

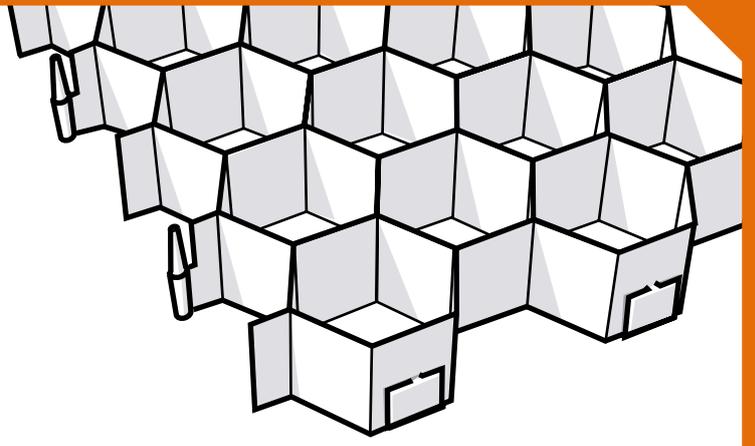
# **COREgravel<sup>®</sup>**

*The Gravel Stabilizer, a natural porous and low-cost paving choice.*

## **Design & Install Guide**

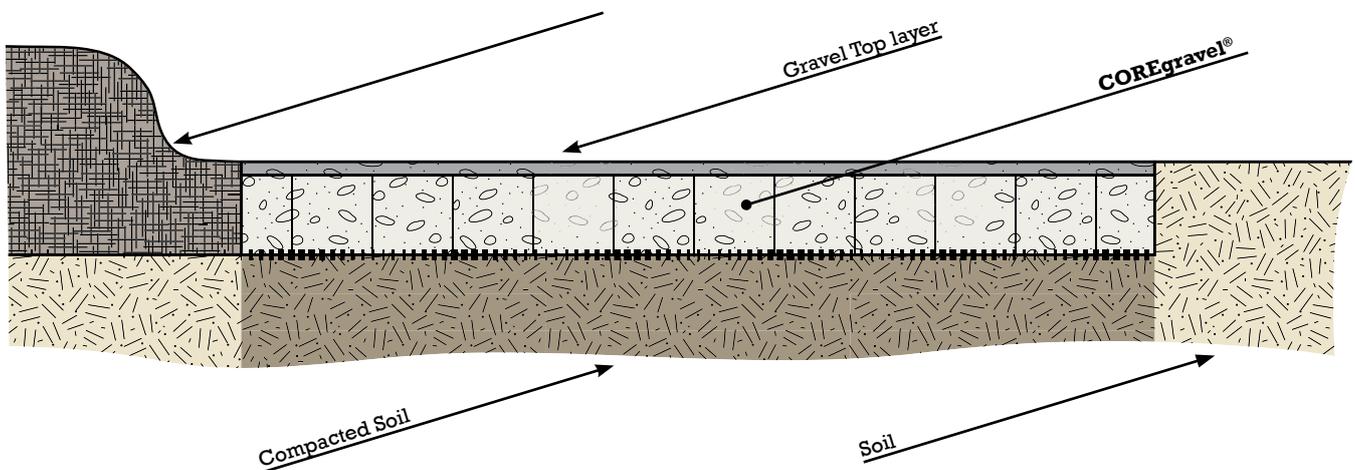
A guide for architects, contractors, installers and anyone planning to use COREgravel<sup>®</sup>





# ***COREgravel***<sup>®</sup>

## Design & Install Guide



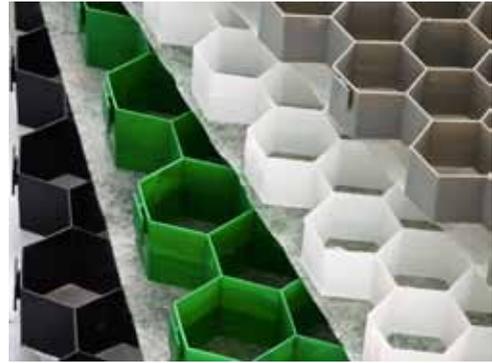
Pathways, driveways, and car parks with COREgravel<sup>®</sup> porous paving are stabilized so gravel stays put with no ruts or sinking, yet allows water to permeate the entire natural, eco-friendly surface.

