

Transportation Safety Division

Overlay Application Procedure

3M™ Stamark™ Pavement Marking Tapes

Information Folder Overlay Application System

September 2021



1 General Explanation

This application manual is designed to assist customers and contractors at applying 3M™ Stamark™ Pavement Marking Tapes and therefore receive best durability and performance. Further it describes the requirements for the applications and procedures, which have to be followed. If a situation is not covered in that folder it is the responsibility of the customer working with the 3M tapes to contact the 3M Sales or technical representative for further guidance. The application of Stamark™ pavement marking tapes as overlay in combination with 3M pavement marking equipment yields in a durable or temporary marking, which can be released for the traffic immediately after its installation.

Fundamental of Overlay application:

- The Overlay Application method can be used for **temporary** marking tape like 3M™ Stamark™ A721 Series for concrete, asphalt-concrete, grit-mastic-asphalt as well as drain and open-pore-asphalt.
- The Overlay Application method can be used for **permanent** marking tape like 3M™ Stamark™ A380 Series **only** for concrete and drain and open-pore-asphalt (OPA). Those asphalts should have a low amount of crushed stones on the surface. The concept is not to be used for melted asphalt and liquid repair asphalt for permanent tape.
- Rough surface structures on non-fresh asphalt roads may cause adhesion issues especially in climatic regions with high temperature differences throughout the year, like in the region of the Alp Mountains. In case of applying permanent Tape, the BitumenPlus or AsphaltPlus Application Method is recommended.
- Applying on surfaces on which any kind of impregnation has been applied must be avoided for tape application.

Applications criteria for 3M™ Stamark™ A380 Series

30.04.2020

Road surface	Applic. System	Restriction
Concrete	3M Primer P50	no restrictions
Exposed aggregate concrete	3M Primer P50	no restrictions
Open pore asphalt (OPA) - cold	3M Primer P50 or BitumenPlus	no restrictions
Concrete, exposed aggregate concrete micro milled	3M Primer P50	no restrictions up to 3mm line spacing(LA)
Concrete, exposed aggregate concrete coarsely milled	Bit.Plus with DS01E inkl. Colzumix S	no restrictions
Asphalt surface or liquid repair asphalt	Bitumen Plus (without P50 Primer)	no restrictions
Liquide asphalt	Bitumen Plus (without P50 Primer)	no restrictions
Splittmastix - cold/old	Bitumen Plus (without P50 Primer)	no restrictions
OPA - hot	Asphalt Plus (without P50 Primer)	no restrictions
Splittmastix - hot	Asphalt Plus (without P50 Primer)	no restrictions

Applications on old markings are excluded from the warranty.

Recommendation for demarking foils or old markings:

for all road surfaces, remove using a fine milling machine or a high-pressure water milling machine.
In exceptional cases or in case of uncertainty, please contact our technical service.

2 Series of operations

The application consists of 7 steps:

- **Decision if the weather conditions allow 3M tapes application**

The application of Stamark™ tapes requires the following minimum weather conditions:

For all rubber based Tapes, Air and Road surface temperature need to be +10°C and above. The relative air humidity has to be lower than 80% and 48 hours no rain before application (for temporary products 24 hours no rain).

These application conditions are valid for all Stamark™ pavement marking tapes unless the Product Bulletin refers to other conditions. If one of the above-mentioned criteria is not fulfilled the application has a high risk of failure and should be postponed until weather conditions are within the limits. Ignoring these recommendations might result in rejection of any warranty claim. In case the applicator expects hidden humidity in the road surface, the use of the moisture bag test is recommended: A dark piece of PE-foil is taped to the road surface using a duct tape or pavement marking tape. The tape should seal all edges and not allow any air movement under the sheet. (See Figure 1) Wait 20 to 25 minutes while the sheet is exposed to direct sunlight. Remove the sheet from the road surface. If no moisture is present on the backside of the sheet or on the road surface 3M™ Stamark™ Tape can be applied.

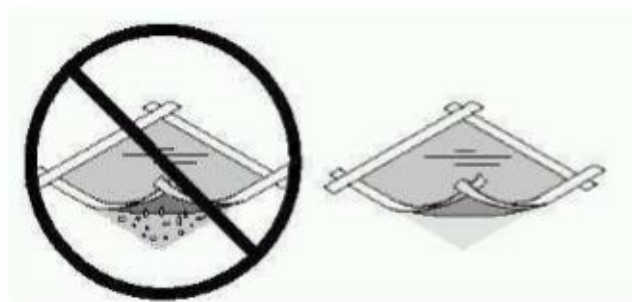


Figure 1: Moisture Bag Test

If moisture is present allow another hour to pass and repeat the test until no moisture is found. Experience has shown that if moisture is present in the pavement the tape will not adhere to the surface.

