ECORASTER®

Permeable ground stabilization systems

Installation instructions

ECORASTER®

ECORASTER®

Disclaimer
The explanations in this document, particularly regarding application and usage recommendations of our products, are based on our experience and knowledge under normal conditions, and assume that the products have been stored and used appropriately. Due to differences in subsoils and different operating conditions, Purus shall assume no liability or warranty of the work results, whatever their legal basis, based on either these instructions or verbal consultation. The user is responsible for checking the products for their suitability, i.e. regarding their intended application. The product-specific data are subject to change without notice. Our general terms and conditions of sale, delivery and warranty apply as well as the latest product data sheet at the time, which should be requested.

Green-blue infrastructure - the „sponge city“ principle.

PURUS PLASTICS lives the „sponge city“ principle because our products offer solutions for modern rain water management: On the roof with **ECOgreen®** and on the ground with **ECORASTER®**.

Why? In Germany, approx. 52 hectares per day are transformed into settlement and traffic areas. Around 45.1% of these surfaces are sealed, i.e. with concrete, asphalt or paving.* The speed of land usage is certainly decreasing, but the rate of sealed areas continues to be high.

The consequences of high land usage globally are clearly noticeable in the form of heat islands and flooding events. The subsequent damage caused underscores how important sustainable and cost-effective permeable surfaces can be.

Our ground reinforcement systems ensure hard-wearing surfaces that do not lose their rainwater retention properties. They are environmentally-neutral, versatile and have proven themselves a million times over while offering excellent value for money.

Due to our range of different grid types and innovative accessories, our systems can be used for all types of applications.

Choosing our quality product helps to save precious resources and reduces the environmental impact of waste plastics.

Thank you.

Yours sincerely,

Your
PURUS PLASTICS Team

GREEN.
SPONGE.
CITY.

*(source: StBA)

Installation instructions *ECORASTER®*

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CIVIL ENGINEERING | ROAD CONSTRUCTION | MUNICIPAL CONSTRUCTION | GARDENING AND LANDSCAPING | MILITARY | SPECIAL HEAVY CONSTRUCTION | PRIVATE AND PUBLIC SPACES | AND MANY MORE.

Why ECORASTER®?

When the ground is paved or compacted due to human intervention, particularly in metropolitan and industrial areas, it is less able to fulfill its natural functions. For one thing, these sealed areas lose the natural ability to retain rainwater leading to a quickly over-burdened waste water system, which also means that the air can no longer be cooled and humidified by the ground. This can cause both flooding and the creation of heat islands. To counteract this trend and help prevent the negative effects of traditional sealed paving, more and more municipalities, architects and planners are relying on permeable and plantable ground stabilization systems.

To counteract this trend and help prevent the negative effects of traditional sealed paving, more and more municipalities, architects and planners are relying on permeable and plantable ground stabilization systems. The implementation of costly rainwater retention and drainage systems can often be eliminated altogether when using the ECORASTER® ground reinforcement system. This means that the use of the ECORASTER® ground reinforcement system may eliminate respective storm water charges, the need for mitigating measures as well as opening up numerous funding opportunities.

The installation of the ground reinforcement system is quick and easy. Several m^2 can be laid per manpower hour without the need for expensive heavy construction equipment. The areas remain unsealed despite the filling or vegetation.

Compared with heavy concrete pavers, ECORASTER® is easy to handle and inexpensive to transport and it has a high load-bearing capacity. The permeable surface is significantly larger at over 95% and ensures a high degree of drainage.

The reliable safety interlocking system and the multiple integrated expansion joints always ensure excellent surface weight distribution, no matter what kind of application the system is used for.

Manufactured from secondary raw materials - free from PVC!

Benefits at a glance.

- ✓ Surface reinforcement without ground sealing
- ✓ no surround required
- ✓ Easy and quick installation
- ✓ Installation without heavy construction equipment
- ✓ Low transport and handling costs
- ✓ High load-bearing capacity
- ✓ Safety interlocking system with 36 detents/m^2
- ✓ Versatile application options with suitable accessories
- ✓ Minimal maintenance
- ✓ Weather-resistant and break-proof
- ✓ UV-resistant and frost-proof
- ✓ 20-year warranty
- ✓ „Made in Germany“

GREEN. SPONGE. CITY.

Application matrix

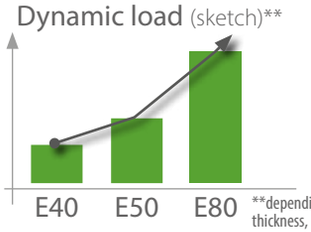
ECORASTER® – Application type			GREEN / MICROGREEN	MINERAL	Bloxx
			green	gravel filled	filled
Load		Surfaces for pedestrians and cyclists as well as bike and hiking paths. Applications for private residences.	E40 (aqua) alternative: E40 XXL	E40 alternative: E40 XXL	✓
		Sidewalks, camping and parking areas, etc., access roads and pathways.	E40 (aqua) alternative: E50, E40 XXL	E40 alternative: E50, E40 XXL	✓
		Pathways, emergency access areas, shoulders and parking spaces. Logistics areas without narrow turning traffic.	E50 alternative: E80	E50 alternative: E80	✓ *
		Areas that are subjected to high wheel loads and narrow turning maneuvers, e.g. logistics areas (forklifts and heavy-duty traffic), truck and bus parking spaces, helipads.	---	E80	
	Unfilled: The installed ECORASTER® can easily handle heavy wheeled vehicle traffic (EN 124 / D400 | except Bloxx). Please prevent turning on the vertical axle and drive at walking speed.				

Minimum static loads (t/m²)

	Aqua	E40	E50	E80
ECORASTER® MINERAL / Bloxx	---	800*	800*	800*
ECORASTER® GREEN / MICROGREEN	200	200	300	500

*Internal test phase limited to 800 t/m².

Dynamic load (sketch)**



**depending on the element height and wall thickness, results in the type of application (s.o.)

Certificates and accreditations

- UV-resistant, tested according to DIN EN 60068-2-5
- Drainage capacity according to DIN 18130
- Axle load up to 20 metric tons, tested according to DIN 1072:1985
- Highly durable, tested according to DIN EN 124:2011
- Environmentally friendly, tested according to OECD 202:2004
- RAL-tested brand quality
- NATO certified
- TÜV CERT

* Bloxx; please note: For a total weight over 12 metric tonnes, the joints and drainage bar of the Bloxx elements should be filled with sand according to the technical note.

We would be happy to send you the information upon request.

