



# Permeable Ground Reinforcement

Installation manual

#### Disclaimer

The explanations in this document, particularly 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 local conditions Purus cannot warranty an installation based on verbal instructions or the guidelines printed in this manual. Local experts should be consulted. Terms and conditions apply. Subject to change without notice.



## Thanks for going permeable!

The consequences of global use of land surface are noticeable and emphasize the urgent need for permeable ground reinforcement solutions

Since the year 2000, in Germany alone 100 hectares of land are sealed every day by construction and roadbuilding. Worldwide it is even worse.

PURUS PLASTICS operates one of the most modern plastics recycling facilities in the world. Our goal: manufacturing truly sustainable products.

ECORASTER® products have been developed and produced in Germany from 100% recycled materials (LDPE) since 1994.

ECORASTER® is absolutely 100% environmentally friendly, time proven with millions of square meters sold, and is versatile and excellent value.

With the right choice of grid types and well-designed accessories, this system is suitable for almost every type of application.

Choosing our quality products help to save precious resources and reduces the environmental impact of waste plastics. Your benefits: You will save money and time during installation, on maintenance and usage.

Your PURUS PLASTICS Team



# Installation Manual ECORASTER®

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## Why ECORASTER®?

Particularly in metropolitan and industrial areas, because the ground is paved or compacted it is less able to fulfill its natural functions. On one hand the ground loses the natural ability to store or “buffer” rain water which can lead to very quickly over-burdening storm water infrastructure leading to flooding, and on the other hand the air cannot be cooled and humidified by the natural ground “perspiring”, contributing to the well-known “Heat Island Effect”.

To counteract this trend and to help to prevent the negative effects of traditional sealed paving, more and more municipalities, architects and civil engineers are designing permeable and vegetated paving systems - a wise and affordable investment.

Using the ECORASTER® system, in comparison to sealed surfaces, saves costly storm water retention ponds and other drainage and infrastructure systems. Often storm water taxes can also be saved and grants may be available to help implement alternative paving options such as the ECORASTER® system.

ECORASTER® installation is quick and simple without the use of expensive mechanical equipment. The paved area is filled with gravel or vegetated and remains permeable.

Compared with heavy ioncrete pavers ECORASTER® is easy and economical to transport and has ultra-high load bearing capacity (up to 800 t / m<sup>2</sup>). The 95% open surface is significantly more permeable and allows a much higher degree of infiltration. In contrast to the concrete pavers ECORASTER® does not absorb water, which prevents frost damage and increases the infiltration capacity.

The proven safety interlocking system and the integral expansion joints create excellent surface weight distribution and resistance to dynamic loading, no matter what kind of application the system is be used for.

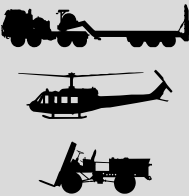
### Benefits at a glance.

- ✓ **easy and quick installation** (up to 100 m<sup>2</sup> | 1,076 ft<sup>2</sup>/h per person)
- ✓ **high resilience** (up to 800 t/m<sup>2</sup>)
- ✓ **low maintenance**
- ✓ **installation without heavy construction equipment**
- ✓ **no edging needed**
- ✓ **permeable ground reinforcement**
- ✓ **low transport and handling costs**
- ✓ **versatile applicable, accessories available**
- ✓ **weatherproof and unbreakable**
- ✓ **Safety interlocking, 36 notches per m<sup>2</sup>**
- ✓ **UV-resistant and frostproof**
- ✓ **20 years warranty**
- ✓ **„Made in Germany“** (TÜV Nord)





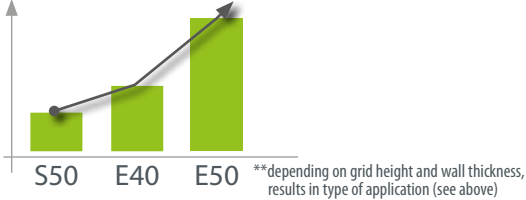
Matrix of Application

| ECORASTER® Application                                                                                                   |                                                                                                                                                                                                                                   | GREEN / MICROGREEN             | MINERAL                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------|
|                                                                                                                          |                                                                                                                                                                                                                                   | vegetated                      | gravel filled                                                                                         |
| Load                                                                                                                     | <br>Roads and paths used only for pedestrians and bicycles may use this                                                                          | E40<br>alternative: S50        | E40<br>alternative: S50                                                                               |
|                                                                                                                          | <br>Paths, walkways and similar applications, as well as car parking                                                                             | E40<br>alternative: E50 or S50 | E40<br>alternative: E50                                                                               |
|                                                                                                                          | <br>Roads, road shoulders and parking lots used for all types of vehicles                                                                       | E50                            | E50*<br>alternative:<br>ECORASTER® STONE                                                              |
|                                                                                                                          | <br>Areas used with high point axle loading e.g. warehousing (forklifts and trucks), truck parking lots, bus parking, helicopter landing pads. | ---                            | E50*<br>alternative:<br>ECORASTER® STONE<br><br><small>*with 3/8" - 3/4" inches covering-over</small> |
| Installed and unfilled, the ECORASTER® system can be driven on with heavy wheeled vehicles (EN 124 / D400 except Bloxx). |                                                                                                                                                                                                                                   |                                |                                                                                                       |

Minimum Loadability, up to (t/m<sup>2</sup>)

|      |      |      |                                                            |
|------|------|------|------------------------------------------------------------|
| 800* | 800* | 800* | ECORASTER®<br>MINERAL                                      |
| 150  | 200  | 300  | ECORASTER®<br>GREEN / MICROGREEN                           |
| S50  | E40  | E50  | <small>*test stopped at 800 t/m<sup>2</sup> limit.</small> |