- **Decision if the road surface is suitable for the 3M Tape**

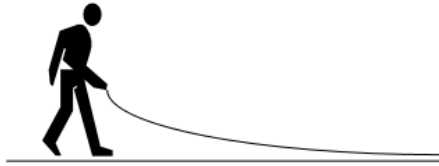
Check mechanical stability of road surface. Remove curing compounds of new concrete surfaces by water-jet or sand blasting before application of the tape. Remove existing marking by means of the above-mentioned methods. Test the adhesion before applying the tape.

- **Surface preparation**

The road surface must be free of oil, grease, gasoline, dust, dirt and other substances that could influence the adhesion of the tape negatively. Cleaning the road, by sweeping or high-pressure air will remove loose particles from the pavement that would decrease the adhesion.

- **Pre-marking**

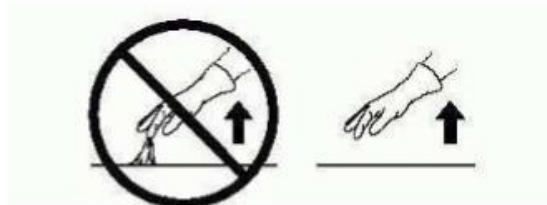
The pre-marking process is performed like for any other pavement markings. Apply the pre-marking in a position that is later not covered by the tape in order to prevent any influence on adhesion.



- **Priming**

Prior to Tape application 3M™ Stamark™ Surface Preparation Adhesive P50 shall be applied to the clean, dry road surface.

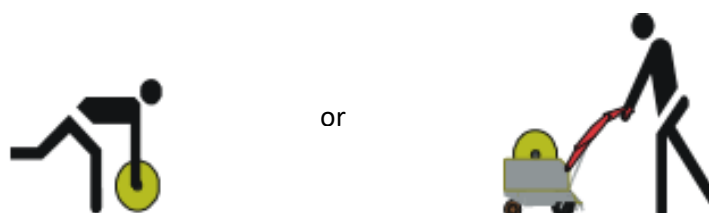
The primer should be applied using a 3M primer spray cart PS-98. Small applications can be done with a small roller. The primer should be applied in a thin, uniform layer. The estimated usage stays typically in the range of 0,2-0,35L/m² (meaning with the primer width of 19cm, suitable for a 15cm wide tape, around 350 running meters may be applied with a single 20L can of primer), however the real usage will strongly depend on the weather conditions like temperature, application speed and viscosity of the primer. Before applying the tape the primer needs to be completely dry. The drying time strongly depends on the road surface structure and material, as well as on the current weather conditions. Typical drying time in summer condition is around 1-5 minutes. If tape wider than 15cm is to be applied, multiple passes with the primer spray cart are necessary. **Note:** When making multiple passes be sure to overlap the Primer layer and allow additional drying time for the overlap area. **Note:** The use of Stamark P50 on any kind of repair asphalt or cold laid asphalt is **not** recommended. Always test the compatibility of the Primer to the road surface. To test the state of the primer layer, use the fingertip test as displayed below: (Wear appropriate protection!)



The primer is dry and ready for the tape application, when it does not lift and string anymore when touched with the fingertip, but still feels a little tacky. It is very important that the primer is completely dry to ensure proper adhesion and prevent the tape from sliding after the application.

- **Tape application**

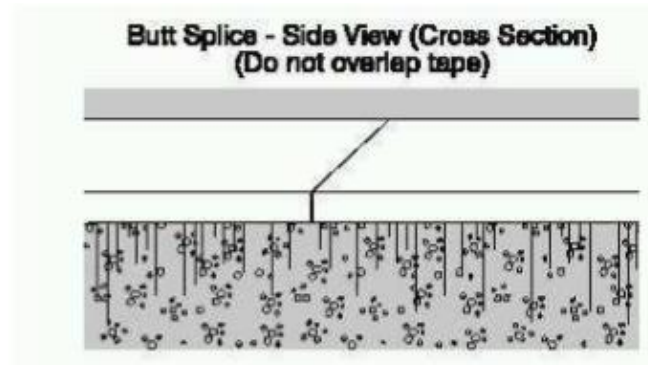
The tape should be applied using 3M™ application equipment. Available equipment are the manual tape applicators MTA-2 or the motorized tape applicator RPM. Alternatively, the tape can be applied by hand. When applying pavement marking tape by hand, be careful not to allow the adhesive to touch the road surface until the tape is applied in the proper position.