Occupancy and parking duration

Examples of permeable surface installations
depending on occupancy and parking duration per day

ECORASTER® Mineral

Occupancy > 10 hours per day

» Visitor parking lots
» Shopping malls (near the entrance)
» Traffic lanes on planted parking lots, access routes
» Storage areas
» Site access and exit routes
» Emergency access areas ... etc.

Parking duration > 10 hrs. p. day

ECORASTER® Bloxx

Occupancy > 10 hours per day

» High traffic areas
» (Disabled) parking spaces for authorities, agencies, town halls etc.
» Office facilities and public buildings, Business parks (in the vicinity of entrances)
» Shopping malls, parks
» Parking spaces in residential areas ... etc.

Parking duration > 10 hrs. p. day

ECORASTER® Microgreen

Occupancy max. 8 hours per day

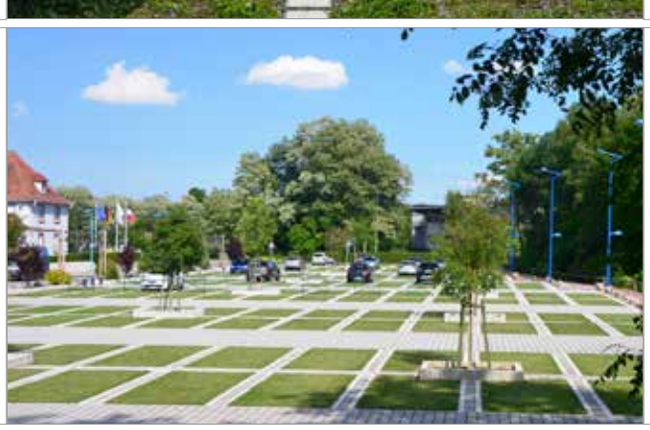
» Parking lots for authorities, agencies, town halls
» Office facilities and public buildings, Business parks (in the vicinity of entrances)
» Shopping malls, parks
» Parking spaces in residential areas ... etc.

Parking duration max. 8 hrs. p. day

ECORASTER® Green

Occupancy max. 4 hours per day

» Parking spaces in tourist destinations
» Offices, business parks (with long distances to entrances)
» Travel lanes for golf carts, etc.
» Cemeteries
» Emergency access roads
» Stadiums and sports venues (outside city centers)
» Camping sites ... etc



Parking duration max. 4 hrs. p. day

Adaptation to the utilization intensity:
The planning of parking spaces and travel lanes can depend on the distance to the buildings, for example:
The closer the parking space is to the building entrance the more robust the backfill of the spaces should be.

Technical Data

Type:	ECORASTER® E80	ECORASTER® E50	ECORASTER® E40	ECORASTER® 40 aqua
Dimensions approx.:	333 x 333 x 80 mm	333 x 333 x 50 mm	333 x 333 x 40 mm	333 x 333 x 40 mm
Material:	100% recycled material [(PO) PE-PP], environmentally-neutral, PVC free, recyclable			
Wall thickness (up to):	5 mm top 7.4 to 7.9 mm bottom	5 mm	3.6 mm	3.6 mm
Load-bearing capacity, static:	Gravel filled: Test phase completed at 800 t/m²			
Load-bearing capacity, dynamic:	Axle load up to 20 metric tonnes (DIN 1072)			
Dimensional stability:	-50° / 90 ° C			
Deformation:	0.5% (at a standard temperature of +20°C to +80°C)			
Moisture absorption:	0.01%			
Solubility:	resistant against acid, lyes, alcohols, oils and gasoline (road salt, ammonia, acid rain, etc.)			
Safety composite system:	36 detents per m²			
Area per pallet:	≈ 37.30 m²	≈ 57.33 m²	≈ 74.67 m²	≈74.67 m²
Approx. weight per item:	2.02 kg	0.98 kg	0.67 kg	0.77 kg
Approx. weight per m²:	18.50 kg	8.82 kg	6.03 kg	6.93 kg

Type:	ECORASTER® Bloxx
Dimensions approx.:	33.3 x 33.3 x 5 cm
Weight/ m²:	approx. 85 kg (incl. concrete slab)
Weight/ m²:	Approx. 7.02 kg (without concrete slab)
Dimensional stability:	Temperature of -50° to 90 ° C
Dimensions paving stone:	142 x 142 x 45 mm (per piece)
Available colors for paving stones:	Gray, upon request: white, anthracite, red
Variants upon request:	Rubber blocks, granite
Area per pallet:	≈ 57.33 m²

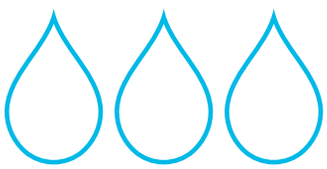
ECORASTER® Bloxx is protected by German utility model 201014106285, Polish utility model W.124709; US Patent 10094073, and European patent application 3237682, among others. It also holds additional patent applications outside of Europe.

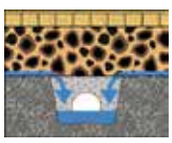
Do you have any questions? We are happy to help:
+49 (0) 9233 77 55 - 0

Checking the water permeability

What are the prerequisites for drainage?

The drainage performance of the ground determines the feasibility of a construction project with water-permeable surfaces. This is expressed by the coefficient of permeability K (m/s). First the drainage performance of the ground must be verified in order for a drainage project to be possible. Geotechnical investigations are required for specific surfaces to be stabilized or heterogeneous soils.

$K > 10^{-4}$ m/s	$10^{-4} > K > 10^{-6}$ m/s	$10^{-6} > K > 10^{-8}$ m/s
Rocky sandy soil	**Sandy loam soil**	**Clay loam soil**
Fast drainage	**Medium drainage**	**Slow drainage**
		


Safety drainage

A possible test setup for determining the permeability.

Please lift out a circular area with a diameter of 40 cm and a depth of 40 cm for this quick test. Then fill with 10 liters of water and time how long it takes for the water to completely drain. Repeat this process until the water drainage time is the same three times in succession. The drainage should take place in natural ground so as not to distort the results.

Evaluation of the drainage duration (in minutes):

Drainage duration ≤ 2	2 < Drainage duration ≤ 20	Drainage duration > 20
fast drainage	medium drainage	slow drainage

Determination of requirements sand, ballast, etc.

Before you can determine how much ballast/gravel you need, please specify the exact height of your project area.
For larger areas, please use a leveling instrument or a laser.

If necessary, use the following calculation to establish the amount of filling material needed:

0.95 x surface area x element height

Installation without a subfloor?

