



Ultimate Bonding, Without Tire "Pick Up"

The Silane
Nanotechnology
for Penetrative
and Reactive Bonding



NANOTECHNOLOGY FOR TACKCOAT

BENEFITS

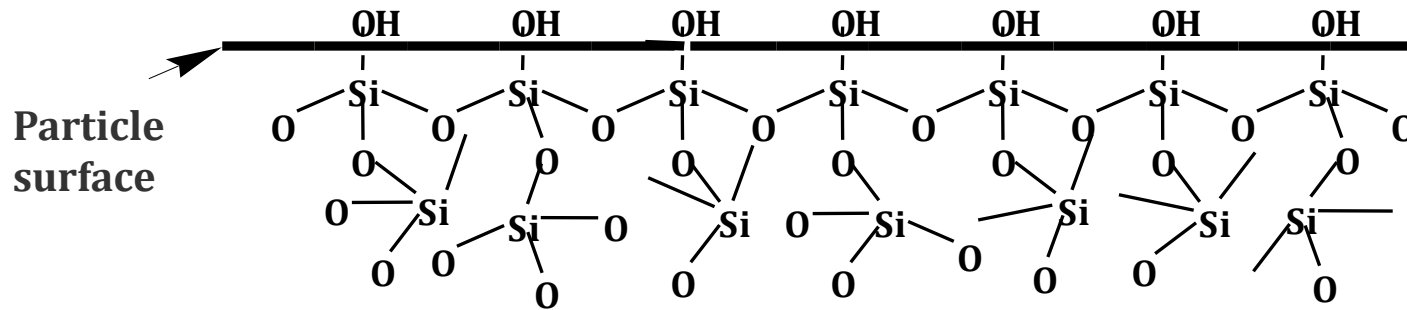
- Reduced Tire Pick up
- Ensures excellent wetting, penetration
- Quick setting time
- Clean nozzles for uniform coverage
- Reduces residual asphalt binder

FEATURES

- New generation reactive 100% Organo Silane technology for water-resistant, penetrative tack coat
- Excellent wetting, sets quickly and eliminates tire pick up
- Converts water loving dust / dirt / aggregates to asphalt loving surfaces for excellent bonding
- Improves stability of cationic bitumen emulsion
- Lowers surface tension of cationic bitumen emulsion

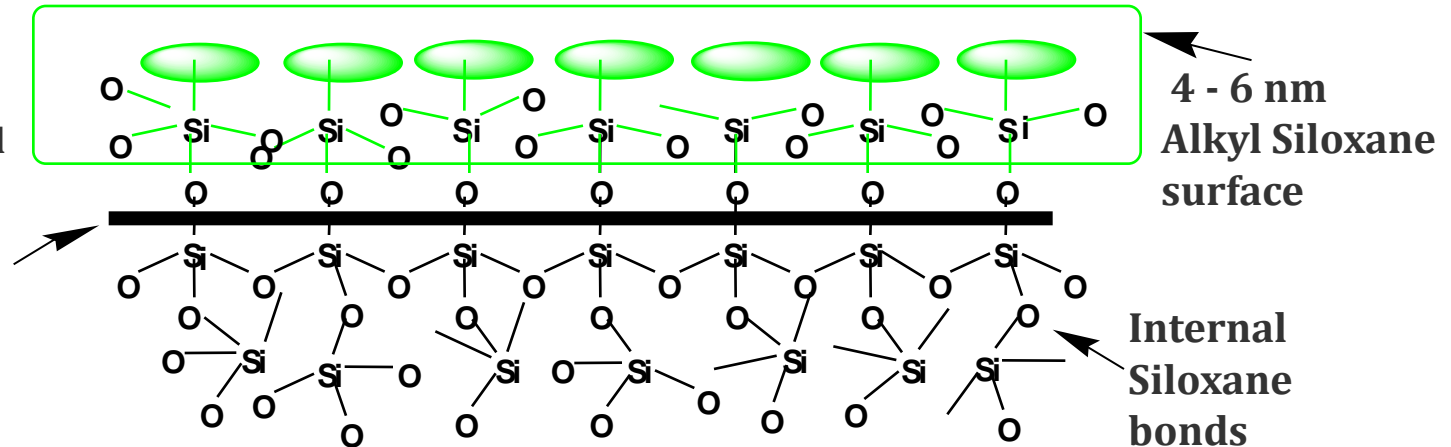
CHEMICAL ACTION

-OH groups make surface very hydrophilic (water loving)



