

SAMPLE SPECIFICATION

Section 02760 Paving Specialties

Pre-Formed Imprinted Thermoplastic Decorative High Traffic Pavement Surfacing System "ThermoPrintHT"

1.0 GENERAL

1.1 Summary

This specification is for an aggregate reinforced preformed thermoplastic decorative surfacing system adhered to asphalt concrete pavements by means of heat fusion. This system replicates the look of brick pavers or other patterns. It can be used on crosswalks as a traffic calming solution.

The preformed thermoplastic is supplied in 24"x24" (.61mx.61m) sheets.

A dry clean asphalt substrate is necessary to ensure proper adhesion.

A primer when needed, supplied by the manufacturer is applied to the prepared asphalt surface. New clean asphalt does not require a primer. Pre-formed sheets of a minimum thickness of 180 mil (4.5 mm) aggregate reinforced thermoplastic are placed onto the asphalt surface and fitted tightly together with tolerances of no more than 50 mils (1.25 mm). The thermoplastic is then heated using infrared heating equipment to a liquid state allowing the seams to close. As the thermoplastic is cooling an aggregate is broadcast onto the surface providing added anti-skid properties as well as a non-stick barrier for the vibratory plate compactor.

A 3/8" (8 mm) diameter template with the desired pattern is then placed onto the warm thermoplastic and imprinted using a vibratory plate compactor.

Once cooled the area can be returned to traffic.

This material will not deteriorate due to exposure to sunlight, oil, gasoline, water, and salt or pavement oil content.

ThermoPrintHT is available in several standard colors and patterns.

1.2 Related Sections

- Section 1.0 General
- Section 2.0 Materials and Performance
- Section 3.0 Delivery Storage and Handling
- Section 4.0 Surface Preparation
- Section 5.0 Application
- Section 6.0 Thermoplastic thickness
- Section 7.0 Applicator Training
- Section 8.0 Samples and Mockups
- Section 9.0 Field Quality Control

2.0 Materials and Performance

2.1 **Manufacturer's Quality Control:**

Manufacture must be ISO 9001:2008 certified and provide up to date certification.

2.2 **Aggregate Reinforced Preformed Thermoplastic Materials:**

Shall have a minimum of 30% non-skid aggregate uniformly distributed throughout the material. The non-skid aggregate must have a minimum hardness of 6 on the Mohs scale.

The pre-formed material shall conform to the pavement contours. The material shall have resealing characteristics and be capable of fusing to itself and previously applied like materials.

The pre-formed material must be composed of a rosin ester binder impenetrable by motor oil, diesel fuel, anti-freeze, hydraulic fluid and deicing chemicals. The material must conform to AASHTO M-249 or as modified to meet specification requirements.

2.3 **Shelf Life:** Shall be a minimum of two years when stored indoors at room temperature.

2.4 **Binder Content:** >18% when tested according to AASHTO T250

2.5 **Water Absorption:** <.5% when tested according to ASTM D570

- 2.6 **Bond Strength:** >310 psi when tested according to ASTM D4796
Impact Resistance: >20 when tested according to ASTM D256, Mtd A
- 2.7 **Indentation Resistance:** >40 when tested according to ASTM D2240 Type A
Low Temperature Resistance: No cracking when tested according to ASSHTO T250
- 2.8 **Flash Point:** >475° F when tested according to ASTM D92
- 2.9 **Skid Resistance: (Friction)** The surface of the pre-formed thermoplastic material shall provide a minimum skid resistance value of >65 BPN when tested according to ASTM: E303
- 2.10 **Thickness:**
The minimum average thickness of the pre-formed thermoplastic material shall be a minimum of 0.180 inch (180 mils) +/- 10 mils (4.5 mm)
- 2.11 **Pigments:** White colored thermoplastic material to be manufactured with sufficient titanium dioxide 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.
- 2.12 **Transverse Lines to Accent Application:** White retroreflective preformed thermoplastic line striping material in 90 mil (2.3 mm) or 125 mil (3.2 mm) thickness. This material is available in 12" (.30 m), 8" (.20m) or 6" (.15m) widths. This material is supplied by applicator and installed in conjunction with the aggregate reinforced material. (Contact manufacturer for proper installation instructions of line striping material)

3.0 **Delivery, Storage and Handling**

3.1 Packaging and Labeling

All Thermoplastic products shall be packed in standard closed containers. Each container of separately packaged component shall be clearly and durably labeled to indicate the date of manufacture, manufacturer's batch number, quantity, color, component identification and designated name or formula specification number together with special instructions.

