

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENT 1047
PAVEMENT MARKING MATERIALS
FIELD SERVICE TESTING PROCEDURE**

March 10, 2004

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1047.01 Description. This supplement describes the field service test procedure by which the Ohio Department of Transportation (ODOT) will maintain a Qualified Product List (QPL) for Pavement Marking Materials meeting the requirements of item 740 and supplemental specifications. This procedure shall consist of a comparative evaluation of the field performance of each material within its pavement marking family. ODOT will use the American Association of State Highway and Transportation Officials' National Transportation Product Evaluation Program (NTPEP) Pennsylvania Test Deck for comparative evaluation.

The Department will only accept QPL pavement marking Materials from manufacturers conforming to Supplement 1089.

1047.02 Eligibility for Field Service Testing. Materials must meet the criteria set by NTPEP, and be tested under NTPEP guidelines. Currently approved materials are subject to field testing at any time as determined by ODOT.

1047.03 Test Line Installation. The service test lines of each material formulation shall be applied at a selected location under the auspices of NTPEP. The Pennsylvania NTPEP Test Deck will be used. Any required surface preparation, primer, adhesive or activator shall be performed and shall become part of the material system for subsequent approval or use.

1047.04 Rating of Field Performance. Field performance will be gathered following the procedures published in the NTPEP Annual Pavement Marking Test Procedure. ODOT in its sole discretion will select these materials from the NTPEP test data and/or from Ohio's field experience.

1047.05 Pavement Marking Material Selection Procedure. ODOT will use the latest two (2) NTPEP Pennsylvania test deck data available to select the traffic paint type 1, Thermoplastic, epoxy and heat-fused preformed thermoplastic pavement marking materials. Only those pavement marking materials which have sufficient number of samples under test at NTPEP test deck will be evaluated for ODOT use.

Traffic paint type 2, Polyester and Preformed pavement marking materials will be approved based upon the field tests and experience in Ohio.

Thermoplastic, epoxy and heat-fused preformed thermoplastic pavement marking materials will also be approved based upon the field tests and experience in Ohio.

The following criteria will be used to select the traffic paint type 1, thermoplastic, epoxy and heat-fused preformed thermoplastic pavement marking materials based upon two years of field performance at the NTPEP Pennsylvania Test Deck:

1 TRAFFIC PAINT TYPE 1 (Item 740.02)

- A. Traffic Paint Fast Dry Type 1, Water-based 100 percent acrylic type (Item 740.02 type 1)
 - i) Durability
 - (a) 8.0 and above for white and yellow colors of paint on asphalt and concrete surfaces at left wheel and centerline area.
 - ii) Dry Time
 - (a) 2 minutes and less for white and yellow colors of paint on asphalt and concrete surfaces.
 - iii) Retroreflectivity
 - (a) 250 mcd/m²/lux and above for white markings for both asphalt and concrete surfaces at centerline area only.
 - (b) 170 mcd/m²/lux and above for yellow markings for both asphalt and concrete surfaces at centerline area only.

iv) Color

To test the pavement marking colors either in the field or in the lab, the color coordinates listed in Table A [based on Daytime Geometry - 45/0 (0/45), CIE illuminant D65 and CIE 1931 (2 °) standard observer] shall be used.

Table A
Color Requirements

	Daytime Chromaticity Coordinates (Corner Points)							
	1		2		3		4	
	x	y	x	y	x	y	x	y
White	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375
Yellow	0.560	0.440	0.490	0.510	0.420	0.440	0.460	0.400

B. Traffic Paint Fast Dry Type 2, alkyd type (Item 740.02 type 2)

Traffic Paint Type 2 (Fast dry alkyd) pavement marking materials will be approved based upon the historic field tests and experience in Ohio.

2. THERMOPLASTIC PAVEMENT MARKING (Item 740.04)

Thermoplastic pavement marking materials will be approved based upon the historic field tests and experience in Ohio, and also upon two year field performance at the NTPEP Pennsylvania Test Deck with the following criteria:

i) Durability

- (a) 10.0 for white and yellow colors of thermoplastic on asphalt and concrete surface at left wheel and centerline area.

ii) Retroreflectivity

- (a) 175 mcd/m²/lux and above for white thermoplastic on asphalt and concrete surfaces at both left wheel and centerline area.
- (b) 125 mcd/m²/lux and above for yellow thermoplastic on asphalt and concrete surfaces at both left wheel and centerline area.

iii) Color

To test the pavement marking colors either in the field or in the lab, the color coordinates listed in Table A [based on Daytime Geometry - 45/0 (0/45), CIE illuminant D65 and CIE 1931 (2 °) standard observer] shall be used.