Dynamic Loadability (sketched)\*\*



Certificates and Approvals

- ✓ UV-resistant, certified DIN EN 60068-2-5
- ✓ Point axle loading up to 20 t/m<sup>2</sup>, DIN 1072:1985
- ✓ Heavy-duty, tried and tested DIN EN 124:2011
- ✓ Environmentally safe, tested OECD 202:2004
- ✓ Factory warranty: 20 years from purchase date (private use)
- ✓ NATO certified E50 - MOD / 9330-99-858-1406
- ✓ TÜV CERT
- ✓ TÜV Nord „Made in Germany“

**Please note:** Please read the manual/  
check our website for more information!  
1m<sup>2</sup> = 10.764 ft<sup>2</sup>



## Occupancy and parking duration

### Installation examples for permeable areas

Dependent on daily occupancy and parking duration

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                |                                                                                      |                                       |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------|
| <b>ECORASTER® Mineral</b><br><b>ECORASTER® Stone</b> | <p><b>Occupancy &gt; 10 h per day</b></p> <ul style="list-style-type: none"> <li>» visitor parking</li> <li>» shopping malls (near mall entrances)</li> <li>» driveways, entrances and exits, access roads</li> <li>» storage areas</li> <li>» fire rescue paths, fire access lanes ... and much more</li> </ul>                                                               |    | <p>parking time &gt; 10 h per day</p> |
| <b>ECORASTER® Bloxx</b>                              | <p><b>Occupancy &gt; 10 h per day</b></p> <ul style="list-style-type: none"> <li>» high traffic areas</li> <li>» accessible parking space, public sector, etc.</li> <li>» office buildings, public buildings, commercial areas</li> <li>» shopping malls, parks</li> <li>» parking areas in residential districts ... and much more</li> </ul>                                 |   | <p>parking time &gt; 10 h per day</p> |
| <b>ECORASTER® Microgreen</b>                         | <p><b>Occupancy max. 8 h per day</b></p> <ul style="list-style-type: none"> <li>» parking space, public sector, etc.</li> <li>» office buildings, public buildings, commercial areas</li> <li>» shopping malls, parks</li> <li>» parking areas in residential districts ... and much more</li> </ul>                                                                           |  | <p>parking time max. 8 h per day</p>  |
| <b>ECORASTER® Green</b>                              | <p><b>Occupancy max. 4 h per day</b></p> <ul style="list-style-type: none"> <li>» parking spaces in tourist areas</li> <li>» office and commercial areas (overflow)</li> <li>» paths for golf carts, etc.</li> <li>» cemeteries</li> <li>» fire access lanes</li> <li>» stadiums and sporting areas (located non inner-city)</li> <li>» campsites ... and much more</li> </ul> |  | <p>parking time max. 4 h per day</p>  |



#### Adapt to the intensity of use:

Parking lots and driveways can be planned according to their distance from the building.



Specifications

|                                                     |                                                                                                |                                                  |                                                  |                                                  |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| Type:                                               | ECORASTER® E50                                                                                 | ECORASTER® S50                                   | ECORASTER® A50                                   | ECORASTER® E40                                   |
| Dimensions:                                         | 330 x 330 x 50 mm<br>12.99 x 12.99 x 1.97 inches                                               | 330 x 330 x 50 mm<br>12.99 x 12.99 x 1.97 inches | 330 x 330 x 50 mm<br>12.99 x 12.99 x 1.97 inches | 330 x 330 x 40 mm<br>12.99 x 12.99 x 1.57 inches |
| Material:                                           | 100% recycled LDPE                                                                             |                                                  |                                                  |                                                  |
| Wall height:                                        | 50 mm • 1.97 inches                                                                            | 50 mm • 1.97 inches                              | 50 mm • 1.97 inches                              | 40 mm • 1.57 inches                              |
| Wall thickness:                                     | 5 mm • 0.1968 inches                                                                           | 2,5 mm • 0.098 inches                            | 5 mm • 0.1968 inches                             | 3,6 mm • 0.14 inches                             |
| Loadability:                                        | up to 800 t/m <sup>2</sup> (depending on fill type)                                            |                                                  |                                                  |                                                  |
| Interlock:                                          | 36 notched connectors per m <sup>2</sup>                                                       |                                                  |                                                  |                                                  |
| Dimensional stability:                              | -50° / 90 ° C • -58° / 194° F                                                                  |                                                  |                                                  |                                                  |
| Change in shape:                                    | 0.5% (at normal temperature +68°F to 176°F)                                                    |                                                  |                                                  |                                                  |
| Moisture absorption:                                | 0,01% • 0.01%                                                                                  |                                                  |                                                  |                                                  |
| Solubility:                                         | resistant to acids, alkalis, alcohol, oil and petrol (de-icing salt, ammonia, acid rain, etc.) |                                                  |                                                  |                                                  |
| Compressive strength:                               | up to 20t point axle load (DIN 1072)                                                           |                                                  |                                                  |                                                  |
| Area per pallet:                                    | 57,19 m <sup>2</sup> • 615.59 ft <sup>2</sup>                                                  | 57,19 m <sup>2</sup> • 615.59 ft <sup>2</sup>    | 57,19 m <sup>2</sup> • 615.59 ft <sup>2</sup>    | 73,15 m <sup>2</sup> • 787.38 ft <sup>2</sup>    |
| Weight per piece:                                   | 1,06 kg • 2.34 lbs                                                                             | 0,76 kg • 1.67 lbs                               | 1,06 kg • 2.34 lbs                               | 0,58 kg • 1.27 lbs                               |
| Weight per m <sup>2</sup>   10.76 ft <sup>2</sup> : | 9,55 kg • 21.05 lbs                                                                            | 6,84 kg • 15.07 lbs                              | 9,55 kg • 21.05 lbs                              | 5,22 kg • 11.50 lbs                              |



|                                      |                                                        |
|--------------------------------------|--------------------------------------------------------|
| Type:                                | ECORASTER® Bloxx                                       |
| Dimensions:                          | 330 mm x 330 mm x 50 mm<br>12.99 X 12.99 x 1.97 inches |
| Weight:                              | approx. 85 kg   187.39 lbs (incl. blocks)              |
| Locking System:                      | 36 T-elements / m <sup>2</sup><br>6 T-elements/ sqft   |
| Dimensional Stability (Temperature): | -50° to +90 ° C<br>-58° F to +194°F                    |
| Block Dimensions:                    | 140 x 140 x 45mm (each)<br>5.51 x 5.51 x 1.77 inches   |
| Weight per Block:                    | approx. 2.12 kg   4.67 lbs                             |
| Available Colours:                   | red, white, dark grey<br>and light grey                |



