INSTALLATION GUIDELINES FOR PAVEMENT OVERLAYS USING TENCATE PETROMAT® MPM PAVING MATS

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Ordering of *Petromat® MPM Paving Mats*

- Review the plans in conjunction with the staging of the paving to determine what lanes are to be covered. This will help define what width of product will be required for the project.
- The standard roll widths are 10 feet and 12.5 feet suitable for most lane widths. However, it might be necessary to order half roll widths, non-standard widths, or to order full size rolls and cut them to fit. There is a longer lead time for non-standard widths, and a slitting charge.
- When ordering rolls, always consider the required or minimum overlap widths, and also keep overlap widths to less than 18 inches to minimize overlap and asphalt binder waste.
- Allow for 5% overlap waste when ordering the quantity of material ordered for a project. If there are many curves on a project, the waste could be higher.
- A reciprocating blade should be used to cut rolls. A circular saw is not recommended.

Storage of the *Petromat® MPM Paving Mats*

- Although the rolls are typically wrapped with plastic, the ends of the rolls, including the cores, are exposed. Therefore, during transportation on any open vehicle, or if stored on site, the material should be completely covered with a tarp.
- The covered rolls must also be kept off the ground, on 4x4 or 6x6 timber beams, or other materials.
- Rolls that are saturated, and/or have wet cores should be transported or moved with a steel core inserted in the core, otherwise the core could break, and the roll will have to be discarded.
- Saturated material, or material that has mold should not be installed.

Surface Preparation

- Power broom and then power blow, or sweep and power blow, or vacuum the pavement before installing Petromat® *MPM Paving Mats*. The pavement surface should be dry, free of dirt, oil and loose stones prior to installation. Additional effort may be necessary on a milled surface to ensure it is free of clean milled of dirt and debris.
- If no new leveling course is installed prior to the interlayer, fill all cracks ¼" (6 mm) or greater with an approved crack fill or seal material.
- If the milling operation exposes the aggregate base, then these areas should be patched with asphalt prior too installing the Petromat® *MPM Paving Mats*. If large areas of aggregate are exposed, then it is recommended that the aggregate be scarified, primed and re-compacted prior to installing the Petromat® *MPM*

Paving Mats (a levelling course can also be installed over these areas).

- If the existing pavement surface exhibits extensive faulting at joints or cracks, a thin leveling course should be placed prior to placing the fabric. If a leveling course is used, crack sealing is not necessary.
- Repair structurally failed pavement areas prior to installing Petromat® *MPM Paving Mats.*
- Surface must be dry prior to the asphalt binder placement. (Delamination between the asphalt binder and existing surface may occur if installed over wet or damp surface conditions).

Asphalt Binder Installation

- **Always** use neat (PG asphalt binder) or polymerized asphalt cement. Emulsions or cutbacks are not recommended.
- The asphalt binder should provide uniform coverage. If gaps are visible, then the nozzles should be cleaned before continuing.
- Asphalt binder temperature in the truck should be between 300 and 350°F (149-177°C).
- PG64-22 (AC-20), PG70-XX (AC-30), or PG76-XX (AC-40), AR8000, 20-40 penetration, or 60-80 penetration grade or polymerized PG70 graded asphalts should be used. For high ambient installation temperatures, higher viscosity asphalt binders should be used. These include, but are not limited to; AC-30, AR8000, 40-60 penetration grade or polymerized PG70-XX graded asphalt. (See Asphalt Cement Table 1 for recommended grades to be used when installing Petromat® *MPM Paving Mats*)
- PG70-XX (AC-30) asphalt should be used when ambient temperatures are expected to exceed 90°F.
- Asphalt binder application rates are based on the specific Petromat® *MPM Paving Mat* used. Table 2 provides the recommended optimum rate of asphalt binder to be used based on material type and surface conditions. Adjusting the asphalt binder application rate may be made based on existing surface conditions.
- The width of the asphalt binder shall be sprayed sufficiently to include the mat width, plus a minimum of 4” (100 mm) longitudinally and transversely on the overlap side(s).
- The asphalt binder should be installed in short (approximately 20 to 50 feet) straight runs to fit curves. It is not recommended that the distributor apply the asphalt binder following the curved radius.

Petromat® *MPM Paving Mats* Installation

- Petromat® *MPM Paving Mats* must be installed with the grid-side facing down into the underlying asphalt binder.
- Any wrinkle(s) that occur during installation 1” (25 mm) and larger, shall be slit and lapped in the direction

of paving and pressed down into the asphalt binder. The wrinkle(s) should be addressed before proceeding with the installation of the next roll.

- To install on curves, it is necessary to place shortened lengths of Petromat® *MPM Paving Mat*. The distributor operator should also be applying shorter straight pulls of asphalt binder to fit the curve.
- To alleviate the pickup of fabric by vehicle tires caused by the exposure to high ambient temperatures or overspray of asphalt binder causing bleed-through, clean blotting sand or HMAC may be spread over the affected area. Excess blotting sand shall be removed prior to paving.
- Should asphalt trucks be forced to wait on the installed Petromat® *MPM Paving Mat* for extended periods, then sanding should be performed uniformly over the fabric ahead of the paver. Sand can be distributed using a salt spreader or similar equipment. The sand should not completely conceal the Petromat® *MPM Paving Mat*, and an application rate of 3lb/SY should be sufficient. When the temperatures exceed 90°F, then sanding might be required more than once.
- Regular traffic should NOT be allowed on the installed fabric. If emergency traffic needs to cross the installed Petromat® *MPM Paving Mat*, then the exposed asphalt binder should be covered with blotting sand or HMAC before traffic can cross.
- Petromat® *MPM Paving Mats* can be installed using a tractor, truck-mounted frame or by hand. Brooms should be used to seat the Petromat® *MPM Paving Mat* into the asphalt binder and remove air bubbles.
- Pneumatic Tire Rollers should be used to "seat" the Petromat® *MPM Paving Mats* in cooler or windy weather or where there is pending rain. Furthermore, in windy or cool conditions it would be recommended that the asphalt binder be applied in shorter sections to help ensure that the asphalt binder remains soft enough to promote the proper adhesion with the Petromat® *MPM Paving Mat*.
- Typical Paving Mat overlaps may range from a minimum of 1” to 4” (25 to 100 mm). Transverse overlaps should run in the direction of the paving operation, and all overlaps bonded together.
- Care must be taken when handling Petromat® *MPM Paving Mat*. Do not drop or bend rolls as this may damage the core and material.
- Hand cutting of the roll is recommended where necessary.

