

SPECIFICATION

PREFORMED THERMOPLASTIC OVERLAY MARKING MATERIAL FOR IMPRINTED/STAMPED PAVEMENT

USE: A durable preformed thermoplastic overlay marking material suitable for application over existing or newly imprinted/stamped asphalt or concrete pavement surfaces for streetscape and traffic calming purposes on public roads and private properties. The pavement surface must be imprinted or stamped prior to the application of the preformed thermoplastic overlay material. When properly applied, the durable preformed thermoplastic overlay material will contour to the impressions/grooves already present in the pavement substrate. Post application imprinting/stamping shall not be allowed. Patterned pavement treatments are typically used on public roadway crosswalks between white crosswalk lines, and on residential and commercial areas for pedestrian and vehicle traffic. The material shall be equally suitable for asphalt and concrete surfaces.

- 1.1. The material must be a resilient preformed thermoplastic product which contains a minimum of thirty percent (30%) intermixed anti-skid/anti-slip elements and where the top surface contains anti-skid/anti-slip elements. These anti-skid/anti-slip elements must have a minimum hardness of 9 (Mohs scale).
 - 1.2. The material must be resistant to the detrimental effects of motor fuels, antifreeze, lubricants, hydraulic fluids, etc.
 - 1.3. The material shall be capable of being applied on bituminous and/or portland cement concrete pavements by the use of a handheld heat torch, infrared heater, or a blue-flame radiant heater. The use of a compactor or similar equipment shall not be necessary during or after the application of the pavement overlay marking material.
 - 1.4. The material must be able to be applied to asphalt and concrete surfaces without preheating the application surface to a specific temperature. The material must be capable of being affixed to green concrete (concrete that has set but not appreciably hardened). The material shall not require the portland cement concrete application areas to be cured or dried out.
 - 1.5. The material must be capable of conforming to pavement contours, breaks and faults through the action of traffic at normal pavement temperatures. It shall not be necessary to use a grid template to imprint pattern grooves or other indentations in the material surface after material application. The material shall cover the entire area to be treated, and it shall not be necessary to inlay the material into individual grooves or indentations.
 - 1.6. The material is typically supplied in segments measuring 2 ft. x 2 ft. [$\pm\frac{1}{8}$ in.] (.61 m x .61 m [± 3 mm]). The material must be able to be applied in temperatures down to 45°F without any special storage, preheating or treatment of the material before application.
 - 1.7. Heating indicators must be evenly distributed on the surface of the material to act as a visual cue during application and post-application.
2. **MANUFACTURING CONTROL AND ISO CERTIFICATION:** The manufacturer must be ISO 9001:2008 certified for design, development and manufacturing and provide proof of current certification. The scope of the certification shall include the design, development and manufacture of preformed thermoplastic marking material.
 3. **MATERIAL:** Must be composed of an ester-modified rosin impervious to degradation by motor fuels, lubricants, etc. in conjunction with aggregates, pigments, binders, and anti-skid/anti-slip elements. Pigments and anti-skid/anti-slip elements must be uniformly distributed throughout the material. The thermoplastic material conforms to AASHTO designation M249, with the exception of the relevant differences due to the material being supplied in a preformed state, being non-reflective, and potentially being of a color different from white or yellow.
 - 3.1. Pigments:
 - 3.1.1. White: The material shall be manufactured with sufficient titanium dioxide pigment to meet FHWA Docket No. FHWA-99-6190 Table 5 and Table 6 as revised and corrected.
 - 3.1.2. Red, Blue, and Yellow: The material shall be manufactured with sufficient pigment to meet FHWA Docket No. FHWA-99-6190 Table 5 and Table 6 as revised and corrected. The pigment system must not contain heavy metals nor any carcinogen, as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant Federal Regulations.
 - 3.1.3. Other Colors: The pigment system must not contain heavy metals nor any carcinogen, as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant Federal Regulations.

- 3.2. **Heating Indicators:** The top surface of the material shall have regularly spaced indents. The closing of these indents during application shall act as a visual cue that the material has reached a molten state, allowing for satisfactory adhesion and proper embedment of the anti-skid/anti-slip elements, and a post-application visual cue that proper application procedures have been followed.
- 3.3. **Skid Resistance:** The surface of the preformed thermoplastic material shall contain factory applied anti-skid elements with a minimum hardness of 9 (Mohs scale). Upon application the material shall provide a minimum skid resistance value of 60 BPN when tested according to ASTM E 303.
- 3.4. **Slip Resistance:** The surface of the preformed thermoplastic material shall contain factory applied anti-skid elements with a minimum hardness of 9 (Mohs scale). Upon application the material shall provide a minimum static friction of coefficient of 0.6 when tested according to ASTM C 1028 (wet and dry), and a minimum static coefficient of friction of 0.6 when tested according to ASTM D 2047.
- 3.5. **Thickness:** The material must be supplied at a minimum thickness of 90 mil (2.29 mm).
- 3.6. **Environmental Resistance:** The material must be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to oil and gasoline.

4. APPLICATION:

- 4.1. **Manufacturer Certified Applicator Requirement:** The material shall be supplied and applied only by an applicator certified by the material manufacturer. The applicator shall provide proof of current certification before commencing work. The Certified Applicator shall follow the material manufacturer's current published application procedures.
 - 4.2. **Asphalt:** The material shall be applied using the propane torch method or an infrared or blue flame heater recommended by the manufacturer. The material must be able to be applied at ambient and road temperatures down to 45°F without any preheating of the pavement to a specific temperature. A sealer specified and supplied by the material manufacturer must be applied to the substrate prior to material application to ensure proper adhesion, and to provide bond reinforcement for larger volumes of material. The sealer must be supplied by the material manufacturer in 300/600ml cartridges along with sealer application supplies. A thermometer shall not be required during the application process. The pavement shall be clean, dry and free of debris. The supplier must provide current application instructions to the Certified Applicator.
 - 4.3. **Portland Cement Concrete:** The same application procedure shall be used as described under Section 4.2.
5. **PACKAGING:** The preformed thermoplastic material shall be packaged in cardboard cartons. The cartons in which packed shall be non-returnable and shall not exceed 25 in. (.64 m) in length and 25 in. (.64 m) in width. The cartons shall be labeled for ease of identification. The weight of the individual carton must not exceed Fifty (50) pounds (23 kg). A protective film around the carton must be applied in order to protect the material from rain or premature aging.
 6. **TECHNICAL SERVICES:** The successful bidder shall provide technical services as required.