ECORASTER® E50v2, E80 and Aqua can also be installed without a subfloor or in soft soil conditions thanks to the safety interlocking system and the enlarged contact surfaces. If no subfloor (water-bearing layer) is used, surface drainage is not guaranteed. Similar to a „sand ladder", the point load is transformed into a surface load, which improves the stability of the surface. Please note that installation on natural ground can lead to unevenness and thus the load-bearing capacity of the surface may be reduced.

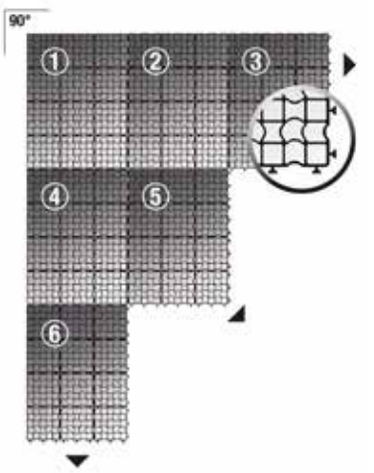
If you would like to use this installation variant despite the possible limitations, then please get in touch with us and we will be happy to advise you.

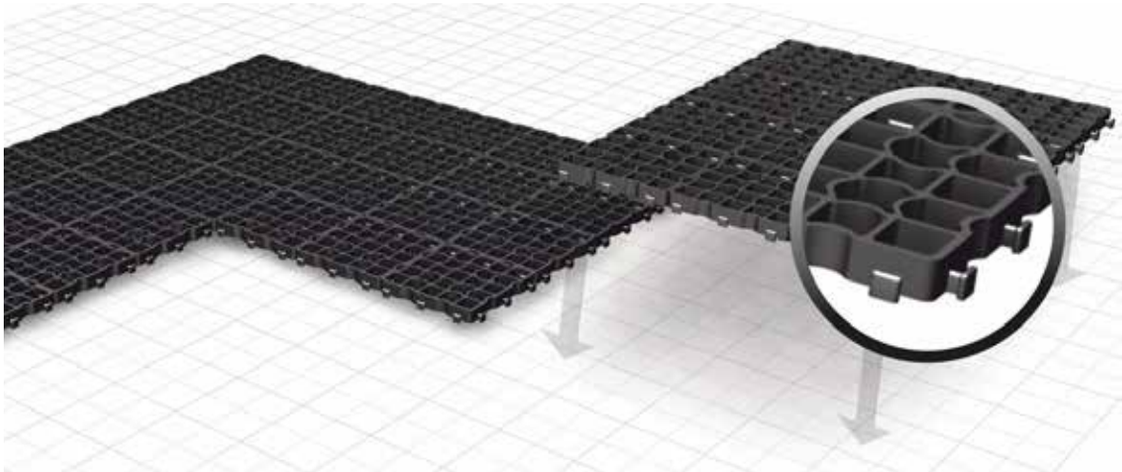
What needs to be taken into account!

» ECORASTER® should be vibrated into place using a vibration plate (filled Bloxx with rubber mat).
» With regards to the height of the subfloor, it should be noted that ECORASTER® settles approx. 0.5 cm due to the vibration.
» The filling of the ECORASTER® can settle somewhat at the beginning. Please fill the reinforcement system up to the top edge.
» Fleece reliably prevents the mixing of the footing base and the subfloor.
» Please backfill the reinforcement system immediately after installation at high outside temperatures.
» Please note that the expansion properties of plastic and keep some (edge) spacing to the borders, etc..
» For E50 Bloxx combinations, first insert the concrete slabs into the Bloxx and then fill the E50.
» When installing, please pay attention to squareness and the stepped manner installation sequence. Using a guideline will help.
» Only use broken material for the subfloor and filling.
» Please calculate the required surface/quantity using a product grid dimension of 333 x 333 mm.

Installing the pre-assembled ECORASTER®

ECORASTER® can be installed quickly and easily without the need for heavy machinery. The ground reinforcement elements are supplied in pre-assembled layers. (E40 XXL is not pre-assembled, but rather one single element.) One layer is equivalent to approx. 1.33 m^2 and consists of 12 ground reinforcement elements (4 x 3 pre-assembled pieces). Large areas can be put down directly from the pallet in one work step thanks to the low weight and the quick fastening.





Installation

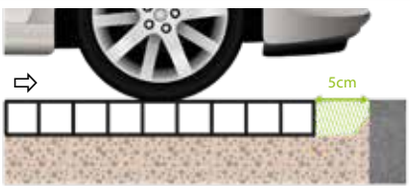
Grid installation should be started in one corner of the surface. The connecting pins of the first layer must point in the laying direction. The next layers are then placed in line with the connecting pins of the already installed elements. In order to achieve an even pattern, we recommend installing the ECORASTER® in a stepped manner along a guideline.

Disassembly*

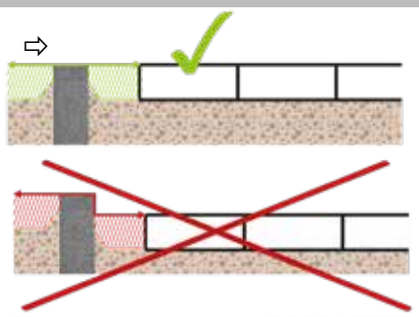
Adjustment – Cutting to size

The following tools have proven useful for the quick and clean machining of ground reinforcement elements:

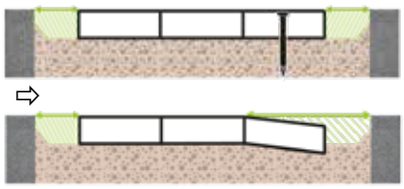
- » Hand-held circular saw
- » Flex (cut-off saw)
- » Jigsaw
- » Pruning shears



If there is a border or one will be created, a min. spacing of 5 cm must be kept between the border and ECORASTER® grids.*



Please install the ECORASTER® ground reinforcement system flat at one level with the border.*



ECORASTER® can be secured with ground nails for parking spaces to prevent the edges turning up due to braking forces. As an alternative, the system can also be lowered.**