# Introduction to COREgravel®

COREgravel® Gravel Stabilizer is the core of hassle-free gravel paving for all types of vehicle or pedestrian traffic with no compromise in strength and durability.

COREgravel® solves the problem of aggregates without gravel stabilization sinking, migrating, and forming ruts.

Just add gravel to the interlocking panels of hexagon cells and you have an eco-friendly surface that costs less than asphalt, concrete or block pavers.



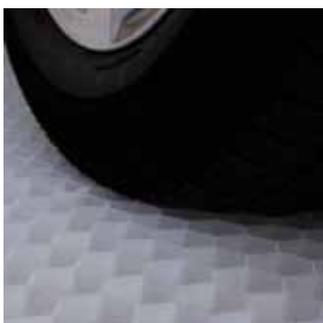
## Top 5 Benefits

- 1. Stabilize gravel.**  
Gravel stays put; no ruts, no sinking, no problems.
- 2. Environmentally Green.**  
Eco-friendly porous paving allows the rain to drain over the entire surface.
- 3. It's Beautiful.**  
A pea gravel walkway or gravel driveway offers stunning curb appeal.
- 4. Low Cost.**  
This permeable paving costs less than asphalt, concrete or block pavers.
- 5. Easy to install.**  
Quick and simple installation in just four easy steps.



## Solid Features

- Super strong. Enhanced load bearing causes no rutting, separating or sliding with vehicle traffic.
- Address a wide range of erosion control, earth retention, slope protection, and stability issues.
- Keep costs low with easy maintenance and use less gravel, since the gravel won't move around.
- Used in ADA-compliant surfaces for pedestrians, bicycles and wheelchair traffic.
- Geotextile backing underneath prevents weed growth and adds to stability.
- When filled, the product is practically invisible.
- Easily add parking lines and edge indicators with COREmarker™ and COREglow™.
- Used in SUDS and LEED compliant paving installations.



Lightweight and super strong



Top view



Geotextile backing

# Applications

COREgravel® Gravel Stabilizer panels are ideal for use in hardscapes, waterscapes and various landscaping projects using gravel or other aggregates.



Car Parks



Estate Walkways



Parking Areas



Patios



Playgrounds



Equestrian



Courtyards



Parks & Gardens



Golf Courses & Trails



Utility Parking



Commercial Lots



Bicycle Paths



Garden Paths



Waterscapes



Camper Parking



Parks & Fields

Ideal for many commercial and residential applications utilized by pedestrians, cars, trucks and other vehicles. Gravel surfaces stay put with no ruts or sinking.



# Cost Comparison

When compared with concrete or asphalt, COREgravel® is significantly less expensive to install. In addition, ongoing maintenance costs are lower throughout the life of the product.

	Concrete	Asphalt	COREgravel®
Installation per m <sup>2</sup>	£120	£60	£25 with gravel <sup>1</sup> ✓
Maintenance	Prone to cracking and requires periodic patching and filling of cracks.	Prone to surface wear and requires periodic patching. Resurfacing is recommended every 15 years.	Occasional ✓ smoothing with rake and a small addition of aggregate every few years.
Strength	Over 200 tons	Over 200 tons	Over 300 tons
Traffic Supported	Heavy	Moderate	Light to heavy <sup>2</sup>
Lifespan	20-40 years	10-15 years	Over 20 years ✓

<sup>1</sup> Gravel prices vary, this is an average complete installation with gravel price included.