Questions? Give us a call:

+1 800 495 55 17



## Check the water permeability

### What are the criteria for infiltration?

The infiltration rate of the ground affects the feasibility of a construction project involving water-permeable surfaces. It is indicated by the coefficient of permeability  $K$  (m/s). To be considered for such a project, the infiltration rate of the ground must be tested. Geotechnical surveys are required for certain surfaces to be reinforced or for heterogeneous ground.

| $K > 10^{-4}$ m/s                                                                                                                                                                                                                                              | $10^{-4} > K > 10^{-6}$ m/s                                                                                                                                                                                                                                     | $10^{-6} > K > 10^{-8}$ m/s                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| stony / sandy soil                                                                                                                                                                                                                                             | sandy / clay soil                                                                                                                                                                                                                                               | clay / loam                                                                                                                                                                                                                                                          |
| <br><br> | <br><br> | <br><br> |
| quick infiltration                                                                                                                                                                                                                                             | average infiltration                                                                                                                                                                                                                                            | slow infiltration                                                                                                                                                                                                                                                    |
|                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                 | safety drainage                                                                                                                                                                 |

### A possible test method to establish infiltration capability

For this quick test dig out a circular area with a of 40 cm diameter and 40 cm depth. Fill 10 liters of water and measure the time it takes the water to fully infiltrate into the soil. Repeat this process until the same approximate time is measured 3 times in a row. The test should be done in the natural undisturbed soil, so as not to distort the results.

### Evaluation of test results (in minutes):

|                               |                                           |                     |
|-------------------------------|-------------------------------------------|---------------------|
| time of infiltration $\leq 2$ | $2 < \text{time of infiltration} \leq 20$ | infiltration $> 20$ |
| QUICK                         | AVERAGE                                   | SLOW                |

### Determination of requirements: Sand, gravel etc.

Before determining your requirements of gravel, loose gravel etc., please determine the height of your area. For larger areas we recommend using leveling instruments or laser technology.

To calculate the material required to fill up the ECORASTER® elements please use the following formula:

**$0,95 \times \text{area} \times \text{height of ECORASTER®}$**

### Installation without substructure?

Thanks to the interlocking system and the excellent area load balancing ECORASTER® can be installed without substructure. If you do not use a substructure (water-storing bed) area drainage is not ensured. Additionally soil variations can effect surface irregularities and cause different loadabilities.

If you plan to install without substructure please contact us we are eager to help you.

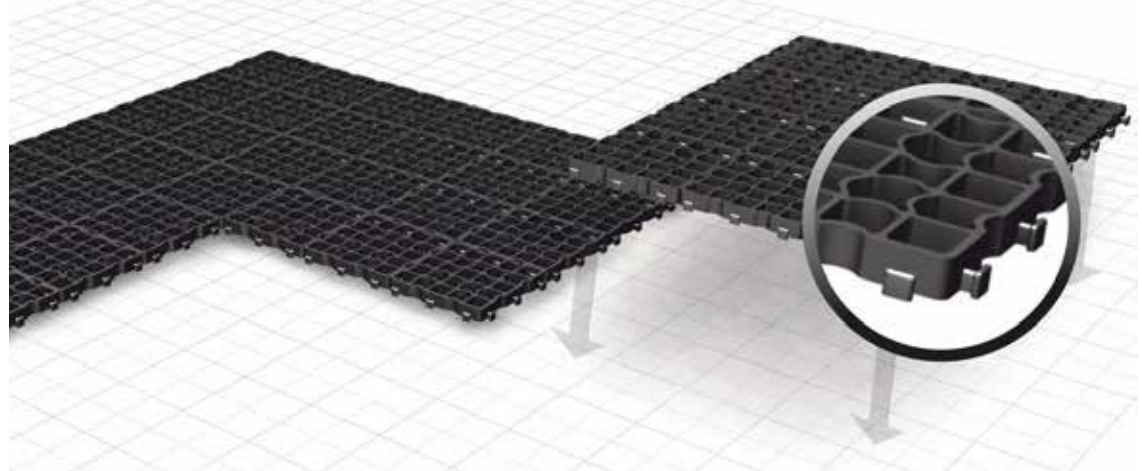
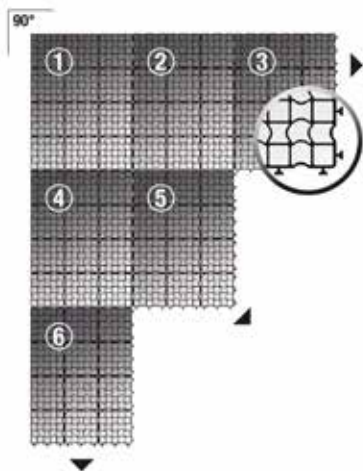
### Please keep in mind!

- » ECORASTER® should be installed with a vibrating plate tamper after installation (Bloxx with rubber mat).
- » For the final height of the substructure please note, that the ECORASTER® settles into base layer approx. 0.5cm | 0.19"
- » After filling ECORASTER® a slight settling is possible. For Bloxx use a geotextile (mesh) to avoid mixing gravel and floor.
- » In hot conditions please fill the ECORASTER® elements immediately after correct installation.
- » For areas mainly used by heavy trucks and forklifts (small turning radius), we recommend using ECORASTER® E50 with 1 - 2 cm | 3/8" - 3/4" over fill, e.g. with loose gravel. Alternatively ECORASTER® E50 Stone (resin-bound) can be installed.



