Pavement Preservation: Benefit, Timing and Practice

Fog Seals and Rejuvenators

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Do you have aged oxidized raveling pavements with hairline cracks?
What is Fog Seal

- Light application of diluted emulsion
- Renews surface
- Seals small cracks & voids
- Retards raveling
- Shoulder delineation
Conditions for Success

- Porous surface
- Low / moderate raveling
- Low / high traffic volume
- High skid resistance
- Stable surface
Fog Seal Materials

- Diluted emulsion
  - Anionic / cationic
  - Slow / medium setting
- Proper consistency for application and filling cracks
- Possible sand cover – Not needed most of the time.
What are the good candidates for rejuvenating fog seal:

- Aged, oxidized
- Dense graded HMA
- Open/Gap graded HMA
- ???Chip Seals???
- Do not apply over new slurry or micro seal
Typical application rates for eFog.
OGAC: 0.10-0.15 gal/sq. yd.
Gap Graded: 0.09-0.13 gal/sq. yd.
DGAC: 0.08-0.10 gal/sq. yd.

5 to 6 years old Chip Seal: 0.09-0.12 gal/sq. yd.
Do not apply over New Slurry Seal or Micro Surfacing

Absorption into pavement surface is critical.
Construction Considerations

- **Pavement Preparation**
  - Clean / no loose fragments, sweeping
  - Dry surface
- **Pavement temperature** ≥ 60°F
- **No rain in the forecast**
- **May use sand to prevent tracking**
- **Manage traffic control** – let it cure at least an hr depending on weather
- **Spray temperature** = 90 °F - 140°F
Inspection & Acceptance

- Materials
- Construction procedure
- Equipment
- Application rate
- Distributor speed
Performance & Limitations

- Design life (2 - 3 years)
- Not effective for:
  - Large cracks
  - Low skid resistance
  - Bleeding
  - Rutting or shoving
  - Structural deficiency
Rejuvenators

Materials applied to aged, oxidized asphalt surfaces to

- Rejuvenate surface
- Prevent raveling
- Coat stripped surface
- May reduce crack development
- Reclamite, Coherex
Rejuvenator Limitations

- Same as fog seal
- Potential of damaging surface
- Always construct a test strip
- Not being used as is
- Rejuvenators are blended in fog seal material
# High Performance Fog Seal (PMRE) Specification

<table>
<thead>
<tr>
<th>TEST PROPERTY</th>
<th>TEST METHOD</th>
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<tr>
<td><strong>TESTS ON EMULSION (PRIOR TO DILUTION):</strong></td>
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<tr>
<td>Viscosity, Saybolt Furol seconds, @ 25 °C, range</td>
<td>AASHTO T 59</td>
<td>50 - 150</td>
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<tr>
<td>Residue, by distillation(1), % by weight, minimum</td>
<td>AASHTO T 59</td>
<td>65</td>
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<tr>
<td>Oil distillate, % by volume, maximum</td>
<td>AASHTO T 59</td>
<td>0.5</td>
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<td>Particle Charge (2)</td>
<td>AASHTO T 59</td>
<td>Positive</td>
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<td>Sieve Test, retained on No. 20, % by weight, maximum</td>
<td>AASHTO T 59</td>
<td>0.10</td>
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<tr>
<td>Storage Stability, 24 hours, %, maximum</td>
<td>AASHTO T 59</td>
<td>1.0</td>
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<td><strong>Tests on Residue from Distillation:</strong></td>
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<td>Viscosity (3), @ 60 °C, poises, maximum</td>
<td>AASHTO T 315</td>
<td>5000</td>
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<td>Penetration, @ 4 °C, 200 grams, 60 seconds, 0.1 mm</td>
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<td>Elastic Recovery (4), @ 10 °C, %, minimum</td>
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<td>Flash point, Cleveland Open Cup, °C, minimum</td>
<td>AASHTO T 48</td>
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<td>Kinematic Viscosity, @ 60 °C, cSt</td>
<td>AASHTO T 201</td>
<td>50 - 175</td>
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<tr>
<td>Saturates, % by weight, maximum</td>
<td>ASTM D 2007</td>
<td>30</td>
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<tr>
<td>Asphaltenes, % by weight, maximum</td>
<td>ASTM D 2007</td>
<td>1.0</td>
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<tr>
<td><strong>Tests on Residue (AASHTO T 240):</strong></td>
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<tr>
<td>Mass Change, %, maximum</td>
<td>AASHTO T 240</td>
<td>6.5</td>
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<tr>
<td>Kinematic Viscosity @ 60 °C, cSt</td>
<td>AASHTO T 201</td>
<td>Report</td>
</tr>
<tr>
<td>Kinematic Viscosity Ratio(5), maximum</td>
<td>- - - -</td>
<td>3</td>
</tr>
</tbody>
</table>
Fog Seal  no Fog Seal
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