<sup>2</sup> Dependent on size and specification

## COREgravel® Porous Paving

Porous paving systems reduce the need for traditional stormwater infrastructure; therefore reducing overall project costs associated with installation and maintenance. In turn, creating a surface that is superior to other types of pavement, with a lower life-cycle cost

Even on sloping ground, the long lasting stabilization grid will prevent loose aggregates from slipping and washing away, reducing the need for frequent maintenance and rejuvenation of your gravel surface. The COREgravel® matrix holds the gravel in an evenly distributed form, eliminating irregularities.

A COREgravel® surface requires less maintenance than it's alternatives such as asphalt or concrete with the added benefits of an entirely porous surface that is amazingly stable.

The honeycomb construction provides tightly packed pockets of loose gravel which create a completely porous hard standing, allowing extreme pressure to be applied without the aggregate displacing making it more practical and versatile than other more costly options.

You won't believe you have a gravel surface underfoot as you experience no difficulty crossing with wheelchairs, bicycles, pushchairs or high heels.

Loose aggregates are extremely easy to recycle once they have reached the end of their life-cycle. COREgravel® is widely recognized as the lowest cost option available for a SUDS compliant surface that is a genuine alternative to traditional paving methods.

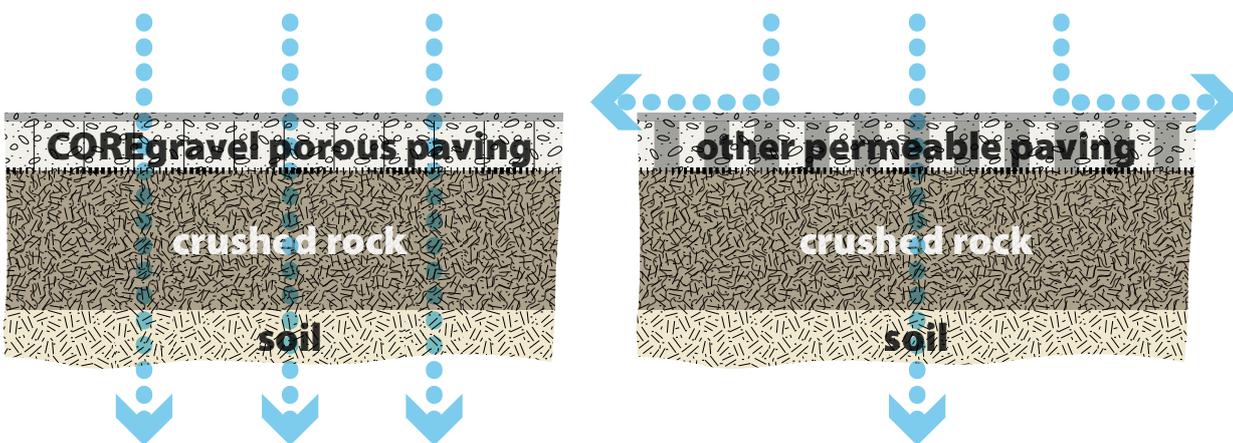


Fig. 1 – COREgravel® is porous across the entire surface, offering better drainage than other paving.

# Installation Instructions

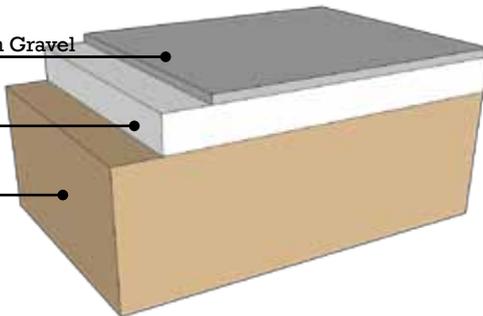
**1** **BASE PREPARATION.** For base preparation, level and clear the area, then excavate and compact allowing for grid thickness and an additional 10mm surface dressing of aggregate.



Top Layer – 1 cm Gravel

COREgravel®

Compacted Soil



**2** **PLACE THE PANELS.** Position the panels on the prepared base with geotextile face down. Cut to shape with pruning shears or a utility knife. Use protective gloves to avoid abrasions. Top of hexagon cell panels should be 10mm below adjacent hard surfaced pavements or final grade.



