



Best Practices for Application of Tack Coats

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❖ **Lecture Details**

- *The proper application of tack coat is an integral part of good pavement performance. A wide variety of tack coats are available to the asphalt industry. This session will provide information regarding material characteristics, construction practices, and their effect on the asphalt pavement performance.*
- *Understand importance of tack coat*
- *What is the proper application rate for tack coats.*
- *What is the best Quality Control for tack coat applications.*

❖ **Pavements can lose up to 50% of its life if debonding occurs between layers.**

❖ **Distresses from improperly bonded layers, not a limited list**

- **Delamination**
- **Top-down cracking**
- **Fatigue cracking**
- **Slippage cracking**

❖ **Advantages of reduced tracking emulsions, provided that the underlying pavement surface is clean**

- **Increased bond strength**
- **Shorter break and cure times**

❖ **Disadvantages**

- **Handling and storage are tricky**
- **Materials still have to break and cure**
- **Cost may be greater than conventional.**

❖ **NCHRP Synthesis 516 covers tack coats in detail.**

❖ **Advantage of conventional neat binder tack**

- **Cools quickly**
- **Virtually eliminates tracking**
 - **Provided that the surface is cleaned properly**
- **Less delays to paving operation**
- **Reduced amount of material needed**

❖ **Disadvantages of conventional neat binder tack**

- **Higher application temperatures**
 - **Safety concerns**
 - **Associated energy costs**
 - **Time needed to reheat the material**

❖ **Hot applied reduced tracking materials**

- **Neat or poly binder**
- **Materials cool quickly and resists tracking**
- **Advantages**
 - **Less tracking**
 - **Less delay**
 - **Lower application rates**
- **Disadvantages**
 - **Higher application temps**
 - **Higher costs**

❖ **Spray pavers most commonly used with OGFC and Gap Graded pavements**

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❖ Evaluation of existing pavement condition:

- Cleanliness of pavement
 - Bond strengths showed statistically significant differences between clean and dusty conditions
- Pavement age
 - Older pavements absorb more tack and therefore require more tack; new pavements don't absorb as much
- Pavement surface texture
 - Has a significant effect on the required residual tack coat application rate
 - Greater surface texture needs more tack
- Milled surface
 - Still needs to be cleaned
 - Rough surface needs more tack.
- PCC surfaces
 - If it has been diamond ground or milled, requires more tack
 - Increased tack rate probably not necessary to account for the joints and cracks
- Moisture on pavement surface
 - Will require more time to cure.
- Three problems with tacking
 1. Underlying pavement layer is not properly cleaned
 2. Unbroken or uncured asphalt emulsion
 3. Residual asphalt from the emulsion is too soft
- Bond Strength Testing
 - NCAT recommended

❖ Key Takeaways

- Long term performance of an asphalt pavement is directly related to proper bonding
- If possible, don't dilute the emulsion.
 - Reduces the residual asphalt on the pavement, which can impact performance
 - More water means emulsion takes longer to cure
 - Potential for more tracking and lower bond strengths
- Make sure the pavement is as clean as possible prior to tacking
- Be aware of Application Rate versus Residual Asphalt Residue Rate
- Bond strength testing is a relatively simple method of determining how effective the bond is
 - >100 psi is generally easy to obtain