurred in 2019 was recorded to have brought heavy rains to various places.

Due to the heavy rain at the time, rivers flooded one after another in various places, Leading to the occurrence of landslides and flooding, where 77 lives and a lot of houses were lost.



>>> Water is polluted

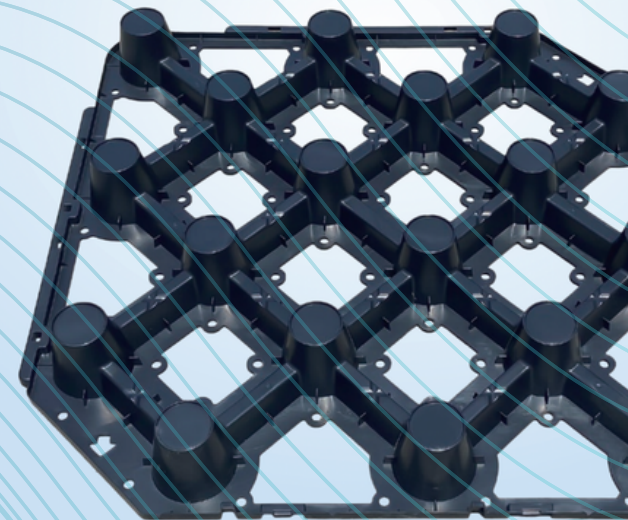
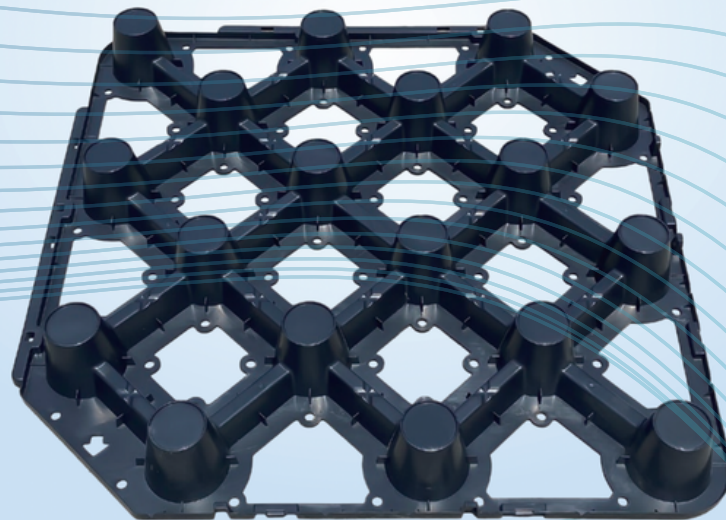
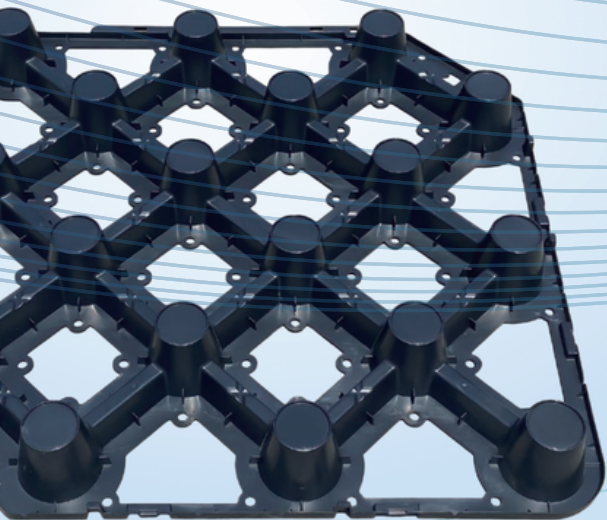


Birth of Anopheles mosquito due to surrounding stagnant water Causes infectious diseases such as malaria.

Using

Dotcon

**To suppress the flood
damage that affects
humankind !!**



SUSTAINABLE DEVELOPMENT GOALS
DotconはSDGsの取り組みに配慮した商品です。



"Dotcon" aims for "a future without flood damage"

We use a dedicated sheet for placing water-permeable concrete and surface reservoir!!

