

PAAMA

Pennsylvania Association of Asphalt Material Applicators

2024 Annual Conference

Fog Seal - Specs / Project Selection / Inspection

www.paama.org



PAAMA Processes Keep Good Roads in Good Condition

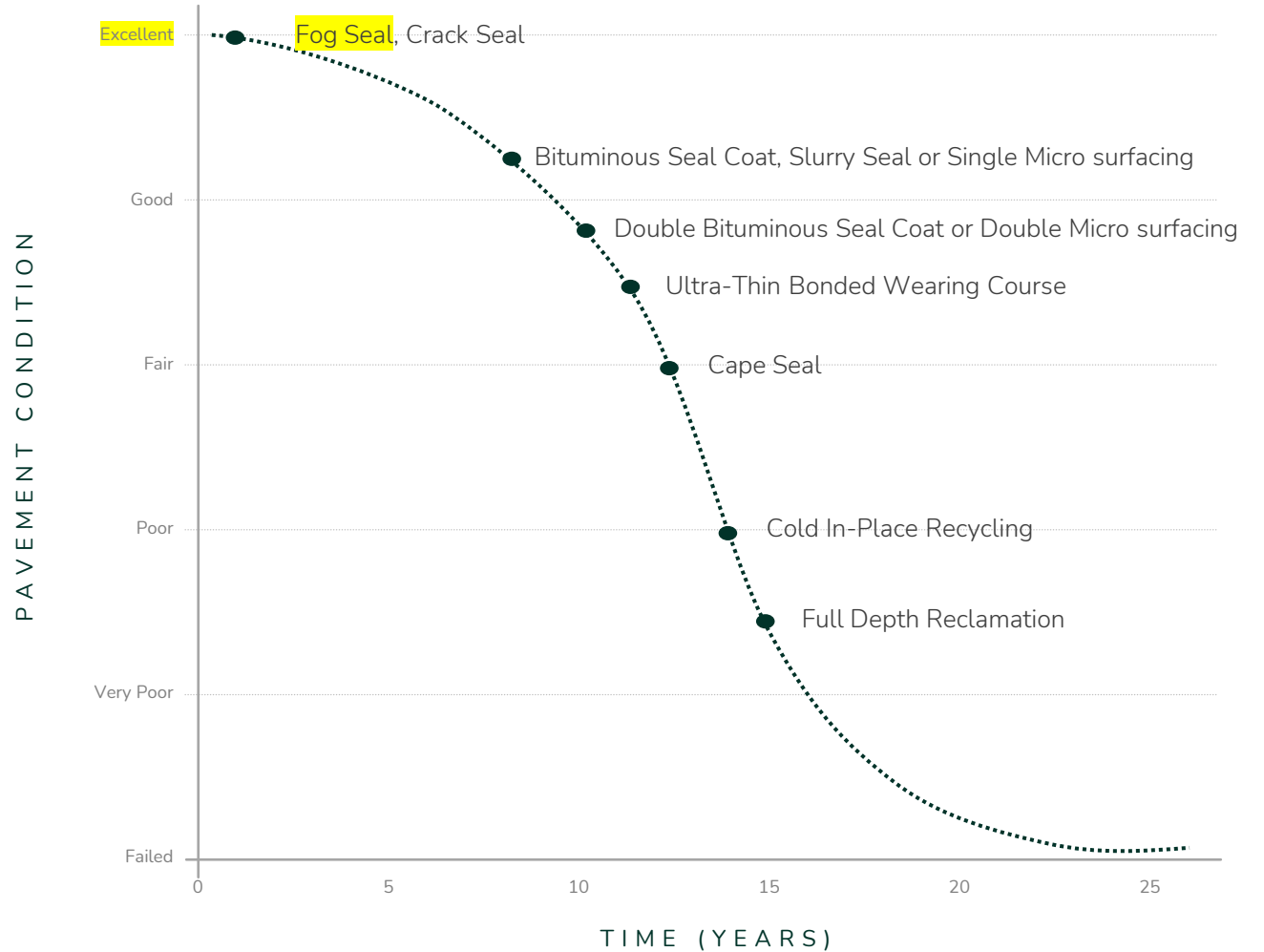
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Fog seal is a single application of emulsified asphalt to an existing asphalt surface.

