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PLASTICS

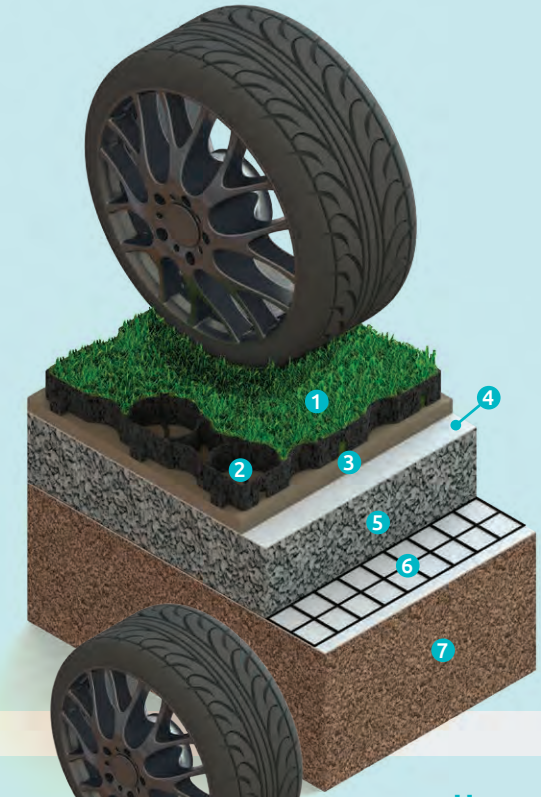
INSTALLATION GUIDE

HANPAVE®

THE IDEAL SOLUTION FOR PARKING LOTS, DRIVEWAYS AND HEAVY PEDESTRIAN AREAS

TYPICAL INSTALLATION EXAMPLES

Hanpave infiltration with grass



1. **Seeded or turf finish**
2. **Hanpave**
   Good quality 60:40 root-zone
   (allow 8½ ft^3 of topsoil per 100 ft^2).
3. **Sharp sand**
   Compacted to 1¼" depth with topsoil (2:1) bedding.
4. **Geotextile filtration layer**
   Non-woven needle-punched
5. **Free-draining sub-base**
   Typically min. 4" of compacted free-draining engineered base. N.B. standard engineered bases are normally **not** suitable for infiltration LID schemes.
6. **Geotextile separation layer**
   Non-woven needle-punched c/w optional geogrid.
7. **Sub soil**
   Typically min. CBR 5%. For weaker sub-soil use a geogrid at the base of the sub-base.



Hanpave infiltration with gravel

Filled with ⅜" angular gravel – not rounded or river washed (allow 8½ ft^3 per 100ft^2). Grit can be used as an alternative bedding to compacted sharp sand.

Hanpave attenuation with gravel

Install a sealed geomembrane layer between the geotextile and the subgrade to prevent infiltration. Water should be directed to a suitable outlet.

More example installations and specifications can be downloaded from **www.hanit.ca**.

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100% recycled
100% recyclable

OVERVIEW

Material	**100% recycled polyolefins**
Nominal size	**13" x 13" x 1⅝"**
Unit weight	**1.26 lbs** (11.3 lbs per 3' 3" x 3' 3" panel)
Coverage	**1.18 ft² per unit**
Compressive strength *max. load/unit	**360 psi** (empty), **60,840 lbs*** **580 psi** (topsoil), **98,020 lbs*** **810 psi** (gravel), **136,900 lbs***
Connection type	**Integral T connector and slots**
Color	**Black or green**
Parking markers	**White circular inserts**

Surface finish	**Gravel or grass**
Infiltration rate	**196" /hr for gravel**
Pallet size	**40" x 40" x 91"** (54 layers of 9 units)
Pallet details	**486 units, 660 lbs** (30 pallets/load)
Compliant with	USA: **Americans with Disabilities Act** Canada: **Charter of Rights and Freedoms & The Canadian Human Rights Act.**

TRIED & TESTED

Some porous paving systems quote maximum load capacities of 250 or 375 psi (36,000/54,000 lbs) but this is only half the story. To withstand repeated vehicle use, a paving system needs strength and flexibility. Strength without flexibility leads to cracks, breakages and ultimately product failure.

Hanpave has been tested according to European DIN EN 124 to maximum capacity and achieves 360–810 psi (60,840–136,900 lbs) depending on the fill material.

Hanpave has also been tested to tough European Copro PTV 828 standards that were specially developed for paving grids. Here are some of the things that PTV 828 test for:



» Strength and flexibility

This is done according to European DIN EN 124 and strength is measured at 15% deformation. Grids must be strong enough to bear a direct load of at least 148 psi for general use and fire trucks when applied through a 10" loading plate. For heavy duty use, this increases to a minimum of 221 psi. The flexibility of the system under load requires a minimum deformation of 2% when measured at 118 psi.

✓ **Hanpave surpassed these values.**

» Strength of the interlocking system

Vehicle movement is not a static force. Cars and trucks apply considerable pressure, particularly when using power steering. The interlocking system must be strong enough to withstand this pressure and the PTV 828 standard specifies a minimum strength of 205 lbs/ft length to ensure a secure connection.

✓ **Hanpave surpassed these values.**

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INSTALLATION INSTRUCTIONS

The engineered porous base should be prepared, installed and compacted according to American Association of State Highway and Transportation Officials (AASHTO) standards.

Before laying **Hanpave**, install an edge restraint that can withstand vehicle overrun and prevent bedding migration.

Install and compact a free-draining engineered granular base (depth according to traffic loading). Cover the base with a non-woven needle-punched geotextile layer (with 6" overlaps) to prevent the bedding course migrating into the sub-base. Install, compact and level a 1¼" sharp sand (or grit) bedding layer.