Since there are holes in the sheet, physical permeability can be secured.

Dotcon solves the environmental problems exacerbated by the paving of roads!

Dotcon's Strength



**Outstanding
water
permeability**



**Easy
installation**




**Reduced
construction
costs**



**Rich in
design**

>>> Outflow control measures

>>> Flood control



**High
durability**

Outstanding water permeability and retention

Docton's speciality

1

Dotcon has unparalleled rainwater permeability, where it can reliably absorb rainwater even when it rains more than 50mm/h.

It can store and permeate water.

At 50mm/h, 24% of rainfall is recharged underground,

In addition, it is possible to store 172 tons of water per hectare inside the panel.

The amount of water that can be stored with one sheet is about 14L.

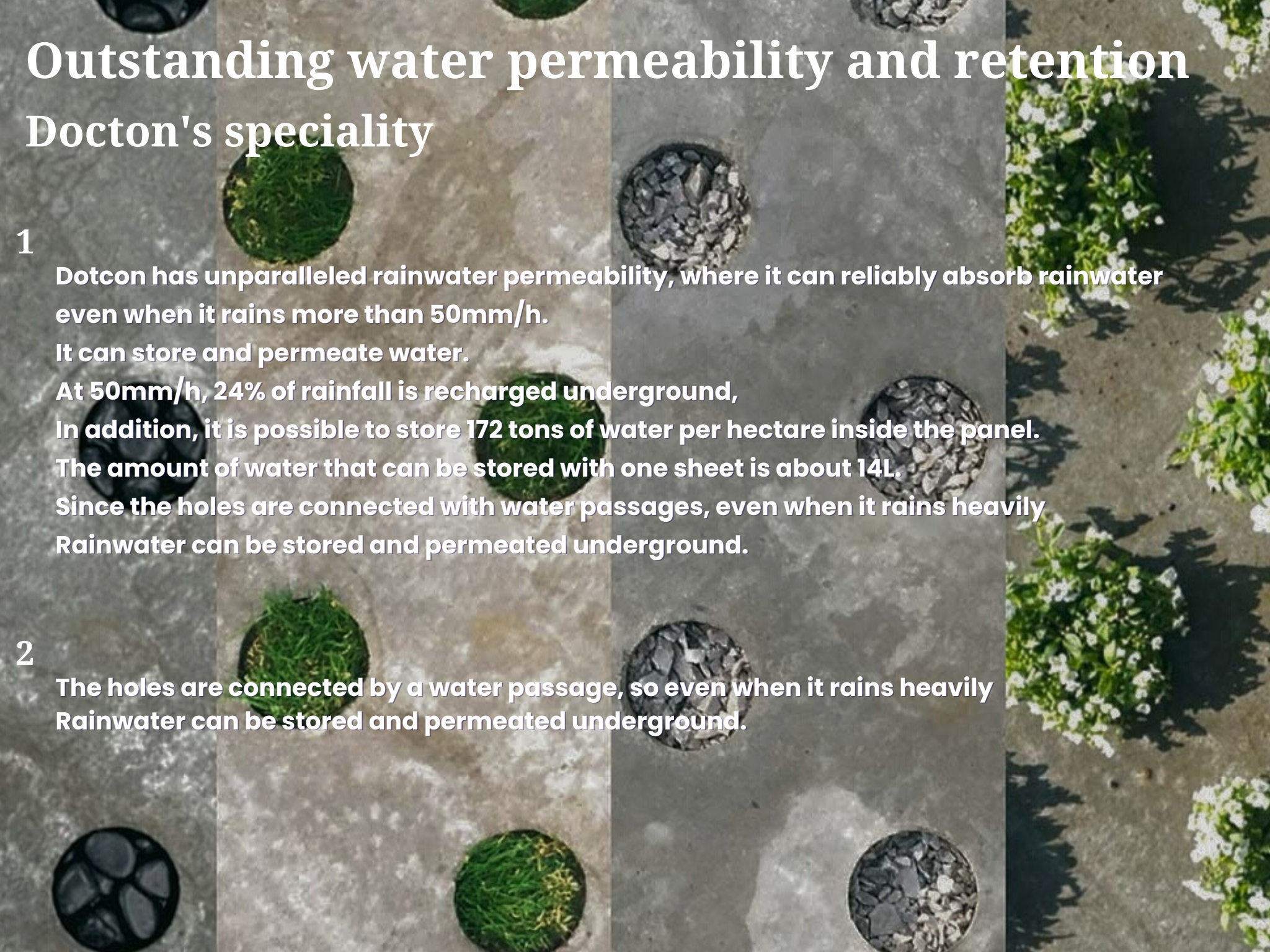
Since the holes are connected with water passages, even when it rains heavily

