Using 3M™ Stamark™ Surface Preparation Adhesive P-50 with 3M™ Stamark™ Pavement Marking Tapes

Information Folder 5.17
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Overview

3M™ Stamark™ Surface Preparation Adhesive P-50 (“P-50”) is a sprayable liquid adhesive that can be used for outdoor pavement marking tape applications to enhance the adhesion of Stamark pavement marking tapes, especially in marginal or difficult application conditions.

Usage

- Intended for industrial or professional outdoor use only.
- Extremely flammable. Always follow proper handling and storage precautions. Refer to the product’s safety data sheet for details.
- Open containers slowly and carefully and away from the face to vent any internal pressure.
- Do NOT use outdated material. Dispose of outdated material according to local regulations.
- If using a Century Tool Inc. Adhesive Spray Applicator PS-14, installers must carefully and fully flush the PS-14 at the conclusion of shifts due to P-50’s rapid drying characteristics. In process cleaning may also be required. Failure to properly clean the PS-14 will result in permanent damage to the pump.

Application Considerations

Equipment

P-50 can be applied with the Century Tool Inc. Adhesive Spray Applicator PS-14 (“PS-14”), a paint cart, or a paint tool. Installers using a PS-14 applicator should use an 8004E spray tip to achieve the recommended wet thickness.

⚠ CAUTION

P-50 is extremely flammable. It is the user's responsibility to ensure the spray method employed meets all appropriate environmental, health, and safety regulations and requirements.

Use only airless spraying equipment. Air atomization spraying results in airborne drying and reduced wetting to the pavement surface, resulting in poor adhesion to the pavement.

Equipment Maintenance

Installers must carefully and fully flush their application equipment at the conclusion of shifts due to SPA60’s rapid drying characteristics. In process cleaning may also be required. Failure to properly clean application equipment may result in SPA60 drying inside the equipment, resulting in flow restrictions, poor spray pattern quality, and possible other equipment damage.

3M recommends using a cleaning solvent such as methyl acetate, acetone, or methyl ethyl ketone for this cleaning.

NOTE

Do NOT use gasoline or similar materials to clean equipment, as it can cause P-50 to gel and cause solids to precipitate from solution and create plugging and blockages.

Cleaning Spray Tips

Clean the spray tip often, especially whenever a non-uniform spray pattern is observed. If cleaning the spray tip does not improve the spray pattern, next try solvent flushing the applicator lines and pump. Follow the cleaning steps below in order until the spray tip is back in working order. Alternatively, a dirty spray tip can be quickly replaced with a clean spray tip.

1. Clean the exterior of the spray tip by spraying the tip with a solvent or wiping the tip with a solvent soaked cloth and then wiping or brushing the softened adhesive residue from the tip. Commercially available carburetor cleaner sprays usually work well for flushing or softening residue.
2. Clean the spray tip orifice by carefully inserting and removing a fine wire into the orifice. Be careful when doing this, as the wire can damage the orifice and affect the spray pattern.
3. Remove the tip and soak it for several hours in a cleaning solvent such as carburetor cleaner, methyl acetate, acetone, or methyl ethyl ketone. After soaking, brush and wipe the adhesive residue from the tip exterior and clean the tip orifice by blowing compressed air through it or by inserting and removing a fine wire.

Applied Wet Thickness

Apply P-50 at a wet thickness of 6 to 7 mils (0.15 to 0.18 mm). The adhesive should extend at least 1 in. (2.5 cm) beyond both edges of the intended tape location to allow for ease of straight tape application over the adhesive. Do not apply tape over uncoated pavement.

NOTE

P-50 will cover approximately 450 lineal feet per gallon when applied at a 6 in. (15.2 cm) wide pattern for application of 4 in. (10.2 cm) wide tape.

NOTE

Installers using a PS-14 applicator and applying tape wider than 4 in. (10.2 cm) will need to spray multiple passes, overlapping the passes by 1 to 2 in. (2.5 to 5.1 cm). Allow additional time for overlapped areas to dry. Refer to 3M Information Folder 5.7 for additional information.

Application Conditions

- P-50 can be applied at temperatures of 40°F (4.4°C) and rising. Dry times increase at lower temperatures and higher humidity levels.
- Road surfaces must be properly cleaned and prepared prior to applying P-50. See 3M Information Folder 5.7, 3M Information Folder 5.18, and/or 3M Information Folder 3.2 for details.
- Asphalt surfaces must be at least three days old before P-50 can be applied to them, as the solvents in P-50 can weaken fresh asphalt pavement surfaces.
- Keep vehicles and equipment off of pavement surfaces coated with a surface preparation adhesive prior to tape application.