3.2 Delivery, Storage and Handling

Thermoplastic products shall be delivered to the site in sealed containers that plainly show the designated name, batch number, color, date of manufacturer, and name of the manufacturer.

Store the material on site in enclosures, out of direct sunlight in a warm, ventilated and dry area at room temperature. Care shall be taken in handling of Thermoplastic containers to prevent puncture, inappropriate opening or other action, which may lead to product contamination. No materials that are past the coating manufacturer's recommended shelf life shall be used without the approval of the coating manufacturer.

4.0 Surface Preparation

4.1 Cleaning

Broom using mechanical brooming device, or stiff bristle hand broom. Scrape and blow fine sand and debris off of surface.

4.2 Repair Damaged Asphalt

Damaged and cracked asphalt shall be repaired by heating damaged area until the asphalt cement is in a liquid state (ensuring asphalt does not exceed 325° F), turning over and mixing in new fresh asphalt if necessary to ensure repair is level with adjacent area. Infrared type heating mechanisms are the recommended heating tool for this procedure.

4.3 Preparation of New Asphalt

Pre-formed thermoplastic shall be capable of being applied on the day the surface is paved without being adversely affected by the fresh pavement oil content.

Asphalt mix design shall be specified by a qualified Pavement Engineer and shall be designed for the purpose of the application.

5.0 Application

5.1 Environmental Conditions

Surfaces should be dry for at least 12 hours prior to applying pre-formed inlaid thermoplastic. 40°F is the recommended minimum air and surface temperature. The surface must be dry prior to application.

- 5.2 Prepared surface shall be primed using recommend primer. New clean asphalt does not require a primer
- 5.3 Apply preformed sheets to primed surface and heat using infrared heating equipment. Heat the pre-formed thermoplastic until it starts to flow. Do not heat the thermoplastic until it starts to burn and discolor. Do not heat pre-formed thermoplastic over 325°F (163°C)
- 5.4 Use an infrared thermometer to measure the surface temperature.
- 5.5 An infrared heating apparatus is recommended for this heating process. Cycling of heat over the target area ensures heat penetration without overheating.
- 5.6 When the thermoplastic sheets are heated to sufficiently close the seams, a non-slip aggregate is broadcast onto the hot thermoplastic surface. Some of this material will be absorbed by the thermoplastic. Once cooled a 3/8" diameter template is stamped into the imprint to define the pattern profile.
- 5.7 While the thermoplastic is still warm a cable template pattern is placed onto the surface and pressed into the heated thermoplastic using a vibratory plate compactor.
- 5.8 The imprinting stencil shall be compacted to full depth.
- 5.9 When the thermoplastic sheets are heated to sufficiently close the seams, a non-slip aggregate is broadcast onto the hot thermoplastic surface. Some of this material will be absorbed by the thermoplastic. Once cooled a 3/8" diameter template is stamped into the imprint to define the pattern profile.
- 5.10 Clean off excess aggregate and allow the thermoplastic surface temperature to cool to that of the adjacent road surface prior to opening to traffic.

6.0 Pre-formed Thermoplastic Thickness

- 6.1 The pre-formed thermoplastic material shall be no less than 180 mils (0.180 inch) +/- 10 mils (4.5 mm)

7.0 Applicator Training

7.1 The Applicator shall be approved by the manufacture for the application being applied. The Applicator shall have lead personnel on the project that have been trained by manufacturer within the past 12 months of starting the project. At least one of these trained personnel shall be on site at all times during the application

8.0 Samples and Mockups

Samples shall be provided to the owner (or owners representative) for approval prior to tender closing.

Samples shall display the following:

1. Pattern
2. Color (pre-formed thermoplastic)
3. Thickness (pre-formed thermoplastic)
4. Variations of the above if requested

Approval of color and pattern to be provided in writing to the bidding contractor no less than 7 days prior to bid closing.

9.0 Field Quality Control

9.1 The contractor for work under this section shall maintain a quality control program specifically to verify compliance with this specification. A daily log shall be kept to record actions in the field.