

9710104 PAVEMENT MARKING MATERIALS  
COMMENTS FROM INTERNAL/INDUSTRY REVIEW

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Comments: (5-25-21, Internal)

The following sentence:

“For standard paint, durable paint, preformed thermoplastic, two reactive component material, high friction thermoplastic, and permanent tape, **the Department will require** National Transportation Product Evaluation Program (NTPEP) field test data.”

Should be reworded to read:

“For standard paint, durable paint, preformed thermoplastic, **two reactive component material**, high friction thermoplastic, and permanent tape, **the Manufacturers shall provide** National Transportation Product Evaluation Program (NTPEP) field test data.”

Response: We agree and will proceed with suggested language.

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Comments: (5-26-21, Internal)

Will any of the existing manufacturers need to be retested using the NTPEP field test? Do we need to add that the NTPEP testing needs be conducted using the bead requirements identified in 710, 711, 709, 713, and 971?

The APL approved manufacturers of these devices will need to be notified of these changes. My office will handle the notification when the specification goes out for Industry Review.

Thank you for the opportunity to review.

Response: 1. Any material currently on the APL will not need to be retested using the NTPEP configuration. 2. Manufacturers shall meet bead requirements as established on corresponding Division II Construction Details Specification and 971. We do not see a need to reiterate this on 971.

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Comments: (5-26-21, Internal)

**PAVEMENT MARKING MATERIALS**  
**(REV 5-14-21)**

SUBARTICLE 971-1.4 is deleted and the following substituted:

→ **971-1.4 Approved Product List (APL):** All pavement marking materials shall be one of the products listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and the infrared identification curve (2.5 to 15 µm) for the vehicle component. The Department will test all standard thermoplastic and profiled thermoplastic pavement marking materials in accordance with FM 5-541, Part B. For standard paint, durable paint, preformed thermoplastic, two reactive component material, high friction thermoplastic, and permanent tape, the Department will accept require National Transportation Product Evaluation Program (NTPEP) field test data in lieu of evaluation testing as per FM 5-541, Part B. A notation of the number of coats and the thickness of each coat at which the product passes testing may be placed on the APL. When listed, this will be the minimum criteria for application of the pavement marking material.

 **Arnold, Scott**  
Does this read more clearly if written, "two component reactive material"?

Response: We propose to leave as Two Reactive Component for now as we are past the deadline for submitting a revision for Section 709 (Two Reactive Components Pavement Markings) for January 2022. This could be revised in the future when both 971 and 709 could be submitted for revision at the same time.

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Comments: (5-26-21, Internal)

May we please gain clarification as to why audible 701 and standard 711 long-line thermo specs will remain under the guidance of FDOT FM-541, while all other pavement marking materials will require NTPEP data?

**PAVEMENT MARKING MATERIALS**  
**(REV 5-14-21)**

SUBARTICLE 971-1.4 is deleted and the following substituted:

**971-1.4 Approved Product List (APL):** All pavement marking materials shall be one of the products listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and the infrared identification curve (2.5 to 15 µm) for the vehicle component. The Department will test standard thermoplastic and profiled thermoplastic pavement marking materials in accordance with FM 5-541, Part B. For standard paint, durable paint, preformed thermoplastic, two reactive component material, high friction thermoplastic, and permanent tape, the Department will require National Transportation Product Evaluation Program (NTPEP) field test data. A notation of the number of coats and the thickness of each coat at which the product passes testing may be placed on the APL. When listed, this will be the minimum criteria for application of the pavement marking material.

Response: Profiled Thermoplastic: NTPEP Pavement Marking Program does not include Profiled Thermoplastic in their workplan. FDOT Specifications require evaluation of raised bumps on profiled and transverse application will not allow use of raised bumps. Therefore, current evaluation method is the most appropriate (APL Test Deck using longitudinal lines).

Standard Thermoplastic: The Department requires a specific formulation for Standard Thermoplastic. This formulation is different from the formulation utilized by Northern States.

Thus, there is insufficient data from Northern State's NTPEP installations to correlate to the Department's specific formulation. Therefore, Standard Thermoplastic would need to remain under FM 5-541 for testing of new products. FM 5-541 will be revised concurrently with 971 to utilize the transverse NTPEP configuration for testing Standard Thermoplastic in APL test deck.

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Comments: (5-28-21, Internal)

The NTPEP workplan Section 5 allows the option for manufacturers to provide the type of beads to be used and the rate of application, but the standard installation is using a Type 1 bead at 6 pounds per gallon. I think that we need to identify in the spec that FDOT expects that the manufacturer must use the option of alternate beads and application rates otherwise it could be interpreted as the type 1 bead is ok for acceptance.

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<b>5.</b>	<b>PRODUCT CRITERIA AND RESTRICTIONS</b>
<b>5.1</b>	<b>Materials may be either liquid or solid form and may include tapes, pre-formed thermoplastics, durable paints (&gt; 15 mil thickness), epoxies, methacrylates, polyesters, polymeric films, thermoplastics and paints. Profiled materials that cannot be measured correctly for Retroreflectivity as described in section 10.3 of this procedure will not be allowed.</b>
<b>5.2</b>	As a standard, paints, epoxies, thermoplastics, etc. will be top dressed with AASHTO M 247, Type 1 moisture-proof beads at the rate of six (6) pounds per gallon. Type 1 beads will be furnished at the test site by the host state. The host state shall provide testing reports for the beads provided. Other beads and rates may be applied providing the manufacturer provides written instructions specifying the type and rate at which the beads will be applied with their original submittal. Products utilizing beads or rates other than the standard will be considered systems rather than individual products and will be noted in the report. Non-standard beads will be furnished by the producer, who must also furnish to the host state one (1) intact fifty (50) pound bag of these beads along with a certified test report, as a laboratory test sample. To accommodate samples in less than fifty-pound bag increments, host state personnel at the test site will provide a sample splitter. (BPM –Field Testing and Evaluation Protocols, Material Criteria)

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Response: The following change below was implemented.