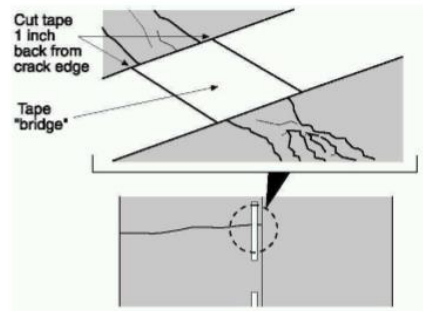
Nevertheless, all longline applications should be done by using the suitable application equipment in order to achieve best results and productivity.

Note: Avoid stretching the tape!

It is important not to overlap the tape: Use Butt Splices:



If there is a crack in the pavement or if the tape is applied over a bridge expansion joint, then cut the tape 2,5 cm (1inch) away from the crack or joint on each side.



Note: Avoid application closer than 10 cm to the longitudinal asphalt seam.

- **Tamping the tape**

Hand-applied tape needs to be pre-tamped with a RTC-3 tamper. Regular tamping must be done with the RTC-3 tamper with a load of 90kg. Tamp the tape by rolling slowly over it. Tamp always in the same direction the tape has been applied and make sure the edges are well adhered.



Do not twist or turn the tamping device on the tape. In total 3 passes are required.

If applying block markings or pedestrian crossings, start in the centre of the marking, then work towards the edges to remove trapped air. **Note:** Tamping the tape by means of truck tires is not sufficient and can cause adhesion failures. After tamping the tape application is finished and the road can be opened for traffic.

3 Application protocol / Tools

The application protocol is essential in case of any warranty claim. Without it, no claim will be accepted. An application protocol for each application has to be filled in and signed by the applicator. Further it is used for the documentation of the application conditions and correct application. The Lot numbers of each roll from the core or the packaging have to be documented as well. The applicator has to send the protocol to the authorities and a copy to the 3M subsidiary within 14 days. Since the documentation requirements might vary from country to country, please refer to your local 3M sales organization for further information. Important for the Overlay Application is the measurement of the surface temperature. Infrared Thermometers are recommended for the usage, like the 3M™ infrared-thermometer IR 750 Non Contact or comparable equipment. Further all the weather conditions need to be measured with the appropriate equipment.

4 Summary



5.1 Health and Safety Information

Read all health hazard, precautionary and first aid statements found in the Material Safety Data Sheet (MSDS), and/or product label of chemicals prior to handling or use.

5.2 Disclaimer

THE 3M WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING OR OF PERFORMANCE, CUSTOM OR USAGE OF TRADE.

5.3 Limitation of Liability

Except for the limited remedy stated above, and except where prohibited by law, 3M will not be liable for any loss or damage arising from the Signs or any 3M product, whether direct, indirect, special, incidental or consequential damages (including but not limited to lost profits, business or revenue in any way), regardless of the legal theory asserted including warranty, contract, negligence or strict liability.

6 Other Product Information

Always confirm that you have the most current version of the applicable product bulletin, information folder or other product information from 3M's Website at <http://www.mmm.com/tss>.

7 Guarantee /Liability

3M assumes no responsibility for any injury, loss or damage arising out of the use of a product that is not of our manufacture. Where reference is made in literature to a commercially available product, made by another manufacturer, it shall be the user's responsibility to ascertain the precautionary measures for its use outlined by the manufacturer. Prerequisite for the guarantee is that the tape was processed according the instruction of this technical information folder.

8 Literature References

For additional information on 3M™ Stamark™ Tapes, Application Instructions or 3M™ Application Equipment, refer to the following publications:

IF AP	Information Folder Inlay / AsphaltPlus Application
IF BPlus	Information Folder BitumenPlus Application
IF P50	Information Folder Surface Preparation Adhesive 3M™ Stamark™ P50
IF PS-98	Information Folder Adhesive Spray Applicator PS-98
IF MTA2	Information Folder Manual Tape Applicator MTA-II
IF RTC-3	Information Folder Tamper Cart RTC-3
PB A380	Product Bulletin 3M™ Stamark™ A380 ESD

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Reliant for these product-information:

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