Tack Coat Best Practices

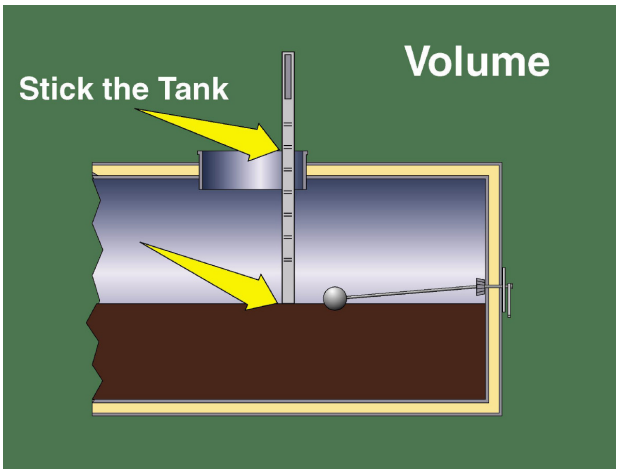
Factors that Influence the Quality Application of Tack Coats

- **Calibrated Equipment**
- **Correct Nozzle Size**
- **Proper Equipment Maintenance**
- **Appropriate Application Rate**
- **Tack Material Selection**
- **Cleaning the Surface for Application**
- **Uniform Material Distribution**
- **Proper Break/Cure Time**
- **Don't Forget the Joints!**

Calibrated Equipment

- **Tack distributor trucks should be calibrated periodically to ensure that the actual applied rate is close to the rate selected by the controls.**
- **A good way to verify the accuracy of the control system is to use a measuring stick to determine the level of material in the tank before and after application. The measuring stick must be calibrated to a specific distributor tank.**

Note: The Truck must be on a level surface!



Calibrated Equipment

- **The best way to calibrate a tack distributor is to measure the amount of material applied to pads of a known area and mass.**
- **ASTM D-2995 is a test standard that describes this process.**

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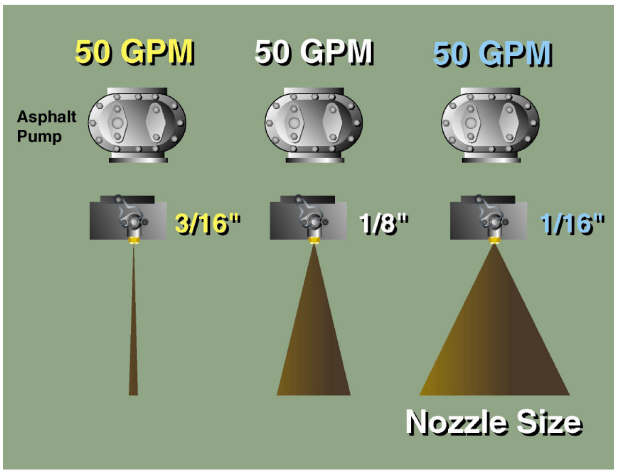
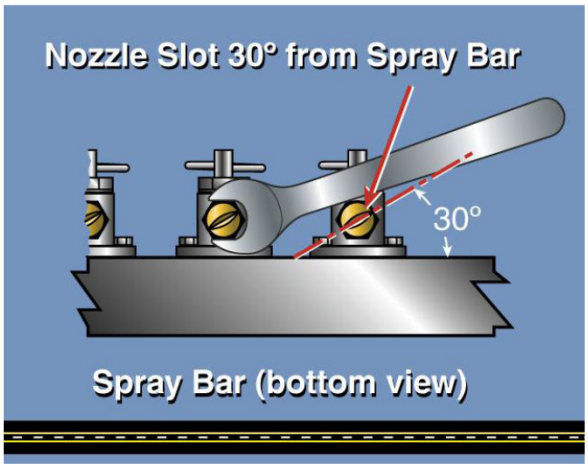
Correct Nozzle Size

- **Distributor trucks are capable of applying a variety of materials over a wide range of rates. This flexibility is made possible by utilizing spray nozzles with different size openings.**
- **To ensure a sufficient amount of pressure is built-up in the spray system, the nozzle must match the opening size and viscosity of the material being applied. In general, the smaller the opening, the greater the pressure.**