Adhesive Preparation

Stir and thoroughly mix the P-50 with a wide wooden paint paddle or an air driven paint mixer, or roll the unopened container back and forth several times until the adhesive is thoroughly mixed. Any sediment on the bottom of the container should be completely stirred into a consistent solution.

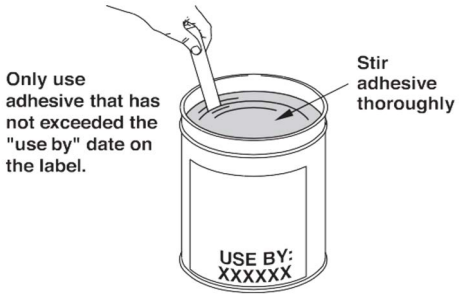


Figure 1. Stirring the Adhesive

Application Procedures

P-50 must coat the pavement surface as a wet liquid and then dry. If P-50 dries in the air (airborne drying) and then contacts the pavement it will NOT form the required bond to the pavement. Properly applied and dried P-50 will appear clear or translucent on the pavement surface. Improperly applied P-50 will have a foamy, frothy, stringy, opaque, or white appearance on the pavement surface. (See Figures 2 through 4.)

Hot, windy, and/or low humidity conditions are likely to cause airborne drying. Smaller spray tips may also cause airborne drying.

Observe the spray fan regularly throughout the day to guard against airborne drying, as conditions may change.



Figure 2. String or Web-like Appearance



Figure 3. Heavy Over Spray Coat



Figure 4. Pooling



Figure 5. Correct Uniform Spray Pattern

General Application Procedures

1. Completely clean and flush the spray equipment with acetone or methyl ethyl ketone.
2. Clean the pavement surface thoroughly as described in 3M Information Folder 5.7.
3. Mark the position where the pavement marking will be applied.
4. Apply one coat of P-50 sprayable adhesive. Spray the adhesive a minimum of 1 in. (2.5 cm) beyond where the edges of the tape will be applied.
5. Allow the P-50 to set. P-50 is set when there is little to no tack, with no adhesive transferring at the touch (see Figure 6), and it has a matte finish.



Figure 6. Testing if SPA60 is Set

NOTE

At 70°F (21.1°C) and average humidity P-50 dries in approximately 5 minutes. Cooler temperatures and/or higher humidity conditions can increase dry times to 30 minutes or more.

6. After P-50 is set, apply the tape using the methods described in 3M Information Folder 5.7.

NOTE

Do NOT allow dry and set P-50 to remain on the pavement without tape application for longer than an hour. The lengthy open time can reduce the initial bond strength and the adhesive surface often becomes contaminated with dirt, dust, and debris which can also reduce adhesion performance.

PS-14 Application Procedures

1. Install a clean 8004E or 8004EVS (brass or stainless steel) single jet spray tip in good operating condition.
2. Ensure any screen filter in front of the spray tip is completely clean and free of obstructions, or remove the screen filter entirely. Screen filter obstructions can lead to excessive adhesive pressure drops and poor spray quality. Replace the screen tip when spray quality remains poor even after thorough cleaning of the spray tip and applicator.
3. Completely clean and flush all functional components of the PS-14 adhesive spray applicator (siphon tube, pump, all piping, and the spray tip) with an appropriate cleaning solvent before spraying P-50. 3M recommends using methyl ethyl ketone, but methyl acetate is also acceptable.

NOTE

Do NOT use gasoline or similar materials to flush the PS-14 applicator. Gasoline and similar materials actually cause P-50 to gel and solids to precipitate from the solution, creating plugging and blockage.

NOTE

Dispose of any cleaning solvent and adhesive residues according to local regulations and guidelines.