## Installing the pre-assembled layers

ECORASTER® can be installed quickly and easily without heavy construction equipment. The elements are delivered in "layers". One layer is equal to 1.33 m<sup>2</sup> | 14.32 ft<sup>2</sup> and consists of 12 single ECORASTER® pieces (4x3). Large areas can be installed in a single operation directly from the pallet as the weight of a layer is low and the interlocking system works quickly and easily.



### Installation

Start the installation at a corner of the area. Make sure the interlocking notches point outwards towards the direction of the further area to be installed. The next layers are simply connected to the notches of the already installed ECORASTER® elements. To achieve a straight result, we recommend using a guideline along the outside of the area.

### Disassembly

The pre-assembled layers can be disconnected if needed. Put the layer you want to separate on top of another layer, the edge along the area you want to split up. Push the upper layer (the one you want to separate) down using your foot. Enough force will loosen the safety interlocking system notches.

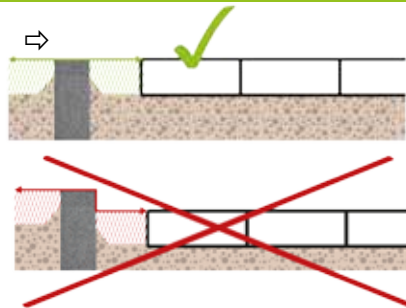
### Adapt – cut to size

For quick and clean cutting of ECORASTER® the following tools have proven themselves in practice:

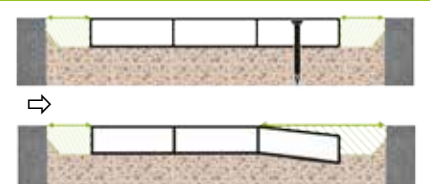
- » portable circular saw
- » cutting disc
- » jigsaw
- » crosscut saw



Please ensure that that you keep 5 cm | 2 inches of space is kept between ECORASTER® and edging\*



Please place ECORASTER® on the same level like the edging.\*



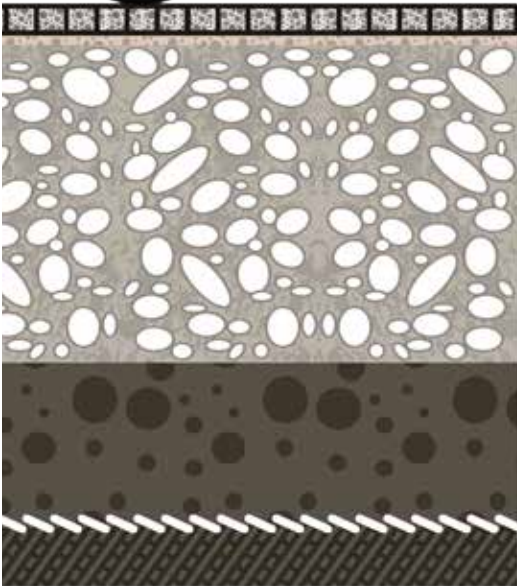
To prevent rising or lifting due to braking forces in parking areas, ECORASTER® can be anchored with ground nails. Alternatively the end of the system can be lowered as shown.\*



Example: Parking with ECORASTER® MINERAL

Filling: Gravel

Areas, which can not be greened because of the heavy use or their insufficient location, can be filled with loose gravel. These areas are also considered to be fully permeable! Due to the high loadability this type of filling is highly recommended for heavy duty areas such as parking or warehouse/logistic areas.



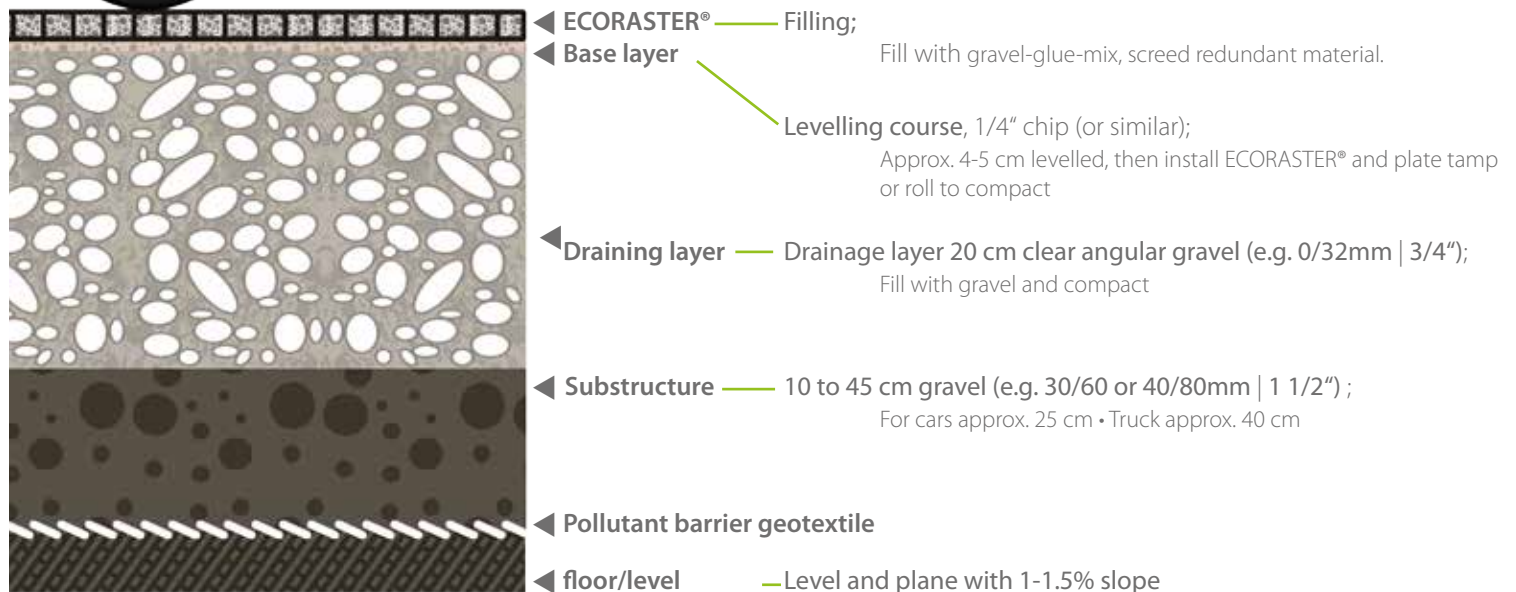
- ◀ **ECORASTER®** — Filling;  
◀ **Base layer** — Fill with gravel/ loose gravel/ sand (with proper grain size, no fines)  
— Levelling course, 1/4" (chip or similar);  
Approx. 4-5 cm levelled, then install ECORASTER® and plate tamp or roll to compact
- ◀ **Draining layer** — Drainage layer 20 cm clear angular gravel (e.g. 0/32mm | 3/4");  
Fill with gravel and compact
- ◀ **Substructure** — 10 to 45 cm gravel (e.g. 30/60 or 40/80mm | 1 1/2") ;  
For cars approx. 25 cm • Truck approx. 40 cm
- ◀ **Pollutant barrier geotextile**
- ◀ **floor/level** — Level and plane with 1-1.5% slope



