

Development of AASHTO Emulsion Performance Grading Standards

AASHTO TSP ETF Meeting
May 22-23, 2017
Denver, CO

Chip Seal Performance Specifications

Objectives for 2017:

- Residue Testing Guidelines: Draft 1A....
- On-going Research & Method Development
- In-service Evaluation of Test Methods
- Identify Funding Sources
- Validation Plan

Chip Seal Emulsion Residue Testing Guidelines: Draft 1A

Objective: Evaluate/Merge SPG/EPG and ?

- Identify high temperature test
 - MSCR vs $G^* \times \sin \delta$
- Identify low temperature test
 - 4 mm DSR vs 8 mm DSR vs BBR
- Determine need for PAV long-term aging
- Characterize polymer modification: PG+??
- Climate zones (67-19): Grades per zone (2 or 3)
- Not yet addressed:
 - Hi-float (yield stress); strength test
 - Curing rate - sweep; water loss

Central Lab to Manage Testing Program

Possible Contract Laboratories

- Mathy - Hanz
- Purdue Superpave Center – McDaniel
- Asphalt Institute – Anderson
- UNR – Sebally, Hajj
- TTI, NCS

Need Funding

On-going Research & Method Development

- Paragon study - Baumgardner
- Research in UK/Europe – Rowe
 - Need for Strength Test at $G^* \sim 20$ MPa
- DSR to Specify Hi-Float Emulsion Residues
 - Yield stress; Shear-rate dependence
 - Fundamental climate-based parameter or a pass/fail equivalent @ 60 C?
 - Addressed by ETF subcommittee: chaired by Kadrmas
- Method Development: 4 mm DSR
 - Issues with temperature control methods

Summer 2016 Sampling Program

- Collect 20-25 chip seal emulsion samples from selected agency projects for round-robin testing
 - Varied climates
 - Range of emulsion types

In-service Evaluation of Test Methods

Are the Proposed Test Methods Implementable for AASHTO Specifications?

- Agency: Maintenance & Materials support
- Industry: Guarantee reliable supply chain

AASHTO Test Method Validation:

How to enlist Agencies/University/Industry lab to participate in round robin testing to validate proposed test methods, set specification limits, and collect ruggedness, reproducibility data

Validation & Implementation Plans

- to include UPGs & RPPs, Industry/AEMA

Chip Seal Performance Specifications: Lead States Program

Identify agencies/universities that:

- have buy-in from preservation, materials, and local academia
- can collect and at-least partially test emulsion residues from ongoing chip seal projects using Draft Testing Guidelines
- will support further implementation and training within all five User-Producer Groups and four regional PP partnerships
- *have interest in further supporting ETF*

Lead States Program

Potential Partners

- Southeast: Texas & North Carolina
 - Contacts: Hazlett, Epps-Martin, Kim
- Pacific Coast – Nevada
 - Contacts: Sebaaly, Hajj, Bush, Morian
- Rocky Mountain – Utah
 - Contacts: Anderson, Van Frank, Romero
- North Central – Indiana
 - Shields, McDaniel
- Northeast - ?Ontario, New York?
- China – JSTI Group

Funding Options for Development of Standards

- Ask Lead-State Agencies to fund local universities
- NCHRP RFP submitted in October
- Preservation Partnerships funding requested
 - Likely not a large sum. ~\$15,000
- User-Producer Groups to fund regional labs
- Pooled Fund
 - Could be difficult due to the prevalence of pooled fund studies and competition for funding (FHWA)
- Leveraging / assisting with China study
- Apply for Federal Lands CTIP funding
- Leverage industry support: AEMA, FP2, AI

Development of Standards

Reality: develop standards on low budget

Options:

- Leverage research and data from previous studies
- Reduce scope of field validation effort
- Leverage pro bono testing from industry and/or State DOTs
- Move forward with provisional standards using current best knowledge and expertise

Prioritize Other Applications

Micro/Slurry

- NCSU EPG recommendations

Tack Coat

- Emphasis on Trackless Tack from FHWA
Innovation
- Northern States have performance problems
- Tack needs climate-based performance specs

Input on Specification Approach

- Review strawman from Dec Meeting
- Develop consensus path forward
- Open discussion on specification development
 - What are the top concerns from industry
 - What are the top concerns from agencies
 - Input from academia
 - What applications deserve priority?