Place first row of panels against a stationary edge if possible. Stagger panels in a bricklayer pattern. The panels have interlocking connectors, however most installations do not require them to be used. Only in areas with greater traffic or steeper grade are they used to lock one direction or both directions. No anchors are needed for gravel stabilizer panels since the geotextile backing prevents any push up.

**3** **FILL THE CELLS.** Infill gravel or aggregate into the hexagon cells by hand, or directly from a truck. Trucks should be careful to avoid sharp turns on unfilled panels. Preferably the truck should dump gravel first on the edge of the installation area, then work inward, therefore only driving on filled cells. Gravel can be spread by hand with flat shovels, asphalt or tarmac rakes, blades, or stiff brooms. A power broom may spread the gravel faster.



**4** **SMOOTH SURFACE.** Level gravel or aggregate to cover COREgravel® gravel stabilizer panels by 1 cm (0.4 inches) so the panels are just out of sight. This allows for aesthetics, stability and protection. Optionally, a vibratory plate, compactor, or roller can be used to set the gravel into the cells.



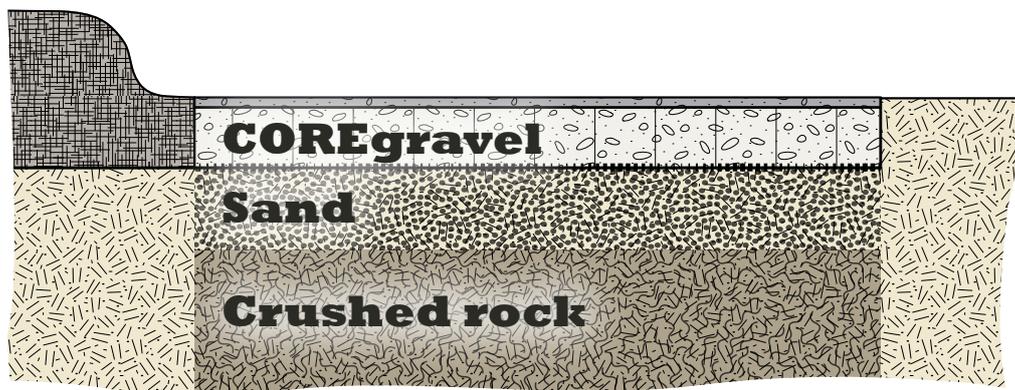
# Additional Installation Information

The installation method and correct specification of COREgravel® is dependent on its intended use and likely traffic loads. COREgravel® grids are available in four size / load categories:

Cell width	Cell depth (mm)	Load (tons per m <sup>2</sup> )
38	25	Over 200
38	40	Over 250
50	40	Over 250
50	35HD	Over 300



For pedestrian and light vehicular traffic on well compacted solid ground, the cellular sheets can be laid directly over the existing surface to form a continuous matrix. We recommend a sand bedding over the surface to even out deformities, then lay and interlock the COREgravel® with its built in Geotextile membrane and simply overfill the cells by approximately 10mm with your chosen gravel.



If the ground conditions are unsatisfactory or there is an increased traffic load the following broad parameters could apply:

Use	Depth of base
Pedestrian / cycle	75 to 150 mm
Light vehicles, driveways and car parks	100 to 350 mm
HGV's	150 to 475 mm
Verge reinforcement	150 to 475 mm

Compact well with a vibratory plate or roller. Overlay the sub-base with a bedding Layer of 20-30mm of sharp sand and compact. Once the sheets are interlocked and the matrix has been formed, apply the infill material (Natural or artificial aggregate) and overfill each cell by approximately 10mm. An edging must be created to retain the matrix and prevent any movement or displacement of the system.

Angular gravel works best as it helps to aid the compaction process and prevent the aggregate from leaving the matrix. We would recommend up to 15mm aggregate for the 38mm cell width, and 16mm to 24mm aggregate for the 50mm cell width. COREgravel® also works extremely well with artificial aggregates, luminous gravel, glass beads or recycled glass.