## Example: Parking with ECORASTER® STONE

### Filling: Hard-surfaced gravel

Heavy used areas, which shall be fully permeable and free of loose gravel can be installed with our "stone" system. In a special procedure two eco-friendly components are mixed together and get blended with the gravel filling. The results are sturdy and tough surfaces, with a high percolation rate (one liter per m<sup>2</sup> per second).

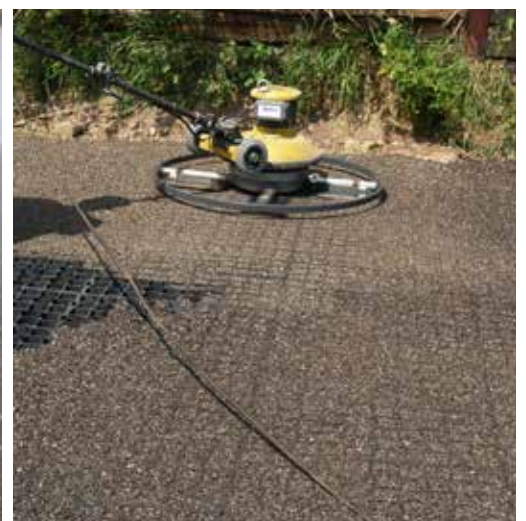


### Please note:

Considering the required technology and skills for this type of filling and the limited processing time, this system is best installed by professionals

Please take advantage of our highly qualified customer service and consulting department to achieve the best possible results.

Important: This system is not loadable until full setting.

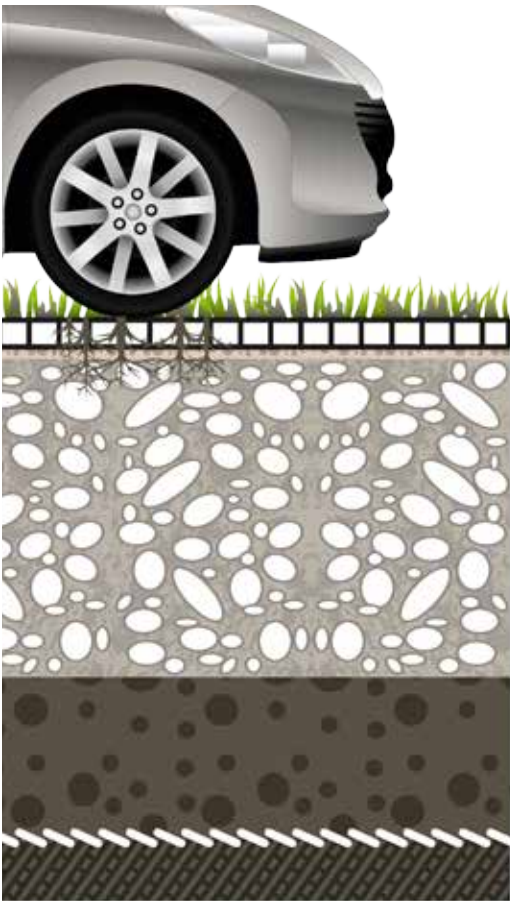




Example: Parking with ECORASTER® MICROGREEN

Filling: Substrate + seeds

After installing the ECORASTER® the area is filled with MICROGREEN, an compound of a highly durable substrate mixture and hardy herbage, sedum and moss plants. This type of filling is unique due to its high resilience and its low need for maintenance.



**Advice!**

To cut the ECORASTER® fast and straight we recommend using a hand-held circular saw. For smaller corners or areas which need to be cut more precisely please use a jigsaw. Do not cut the layers in advance. If possible please cut the layers after extending them beyond the edges of the area. Setting the ECORASTER® on a base for cutting can make it easier.

- ◀ **ECORASTER®** — Filling;  
◀ **Base layer** — Fill with mineral substrate, sow seeds (mix of sand-thyme, mosses, sedum, mountain sweet grass, white clover)  
— **Levelling course, mineral substrate** (3/15mm, Microgreen-substrate);  
Approx. 4 cm levelled, then compact with roller to approx. 3 cm
- ◀ **Draining layer** — Drainage layer 20 cm clear angular gravel (e.g. 0/32mm | 3/4");  
Fill with gravel and compact
- ◀ **Substructure** — 10 to 45 cm gravel (e.g. 30/60 or 40/80mm | 1 1/2");  
For cars approx. 25 cm • Truck approx. 40 cm
- ◀ **Pollutant barrier geotextile**
- ◀ **floor/level** — Level and plane with 1-1.5% slope

Please note:

- This system is only suitable to a limited extent, when mainly used by heavy trucks.
- Seeds need to be stored in a dry and dark place until sowing.
- Areas do not need mowing, fertilization or watering.