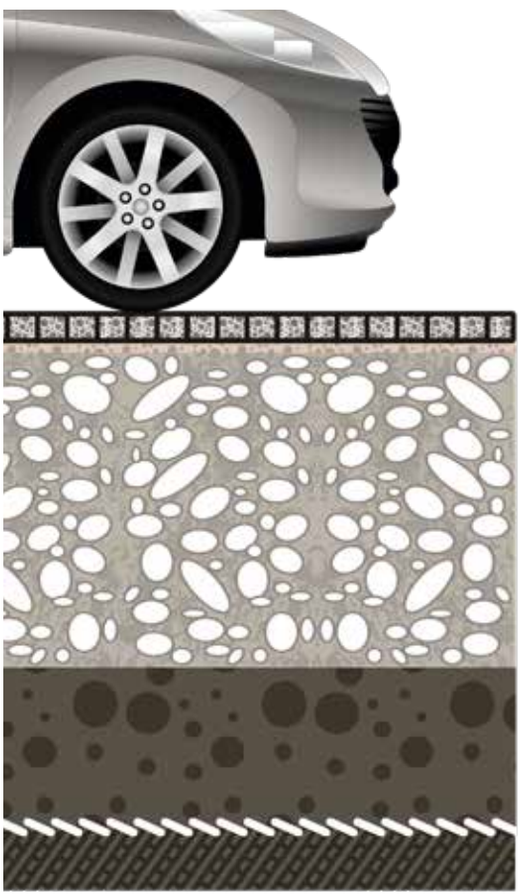
*Please note the direction of the snap tabs.

**Direction of travel from left to right

Robust, proven and easy - gravel-filled.

Filling: Gravel

Surfaces that cannot be planted due to the stress or position can be just as permeable by filling the ground reinforcement system with loose gravel. This type of installation is offered for parking spaces, logistics areas and other heavy-duty areas particularly due to the high load-bearing capacity.



ECORASTER® — Filling; Gravel, ≥ 8 mm

Base layer — Leveling layer; gravel (8/11, 8/13 or ≥ 8 mm); no loose chippings/ stone chips!
Add max. 4 cm and scrape off, then install ECORASTER® and com pact/settle it using a vibrating plate.

Subfloor I — Drainage layer; 20 cm ballast (0/32);
Add ballast and compact (roller/vibrating plate)

Subfloor II — 10 to 45 cm ballast (e.g. 30/60 or 40/80);
Ballast height cars: approx. 25 cm • trucks approx. 40 cm

Fleece — If required for improving the stability of the ground

Footing base — Natural ground
Create a base grade with a min. gradient of 1-1.5%

We recommend a subfloor structure and compression in accordance with the German road construction regulation RStO.

20 years warranty ECORASTER

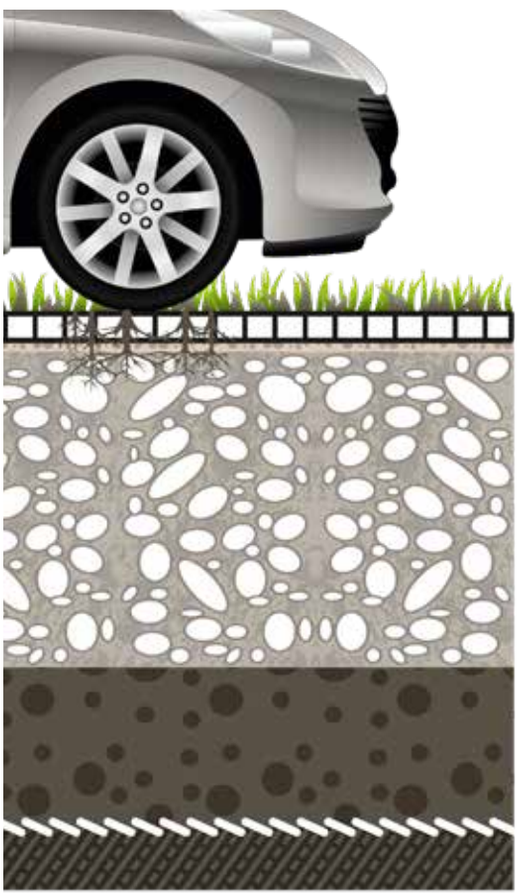
Robust and low-maintenance - Microgreen.

Filling: Substrate + seeds

The ECORASTER® MICROGREEN system has a ground reinforcement element that is filled with a specially developed, robust substrate mixture as well as resistant herbaceous plants and sedum plants. This filling is characterized by its high resistance and low maintenance effort.

Tip!

A hand-held circular saw is the perfect tool for a quick and clean cut. A jigsaw is recommended for smaller corners that require a precise cut. It is not recommended to pre-cut the layers. If possible, lay out the grid protruding over the edge and then make the cut. A small underlay makes the cutting easier.



- **ECORASTER®** — Filling; mineral substrate
  Fill flat, add seeds (mix: wild thyme, moose, sedum, Alpine sweet grass, white clover)
- **Base layer** — Leveling layer; mineral substrate (3/15, Microgreen substrate);
  Add approx. 4 cm and compact with roller to approx. 3 cm
- **Subfloor I** — Drainage layer; 20 cm ballast (0/32);
  Add ballast and compact (roller/vibrating plate)
- **Subfloor II** — 10 to 45 cm ballast (e.g. 30/60 or 40/80);
  Ballast height cars: approx. 25 cm • trucks approx. 40 cm
- **Fleece** — If required for improving the stability of the ground
- **Footing base** — Natural ground
  Create a base grade with a min. gradient of 1-1.5%

Please note:

• This system is only suitable to a limited extent for surfaces that are mainly used by trucks/heavy-duty traffic.

• The seeds for sowing must be kept dry and stored in a dark location until they are used.

• Maintenance instructions: Very low maintenance effort. The surfaces do not need to be mowed, fertilized or watered!

We recommend a subfloor structure and compression in accordance with the German road construction regulation RStO.

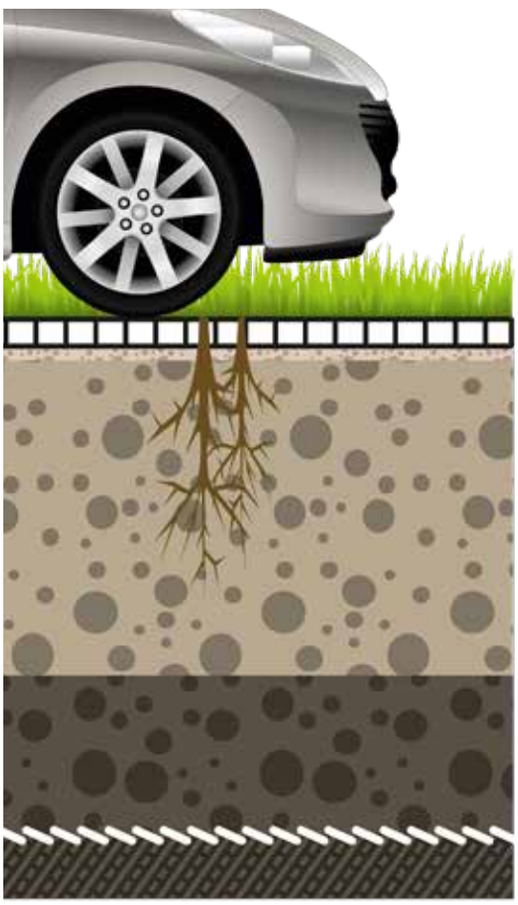
The beautiful classic - green.