Table A
Color Requirements

	Daytime Chromaticity Coordinates (Corner Points)							
	1		2		3		4	
	x	y	x	y	x	y	x	y
White	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375
Yellow	0.560	0.440	0.490	0.510	0.420	0.440	0.460	0.400

3. EPOXY PAVEMENT MARKING (Item 740.07)

Epoxy pavement marking materials will be approved based upon the historic field tests and experience in Ohio, and also upon two year field performance at the NTPEP Pennsylvania Test Deck with the following criteria:

i) Durability

- (a) 10.0 for white and yellow colors of epoxy on asphalt and concrete surface at left wheel and centerline area.

ii) Retroreflectivity

- (a) 175 mcd/m²/lux and above for white epoxy on asphalt and concrete surfaces at both left wheel and centerline area.
- (b) 125 mcd/m²/lux and above for yellow epoxy on asphalt and concrete surfaces at both left wheel and centerline area.

iii) Color

To test the pavement marking colors either in the field or in the lab, the color

coordinates listed in Table A [based on Daytime Geometry - 45/0 (0/45), CIE illuminant D65 and CIE 1931 (2 °) standard observer] shall be used.

Table A
Color Requirements

	Daytime Chromaticity Coordinates (Corner Points)							
	1		2		3		4	
	x	y	x	y	x	y	x	y
White	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375
Yellow	0.560	0.440	0.490	0.510	0.420	0.440	0.460	0.400

4. HEAT-FUSED PREFORMED THERMOPLASTIC PAVEMENT MARKING (Item 740.08)

Heat-fused preformed thermoplastic pavement marking materials will be approved based upon the historic field tests and experience in Ohio, and also upon two year of field performance at the NTPEP Pennsylvania Test Deck with the following criteria:

i) Durability

- (a) 10.0 for white and yellow colors of heat-fused preformed thermoplastic on asphalt and concrete surface at left wheel and centerline area.

ii) Retroreflectivity

- (a) 175 mcd/m²/lux and above for white heat-fused preformed thermoplastic on asphalt and concrete surfaces at left wheel and centerline area.
- (b) 125 mcd/m²/lux and above for yellow heat-fused preformed thermoplastic on asphalt and concrete surfaces at left wheel and centerline area.

iii) Color

To test the pavement marking colors either in the field or in the lab, the color coordinates listed in Table A [based on Daytime Geometry - 45/0 (0/45), CIE illuminant D65 and CIE 1931 (2 °) standard observer] shall be used.

Table A
Color Requirements

Daytime Chromaticity Coordinates (Corner Points)								
	1		2		3		4	
	x	y	x	y	x	y	x	y
White	0.355	0.355	0.305	0.305	0.285	0.325	0.335	0.375
Yellow	0.560	0.440	0.490	0.510	0.420	0.440	0.460	0.400

5. POLYESTER PAVEMENT MARKING (Item 740.03)

Polyester pavement marking materials will be approved based upon the historic field tests and experience in Ohio. Two year field performance test data from NTPEP Pennsylvania Test Deck will also be reviewed if sufficient data is available for new products.

6. PREFORMED PAVEMENT MARKING (Item 740.05)

Preformed pavement marking materials will be approved based upon the historic field tests and experience in Ohio.

1047.06 List of Prequalified Materials. Pavement marking materials selected from the NTPEP test data will be added to the prequalified list.

New marking materials and / or techniques if proven acceptable by ODOT will also be added to the prequalified list.

1047.07 Removal from the Prequalified List. A pavement marking material will be removed from the prequalified list if in ODOT's sole discretion, the material has substantially or recurrently failed to perform satisfactorily in the field or does not meet the criteria per 1047.05.

1047.08 Reapproval. A pavement marking material removed from the prequalified list due to unsatisfactory field performance shall not be returned to the list until the manufacturer identifies the reason for the failure and the problem has been corrected to

the satisfaction of ODOT. Experiences of other States or governmental agencies may be considered in this action.

Use of pavement marking material returned to the prequalified list may be limited in quantity until field performance can be assured.

1047.09 Modifications to Prequalified Pavement Marking Materials. It is recognized that manufacturers will occasionally modify certain aspects of their products in an effort to enhance performance, improve durability, reduce costs, or for other similar reasons. Pavement marking material manufacturers shall notify ODOT whenever modifications are made to products contained on the prequalified list. ODOT will review the changes being made to the material, and, at its sole discretion, decide what action, if any, is appropriate. Appropriate action includes limitation of usage or removal from the prequalified list.

1047.10 Work Zone Performance Evaluations. For item 614.11, the performance evaluation shall be conducted according to the ratings given in Table 1 for Color, Table 2 for Night Visibility and Figure 1 for Test Line Durability.