4. Lift and fully extend the recessed pour spout from the top of the 5-gallon container.
5. Twist off the threaded cap to open. Keep the outside surface of the pour spout and the inside of the pour spout cap clean and free of adhesive residue or the adhesive will strongly bond the cap to the spout, making it extremely difficult to remove. 3M recommends immediately coating the inside of the cap with a light lubricant such as a spray oil or light grease.
6. Insert the PS-14 siphon tube into the open pour spout and place the end of the siphon tube at the very bottom of the five gallon container.
7. Adjust the orientation angle of the flat fan spray pattern delivered by the spray nozzle to be perpendicular to the direction of travel. The spray nozzle should also be adjusted to spray straight down onto the pavement and not at an angle.
8. Adjust the height of the spray nozzle and spray arm to deliver a 6 in.-wide (15.2 cm-wide) coating of P-50 on the pavement surface. Typically the proper height of the spray tip above the pavement surface is 6 in. (15.2 cm). Spray widths wider than 6 in. (15.2 cm) will result in an unacceptably thin coating of P-50.

9. Push the PS-14 applicator at a normal walking speed (or slightly faster) with the front wheel pressed firmly on the pavement. Avoid front wheel bounce on rough surfaces as this causes gaps in the coating. Typically a poor fan spray pattern (non-uniform, streaky, trickly) can be improved by walking faster to increase the pump spray pressure.

NOTE

After a thorough solvent flush of the spray cart, it may be necessary to first push the cart 50 ft (15.2 m) or more to prime the pump in order to achieve a uniform spray pattern. A brisk walking speed can also help prime the pump.

10. Allow the applied P-50 to dry and set fully before applying pavement marking tape. At 70°F (21.1°C) and average humidity this takes approximately 5 minutes. Cooler temperatures and/or higher humidity conditions can increase dry times to 30 minutes or more.
11. Apply the pavement marking tape within 30 minutes after the P-50 is fully dry and set. Pavement marking tapes can be applied after this open time, but bond strengths may be lower.

NOTE

Do NOT allow dry and set P-50 to remain on the pavement without tape application for longer than an hour. The lengthy open time can reduce the initial bond strength and the adhesive surface often becomes contaminated with dirt, dust, and debris which can also reduce adhesion performance.

Storage and Shelf Life

Storage

- Store the products at 60°F to 80°F (16°C to 27°C) in a dry area, and protect from freezing.
- Store away from acids and oxidizing agents.
- Store out of direct sunlight.
- Keep the container closed when not in use.
- Store in a well ventilated area.
- Contents may be under pressure; open carefully.

Shelf Life

P-50 has a shelf life of two years from the date of manufacture.

3M Related Literature

Always confirm you have the most current version of the applicable product bulletin, information folder, or other product information from 3M's website at www.mmm.com/roadsafety.

- 3M Product Bulletin 270 ES 3M™ Stamark™ Pavement Marking Tape 270ES
- 3M Product Bulletin 380AW 3M™ Stamark™ High Performance All-Weather Tape Series 380AW
- 3M Product Bulletin 380IES 3M™ Stamark™ High Performance Tape Series 380IES
- 3M Information Folder 3.2 3M™ Stamark™ Removable Tapes Pavement Surface Preparation and Application Procedures
- 3M Information Folder 5.18 3M™ Stamark™ Pavement Marking Tape and Liquid Pavement Markings
- 3M Information Folder 5.7 3M™ Stamark™ Tapes Pavement Surface Preparation and Application Techniques
- 3M Information Folder 5.8 Application of 3M™ Stamark™ Pre-Cut Symbols and Legends
- 3M™ Stamark™ Pavement Markings Tapes Climate Guide
- 3M Road Surface Guide for 3M™ Stamark™ Pavement Marking Tapes

Health and Safety

Chemicals

When handling any chemical products, read the manufacturers' container labels and the safety data sheets (SDS) for important health, safety, and environmental information.

Follow this link to obtain SDS sheets for 3M products.

Follow this link to obtain information about substances of very high concern (SVHC) for EU products.

Tools and Equipment Usage

When using any equipment, always follow the manufacturer's instructions for safe operation.

Vapors

⚠ **WARNING**

Do NOT eat, drink, or smoke when using this product. Wash exposed areas thoroughly with soap and water. Avoid breathing of vapors, mists or spray. Avoid eye contact with vapors, mists, or spray. Keep out of the reach of children.

Flammability

⚠ **WARNING**

Keep away from heat, sparks, open flame, pilot lights and other sources of ignition. Ground containers securely when transferring contents. Wear low static or properly grounded shoes. Do not smoke or ignite matches, lighters, etc. while handling this material. Avoid static discharge. Vapors may ignite explosively. May cause flash fire.

Warranty Information

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