**971-1.4 Approved Product List (APL):** All pavement marking materials shall be one of the products listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and the infrared identification curve (2.5 to 15 µm) for the vehicle component. The Department will test standard thermoplastic and profiled thermoplastic pavement marking materials in accordance with FM 5-541, Part B. For standard paint, durable paint, preformed thermoplastic, two reactive component material, high friction thermoplastic, and permanent tape, ~~the~~ Manufacturers shall provide National Transportation Product Evaluation Program (NTPEP) field test data **meeting FDOT Specification requirements.** ~~For these, manufacturers shall install in the product on the NTPEP Pavement Marking Material (PMM) test deck a product meeting Department's corresponding specification requirements, including thickness, beads, and composition, among others specified in corresponding section. Therefore, manufacturers shall not opt for the standard NTPEP application.~~ A notation of the number of coats and the thickness of each coat at which the product passes testing may be placed on the APL. When listed, this will be the minimum criteria for application of the pavement marking material.

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Comments: (6-1-21, Internal)

Primarily we would like clarification on a few things not stated. These may be addressed in other auxiliary policies that we did not receive but should be considered. Our comments are only addressing concerns that deal with Preformed Thermoplastic and other related products being developed but may have similar concerns for the other products included in the revision.

We assume products on the APL, stay on the Florida APL and products currently under evaluation will continue and this proposed process only applies to new products submitted after this process is adopted. Is this correct?

Response: Correct. The requirement for NTPEP PMM Field Evaluation is for new products submitted to APL.

NTPEP collects 3 years of data with only an annual reading.

Response: Current NTPEP PMM workplan for field evaluation (section 10) requires initial readings and every 2 months after installation during the first 6 months of testing. Following the 6-month testing, evaluation frequency will move to quarterly for the remaining 2 years. Therefore, NTPEP PMM provides more than 1 reading per year.

Will there be a process for emerging products that don't have competition or has limited competition? Three years is a long time for an evaluation to bring a product to market and can be stifling to new innovations.

Response: The Department has different ways to implement the use of such products independent of the Standard Specifications. Implementation processes include limiting the product to project specific needs, Developmental Specifications, and Conditional Warranty. The actual implementation process will be specific to the product and the Department's needs.

High friction thermoplastic is included in the list to be evaluated through the NTPEP process. Is there currently a product evaluation in NTPEP for this category?

Response: NTPEP PMM program includes categories for standard thermoplastic and preformed thermoplastic. Current APL procedure for High Friction thermoplastic and High Friction preformed thermoplastic requires the manufacturers to submit independent test results to show their product meets current FDOT requirements including skid resistance requirements. Therefore, even though NTPEP PMM workplan does not evaluate friction it will evaluate other performance requirements and the manufacturer will still need to submit the independent lab test results-including BPN values- at the time of application to APL, as usual.

Does it or will it include non-retroreflective thermoplastic (without beads) as well as a product with retroreflective and friction capability.

Response: Manufacturers looking for approval shall install in NTPEP PMM test deck a product that meets FDOT Specifications for material composition (beads, anti-skid elements, binder, etc.) and performance.

Since this is not a known NTPEP activity, the testing requirements are not available for comment.

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Comments: (7-8-21, Industry)

Ozark Materials, LLC disagrees with the proposed changes to attain APL status for Pavement Marking Materials, specifically Standard Paint, Durable Paint, and Preformed Thermoplastic. Ozark has spent considerable R&D time, resources, expense, and years to attain approvals for our products in the state under existing guidelines that we abided by in good faith. We have had to prove our performance for years for each of these products before being allowed to sell pavement markings. NTPEP has inherent problems with it, including the application methods. For example, NTPEP applications are typically applied with small handliners whereas most contract work in the state is using long line trucks. The bead rates and types cannot be corroborated from the deck in meeting the state specifications. Additionally, NTPEP is not sufficient data to determine performance to the state specification, namely because the lines are transverse on the NTPEP decks and the majority of the markings on Florida roadways are longitudinal. What would be the extrapolation of performance data from NTPEP to determine whether the products meet FDOT requirements? Do you use skipline or wheelpath data? Do you have the field samples from the actual installation on the test decks for FDOT SMO to test and validate the products are the same as what would be sold into the state as the SMO does now? Is northern test deck data acceptable? All of these issues present problems that Ozark Materials, LLC takes issue with. In summary, we recommend that the state stay with the current approval process by means of in-state field installation and evaluation. It is the only way to accurately determine that the Pavement Markings can perform according to FDOT Specifications on FDOT roadways. Thank you for your consideration.

Response: The Department has been using NTPEP PMM Field Evaluation data for temporary tapes and standard waterborne paints approval since 2011. The Department is adding preformed thermoplastic, two reactive component material, high friction thermoplastic, and permanent tapes. Current approval procedure for preformed thermoplastic requires the material to be installed as a transverse stop bar (FM 5-541, section 9). Several states are using NTPEP PMM Field Evaluation for the approval of permanent materials. The Department has carefully evaluated data from several NTPEP test decks and feel confident on this process. Manufacturers looking for approval shall install in NTPEP PMM test deck a product that meets FDOT Specifications. Current FM 5-541 will be revised to include instructions on how to evaluate NTPEP PMM Field data. FM 5-541 will also include instructions on how to install and evaluate standard thermoplastic and profile thermoplastic in APL test deck.

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