Rainwater can be stored and permeated underground.

2

The holes are connected by a water passage, so even when it rains heavily

Rainwater can be stored and permeated underground.



Outstanding water permeability and retention

Docton's speciality

3 Compared to general permeable pavement, there is no need to worry about clogging, High water permeability is maintained.

Asphalt is permeable at first, but it quickly becomes clogged and becomes impermeable in about three months.

There is no way to eliminate the clogging, and when the water permeability is lost, the asphalt is turned over and paved again, and the cost performance is very bad.

4 Since the holes ensure water permeability, there is no need to create a water gradient. horizontal construction is possible.



The reduction of construction costs

Docton's speciality

Although the introduction of permeable concrete is more expensive than conventional concrete,

Docton is REALLY CHEAP !!

《Price comparison between Dotcon and other permeable concrete and concrete pavement》

	Dotcon	Vegetation block pavement	Turf parking	Porous concrete	Concrete pavement
Per square meter	¥ 13,741	¥ 25,317	¥ 21,406	¥ 11,287	¥ 9,169
Difference with Dotcon	¥ 0	¥ +11,576	¥ +7,665	¥ -2,454	¥ -4,571

The yellow part is the part where concrete can be reduced



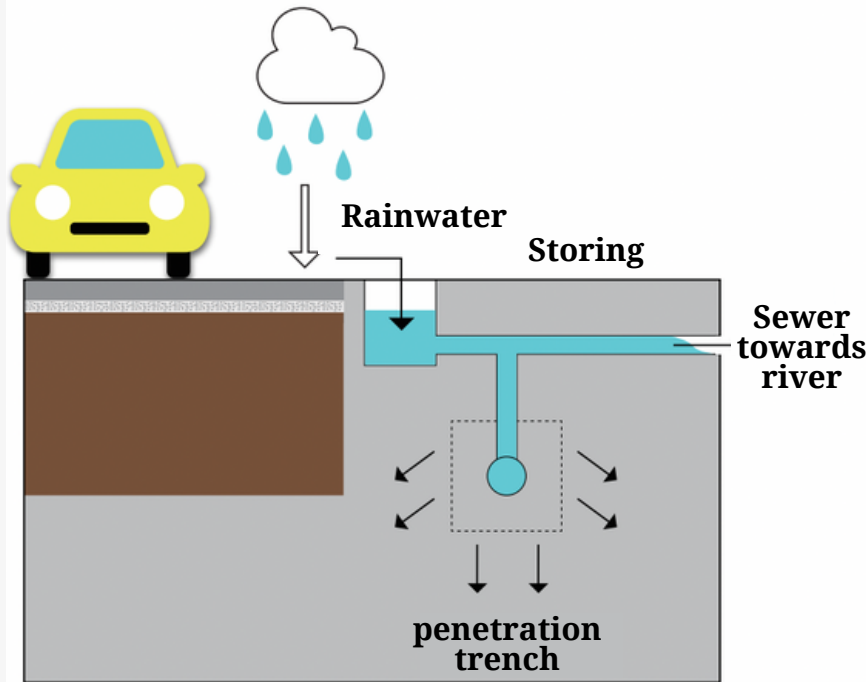
It is possible to reduce the construction cost because the excavation and the residual amount is small !

The holes and vents allow the concrete to be reduced by about 20%.