Filling: Turf, microclover, etc.

Using ECORASTER®, you can transform surfaces into hard-wearing/ drivable green surfaces, without land loss or paving. Ruts are avoided, puddles and mud are eliminated. Green and unpaved surfaces are a clever way to combat heat islands and are a fixed part of the „sponge city" concept and rainwater management. Visual highlights can be set using markings and combinations of Bloxx.

If you are doing the planting yourself, we recommend the following seed mixture:

20 % Festuca Rubra Corn Rodeo
25 % Festuca Rubra Trich Dawson
20 % Festuca Arundinacea Mustang
15 % Lolium Perenne Langa
20 % Poa Pratensis Cynthia



ECORASTER® — Filling: Substrate
e. g. mix 30 % gravel + 70 % topsoil + long-term fertilizer), then water seeds.

Base layer — Leveling layer:
e.g. mix quartz sand, gravel, earth + long-term fertilizer), height 4 cm
Remove plan and compact with roller to 3 cm.
Water compacted surfaces before ECORASTER® installation.

Fertile subfloor — Intermediate layer:
e.g. mix with 65-70% ballast 30/60, alt.: mix 30-35% humus and 65-70% ballast 30/60, height approx. 20-30 cm

Drainage subfloor — Drainage layer; ballast (e.g. 30/60-40/80)
Height approx. 10-40 cm, compact with roller/vibration plate

Fleece — If required for improving the stability of the ground

Footing base — Natural ground
Create a base grade with a min. gradient of 1-1.5%

Please note:

- This system is only suitable to a limited extent for surfaces that are mainly used by trucks/heavy-duty traffic.
- Measures are required for the preservation of green surfaces (fertilizing, watering and lawn care).
- If doing the planting yourself, please check the local requirements of your seeds.
- The daily parking duration and the occupancy quantity affects the success of the green parking spaces.

Tip!
If the nodes of the plants remain under the grid top edge, then the green area is better protected against driving movements.

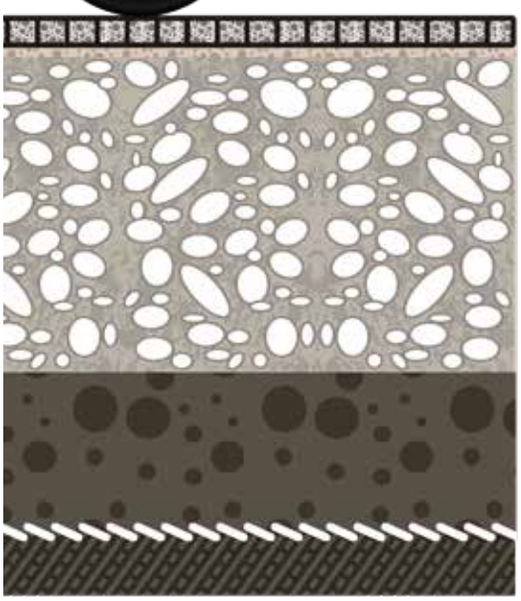
We recommend a subfloor structure and compression in accordance with the German road construction regulation RStO.

Permeable, barrier-free solution that looks like paving - BLOXX.

Filling: Concrete paving stones

ECORASTER® Bloxx enables quick ground stabilization in a paver design WITHOUT surface paving. No time-consuming grouting required, because all you do is insert and the surface is done. Perfectly suited for parking spaces, barrier-free areas, access roads and walkways. Can be combined with ECORASTER® E50 and also available in half sizes, e.g. as a marking. You want surfaces in different colors and a green space as a highlight in-between? No problem!

TIP:
Bloxx and E50 work seamlessly together.Travel lanes and barrier-free areas can be combined with green areas without trip hazards.



- **ECORASTER®** — Bloxx, filling with paver stones
  shake surface (with rubber mat). 142*142*45 mm (piece); dark gray, light gray, white, red
- **Base layer** — Leveling layer; gravel (8/11, 8/13 or ≥ 8 mm); **no loose chippings / stone chips!**
  Add max. 4 cm and scrape off, then install ECORASTER® and settle it using a vibrating plate*.
- **Subfloor I** — Drainage layer; 20 cm ballast (0/32);
  Add ballast and compact (roller/vibrating plate)
- **Subfloor II** — 10 to 45 cm ballast (e. g. 30/60 or 40/80);
  Ballast height cars: approx. 25 cm • trucks approx. 40 cm
- **Construction Fleece** — If required for improving the stability of the ground
- **Footing base** — Natural ground
  Create a base grade with an approx. gradient of 1-1.5%

We recommend a subfloor structure and compression in accordance with the German road construction regulation RStO.
*After installing the Bloxx, compact the filled surface with a vibration plate with a rubber mat (max. 100 kg).

E80 heavy - for green-blue logistics areas

The heavyweight ground reinforcement system:

The new E80 heavy is for consistent use in „heavy-load & heavy-traffic“ areas. Loading, maneuvering or turning on the spot are extremely high loads that the E80 can easily handle. Regardless of the construction or type of load, the heavy ensures permeable logistics areas.

The E80 heavy is a sophisticated ground reinforcement system powerhouse:

Thanks to the integrated 4-way channel, you can easily route lines or irrigation systems under the surface along it. The centrally mounted bayonet catch enables the attachment of various adapters. Posts, fences or other dividers can be easily mounted and/or removed.