## Edging/curbing

Many options will work well with COREgravel® including plastic, metal, wood, or concrete curbing both in-ground and above ground, as well as vegetation, or parking bumpers. Typically edge restraint is dependent on ground condition and intended traffic load. Any edging that is suitably installed to maintain the COREgravel® matrix in the specific ground conditions can be considered fit for the purpose.

## Slopes and grades greater than 30° (1:3.3)

Install as directed for installation, however after Step 2, install anchors. This will keep the COREgravel® panels in place in areas where there is a slope greater than 30° or 1:3.3.



# COREgrass™ Porous Paving

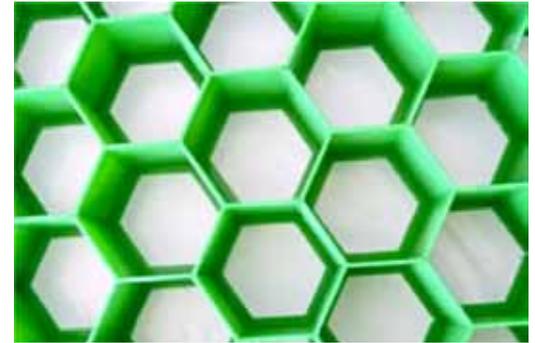
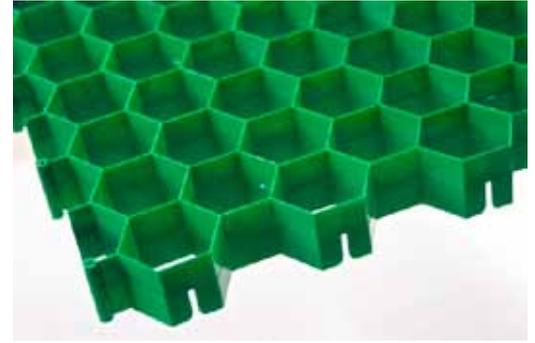
## Grass Reinforcement

COREgrass™ grass reinforcement provides amazing stability, grass protection, and sustainable drainage, whilst providing the desirable visual and natural effect of grass paving.

COREgrass™ is environmentally friendly in design, function and material. Unlike other plastic grass grids, COREgrass™ has the necessary strength to withstand high levels of traffic.

COREgrass™ is suitable for use on hardscapes or landscapes and is perfect for:

- Grass car parks
- Caravan parks
- Cycle paths
- Foot paths
- Driveways
- Temporary car parks



## Installing COREgrass™

A proprietary interlocking system and manageable sized sheets make for easy installation. Simply level and compact the site, then lay the interlocking sheets of COREgrass™ to form a continuous matrix. Next, lay a good quality topsoil to overfill the units by approximately 10mm.

Seeding followed immediately by a top layer of fertiliser will aid the grass growth and regular watering of the seeded area should be maintained for a period of 4-6 weeks.

## COREgravel® & COREgrass™ : Truly Porous Surfaces

Water runs through the gravel and geotextile membrane across the entire surface so COREgravel® & COREgrass™ are true porous paving products.

Pervious surfaces can be either porous or permeable. The important distinction between the two is:

- Porous surfacing is a surface that infiltrates water across the entire surface.
- Permeable surfacing is formed of material that is itself impervious to water but, by virtue of voids formed through the surface, allows infiltration through the pattern of voids.



## Environmental comparison:

	Concrete/Asphalt	Permeable Pavers	COREgravel® & COREgrass™
Drainage	None	Permeable (Partial)	Porous (Full) ✓
Permeable Area	0%	15-40%	100% ✓
Recyclable	Yes/No	Yes	Yes ✓
Stormwater Infrastructure Needed	Yes	Maybe	No ✓
Stormwater Mgmt Fees	Yes	Maybe	No ✓
LEED Credit	No	Maybe	Yes ✓
SUDS Compliant	No	Maybe	Yes ✓

\* Check with local organizations for exact details and accuracy, this is a general guide for most locations.