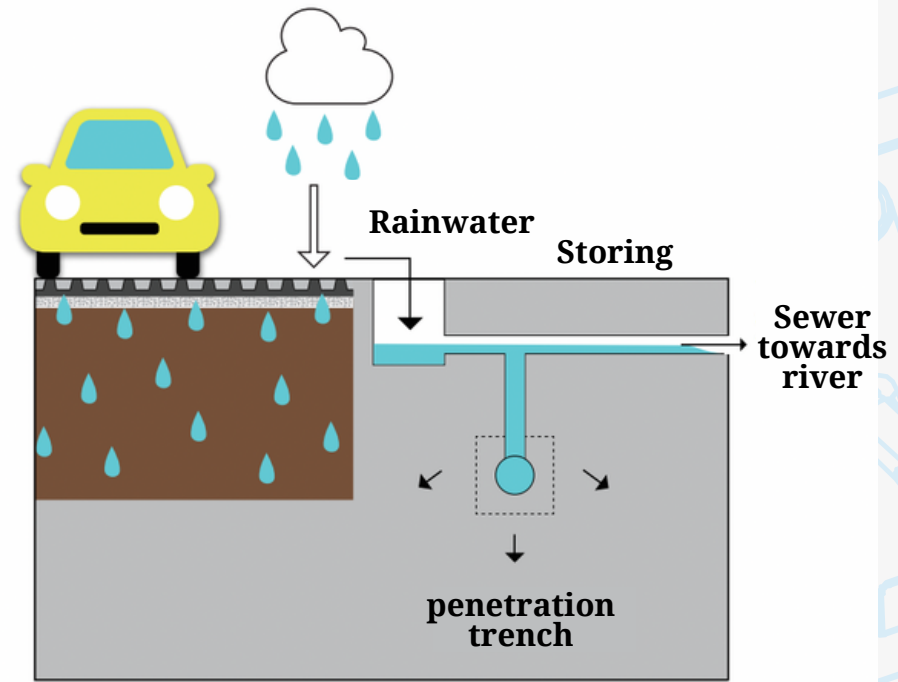
Since it is possible to infiltrate rainwater directly into the ground, rainwater runoff can be suppressed and rainwater distribution facilities,

It is possible to reduce the cost burden on infiltration facilities and storage facilities

For impermeable pavement



When using Dotco Dotconn



Ordinary concrete and asphalt are not permeable, so

About 90% to 80% of the water is drained and the rain gradually flows into the earth.

As it permeates, you will need a lot of drainage equipment.

Dotcon is permeable due to the holes, So it can reduce the amount of water discharged into the catch basin, which can also reduce the amount of drainage equipment.

New type Docton ! Easy Installation

Docton's speciality

From August 2023 onwards

Construction
method video



Finishing
method video



1 Spread gravel and compact

Just like normal concrete pouring
Spread gravel as the foundation of the
base part,
Press down.



2 Take out Level

In order to finish Dotcon to the
prescribed height,
Spread sand, etc., and perform
leveling.



3 Lay Docton

According to the shape of the
construction site, it is like a puzzle.
Lay out the Dotcon connected like this.



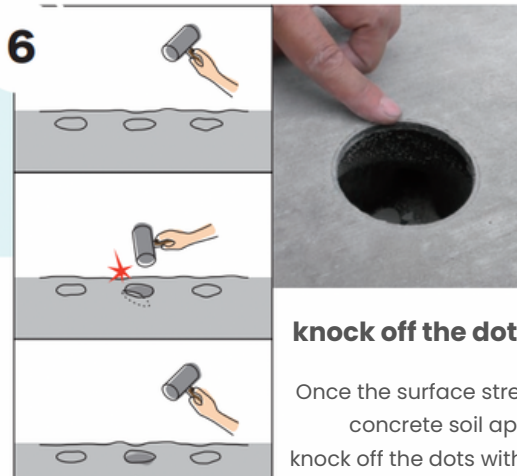
4 Lay out wire mesh or reinforcing bars

Place the wire mesh in a spot according to the mark of the
guide. No spacer required.
Simply line up along the guide to easily increase concrete
strength.(150 pitch wire mesh)
* Change the diameter of the bar arrangement according
to the intended use.



5 Concrete placement

Match the height of the fresh concrete
to the surface of the lid,
Finish with a trowel (propeller).