TIP:
We recommend compacting the subfloor in layers during installation.(500 kg vibration plate)

	Multilayer construction*	Single layer construction*
ECORASTER®	E80 heavy, filling gravel 8/11 (≥8 mm)	E80 heavy, filling gravel 8/11 (≥8 mm)
Base layer	Leveling layer (8/11, ≥8 mm); no loose chippings / stone chips!	
Subfloor I	Base layer; ballast (0/32)	(Recycling) ballast (0/32)
Subfloor II	Frost protection; ballast (16/32)	
Fleece	If required for improving the stability of the ground	
Footing base	Natural ground; Create a base grade with an approx. gradient of 1-1.5%	

*Height of layers and quality of the materials depend on the conditions on site. The target value of the load test is min. 120 MPa on the base layer. In case of low load-bearing top soils or low clearance heights, Basetrac® Duo-C PET 30 B15 or similar can be used, for example. Please settle/compact the installed ECORASTER®.

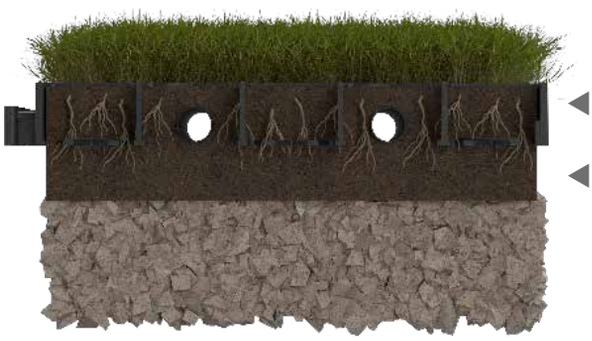
Go To
Video

We recommend a subfloor structure and compression in accordance with the German road construction regulation RStO.
Logistics areas are hazard zones and should be driven on at a maximum 10 km/h.

E40 Aqua - The ground reinforcement system for subsurface irrigation or cable routing.

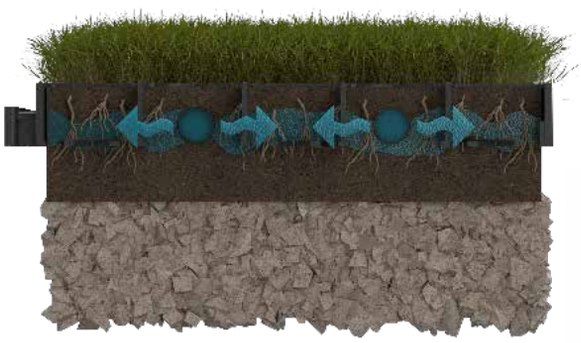
Green surfaces without wasting water:

Green surfaces, whether turf or sedum types, should be watered on a regular basis. Oftentimes, surface sprinklers are used, which recently are getting lots of criticism due to how much of the water used simply evaporates away. With the new ECORASTER® E40 aqua, you combine the benefits of permeable ground stabilization with the benefits of subsurface irrigation. As an alternative, the „Aqua" can also be used to securely route cables under a surface. **We provide you with a plan, parts list and all required components. We only use world-renowned irrigation systems.**



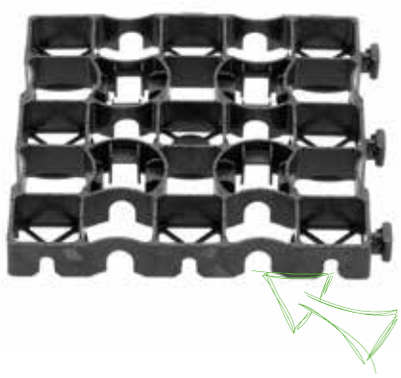
ECORASTER® — E40 Aqua, filling with (mineral) substrate with seeds
e.g. turf or white clover

Leveling layer — (Mineral) substrate (3/15); approx. 3 cm after compacting. Subfloor as per ECORASTER® Green information.



This construction should <u>not</u> be driven on by trucks and/or heavy-duty traffic!

It's your choice:
You can control the irrigation manually, with a time switch or in full automatic mode with sensors and app.



Maximum diameter 20 mm

Subsurface irrigation usually saves more water (≈ 60%) than regular surface sprinklers!

<u>Technical Data</u>

- Flow rate per drip: 1.6 l/h
- Drip spacing: 30 cm
- Pressure compensation area:: 0.5 to 4.0 bar
- Recommended filtering: 120 Mesh
- Line diameter in mm: AD: 16.6, ID: 14.2
- Wall thickness:1.2 mm
- CNL – pressure maintenance mechanism prevents system leaks when the pressure falls under 0.14 bar (available option)
- Schlauchclips nur auf unebenen Untergründen nötig!

Irrigation? From one source:
+49 (0) 9233 77 55 - 0

We recommend a subfloor structure and compression in accordance with the German road construction regulation RStO.

Emergency access areas (DIN 14090)

So that help arrives when needed!

Fire department operations are often hampered by inadequate access roads, installation and movement areas or their insufficient load-bearing capacity. Clogged up tire threads and bogged down vehicles add unnecessary minutes to precious response times. Improper ground stabilization, low material quality and gravel turf are among some of the reasons for the insufficient load-bearing capacity of many fire department access areas. Cause:Gravel turf tends to have strong humus buildup!

The requirements::

Driveways or access roads and installation/movement areas for the fire department must be reinforced to withstand an axle load of up to 10 metric tonnes and a permissible total weight of 16 metric tonnes (min. load class in accordance with the German road construction regulation RStO 12).

The solution:

The ECORASTER® ground stabilization system reinforces the surfaces without sealing it. Despite very high load-bearing capacity of the surface, rainwater can drain away, usually without the need for an expensive drainage system in the subfloor. The use of ECORASTER® systems guarantees that aerial rescue trucks reach the incident site swiftly and can be positioned safely.

» Please note:

When it comes to the construction of emergency access areas, the applicable local building regulations are mandatory. In addition, DIN 14090 and DIN 1072 provide the larger legal framework.

*We recommend consulting with the responsible fire department prior to any new installation or renovation project.

Excerpt from „Emergency access areas, fire department access areas" (TBB/ DIN 14090)

Access roads	Width:	• min. 3 m (for straight driveways)* • min. 3.5 m (in case of limited width due to structural elements on either side)
	Load-bearing capacity:	Permissible total weight min. 16 metric tonnes, Axle load min. 10 metric tonnes
Installation areas	Dimensions:	min. 5 m x 11 m*
	Load-bearing capacity:	min. 800 kN per square meter
Movement areas	Dimensions:	• min. 7 m x 12 m* per vehicle, • plus transition areas (4 m) either side of movement area
	Load-bearing capacity:	Permissible total weight min. 16 metric tonnes, Axle load min. 10 metric tonnes

GREEN. SPONGE. CITY.

We have been ambitiously following the „sponge city" principle for over 30 years now. Our products have been used worldwide a million times over.

