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PlusTi™
Smog Eating Roads
A Better Way to Get There

Pavement Technology, Inc.

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JOINTBOND^{Ti}® super-hydrophilic longitudinal joint stabilizer



PlusTi JOINTBOND^{Ti} longitudinal joint stabilizer application

The PlusTi™ family of smog-eating road penetrants includes JOINTBOND^{Ti}® super-hydrophilic longitudinal joint stabilizer for asphalt pavements. Longitudinal joints and rumble strips in asphalt pavements are the most common and earliest point of pavement failure due to insufficient density during construction. Left unaddressed, these inherently weak joint areas reduce pavement life cycle by as much as 40 percent.

PlusTi super-hydrophilic longitudinal joint stabilizer improves density and protects longitudinal joints and surrounding areas. It uses traditional Maltene Replacement Technology (MRT) to deeply penetrate the pavement, stabilizing the critical joint area with a proven, polymerized, maltene-rich asphalt rejuvenator emulsion.

As added benefits, PlusTi JOINTBOND^{Ti} longitudinal joint stabilizer incorporates PTI's state-of-the-art photocatalytic technology with Titanium Dioxide (TiO₂) for dramatically stronger water resistance, producing a quick-drying, self-cleaning surface that prevents water intrusion damage including ice-builds. It also provides a UV-protective cool pavement that slows down future oxidative damage.

As with all of PTI's TiO₂-enhanced pavement preservation products, PlusTi joint stabilizer captures and removes as much as 60 percent of toxic vehicular exhaust, principally nitrogen oxides (NOx) and volatile organic compounds. The PTI suite of pollution-remediating pavement preservation solutions create an air-purifying roadway microenvironment

(ME) that can mitigate the effects of Urban Heat islands, contributing to an agency's compliance with the Clean Air Act (CAA) and the U.S. EPA's stringent National Ambient Air Quality Standard (NAAQS).

PlusTi super-hydrophilic longitudinal joint stabilizer is the ideal solution for new asphalt highway rumble strips and other critical joint areas for government agencies dealing with reduced budgets, deteriorating infrastructures and pollution concerns.

Markets

- DOTs
- Urban/Suburban Municipalities, Counties
- Highway Rumble Strips, Shoulders and Ramps
- Airports with Compatible Substrates

Compatible Substrates

- For asphalt pavements less than one year old

Benefits

- Helps prevent cracking and deterioration of critical joints and rumble strips
- Penetrates deeply and quickly to protect against air, water, ice and salt brine
- Provides a super-hydrophilic surface for rapid water displacement, dramatically improving water resistance along the joint, with implications for improved inclement-weather performance
- Restores and improves longitudinal joint area density and durability

- Captures and removes up to 60% of toxic airborne vehicular emissions
- Self-cleaning with anti-mold and anti-bacterial properties
- Will not obliterate striping and other markings
- Leaves no surface residue
- Field tested and proven technology

How It Works

PlusTi JOINTBOND^{Ti} polymerized super-hydrophilic joint stabilizer was developed to inhibit the premature deterioration of construction joints by penetrating the asphalt pavement and molecularly combining with the existing asphalt binder. As a polymerized maltene-based emulsion, PlusTi joint stabilizer extends the service life of longitudinal joints and rumble strips in three ways:

- Improving the structural density of the in-place asphalt binder
- Adding a physical in-depth seal to the construction joint area, thereby sealing the surrounding area against intrusion by air, water, ice and salt brine
- Providing a TiO₂-enhanced, superhydrophilic and solar reflective surface for rapid water displacement and reduced UV-induced oxidation

The emulsion delivers photocatalytic TiO₂ deep into the asphalt surface, leaving behind a photocatalytic surface layer that is air purifying and improves both solar reflectance values and water displacement capacity. As weather and traffic wear the surface layers of pavement, deeper layers of TiO₂ are exposed at the surface in a self-generating process.

How to Apply

Temperature

Apply only when ambient temperature is expected to remain at or above 40°F for 12 hours.

Surface Preparation

Surface must be dry with no threat of rain within 4 hours of application.

(continued)

Field testing shall be performed prior to application to determine the maximum amount of material that the pavement can absorb within a 20 minute period. Contractor shall apply various test strips ranging in length from 100-150 ft. using different rates, noting the time it takes for total absorption to occur without surface residues remaining.

Application Method/Rate

PlusTi polymerized super-hydrophilic asphalt joint stabilizer must be applied by an approved applicator using a computerized distributor truck cleaned of all other materials to prevent contamination. Its recommended application rate is

between 0.06 and 0.15 gallons per square yard (GSY).

PlusTi joint stabilizer shall be applied such that a uniform distribution is obtained along the longitudinal construction joint and an area a minimum of 12 inches on each side of the joint.

Multiple applications may be needed on grades or super elevations prone to excessive runoff. Succeeding applications shall be made as soon as penetration of the preceding application is complete.

Other Considerations

Treated sections must be closed and free from traffic until PlusTi treatment is complete. Traffic control shall be

conducted in compliance with all local, state and federal requirements.

Limited Warranty

Pavement Technology, Inc. (PTI) warrants its products to be of the highest quality. Refund of purchase price or replacement of product shall constitute the limit of PTI's liability. PTI makes no other warranties, express or implied, with respect to the products or any service and disclaims all other warranties, including any warranty of merchantability and fitness for particular purpose. This limited warranty may not be modified by reps of PTI, its distributors or dealers.

Specifications/Testing¹

Characteristics Tested	Test Locations	
Hydrophilic		Water Contact Angle (WCA) in °²
	Summit County, OH (A)	41°
	Summit County, OH (B)	40°
	Control	121°
NOx (Vehicle Exhaust) Reduction Efficiency		Percent of NOx Reduction
	Summit County, OH (A)	46%
	Summit County, OH (B)	47%
	Control	negligible
Solar Reflectance Value		Solar Reflectance Index (SRI)³
	Summit County, OH (A)	39
	Summit County, OH (B)	41
	Control	9
Depth of Penetration		Avg. TiO₂ Load (ppm) @ ¼ inch or more⁴ wearing course depth
	Summit County, OH (A)	3320
	Summit County, OH (B)	3314

1 Laboratory and field sample testing conducted by Texas A&M Transportation Institute (TTI).
 2 A lower WCA indicates faster water desorption (displacement).
 3 The USGBC LEED V4 Heat Island Reduction (HIR) minimum is 29.
 4 Wearing-course depth based on Zollinger DG and Joshaghani A, Texas A&M Transportation Institute, Follow-up, December 2019.

Safety Guidelines

Contractors shall follow all stipulated application requirements.

Manufacturer

D&D Emulsions, Inc., Mansfield, OH

National Distributor

Pavement Technology, Inc., Westlake, OH

Covered by one or all of Patents:
 US7,929,038 B2; US8,172,479 B2;
 US8,899,871 B2 and
 Canadian 2,558,935

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