6 knock off the dot

Once the surface strength of the
concrete soil appears,
knock off the dots with a hammer

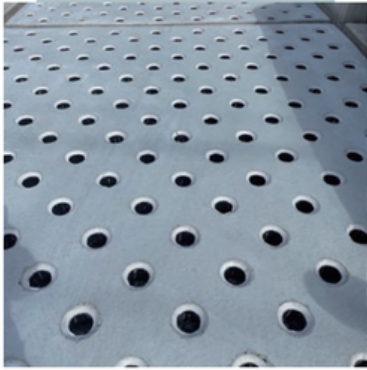


Finished

Rich in design

Docton's speciality

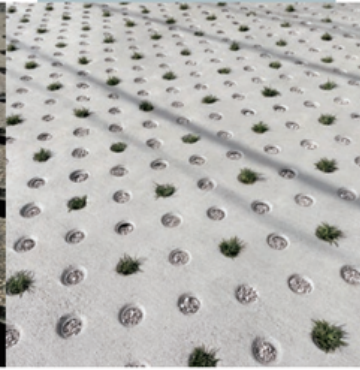
Iron trowel finish



washing finish



brushed finish



All concrete finishing methods
You can apply it to Dotcon!

In the dot (hole) part of Dotcon
Various designs can be used to
decorate

Cobb Gravier



gold crest



Ryūnohige's parcel
line



light



Gravel, plants, flowers, lights (permeable), etc.

If you put it in a hole, you can also make patterns and division lines depending on the position!

High durability

Docton's speciality

Asphalt

Asphalt has low durability, and due to concentration of load,

Cracks, dents, and misalignment occur



Worst case

Large-scale collapse → road subsidence



Asphalt has low heat resistance,
It has the property of softening at high temperatures



Asphalt softens in midsummer + vehicle weight



can rut



Repaving



asphalt requires regular maintenance and is costly

Concrete

Because it contains reinforcing bars and wire mesh

High strength, durability and earthquake resistance



Depending on the strength of the ready-mixed concrete and the amount of reinforcing bars

You can also adjust the intensity

Concrete keeps for 30 to 50 years,

No need for frequent maintenance

Significant reduction in maintenance costs

Dotcon's

concrete is durable and relieving to use

We have already established a strength that can be used with peace of mind in residential parking lots, etc., but we will continue to make further improvements so that it can be used on roads with even higher traffic volumes.



[Results of Dotcon bending strength test conducted at Yokohama National University]

Dotcon no hole	5.55N/mm ²
Dotcon hole 1	2.76N/mm ²
Dotcon hole 2	2.29N/mm ²

At the **Kanto Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism**

We constructed Dotcon for the exhibition.



Docton's other specialities

Dotcon recycling

Since it can be easily removed from the concrete during demolition, it can also be recycled by separate dismantling.

Eco-friendly recycled PP use

While being 100% environmentally friendly recycled raw materials, it has a firm texture.

No wire mesh or rebar spacers required

There is a special mark on the dot concealed sheet, so wire mesh and just put rebar. Since it is not directly stepped on during casting, there is no disturbance of the rebar.

18 holes

Non-slip concrete used on steep slopes
There are holes at the same intervals as holes in the seat absorb running noise, reducing road noise and
Anti-slip effect can be expected.

Unique structure that prevents ready-mixed concrete from flowing in

Inflow under the sheet when constructing ready-mixed concrete
It has a rib and a special lid to prevent it.

One-touch joint for easy connection

Just line up the dots according to the arrows.
The material is easy to process, so edge processing is easy.

Horizontal installation

Permeability is ensured by the holes, so a water gradient is added
Since it is not necessary, horizontal construction is possible.

Reliable strength design

Since people and machines will be on board during construction,
Since the seat load is calculated, damage
There is no need to worry about injuries due to
Sufficiently withstands a load of 100kg.