Installation on a slope:ECORASTER® with matching ground nails

With more than 200 expansion joints per m^2 and 36 connection elements per m^2, the ECORASTER® element is able to counteract the prevailing forces on the embankment. Topsoil erosion, the destruction of the ground surface, e.g. by serrated recesses, and the loss of nutrients and linear erosion through flowing rainwater are minimized by the system properties after professional installation. Potential fundamental landslide hazards and soil conditions should be assessed by a geological engineer with local expertise.

The system components (ECORASTER® clips for fastening nails, angle elements, ribbed ground nails, etc.) must be adapted to project requirements and the dimensioning of nails, for example, (length, diameter) and the element spacing (e.g. 1 fastening nail per m^2) must be specified by the planner

For an optimum implementation of the intended purpose, the following preparatory measures might be necessary prior to installing the ground reinforcement system (depending on soil and baseline conditions):

- Removal of loose rocks or unsuitable ground material
- Deforestation and/or clearance of vegetation
- Filling of cavities or grooves
- Profiling or leveling

Depending on circumstances, a sufficiently strong subfloor should be added to the prepared base as a bearing or leveling layer. Once installed, the ground reinforcement elements are filled with a 5 cm layer (level with the top of the elements) of suitable topsoil material or a mixture of sand and topsoil, humus and, for example, substrate, which contains fertilizer to start the re-vegetation process. The subfloor and filling material should contain a small amount of fine material in order to guarantee a certain water retention capacity of the vegetation and water permeability of the system.

PVC FREE
NO PVC

Please note:

- A standard plant and/or turf mixture (e.g. RSM 5.1.1 or 5.1.2) with a yield of min. 20 g/m^2 is recommended for rapid greening
- Other vegetation types can also be used depending on the location. Please check the local requirements of your seeds. The time the seeds are planted should be as early in the year as possible.
- Covering the grid elements with as much aboveground plants as possible protects the filling material from weather conditions. Heavy root penetration ensures optimal interlocking with the subsoil and makes a decisive contribution to ground stabilization.

A sophisticated system - thanks to matching accessories.

» easy fix

Ideal for expansions and repairs.
Set includes:
40x clips, 1x drill bit and instructions.

» Ground nail

Provides extra stability. Matching for drill holes, alternatively with clips. Galvanized, riffled and 600 mm long.

» Flex element

For bends, rings and connections Flexible connecting element, can also be used for curves.

» Marking elements

Marking type A markings rise slightly above the surface. Primarily used in areas free of snow and ice.

» Universal angle element

Ideal for embankments and for use on slopes. The element can be adjusted 90° in two directions and is available in heights of 40 and 50 mm.

» 0.5 Bloxx

Ideal for markings and creative ideas: ECO-RASTER® Bloxx are also available in a half-size formate.

» 0.5 E50

For accents and form closure with 1/2 Bloxx: ECORASTER® E50 are also available in a half-size formate,suitable for 1/2 Bloxx.

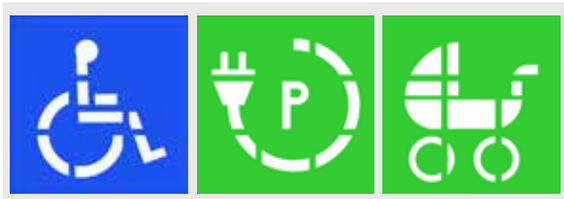
» Marking elements

Marking type B sits level with the edge height of the grid (50 and 40 mm), ideal for regions with snow removal.

360° view plus functional animation online:
All ECORASTER® ground reinforcement systems and accessory parts can be viewed in more detail at www.purus-plastics.de

» E80 accessories

Upon demand, you can receive matching parking space markings as well as high-quality RGB ground spots from Dot Spot® for the ECO-RASTER® E80 heavy. The center bayo-net catch of the E80 can be used with the short adapter for attaching posts and barriers.



» Pictograms

Bloxx can create permeable surfaces without trip hazards. Perfect for labeling, also in combination with E50 surfaces.

Certificates, tender specifications, technical data and accessories for Aqua:
All ECORASTER® consultants look forward to your request and would happily provide a suitable response to your inquiry.

» Load carriers

ECORASTER® (T)E40, XXL and Aqua are shipped with „load carriers". Instead of receiving one pallet, you also get an additional layer (approx. 1.33 m^2; 40 mm) for your surface. Simply remove the pallet feet (e.g. with a saw).

Then dispose of the cuts in the recycling bin, you are very welcome.

ECORASTER® X30 | Subfloor for garden design.

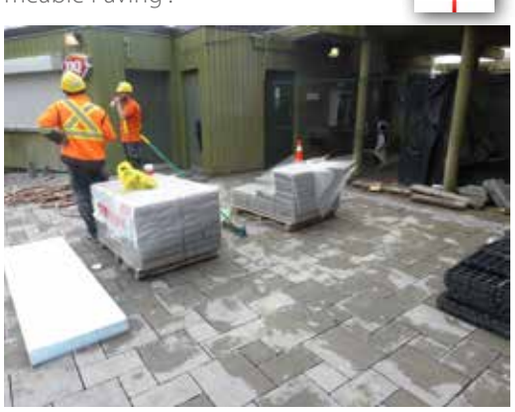
You want to install a large-size area? The ECORASTER® X30 creates a stable subsurface and easy installation areas. Deep depressions and edges can be avoided with the interlocking of the X30.

Your benefits:

- » Up to 50% less excavation
- » Up to 30% savings in labor costs
- » Distribution of point loads
- » Less shifting and sinking
- » Solid subfloor
- » Sustainable, efficient and cost-effective!

Got questions? Give us a call:
+49 (0) 9233 77 55 - 0

This beautiful project at the Toronto Zoo was made possible by our Canadian partner „LID Permeable Paving".



Type:	Dimensions:	Material:	Wall thickness:	Solubility:	Load-bearing capacity:	kg/piece:	Weight/m²:
X30	333 x 333 x 30 mm	100% recycled PO (PE-PP)	5 mm	Resistant against acid, lyes, alcohols, oils and gasoline (road salt, ammonia, acid rain, etc.)	20 tons tested axle load (DIN 1072)	0.77	6.93 kg

Frequently asked questions

Can ECORASTER® elements be driven on?

Yes! ECORASTER® can be driven on without a problem. Depending on the subfloor and filling, the elements have been tested ted externally with loads of up to 800 metric tons per square meter. The ECORASTER® elements featured here (except for Bloxx) can be driven on at walking speed when unfilled, which significantly facilitates the filling process. Tips and recommendations can be found on page 6.

