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Tack Coat



Tack coat is diluted emulsified asphalt applied to an existing paved surface. It creates a bond between the existing surfaces and a hot-mix overlay, which increases the pavement strength. Omitting tack coat can reduce pavement life. It creates the necessary bond between the adjacent and the underlying materials and the new pavement layer. Therefore, crews should apply tack coat to all adjacent surface (i.e. curbs, gutters, structures, or existing pavement). This ensures that the entire pavement structure will act together.

Without tack coat, pavement deficiencies such as debonding, mat slippage, and top-down cracking can occur. The deficiencies will create other distresses and can greatly reduce the life of the pavement surface.

NHDOT Standards

The *NHDOT Standard Specification for Road & Bridge Constructions* states that a tack coat shall be applied immediately prior to placement of pavement. The rate of emulsified asphalt application shall be between 0.02 and 0.05 gal/yd². An engineer should determine the rate considering the relative absorbance and texture of the pavement surface.

Application

Properly applied tack coat results from good surface preparation and application, along with the properly setup and function of the equipment. The three essential requirements to tack coat are:

1. the surface must be clean,
2. the coat must be thin, and
3. applied evenly.

Agencies should apply tack coat when the surface of the road is clean of dust, soil, pavement grindings, and other foreign matter. The surface should be dry before applying the tack coat. This ensures a proper bond and cool.

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Tack coat should set sufficient time to cure before allowing construction vehicles on it. Cured tack turns from brown to black and the surface becomes sticky. Paving equipment on wet tack coat may result in tracking, which typically occurs in the wheel paths. These are the most critical locations for new surfaces to bond to existing surface.

Tracking occurs more often on milled surfaces because large amounts of debris can remain from the milling process. Sweeping alone is typically inadequate to remove the debris. A broom and vacuum system works best to completely clean the roadway prior to tack coat application.

Too much tack coat is wasteful and takes too long to cure. Too much tack can migrate into the overlay, negatively affecting mix properties. It can even bleed through thin overlays. Excessive tack can act as a lubricant, creating a slippage plane as well as paving over uncured crack. A slip plane is noticeable during rolling operations in the form of checking or micro cracking.

Distributor equipment is essential for proper application. To ensure the desired rate and uniformity, distributor operators must maintain proper temperature, pressure, and spray bar height.

The suggested spraying temperature of a slow setting asphalt emulsions, such as SS-1H, is between 75 and 130F. The correct temperature ensures adequate flow of the material.

The pressure depends on truck speed, application rate, type of emulsion, and type of spray bar nozzles. The correct opening of the spray bar nozzles produces the right pressure. Incorrect pressure results in spray back or misting.

The nozzle angle should be 15 to 30 degrees. All nozzles should be set at the same angle to optimize overlap and minimize interference.

Spray bar height depends on truck speed, the snivy configuration, and the application pressure. Operators should adjust the spray bar height throughout the day depending on the amount of emulsion in the tank.



The fundamental aspects of tack coat success include:

- Thoroughly clean roadway surface.
- Ensure all the equipment functions properly and is set up correctly.
- Choose the proper application rate for the emulsion used and the existing surface conditions.
- Apply the materials uniformly.
- Allow the tack to break prior to paving to ensure the best possible bond between layers.

The proper preparation of the existing surface and tack coat will lead to longer performance of asphalt overlays.

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