## Example: Parking with ECORASTER® GREEN

### Filling: Lawns, pre-greened or DIY greened

Installing the pre-greened ECORASTER® blanket and earthy soil turns into a grass field within a couple of hours. The immediate green result enables a swift acceptance of construction work. The surface is reinforced, drivable and permeable. Of course the ECORASTER® can be filled and greened as a DIY project.



◀ **ECORASTER®** — Filling:  
◀ **Base layer**

— Levelling course: **Fertilit®**

◀ **Fertile layer**

— Intermediate: **HYDROFERTIL®** (mix with 65-70 % gravel 30/60 mm)  
(alt.: mix 30-35 % Humus and 65 - 70 % gravel 30/60 mm)  
Height approx. 20 - 30 cm

◀ **Draining layer**

— Drainage layer; Gravel (e.g. 30/60 - 40/80 mm | 1 1/2")  
Height approx. 10 - 40 cm, plate tamp or roll to compact

◀ **Pollutant barrier geotextile**

◀ **floor/level**

— Level and plane with 1-1.5% slope

We recommend the following seed mix::

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

#### pre-greened

Install ECORASTER® Green,  
use lawn roller to press on

#### DIY greened

**SEMILIT®** (alt. mix 30%  
gravel + 70% humus +  
long-time fertilizer), elutriate  
seeding material.

### Please note:

- This system is of limited suitability for areas mainly used by heavy trucks.
- Green areas need maintenance (fertilization, watering and lawn care).
- In case of DIY greening please check if the location meets the demands of your seeding materials.
- Daily occupancy and the time of parking will affect the result of the greening.



#### **Note:**

Keep the soil level just below the top of the ECORASTER to protect the germinating seeds and ensure a durable parking/driving surface.

Example: Parking with ECORASTER® Bloxx

Filling: Paving stones

The new ECORASTER® Bloxx system allows quick ground reinforcement with modern paver design in a fully permeable manner. This system is perfect for parking, concrete replacement, accessible areas, driveways and paths. Look closely at the integrated drain: This innovative system prevents clogging. Grouting the joints? Not needed!

Feel free to combine Bloxx with the other ECORASTER® elements to include greened accents into your permeable area.



ECORASTER® Bloxx fits perfect into the safety interlocking system. As a result Bloxx can be combined with any other ECORASTER®.



- ◀ **ECORASTER®** — Bloxx, filling with paving stones, settle area with plate compactor (rubber mat). 140\*140\*45mm (each paver); Dark grey, light, red, white
- ◀ **Geo-fabric** — ECORASTER® mesh; Construction textile with grid/net structure
- ◀ **Base layer** — Levelling course, 1/4" (chip or similar); Approx. 4-5 cm levelled, then plate tamp or roll to compact
- ◀ **Draining layer** — Drainage layer 20 cm clear angular gravel (e.g. 0/32mm | 3/4"); Fill with gravel and compact
- ◀ **Substructure** — 10 to 45 cm gravel (e.g. 30/60 or 40/80mm | 1 1/2"); For cars approx. 25 cm • Truck approx. 40 cm
- ◀ **Pollutant barrier geotextile**
- ◀ **floor/level** — Level and plane with 1-1.5% slope





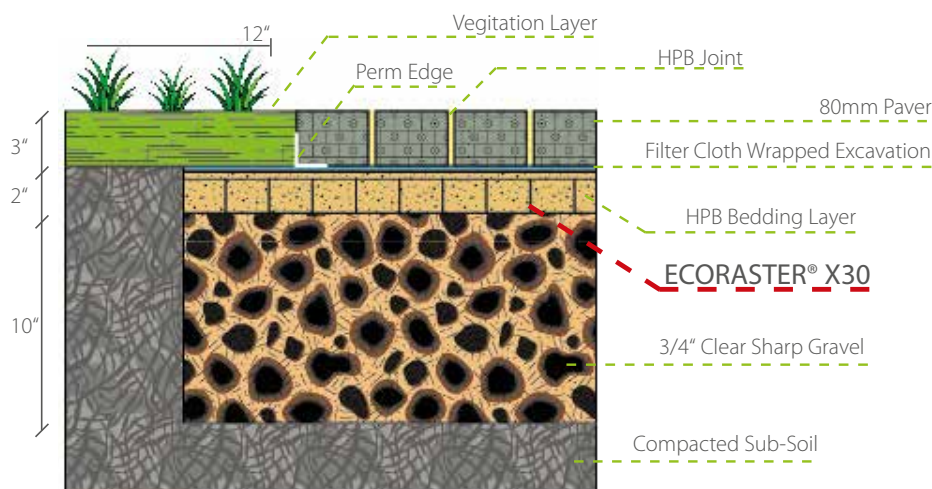
## ECORASTER® X30 | Hardscape Base Stabilizer

Save money and time on your substructure. The ECORASTER® X30 is a heavy duty linking grid system that allows you to build stronger hardscapes by stabilizing the base material.

### Your Benefits:

- » Up to 50% base reduction in excavation
- » Up to 30% labour cost savings
- » Wider pin-point load dispersal
- » Reduced warranty call-backs from shifting and sinking
- » Reduced risk of poor sub-base compaction
- » Sustainable, efficient, and profitable!