Can ECORASTER® areas be cleared of snow?

Yes! ECORASTER® can be cleared of snow using de-icing salt, brooms, snowplows or a brush roller/snow blower. The complete or nearly complete removal of all snow or ice should be avoided and the chambers should not be swept out. If the surface is filled with gravel, the maintenance effort is reduced to re-distributing a usually manageable amount of gravel after thawing.

Are ECORASTER® areas classed as permeable?

Thanks to an open surface area of more than 95%, water cannot accumulate on a classic ECORASTER® surface. Ultimately, it is up to the respective authorities/municipality, which have the decision-making power in this regard.

Can ECORASTER be installed without a subbase?

Yes, although this might result in limited performance of the ECORASTER® system:

If no subfloor (water-bearing layer) is used, surface drainage is not guaranteed. Furthermore, changes in the natural ground can lead to unevenness and varying load capacities. Thanks to the tried and tested safety composite system, the ground will not have any joints or edges.

Are plastic ground reinforcement elements less durable?

Not when you choose a quality product! Our ECORASTER® products are covered by a 20-year warranty; and by producing the raw materials as well as the finished product, we can guarantee consistently high quality. Our ground reinforcement elements are made from recyclable PE- PP, a break-proof, weather-resistant and UV-stable material. Our ground reinforcement elements are also recyclable!

Do I have to build a surround?

No! The structure of the ECORASTER® ground reinforcement system features a multitude of expansion joints so that no surround is needed. Please simply leave a gap of at least 5 cm to the edge when installing the product. This creates an additional expansion joint.

Is ECORASTER® environmentally friendly??

PURUS PLASTICS operates one of the most sophisticated plastics recycling plants worldwide. Our grid elements are environmentally neutral, free from PVC and are developed and manufactured in Germany. We pride ourselves on using a large proportion of recycled material and we are also proud of the recycling compatibility of our products. As a result, we save more than 30,000 metric tonnes of CO^2 per year and guarantee sustainable products.

Allgemeine Hinweise | Sicherheitshinweise • Basic information | Safety notes

Sehr geehrte Kundin, sehr geehrter Kunde,

mit unserem original ECORASTER® haben Sie sich für ein erstklassiges Produkt entschieden, dass Umweltfreundlichkeit und hohe Leistungsfähigkeit kombiniert. Unsere Produkte unterliegen ständigen Qualitätskontrollen, um unseren Anforderungen zu entsprechen. Wir möchten, dass Sie lange Nutzen und Freude an Ihrem ECORASTER® haben und bitten Sie daher einige Hinweise zu beachten.

Vielen Dank für Ihre Wahl, PURUS PLASTICS GmbH Deutschland.

Wichtige Information. Sorgfältig lesen. Diese Information aufbewahren.

• Bitte lesen Sie vor der Verarbeitung der ECORASTER® die Anleitung. Für Fragen steht Ihnen Ihr Händler gern zur Verfügung.

• Bitte tragen Sie bei der Verarbeitung (dem Zuschneiden, der Verlegung sowie dem Verfüllen) angemessene Schutzbekleidung (Sicherheitsschuhe, Schutzbrille, Handschuhe, Mundschutz, Gehörschutz, Kopfschutz) und achten Sie auf Ihre Umwelt und Dritte. Abrieb, z.B. durch Zerspanen, bitte nicht einatmen.

• ECORASTER® eignet sich nicht zum Überbrücken von Geländevertiefungen (z.B. Gräben, Löcher, Mulden)

• ECORASTER® kann nur mit originalem Zubehör erweitert werden. • ECORASTER® ist nicht mit fremden Produkten kombinierbar.

• Der Unterbau muss vor dem Verlegen eben und ausreichend dimensioniert sein.

• Bitte prüfen Sie vor dem Verfüllen der ECORASTER® auf einwandfreie Verhakung der Elemente.

• Bitte entsorgen Sie nicht benötigte ECORASTER® gemäß den national geltenden Abfallbestimmungen.

ACHTUNG

• Oberfläche kann durch Eis und Nässe glatt sein.

• Unsachgemäße Handhabung (z.B. falscher Transport oder fehlerhafte Lagerung) kann zu (Personen-) Schäden führen.

• Beschädigte oder unsachgemäß verlegte ECORASTER® können (Personen-) Schäden verursachen und die Funktion des Bodengitters beeinträchtigen. Achtung vor scharfen Kanten.

• ECORASTER® sind brennbar. Die Dämpfe brennender Kunststoffgitter nicht einatmen.

Dear customer,

Thank you for choosing the original ECORASTER®. You made your choice for a premium class product that combines high performance and eco-friendliness. Our products are subject to our constant quality checks to match highest requirements. We want you to have to best possible and most enduring benefit from ECORASTER® and appreciate that you take notice of the following information.

Thank you for your choice, PURUS PLATICS GmbH Germany.

Important information. Read carefully and keep for further reference.

• Please read the manual before handling ECORASTER®. For questions please contact your dealer/ sales representative.

• Please make sure that you always wear appropriate protective wear during handling (cutting, laying and filling) with ECORASTER® (safety goggles, gloves, ear and breathing protection, safety shoes and hardhat) and mind your environment and third parties. Do not breathe dust from cutting.

• ECORASTER® is inapplicable to bridge terrain indentations (e.g. holes, ditches and troughs).

• ECORASTER® is only extendable with original accessories.

• Do not combine ECORASTER® with third-party products.

• Make sure that substructure is level and sufficiently dimensioned.

• Make sure that all ECORASTER® are locked proper before filling.

• Please dispose no longer required ECORASTER® according to your local waste regulations.

WARNING

• Surface might be slippery when wet and icy

• Inappropriate handling (e.g. wrong transport or wrong storage) might cause (personal) damage.

• Broken or incorrect placed ECORASTER® might cause (personal) damage and influence the grids functionality. Beware of sharp edges.

• ECORASTER® is flammable. Don't breathe fumes of burning grids.

Safety signs in accordance to ANSI Z535

Practical and efficient solutions for the „sponge city“ for over 30 years.

Made in Germany – Used worldwide.
Questions? We are happy to help:

PURUS ECOgreen®
Grün Dach Lösungen.

ECORASTER®

PURUS PLASTICS GmbH | Am Blätterrangen 4 | D-95659 Arzberg
Tel.: +49 9233 77 55 0 | info@purus-plastics.de | www.ecoraster.com

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Version: ER_VLH_en_2025_v1