# SUDS (Sustainable Urban Drainage Systems)

SUDS are physical structures built to receive surface water runoff, located as close as possible to where rainwater falls, providing the options of:

**Infiltration** - Utilized whenever possible, subject to appropriate soil conditions and environmental considerations.

**Attenuation**- Utilized when direct infiltration is not appropriate and when water storage is required.

They also provide treatment for surface water using the natural processes of sedimentation, filtration, absorption and bio-degradation.

Recent research shows that typically up to 80% of sediment, 60% of phosphorous and 80% of nitrogen can be removed from rainwater through porous paving, together with substantial levels of heavy metals and hydrocarbons. This natural treatment provides the ideal opportunity for rainwater conservation and re-use for a variety of non-portable applications e.g. toilet/urinal flushing, irrigation, laundry, vehicle washing, refrigeration etc.

Such source control principles and techniques are now inherent within best practice and are increasingly becoming the norm within development projects.

As MOT type 1 is not self draining it is unsuitable for a SUDs scheme. We would recommend a “modified” Type 1, with all the fines under 3mm taken out. It will become self draining, as it is very difficult to compact a single sized gravel a well graded gravel could be used which will compact adequately and avoid waves in the finished surface. The actual thickness of the sub base depends on the CBR of the sub grade, if unsure we would always recommend that a full ground investigation is undertaken by a professional geotechnical engineer.

Learn more here:

- UK Environment Agency: Sustainable Drainage Systems  
<http://www.environment-agency.gov.uk/business/sectors/36998.aspx>



## LEED

LEED® (Leadership in Energy and Environmental Design) is a national “Green” building assessment system developed by the United States Green Building Council (USGBC) to encourage and accelerate global adoption of sustainable green building and development practices. LEED evaluates and rates the environmental performance of new and existing commercial, retail, institutional, educational and high-rise residential buildings over a project’s life-cycle. Developments incorporating LID practices, including porous pavements, earn points toward this rating system and support the principles of a “Green Infrastructure” through the EPA. The higher the rating, the greater the impact on our ecology and future as whole.



Learn more here:

- USGBC: U.S. Green Building Council – LEED  
<http://www.usgbc.org/LEED>

## Technical Certifications

Our high standards produce products that are certified by independent and respected organizations.

- AFNOR - verify the products have been tested by a quality laboratory, and found complied with the requirements of NF EN ISO 844:2009
- SGS - Compression Test Standard :ATSM D1621-04a  
Compressive strength per m<sup>2</sup> = 9960N/1016 kg  
1016 kg/0.0175 m<sup>2</sup> = 58,057 kg = 58.057 Tons
- OHIM - the official trade marks and designs registration office of the EU. Registered Design No. 001599572-0001



# COREmarker™ Delineation/Marking

The ONLY real solution for marking gravel: COREmarker™. No more problems defining parking spaces or pathways in a natural gravel or aggregate surface.

## Delineation

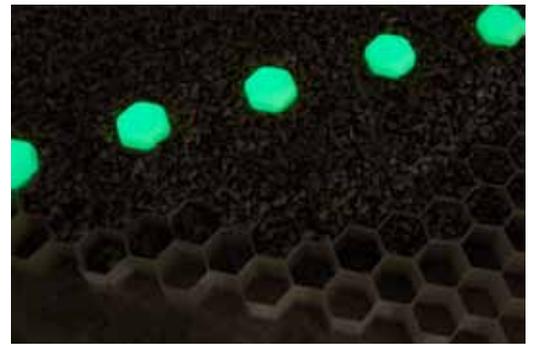
Lines, shapes, even messages can be set in gravel driveways, car parks or roads. Paint, chalk, or timbers are a hassle and require constant maintenance, however COREmarker™ Line Markers are easy to use and made to withstand all types of traffic and weather conditions.

Safety is an integral part of surface design for drivers or pedestrians. The easily visible, yet unobtrusive COREmarker™ fits snugly into the COREgravel™ gravel stabilizer panels.