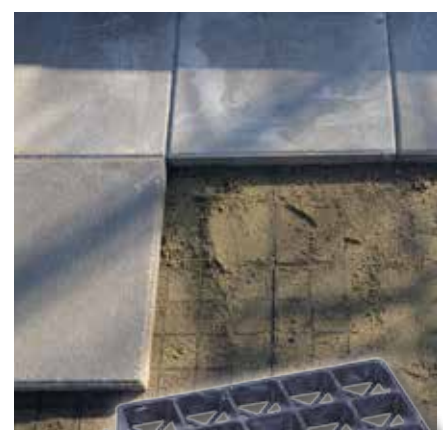
### Easy to install:



- » Heavy Duty Base Stabilization
- » Permeable Base Stabilization
- » Interlock Driveway Base Support
- » Permeable Interlock Concrete Paving Installation

Questions? Give us a call:

 **+1 800 495 55 17**



| Type:                         | Dimensions:                               | Material:          | Wall thickness: | Load up to:                                                      | Solubility:                                                                                    | Compressive strength:                | Weight per piece: | Weight per m <sup>2</sup>   10.76 ft <sup>2</sup> : |
|-------------------------------|-------------------------------------------|--------------------|-----------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------|-------------------|-----------------------------------------------------|
| <b>X30</b><br>Base Stabilizer | 330 x 330 x 30 mm • 12.99 x 12.99 x 1.18" | 100% recycled LDPE | 0.2 in          | 23 t/ft <sup>2</sup> (unfilled)<br>75 t/ft <sup>2</sup> (filled) | resistant to acids, alkalis, alcohol, oil and petrol (de-icing salt, ammonia, acid rain, etc.) | up to 20t point axle load (DIN 1072) | 0,77 kg • 1.7 lbs | 6,93 kg • 15.3 lbs                                  |



Fire Access

So help won't stuck!

Fire-fighting operations are often hindered by the poor quality or lack of access lanes and parking and turning areas. The reason for this is the development of organic material (humus). Mud filled tire treads and getting stuck in the mud can delay lifesaving access to the site in an emergency situation. Muddy, unstable and uneven ground will compromise the quick extinguishing of fire and other life saving measures.

The Requirements:

Access roads, parking and turning surfaces have to meet the minimum standards of the Road Building Class VI (Guidelines for standardizing vehicular trac surfaces- RStO)

Our Test Run Result:

Our pictures (bottom right) show a modern German fire truck, weighing 16 tons fully equipped. Even though the truck has a fully adjustable 4WD and semi-offroad tires, it got stuck in normal grassland after driving only five meters. Heavy equipment was needed to get it back on track. The grass was unstructured and the area was under dry conditions.

The Solution:

The ECORASTER® system reinforces or “paves” the ground surface without sealing it. This means that even with high surface loads (up to 800 t / m² , depending on the filling type) the rainwater/ firefighting water can easily infiltrate into the ground, usually without additional complex drainage elements.

This also means that in some cases (depending on local legislation) there is no stormwater tax dependent on sealed surface area. The ECORASTER® system can be installed with different fill materials and it allows total design freedom for landscaping.

ECORASTER® E50 ensures safe access and parking/ turning of emergency vehicles.

» Please note:

Please follow the instructions and guidelines on our website/ installation manual. The local code must be followed.



| Section from „Fire access surfaces“ (TBB/ DIN 14090) |             |                                                                                                                                                                         |
|------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Access                                               | with:       | <ul style="list-style-type: none"><li>• minimum 3 m (straight entrances)</li><li>• minimum 3,5 m (entrances bordered with structures, where both side ≥ 12 m)</li></ul> |
|                                                      | tonnage:    | total allowed weight minimum 16t<br>minimum 10t per axle                                                                                                                |
| Hard-standing                                        | dimensions: | minimum 5 m x 11 m*                                                                                                                                                     |
|                                                      | tonnage:    | minimum 800 kN per m²                                                                                                                                                   |
| Turning area                                         | dimensions: | <ul style="list-style-type: none"><li>• i.e. vehicle minimum 7 m x 12 m,</li><li>• plus extensions (4 m) front and rear of turning areas</li></ul>                      |
|                                                      | tonnage:    | minimum 16 t,<br>minimum 10 t per axle                                                                                                                                  |

Questions? Give us a call:

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## Installation on slopes: ECORASTER® A50



With over 200 expansion joints per square meter and 36 notched interlocking connectors per square meter the ECORASTER® counters the forces which are impacting the embankment. Erosion of the solum, soil destruction e.g. by rain water made channels, line-shaped erosion and nutrient washout can be prevented by a proper installation of the ECORASTER® system. Local engineering should be consulted to address specific soil conditions.

The system's components (ECORASTER® A50 with groove for ground nails, universal hinge, ribbed ground nails) should be adapted to the requirements and the proper dimensions (e.g. ground nail size) and the interval between the nails (e.g. one per m<sup>2</sup>) should be advised by the architect/ engineer.

To achieve the best result for this application following actions might be taken before the ECORASTER® installation, depending on the initial conditions and soil conditions:

- Removal of loose rocks and non suitable soil material
- Clearing, removal of vegetation
- Fill up channels and draws
- Levelling/ profiling



Depending on the requirements, a sufficient measured substructure (as a base course/ levelling course) should be placed on the prepared slope. The installed ECORASTER® is filled to the top edge with suitable topsoil or a mixture of sand with soil, humus and e.g. substrate, which contains starting fertilizer for the greening. Substructure and filling material shall contain a small amount of fine material, to ensure a certain water reservoir capacity for the greening and to ensure water permeability.

### Installation profile, ECORASTER® on slopes:



### **Please note:**

- For a swift greening we recommend a standard mix of herbs or lawns with an application of minimum 20 g/m<sup>2</sup>.
- Depending on the location vegetation types might vary. Please check the habitat requirements of your seeds. Preferable time for sowing is springtime.
- The bigger and better the area of ECORASTER® is covered/ vegetated the better the filling is protected against weather effects. Growing root penetration increases the interlocking with the substructure and effects the results of the ground/ embankment reinforcement.





## Perfect fitting extensions | Softground



### » Geotextiles/ Landscape fabric

Matching your project we are offering the required textiles.

Installing the Bloxx we recommend to use ECORASTER® mesh.



### » Curve-Element

The flexible connector for laying curves, radii and circles, e.g. for changes in direction when reinforcing soft road shoulders. Specially developed for the ECORASTER® system, it inserts seamlessly into the surface.