Untreated Stone / Dust/ Dirt/ Aggregates

Nanotac
creates
molecular level
Asphalt loving
zone



Treated with Nanotac



WATER SENSITIVITY

- Asphalt Surfaces are water sensitive due to inadequate cleaning of dirt & dust
- Milling generates micro cracks in the asphalt layer allowing higher water permeation
- Water sensitivity causes bonding failures



WATER RESISTANCE

- Nanotac converts water loving dust / dirt / aggregates to asphalt loving surfaces
- Ensures excellent bonding & water resistance





POOR WETTING

- Cationic bitumen emulsion has poor wetting properties
- Results in poor coverage of tack coat



EXCELLENT WETTING

- Nanotac lowers the surface tension of the cationic bitumen emulsion
- Leads to excellent wetting & complete coverage



NOZZLE CLOGGING

- Cationic bitumen emulsion has poor mechanical stability
- Results in clogging of nozzles and non-uniform application



CLEAN NOZZLES

- Nanotac keeps nozzles clean by improving stability of cationic bitumen emulsion
- Ensures uniform spraying at room temperature
- Heating of the emulsion not required, saving energy & time



EXCESS BITUMEN

- Cationic bitumen emulsion particles size range from 5 - 10 microns
- A 10 micron layer requires 10 gm / m² of residual asphalt
- 150 - 250 gm / m² is specified world over as residual asphalt for tack coat application
- Excess deposition of 15 - 25 times needs to be optimized



BITUMEN OPTIMIZED

- Allows substantial reduction in asphalt thickness due to better wetting & spraying
- Green Technology



TIRE PICK UP

Cationic Bitumen Emulsion..

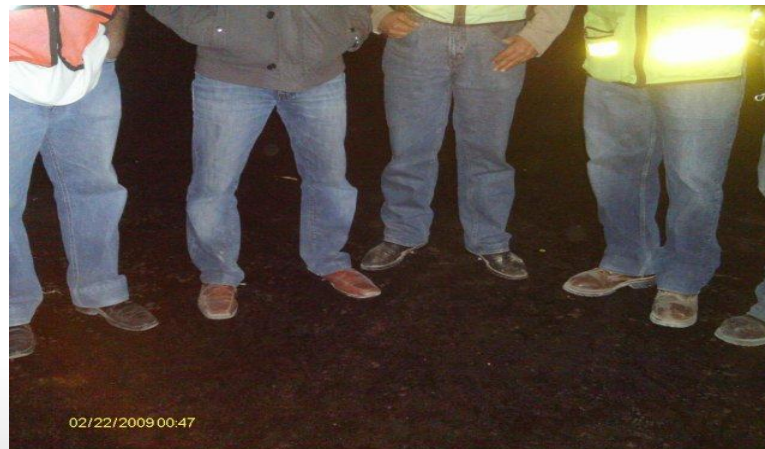
- Has poor drying
- Is tacky
- Bonds superficially

... causing Tire Pick Up



NO TIRE PICK UP

- Wets, penetrates & sets quickly (5-10 minutes)
- Reduces tackiness on the surface
- Eliminates Tire Pick-Up



MIXING PROCESS

- Start re-circulation of cationic bitumen emulsion
- Add water followed with Nanotac, continue re-circulation for 10-15 minutes
- Spray the Mix

FORMULATION

Additive	Cationic Bitumen Emulsion (60 %) (kg)	Water (liter)	Nanotac (kg)	Total (liter)	*Asphalt Content (%)
No Additive	3000	3000	-	6000	30
Nanotac	1500	4500	45	6000	15
Nanotac	1000	5000	50	6000	10

* A 10 micron thickness requires only 2% residual asphalt content