## Glowing caps for power-free luminescence

What about at night? We went a step further and created a glow-in-the-dark COREmarker™ that lights up at night without power, electricity or wires. Providing safety and cost savings COREmarker™ will keep your project ahead of the rest.

COREmarker™ is available in phosphorescent glow-in-the-dark and non-luminescent styles. These markers are sure to make your gravel project beautiful and functional. One big limitation to gravel car parks used to be line marking, but with COREmarker™ you can have a gravel driveway and car park AND have lines too!



# COREglow™ Glow In The Dark Pebbles

COREglow™, glow in the dark pebbles are the bright choice for eco-friendly lighting that requires no electricity and no power. Saving our natural resources is important to us, so a renewable light source like glow pebbles that have no carbon emissions will not only save money, but save the environment around us.

COREglow™ pebbles provide glow in the dark edging and stone solutions for all your landscaping needs. This unique product incorporates amazing technology to keep your glow gravel radiant for many hours. The phosphorescence given off by our product is not harmful, and provides safety of passage when no light source is available.

## Glow in the dark... Reinvented!

The new luminescent material in our COREglow™ product is a multi-activated, highly efficient powder, cultivated from the Earth that enables light-storing with a long afterglow. The brightness and duration of the luminescent material we use is more than 10 times brighter than the traditional ZnS (zinc sulfide) luminous materials. With only 10 - 20 minutes of exposure to daylight or lamplight, the COREglow™ product can maintain its afterglow in the dark for up to 20 hours.



# Product Specifications

COREgravel® is built to the highest specifications in the industry, please review our four sizes.

COREgravel	38-25	38-40	50-40	50-35 HD
Cell Diameter	38 mm	38 mm	50 mm	50 mm
Cell Depth	25 mm	40 mm	40 mm	35 mm
Cell Wall Thickness	0.8 mm	0.8 mm	0.8 mm	2.0 mm
Max weight (filled)	Over 200 tons	Over 250 tons	Over 250 tons	Over 300 tons
Max weight (empty)	58 tons	62 tons	62 tons	150 tons
Geotextile membrane	50 g/m <sup>2</sup>	50 g/m <sup>2</sup>	50 g/m <sup>2</sup>	50 g/m <sup>2</sup>
Recommended Duty	Light	Medium	Medium	Medium - Heavy
General Use	Pedestrian/Car	Car/Truck	Car/Truck	Car/Truck/HGV
Small sheet size	800 x 1200 mm			
Small sheet area	0.96 m <sup>2</sup>	0.96 m <sup>2</sup>	0.96 m <sup>2</sup>	0.96 m <sup>2</sup>
Large sheet size	1200 x 2400 mm			
Large sheet area	2.88 m <sup>2</sup>	2.88 m <sup>2</sup>	2.88 m <sup>2</sup>	2.88 m <sup>2</sup>

COREgravel® is available as a light, medium and heavy duty reinforcement system and is therefore ideal for:

- Emergency access roads
- Helicopter landing pads
- Car parks
- Sport & leisure facilities
- Pedestrian areas
- Holiday complexes
- Footways
- Grass verges
- Accommodation bases
- Hard standings
- Domestic driveways
- Cycle ways
- Caravan sites