Issues Addressed

- Minor Surface Cracks
- Oxidation
- Raveling (due to segregation or poor compaction)

Common Combinations

Chip seal + Fog seal

Full Depth Reclamation + Fog Seal

Cold In Place Recycling + Fog Seal



source: Roadresource.org

Benefits

- Protects the pavement structure from moisture intrusion and oxidation
- Improves pavement life and may delay the need for major maintenance or rehabilitation
- Improves road safety by enhancing color contrast between pavement surface and road markings

Benefits

- Secures loose chips and prevents windshield damage
- Aesthetically appealing
- Promotes public acceptance of chip seals and preventative maintenance

Project Selection

- Only those surfaces where penetration of the emulsion can be expected
- Inspect for signs of bleeding or flushing prior to application of fog seal
- Adequate structural integrity
- Textural assessment by mechanical or optical means to avoid a less than acceptable friction value

source: Roadresource.org

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- PennDOT officially only recognizes Fog Seal as a treatment over a new Chip Seal
 - Liquid Fuels Fund requirement
- PAAMA supports and promotes the use of Fog Seal as an early preservation treatment on dense graded mixes
 - General Funds (more autonomy)



source: Roadresource.org



Inspection

- ASTM D-2995 can be used to estimate emulsion application rate and residual application rate.
- Distributor truck temperature and spray bar calibration
- Spray bar height and angle for uniform application
- PennDOT certified emulsion and application (if required)



PennDOT Fog Seal Specification

PAAMA-PennDOT Collaborative Effort

- Changes effective 10.11.24
- Consolidated Cationic and Anionic tables
- Addition of “Fast Break Fog Seal” table
 - Includes non-tracking tack emulsion
 - Break/cure time within 30 minutes or less
- 38% minimum residue

[Appendix-PennDOT Sec.472](#)



RoadResource.org

A COMPREHENSIVE RESOURCE FOR
OPTIMIZING NETWORK MANAGEMENT

Create your own log in & activate your OWN ACCOUNT

Fog Seal Treatment Construction Preparation

Fog Seal

Construction > Preparation

MORE TREATMENTS...

FIND A CONTRACTOR/SUPPLIER

OVERVIEW

ABOUT
PROCESS & VARIATIONS
EXPECTATIONS
COST
HISTORY
BEST PRACTICES

PRE-CONSTRUCTION

SITE SELECTION
MATERIAL SELECTION
MIX DESIGN
SPECIFICATION REVIEW

CONSTRUCTION

PREPARATION
WEATHER REQUIREMENTS

Notification

As with all road construction projects, keeping residents and road users notified and informed of upcoming activities is helpful in minimizing confusion, motorist delays, and complaints. Extra care should be taken to adequately inform the public and other stakeholders regarding the work.

Notification practices vary from agency to agency and from job to job, but some common forms of notification include one or more of the following:

- Letters and/or e-mails to all affected parties
- Hand-delivered notices to properties abutting the project
- Temporary "No Parking" signs at appropriate intervals on the project
- Electronic message boards set up in advance of the work taking place
- Reverse 911 automated telephone messaging to property owners
- Posting project information on the agency's website
- Social media messaging of the upcoming work
- Conventional media (TV, radio and newspaper) notices

Notification message content also varies, but usually includes the following information to address six basic questions:

472.1

472.2(b)

SECTION 472—ASPHALT FOG SEAL FOR ASPHALT SEAL COATS

472.1 DESCRIPTION—This work is the treatment of an asphalt seal coat with an application of asphalt material.

472.2 MATERIALS—

(a) **Emulsified Asphalt Material.** One of the following from a manufacturer listed in Bulletin 15.