Table 1
TEST LINE COLOR

SCALE	DESCRIPTION
10	White and yellow highly visible and effective in delineation when viewed from further than 10 feet (3 m).
9 8 7	White and yellow definite in color; visible and effective from further than 10 feet (3 m).
6 5 4	White appears grayish; yellow has a brownish or greenish tint. Lines are visible and effective at 10 feet (3 m).
3 2 1	White appears gray; yellow appears brown or green. When viewed at 10 feet (3 m), material does not delineate a 4 inch (100 mm) stripe.
0	No visible material remain.

Table 2
NIGHT VISIBILITY

SCALE	DESCRIPTION
10	Intensely bright; like a light running across the road; firey.
9 8 7	Bright; uniformly retroreflective. White is very bright. Yellow appears as lemon colored light.
6 5 4	Non-uniform in retroreflectivity. White appears reflective white. Yellow appears reflective medium yellow.
3 2 1	Line evident but no retroreflectivity. Material reflects stray light. White appears grayish. Yellow appears dark yellow.
0	Line not visible.

TEST LINE DURABILITY

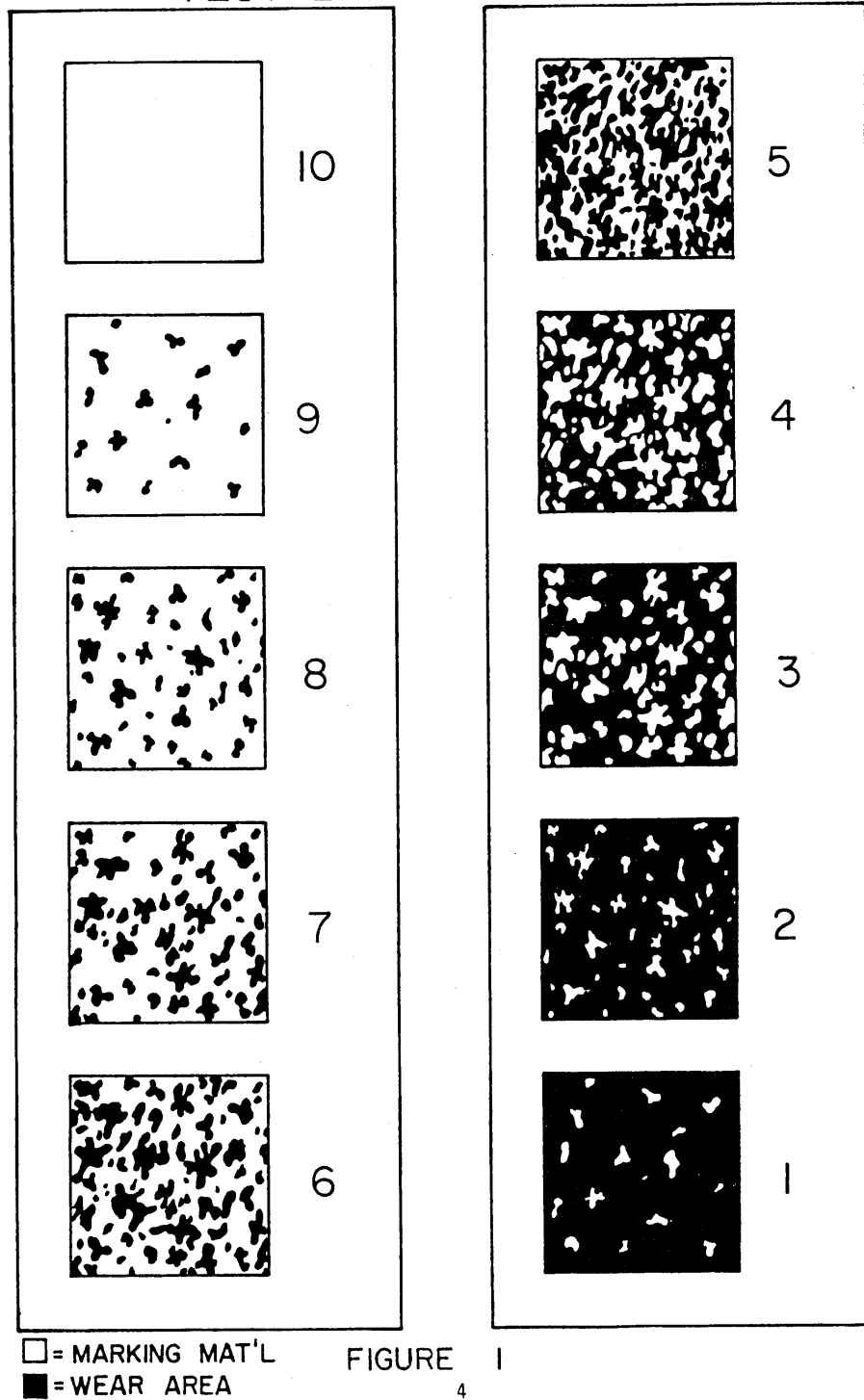


FIGURE 1
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