## Common questions

### Can COREgravel® be used where HGV's require a turning area?

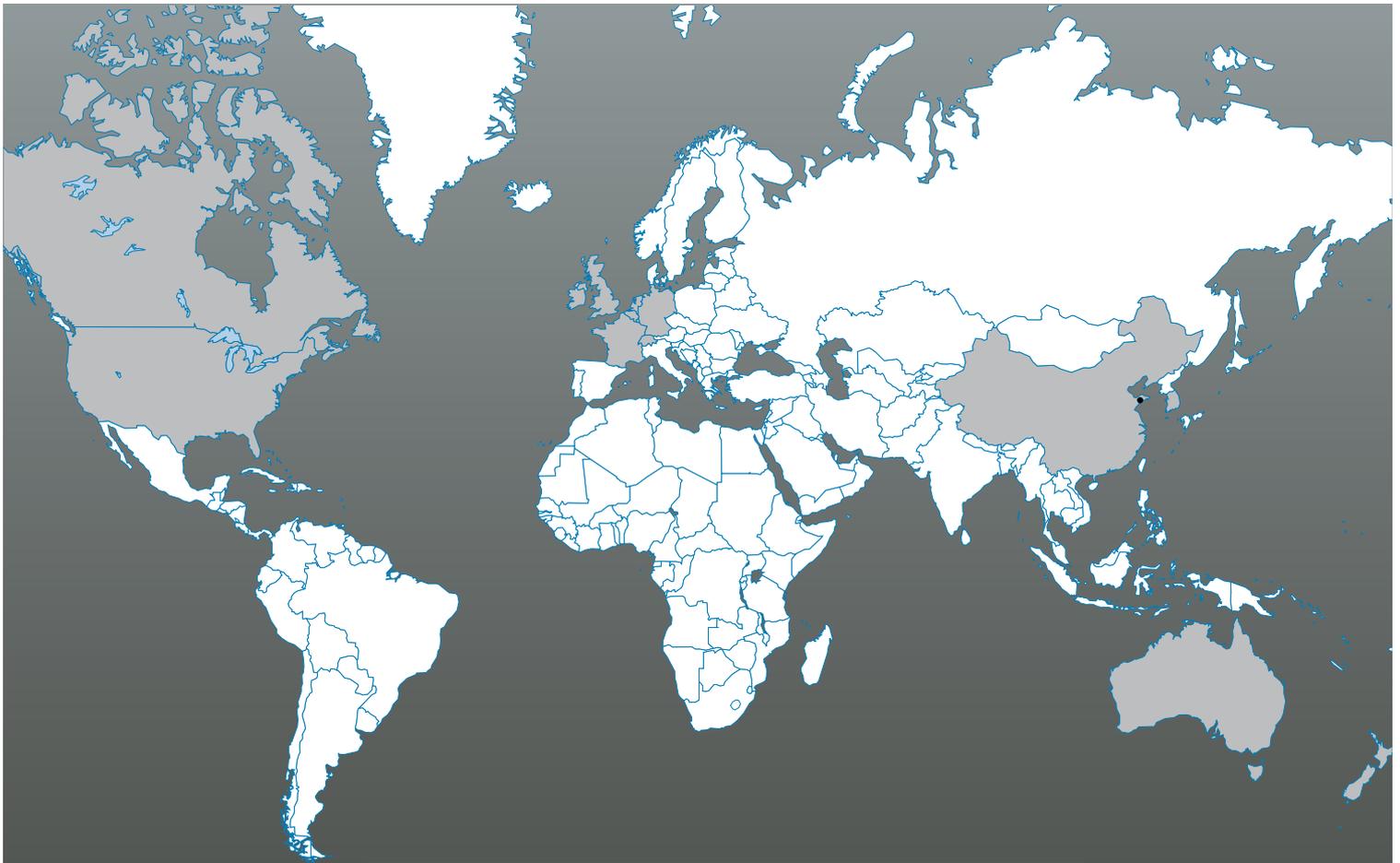
No plastic grid system that we know of is capable of withstanding the immense pressure created by the screwing action of the power steering on a HGV at a very low speed. Sustained use over a prolonged period will adversely affect the plastic grid.

### Can tracked vehicles be used on COREgravel®?

No plastic grid system that we know of is capable of withstanding the motion created by tracked vehicles when they turn sharply (the tracks can catch the grids whilst turning and lift the units). However if this action is avoided tracked vehicles can pass over the system with no ill effect.

### Is COREgravel® suitable for frequent, heavy use?

YES. For frequent, heavy use we recommend COREgravel® 50/35 HD (Heavy Duty).



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**SYSTEMS**

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