Proper Equipment Maintenance

- **Nozzles must be clean/unclogged and should be adjusted to the proper angle.**
- **The height of the spray bar should be approximately 12" above the surface.**
- **If equipped with one, the material strainer should be checked daily and cleaned if necessary.**



Appropriate Application Rate

- **Not all surfaces need the same amount of tack applied to ensure a proper bond. The application rate specified on a set of project plans is a good initial target, but the final rate should be determined by placing a tack coat test strip at the beginning of the job, in accordance with TDOT spec section 403.05.b.**

TDOT Spec 403.05.b:

For the test strip, apply the tack material at a rate between 0.05 and 0.10 gallons of applied emulsion per square yard. If placing the bituminous material upon a milled surface, apply the tack material at a rate between 0.08 and 0.15 gallons of applied emulsion per square yard…

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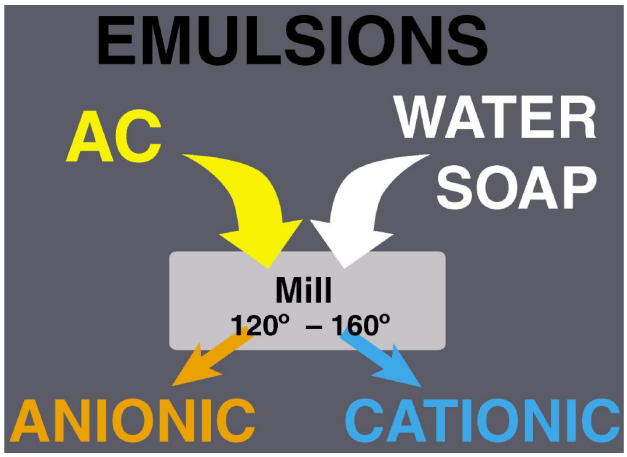
Tack Material Selection

- **TDOT permits the use of several emulsified asphalt materials as tack coats. Refer to section 403.02 of TDOT's specs for the official list.**

Table 403.02-1: Tack Coat Application Temperatures

Material	Temperature Range
SS-1, SS-1h, CSS-1, TST-1P, CQS-1h, CQS-1hp and CSS-1h	60 to 140 °F
TTT-1	160 to 180 °F
TTT-2	120 to 160 °F



Cleaning the Surface

- **Sweeping the substrate is critical prior to tack coating. Dust or debris on the surface will prevent the emulsion from bonding to the substrate pavement.**
- **In cases where there is a significant amount of very fine dust, such as a milled surface that has been left open to traffic, a vacuum sweeper may be required to prevent tack from sticking to equipment tires.**


TACK BUILD-UP ON PAVER BOGEYS DUE TO DUSTY SURFACE

Uniform Distribution of Material

- **To ensure a proper bond, material must be applied evenly across the entire surface. Streaks are to be avoided.**
- **Adjustments to the pattern of nozzles or to the height of the spray bar may need to be made in order to distribute the material evenly.**


"CORN ROWS" (STREAKS) DUE TO AN UNEVEN DISTRIBUTION OF MATERIAL

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TDOT Spec 403.05.b:

In all cases, ensure that the application will result in a minimum double overlap of the actual tack spray as it lands on the surface. Adjustment of the spray-bar and the nozzles may be necessary to achieve this minimum double overlap. Corn-rows or any other pattern that would result in less than double overlap coverage of the tack coat are not acceptable for the tack application.

Proper Break/Cure Time

- **When first applied as tack coat, emulsion is brown in color – indicating that it is still in emulsified form**
- **Break: When the emulsion changes from brown to black, the emulsion has "broken" or the asphalt binder particles have separated from the water and coalesced.**
- **Set: When all of the water has evaporated, the emulsion has "set," and all that is left is asphalt binder. *Tack needs to be DRY prior to paving.***

Don't Forget the Joints

- **TDOT spec 407.16 requires that tack be applied to both longitudinal and transverse joints.**
- **Per TDOT Spec. 407.10: *The contractor must paint contact surfaces of curbing, gutters, manholes, and other structures with a thin, uniform coating of bituminous material before placing the mixture against them.***
- **This can be accomplished by using a specially-aimed nozzle or by applying by hand with a spray wand.**