Preformed Thermoplastic Pavement Markings

APPLICATION INSTRUCTIONS

First-time applicators should contact Ennis-Flint, Inc. for product support and on-site training.

SURFACE APPLICATION, GENERAL REQUIREMENTS:

**Equipment:**
- Magnum® Torch or equivalent propane fueled torch with pressure regulator and 25 ft. of hose
- Infrared Thermometer
- Tape Measure
- Adequate Supply of Propane
- Gas Powered Blower or Broom
- Chalk Sticks and Chalk Snap Line
- Utility Knife, Putty Knife

**Surface:**
Asphalt and concrete must be free of dirt, dust, chemicals or significant oily substances. Portland cement concrete must be free of all curing compounds. Any residual salts or other deicing chemicals must be removed prior to application. HotTape® material can be applied on new or old thermoplastic. Concrete substrates should be moisture free for 24 hours prior to application for best results. When applying on old thermoplastic scrape off any loose material. Ensure that the remaining thermoplastic surface is clean. If the old thermoplastic is oxidized (powdery surface), grind or heat it and scrape the top surface so fresh material is exposed. Do not apply on top of paint, cold plastic, or plural component pavement markings.

**Material:**
HotTape® material shall be kept dry at all times. Avoid extreme storage temperatures. HotTape® material should be stored indoors at temperatures between 35°F and 90°F. Packages should be stored flat and stacked a maximum of 30 high. HotTape® material should be handled with care in temperatures below 50° F as it will be less flexible in colder weather. Shelf life is 24 months. Note: HotTape® material rolled goods will uncoil best when ambient temperature is above 55˚F.

**Temperature:**
HotTape® material can be applied at ambient and surface temperature above 32°F.

SAFETY PRECAUTIONS:
Protective clothing consisting of leather work shoes, long pants, gloves, safety goggles, and a safety vest should be worn. Note: portland cement concrete surfaces may spall when heated with the torch therefore safety glasses must always be worn when applying HotTape® material onto portland cement concrete surfaces. Do not attempt to pull the molten material off your skin. If accidental contact occurs, wash contaminated skin with soap and water and remove contaminated clothes immediately. If accidental contact with the eyes occurs, immediately flush eyes with plenty of water for at least 15 minutes; remove contact lenses; call a physician.

INSTRUCTIONS FOR APPLICATION ON ASPHALT OR NON-BITUMINOUS SURFACES:

1. Clean intended application area thoroughly. All loose particles, sand, dust, etc. must be removed. Utilize a power blower or compressed air if available, otherwise sweep completely.

2. Position all connecting parts of the HotTape® material (lines, legends, or symbols) on to the pavement surface. There should be no gaps between the adjoining segments. Delineate the area to receive the HotTape® material using a chalk line, chalk or crayon. You may overlap the edges slightly. Check to ensure that proper layout and alignment is obtained before moving to step 3. Once the marking has been traced, or the area delineated, remove the marking from the pavement.

3. Prepare to pre-heat the pavement by positioning yourself with the wind at your back as you face the delineated area. This will allow the wind to move the heat over the unheated portion of the pavement while at the same time keeping the heat away from your feet. Using a Magnum® Heat Torch, or similar heat source, use the pre-set pilot valve setting to get a blue flame with an orange or yellowish tip. Then squeeze the torch handle to achieve maximum output. Hold the torch nozzle 8 to 10 inches above the pavement. Using the torch in a circular motion pre-heat the surface to a minimum temperature of 300° F. Extend the heating 3 to 6 inches outside the pre-marked area. Do not attempt to pre-heat an area larger than 2 feet x 4 feet at any one time. Properly heated asphalt should turn a deep, solid black. Note: concrete surfaces may spill when heated with the torch therefore safety glasses must always be worn when applying HotTape® material onto portland cement concrete surfaces. Use the infrared thermometer to check the surface temperature for a minimal reading of 300°F across the entire target area.

4. Once the surface temperature of the targeted area reaches 300° F immediately position the first HotTape® material segment with exposed glass beads side up. Do not apply HotTape® material in pieces larger than 2 ft. x 4 ft. at any one time. If using a torch like the Magnum® heat torch, the applicator should utilize the pre-set pilot valve setting (do not squeeze the handle) to get an orange tipped flame to heat the material. Do not operate the Magnum® torch at maximum output while heating the HotTape® material. Hold the torch so that the torch nozzle is 6 to 8 inches over the HotTape® material. If material is splattering with the introduction of the torch, the flame is too close to the material or the pilot valve needs to be adjusted to lower the intensity and eliminate the spattering.
5. Begin heating the HotTape® material by moving the torch flame slowly, but steadily over the material. The HotTape® material must be heated to its melting temperature to achieve a bond with the pavement. **Insufficient heat will result in inadequate bonding and failure.** Overheating the material will sink the top coating of beads into the HotTape® material and the resulting marking will be less retroreflective initially. To ensure that heat is evenly applied to the entire marking, move the torch in a sweeping motion, approximately 2 feet wide, keeping the nozzle of the torch about 6 to 8 inches above the material. **Caution: Maintain a minimum distance of 6 inches between the torch nozzle and the material. Any closer will cause superficial scorching of the material without adequate melting throughout.** Note that 125 mil thick material will require a longer heating period than 90 mil. During heating, the HotTape® material should soften and begin to conform to the pavement surface to which it is applied. Additionally, the material may bubble, and may change color, turning slightly darker or pale. If the material does change color move the torch to another section to avoid scorching the material. HotTape® material will exhibit a soft, “chewing-gum” appearance when properly heated.

6. Inspect the recently applied HotTape® material to ensure that complete bonding has occurred over the entire area. After the HotTape® material has cooled to near ambient temperature, cut an area in the interior of the material with a chisel where it appears the material received the least amount of heat. For white HotTape® material this will appear the whitest in color.
   a. **If applied on asphalt:** If the material can be lifted without evidence of asphalt on the underside, insufficient heat has been applied.
   b. **If applied on portland cement concrete:** When trying to lift the recently applied HotTape® material off the non-bituminous surface it is unlikely that any part of the pavement will be lifted with the material. Adequate bonding has occurred if the HotTape® material separates and part of the HotTape® material remains stuck to the pavement.
   c. If upon inspection insufficient heat has been applied, simply reapply heat until adequate bonding has occurred. **Note: Do not leave the project until sufficient bond has been established.** Attempts to reheat at later date will be unsuccessful.

7. HotTape® material is formulated with surface applied and intermixed glass beads to provide both high initial retroreflectivity and better visibility throughout its service life. HotTape® material can be supplied without pre-applied surface beads. When this happens, glass beads must be applied to the surface during application while the material is in the molten state to provide adequate initial retroreflectivity. This is also a very important step in obtaining the required skid resistance.

8. HotTape® material will cool and set rapidly within a couple of minutes of application. If desired, setting time can be accelerated with a spray of cool water.

**NOTES:**
- HotTape® material is compatible with asphalt and concrete surfaces and can be applied on special surfaces, i.e., bricks and cobble stones.
- Do not allow 2 pieces of non-beaded HotTape® material to remain in direct contact with each other as they will bond together especially in hot weather. Use the plastic separation sheets to avoid this situation.
- You can "cut and paste" with HotTape® material. Use a knife to score the material and carefully break it along the score. In warm weather, you can use scissors.