LAYING HANPAVE™

Starting from a straight edge, lay **Hanpave** onto the bedding layer with the T connectors facing outwards. The paved area can then be extended by simply clicking further grids into place. **Hanpave** comes pre-assembled in 9 unit sections that can be lifted off the pallet, laid on the bedding layer and clicked together. Large areas can be laid quickly and easily this way. N.B. Always stand on the installed grids when laying the next row.

Laying rates: Hanpave comes pre-assembled in 3 x 3 units (10¾ ft^2) for quick and easy installation. With a three-person team, up to 3,000–4,000 ft^2 can be laid in a day.

Expansion gaps and cuts

Allow a 1" gap (filled with gravel or topsoil) between **Hanpave** and a curb or hard edge. **Hanpave** can absorb up to 1/16" of movement per grid so further expansion joints throughout the paved area are not needed.

Hanpave grids can be cut to fit around obstacles. Make cuts before installation and leave full, complete cells along the outer edge. Avoid cutting grids to less than half size.

Installation on slopes

Hanpave can be installed on slopes of up to 15° without additional staking. For steeper slopes, drive a 12" ground stake into the center of the grid and hook over the base reinforcement at 3' centers.

Parking markers

Hanpave parking markers can create parking spaces and bays. N.B. insert markers into the grids before filling.

SURFACE FINISH

Gravel

Fill **Hanpave** to the top with 1/16–¼" angular gravel (crushed rock). This allows the gravel to compact within the cells. Rounded or river washed gravel will not compact.

Top up the gravel once the filling has settled. A light vibrating plate can be used to settle the gravel to the top of the cells but be careful not to overfill. After installation, top up the gravel (if required) as part of normal maintenance.

Allow 8.5 ft^3 of gravel per 100 ft^2.

Grass

The non-woven needle-punched geotextile layer below the bedding layer lets rainwater drain through naturally but suppresses weed growth.

For the bedding layer, mix one part good quality root-zone to two parts sharp sand. Fill **Hanpave** with a high quality free-draining sandy loam (60:40 root-zone) and scrape off any excess (typically 1 ton = 150 ft^2 of **Hanpave**). Do not use 'as dug' material.

Before seeding, allow a week for the topsoil to settle naturally or use a light vibrating plate. This should create a ¼" space between the soil and top of the cell that protects a newly seeded area from vehicle use.

Allow 8½ ft^3 of topsoil per 100 ft^2.

Seeding: Apply a suitable grass seed mix (approx. 1 oz/yd^2) with a light fertilizer top dressing. Water the area regularly for six weeks before vehicle use. See the next page for grass seed mixes.

Turfing: For an 'instant' grass finish for **Hanpave**, allow the topsoil to settle and top up with additional root-zone and a quality fertilizer. Be sure to choose a wear-resistant turf and install to the supplier's recommendations. Water the area regularly for three weeks before vehicle use.

Note: A 10–15 mph (15–25 kph) speed limit and/or traffic calming can minimize heavy braking and abuse of the area.

Subgrade strength

Consistency	Indicator			Strength	
	Feel to touch	Visual	Mechanical	CBR%	*CU (kN/m²)
Very soft	Hand sample squeezes through fingers	Man standing will sink >3"	<2	<1	<25 (3.6psi)
Soft	Easily molded by finger pressure	Man walking sinks 2–3"	2–4	Around 1	Around 25 (3.6psi)
Medium	Molded by moderate finger pressure	Man walking sinks 1"	4–8	1–2	25–40 (3.6–6psi)
Firm	Molded by strong finger pressure	Utility truck ruts 0.4–1"	8–15	2–4	40–75 (6–11psi)
Stiff	Can't be molded, indented by thumb	1" ruts: loaded construction vehicle	15–30	4–6	75–100 (11–15psi)

*CU refers to undrained shear strength and is expressed in kN/m² (psi). Information in this document is a given as a guide only. HAHN accepts no responsibility for loss or damage resulting from the use of this guide.

Sub-base depths

Typical use	CBR (%) of subgrade	Free-draining base depth		Use of geogrid
		inc. geogrid	exc. geogrid	
• Domestic parking areas • Pedestrian access • Wheelchair access • Trails • Cycle routes • Golf cart paths	Not normally measured	4"	4"	n/a
• General and mall parking • RV parks • Car showrooms • Stables • Helicopter pads • Airport parking • Sports centers	>6	4"	4"	n/a
	4–6	6"	9"	30/30
	2–4	9"	13"	30/30
	1–2	10"	15"	30/30
• Fire routes • Occasional trucks • Emergency vehicle access	>6	6"	6"	n/a
	4–6	7"	10"	30/30
	2–4	11"	16"	30/30
	1–2	19"	28"	30/30
• Shoulder reinforcement (residential roads) N.B. For shoulder reinforcement next to major routes subject to regular trucks – use HAHN HDGG (Heavy Duty Ground Grid)	>6	6"	6"	n/a
	4–6	8"	12"	n/a
	2–4	12"	18"	30/30
	1–2	18"	25"	30/30

Note: If no geogrid is used the sub-base thickness above should be increased by 50%.

Typical grass seed mixes (local variants of specific traffic tolerant grass seeds should be considered)

General parking
- 50% Perennial ryegrass
- 20% Slender creeping red fescue
- 25% Strong creeping red fescue
- 5% Browntop bentgrass

Accessways
- 30% Hard fescue
- 20% Chewings fescue
- 20% Slender creeping red fescue
- 25% Strong creeping red fescue
- 5% Browntop bentgrass

Shoulders/medians
- 35% Smooth stalked meadow grass
- 30% Slender creeping red fescue
- 25% Perennial ryegrass
- 10% Browntop bentgrass

Courtesy of www.pavingexpert.com

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