Product Summary

Product material: recycled PP
Body dimensions: 920mm x 920mm

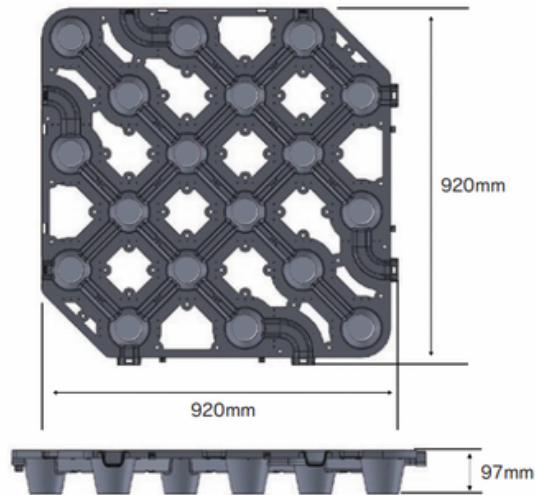
0.81m²

Thickness: 97mm

Plate thickness: 2.5mm

Weight: 2.76kg

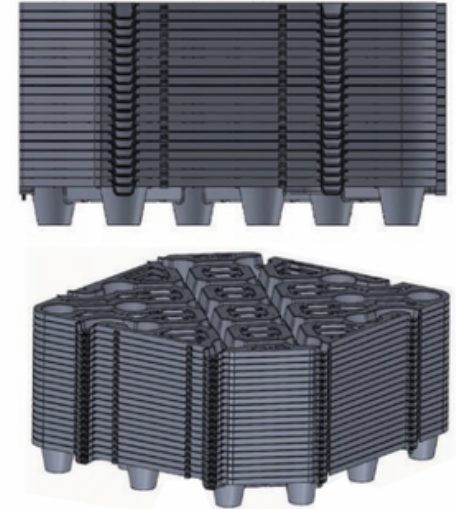
Number of holes: 18



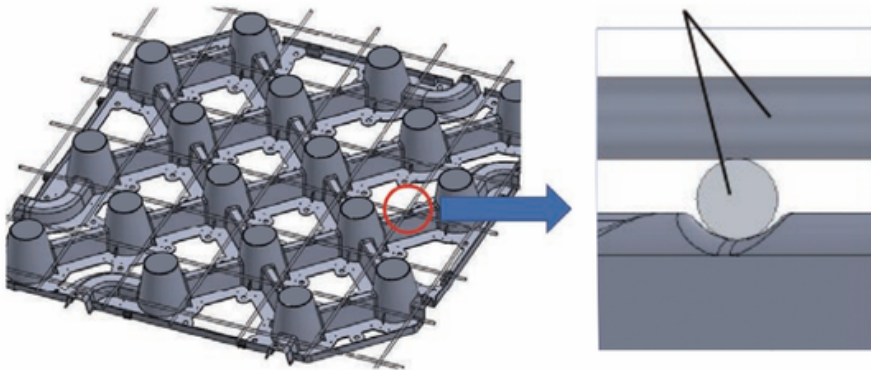
During transport

20 levels
height : 0.5m
weight : 51kg

50 levels
height : 1.1m
weight : 129kg

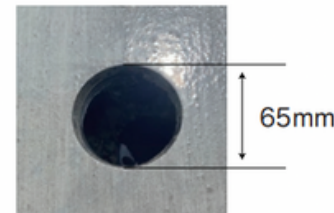


Wire mesh/ rebar guide



Height/ hole size

▶ hole size



Development Intention

"In recent years, flood damage due to global warming has increased rapidly.

Due to Typhoon No. 19 that occurred in October 2019, extensive floor flooding occurred, and our group company

Ozawa Sogyo Co., Ltd. owns a concrete pump vehicle that drains water above and below the floor and restores flood damage.

did.

I have been involved in the concrete industry for many years, but the act of covering the ground surface with concrete or asphalt is

I came to think that it might be the cause of such flood damage.

If we continue to use concrete in the same way, will our children have a bright future?

Therefore, we took on the challenge of combining the conflicting functions of pouring concrete to prevent flood damage and water permeability.

So I fought

If all the roadbed materials on earth could be changed to Dotcon, the earth's environment would recover dramatically.

I believe it should.

In order to entrust children with a bright future, we aim to realize a future without flood damage with Dotcon."