### » Hinge & Groundnails

Depending on the slope, the application and the tensile forces impacting the hillside/ embankment hinges and/or ECORASTER® A50 with ground nails are recommended. The ECORASTER® area will be interlocked with the slope and the tensile forces will be reduced effectively. The hinge can be adjusted 90° both ways.



### » Parking lot markers

The markers are inserted into the ECORASTER® and fixed in place with locking elements.

Two types of markers are available. For areas with snow-plowing service we recommend type B, as type A is raised.



### 360° View plus animation online:

Have a closer look : All ECORASTER® elements and accessories in 360° HD with animation on [www.purus-plastics.de](http://www.purus-plastics.de).



### » SOFTGROUND®

The tough and non-slip rubber mat locks directly into the ECORASTER® E30 elements. Softground® is suitable for terraces, trade fairs, horseboxes and many other applications.

The substructure for SOFTGROUND® areas is similar to Mineral/ Stone.



### Accessible areas, accessibility

If you want to install accessible areas you can choose from different ECORASTER® types/ fillings.

Besides SOFTGROUND® you can also install ECORASTER® Stone or Bloxx.

Just give us a call...

We are eager to help you!





## Review



For more than 20 years, Purus Plastics has manufactured ECORASTER® permeable ground reinforcement system, made of 100% recycled materials (LDPE). Our very first installation of ECORASTER E50 „Classic“ was installed over 20 years ago at a busy waste collection depot. This specific installation is found in a cold climate and the grid has been subjected to the constant freeze-thaw cycle as well as constant snow plowing. Even with constant use by heavy trucks and repetitive loading and unloading, the area remains level, stable and in very good condition. The area has been allowed to naturally vegetate.



**20 YEAR  
warranty**  
ECORASTER®

## Our Promise of Quality



PURUS PLASTICS constantly monitors the quality of the self-generated raw materials and the in-house produced products, to guarantee what we promise: "Quality, made in Germany!"

As a technology leader we will not stop improving, in order to relieve future generations and to save valuable resources.

Manufacturing our ECORASTER® system for more than 20 years and its installation worldwide has proven that our system is durable, loadable and sustainable. As a founding member of the European quality network for "products made out of recycled materials" we want to ensure that best quality, best value and the highest environmental compatibility is ensured.



## Frequently Asked Questions

**Can I drive on ECORASTER®?**

Yes you can! ECORASTER® is durable. Depending on the substructure and filling, the loadability can exceed 800 metric tons per m<sup>2</sup> (TÜV approved). Even right after installation, the empty elements (excl. Bloxx) are sturdy enough in empty conditions to drive on. This simplifies filling the area. See page 6 for more details.

**Can I clear snow on ECORASTER® areas?**

Yes you can! ECORASTER® withstands de-icing salt, brooms, snow plows, brush rollers. Please contact us for specific guidelines.

**Is an ECORASTER® area considered "permeable"?**

More than 95% of the ECORASTER® surface is permeable/ open, so surface water cannot accumulate. Local authorities may declare "permeability" in order to save taxes or fees.

**Can I install ECORASTER® w/o substructure?**

Yes you can! In some circumstances there may be limitations to the performance of the ECORASTER® system. Thanks to the interlocking system and the excellent load distribution ECORASTER® can be installed without substructure. If you do not use a substructure (stormwater buffer) area drainage cannot be ensured. Additionally soil changes can effect surface irregularities and cause different loadabilities. If you plan to install without substructure, please contact us, we are eager to help you.

**Are plastic reinforcement tiles less durable?**

Not if you focus on quality! Our ECORASTER® come with a 20 year warranty and the best possible value. As both the raw material producer and the product manufacturer we can ensure a consistently high quality. Promise! Our system is made of 100% recycled LDPE (also recycable), heavy-duty, weatherproof and UV-resistant.

**Do I have to install an edging?**

No! The structure of the ECORASTER® tiles incorporates integral expansions joints which make an edging unnecessary. We suggest leaving a 5cm/2 inches space between the ECORASTER and the fixed border which also acts as an expansion joint

**Is ECORASTER® eco-friendly?**

PURUS PLASTICS operates one of the worlds most modern plastics recycling facility. Our products are eco-neutral and are engineered/ produced in Germany. We focus on a high input of recycled materials and the that our products remain recycable.



## Basic information | Safety notes • Allgemeine Hinweise | Sicherheitshinweise

Dear customer,

Thank you for choosing the original ECORASTER®. You have chosen 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 the best possible and most enduring benefit from ECORASTER® and appreciate you noting the information below.

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 functionality. Beware of sharp edges.
- ECORASTER® is flammable. Don't breathe fumes of burning elements.

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.

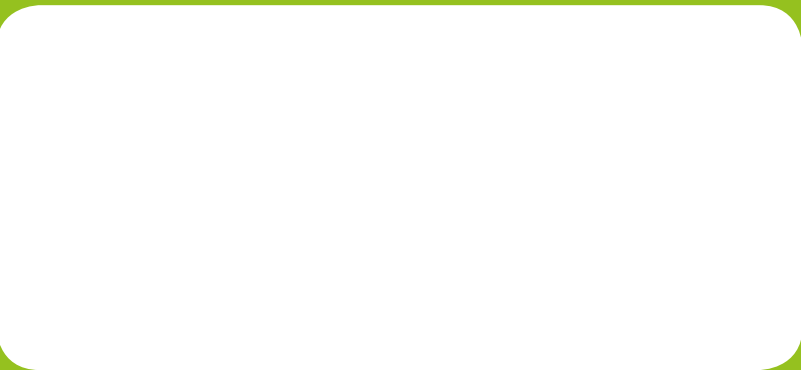
Safety signs in accordance to ANSI Z535



Developing sustainable solutions for  
a permeable ground reinforcement.



German engineering – available worldwide.  
Questions? Please give us a call or contact your local dealer:



[www.ecorastergrid.com](http://www.ecorastergrid.com)

ECORASTER® is a PURUS PLASTICS GmbH brand.  
Subject to change without prior notice. E. & O. E.

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