Asphalt Paving on the Installed Petromat® *MPM Paving Mat*

- The Petromat® *MPM Paving Mat* must be clean and dry prior to the asphalt overlay installation, otherwise delamination may occur between the fabric and new overlay.
- The recommended minimum compacted hot mix asphalt overlay thickness for Petromat® *MPM Paving Mats* is 1.5” (40 mm).
- During, or prior to paving, do not allow asphalt delivery vehicles to park on Petromat® *MPM Paving Mats* for extended periods of time. This could cause damage to the fabric and cause bleed through of the asphalt binder caused by tire and motor temperatures.
- Turning of the paving equipment, trucks or other vehicles on Petromat® *MPM Paving Mats* should be avoided or kept to a minimum to avoid damage to the fabric. If the paving equipment is required to do sharp turns on the paving interlayer, a thin light application of asphalt mix should be spread on the Petromat® *MPM Paving Mat* and turning should be slow and gradual to avoid damage.
- Asphalt compaction should proceed as per convention.

Key Factors to Ensure a Successful Installation

- The asphalt binder should be continuous across the width and length of the pavement. The nozzles are likely to clog during the asphalt binder application, and the filters on the asphalt distributor could reduce the actual asphalt binder application rate.
- Ensure the asphalt binder application width is at least 4” (100 mm) wider than the product width. This also applies to overlaps.
- If the Petromat® *MPM Paving Mat* is still moving under foot prior to paving, then the incorrect asphalt binder type has been selected for the installation. Consider a stiffer PG grade binder type. Sanding using a minimum of 3lb/SY will be helpful in minimizing the negative impacts of the incorrect binder type, but on steep vertical grades, and/or where a shuttle buggy is being used, and/or on super-elevations, this may not be sufficient, and a stiffer binder should be used.
- If the Petromat® *MPM Paving Mat* does not adhere to the asphalt binder and wants to blow away, or moves excessively under construction vehicle traffic, make sure the fabric lay down machine follows closely behind the asphalt binder distributor. Secondly, consider reducing the length of sections that are being sprayed and check to see if that resolves the issue. Thirdly, if the problem is still not resolved, then check to see if the asphalt binder is pulling up off the existing asphalt surface, as it might not be clean enough.

Table 1: Recommended Asphalt Binder Types for Petromat® *MPM Paving Mats*

	Penetration Grade				AC Grades	AR Grades	PG Grades	Polymer Modified
	40				AC 40	AR 16000		
Asphalts or Petromat® MPM-E	50						PG 70- 22	SBSPG 76-22
		60			AC 20	AR 8000	PG 67- 22	SBSPG 70-22
							PG 64-22	
		70	85		AC10	AR 4000	PG 58-10	
			100				PG 58-28	
				120	AC 5	AR 2000		HPSPG76-10
				150			PG 52-28	
				200	AC 2.5	AR 1000		
				300				

Table 1 serves as a guide for liquid asphalt binders to be used when installing Petromat® *MPM-E Paving Mats* and is not intended to be an exact comparison of liquid asphalt rate, specific properties of individual grades for use in specific applications. The region of the country and ambient temperatures at the project can influence asphalt binder preference and selection.

The amount (gallons/square yard [liters/square meter]) of asphalt binder placed should be sufficient to:

1) Bond the fabric to the old pavement (or leveling course).
2) Saturate the fabric.
3) Provide enough residual to bond the new overlay to the fabric.

Too light of an application of asphalt binder could preclude any of the above. Too heavy a asphalt binder could result in slippage problems at higher temperatures. Therefore, it is very important that the proper amount of, and temperature appropriate, asphalt binder be applied. The condition of the existing pavement, and likely paving ambient temperatures are the determining factors for the proper application rate.

Table 2: Recommended Asphalt Application Rates

Recommended Asphalt Application Rates	**MPM-30**	**MPM-50E**
Normal Application Rates (<90°F, new asphalt, uncracked surface)		
Gallons/Square Yard	0.13	0.18
Liters/Square Meter	0.59	0.81
Normal Application Rates (>90°F, new asphalt, uncracked surface)		
Gallons/Square Yard	0.11	0.16
Liters/Square Meter	0.50	0.72
Heavy Application Rates (<90°F ambient, milled, heavily oxidized, badly cracked)		
Gallons/Square Yard	0.14	0.19
Liters/Square Meter	0.63	0.86
Heavy Application Rates (>90°F ambient, milled, heavily oxidized, badly cracked)		
Gallons/Square Yard	0.13	0.18
Liters/Square Meter	0.59	0.81

Application rates should be adjusted based on pavement conditions, (milled, irregular or porous and oxidized surfaces and cracked-distressed) pavement conditions.