TABLE A
Fog Seal Materials

Class of Material	Type of Material	Application Temperature (F)	
		Minimum	Maximum
CSS-1h	Cationic Emulsified Asphalt	70	150
SS-1h	Emulsified Asphalt	70	150
SS-1hP	Polymer-Modified Emulsified Asphalt	70	150
CSS-1hP	Cationic Polymer-Modified Emulsified Asphalt	70	150

If required or directed, dilute emulsified materials using emulsion and water or a compatible emulsifying solution. Do not exceed dilution of less than 38% asphalt residue. All dilution must be done by the emulsified asphalt supplier at the emulsified asphalt supplier plant location. Provide a Bill of Lading from the emulsified asphalt supplier certifying the base emulsified asphalt properties before dilution, the quantity of emulsified asphalt, and the water added for dilution, or certify the diluted product. Diluted emulsified asphalt must be applied within 48 hours after dilution. Dilution of asphalt emulsion in the field is not allowed.

TABLE B
Fast Break Fog Seal Materials

		Application Temperature (F)	
NTT	Non-Tracking Tack	140	180
CNTT	Cationic Non-Tracking Tack	140	180
*Proprietary Fast Break Materials	*As listed in Bulletin 15	*	*
<ul style="list-style-type: none"> • Do not dilute NTT/CNTT. • *Proprietary Fast Break Fog Seals Materials: Conditionally approved in Bulletin 15 according to manufacturer's recommendations. Application Temperatures according to manufacturer's recommendations. If dilution is allowed according to manufacturer's recommendations, do not exceed dilution of less than 38% asphalt residue. Dilution of asphalt emulsion in the field is not allowed. • All Fast Break Fog Seal Materials must achieve a break/cure within 30 minutes or less. 			

(b) **Fine Aggregate (Cover Sand).** Type A, Type B1, or B3, Section 703.1

Appendix-Section 472 Asphalt Fog Seal for Asphalt Seal Coats

472.3

472.4(b)

472.3 CONSTRUCTION—Place the fog seal on an asphalt seal coat constructed as specified in Section 470, or as directed by the Representative. Allow the seal coat to cure a minimum of 2 days before fog sealing. Place the fog seal application within 2 to 30 days after the last day of the seal coat placement, unless otherwise directed in writing by the District Executive.

(a) Weather Limitations. Apply fog seal when the air, surface, and aggregate temperatures are above 60F. Do not apply emulsified asphalt if, in the Representative's opinion, rain is imminent or if freezing temperatures are expected within 8 hours after application.

(b) Surface Preparations. The road surface must be clean and dry before placing the fog seal. Sweep the pavement with a motorized broom to remove excess seal coat aggregate, debris and dust. If the seal coat surface aggregate is damaged by the sweeping operation, adjust the operation until a satisfactory clean surface is achieved. Cover manholes, valve covers, sensors, etc. to prevent adherence of the emulsified asphalt. Remove protective coverings before opening the road to traffic.

(c) Emulsified Asphalt Application. Apply the emulsified asphalt with a distributor meeting the requirements of Section 460.3(b). Place emulsified asphalt on completed seal coated areas.

Construct a 100-foot test strip. Review the application of emulsified asphalt and adjust the application rate as needed. Target the Residual Asphalt Rate between 0.02 to 0.05 gallons per square yard. Determine the distributor's application rate in the field according to PTM No. 747. Apply the emulsified asphalt to minimize the amount of overspray.

(d) Fine Aggregate (Cover Sand) Application. If indicated or directed, apply fine aggregate uniformly over the surface treatment within 5 minutes of applying the emulsified asphalt. The fine aggregate application rate is 2 to 5 pounds per square yard. Lightly cover remaining spots of excess emulsified asphalt with fine aggregate, before opening to traffic. Sweep the pavement with a motorized broom before opening to traffic.

(e) Pavement Markings. Interim pavement markings can be placed after the fog seal cures. Do not place permanent pavement markings on the fog seal until 3 days after the last day of fog seal placement.

(f) Opening to Traffic. Check shaded areas to ensure the fog seal has cured fully before opening fog sealed roadways to traffic. Do not allow traffic on the emulsified asphalt until it has cured.

472.4 MEASUREMENT AND PAYMENT—

(a) Area Basis. Square Yard

(b) Material Used Basis.

1. Fine Aggregate. Ton

2. Emulsified Asphalt Material. Gallon

472 – 2
Change No. 9

