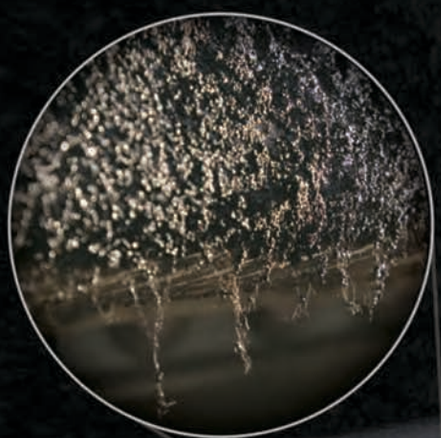
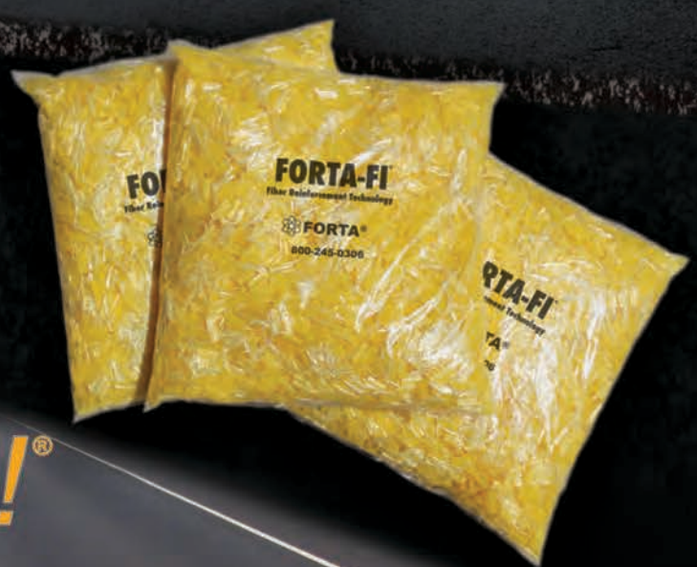
# FORTA-FI®

## High Tensile Strength Synthetic Fiber Reinforcement for Asphalt Pavement






## IMPROVE PAVEMENT PERFORMANCE

## Get FORTA*fied!*®

**Conventional Asphalt Pavement** ⟷ **FORTA*fied!*® Asphalt Pavement**

# The Sustainability Solution for Asphalt

## Who is FORTA®?

Forta Corporation's asphalt fibers have successfully been used in projects around the world. With the first patent in 1982, joined by two additional patents in 2012, we continue to grow and expand our products. Not only are we a manufacturer, we continue to perform scientific research that gives us the ability to develop our products and to better quantify the value provided by these products.

## What is FORTA-FI®?

The secret to reinforcing almost any construction material is historically simple: add fibers throughout the material to add strength, toughness, and durability. FORTA® capitalizes on this three-dimensional certainty by providing strong and chemically inert synthetic fibers, containing aramid and polyolefin, — FORTA-FI® — that mix quickly and distribute uniformly in asphalt mixtures. Once distributed, FORTA-FI® acts as reinforcement in both conventional and modified asphalt mixtures, offering improvements to stability-related problems often occurring in unreinforced asphalt pavements.

Though the millions of distributed fibers are easily detectable in the asphalt mixture, they become virtually invisible on the pavement surface, and they require no modifications to normal lay-down and compaction practices. By controlling thermal, reflective, and fatigue cracking, as well as rutting, FORTA-FI® is a cost-effective way to improve the durability and longevity of a wide variety of hot mix asphalt, warm mix asphalt, and hot/cold patch applications. FORTA-FI® will continue to pave the way for a fiber-reinforced asphalt future.


**Traditional Asphalt Pavement**


As a truck stops, the force drives down into asphalt pavement and supporting layers, causing stress and fatigue where the tires meet the road.

**FORTA*fied!*® Asphalt Pavement**


As a truck stops, the aramid fibers spread the force throughout the treated layer, reducing stress and fatigue where the tires meet the road.

EACH CUBIC FOOT OF PAVEMENT CONTAINS APPROXIMATELY **16.5** MILES OF ARAMID FIBER.

**3D REINFORCEMENT**

## COST-EFFECTIVE

***SAVE NOW:***

***35% reduction in asphalt thickness***


*Based on a 2008 ASU case study prepared using Mechanistic Empirical Pavement Design Guide (MEPDG).*

***SAVE DOWN THE ROAD:***


*Based on a 2008 ASU case study prepared using Mechanistic Empirical Pavement Design Guide (MEPDG).*

## EASY TO USE

- easily metered automatically or manually
- mixes in drum plants and batch plants
- mixes thoroughly in seconds
- distributes uniformly

**NO MODIFICATIONS needed to:**

- your current asphalt mixture
- asphalt plant
- placement or compaction practices

## TESTED AND PROVEN

**Extensively tested with proven results!**

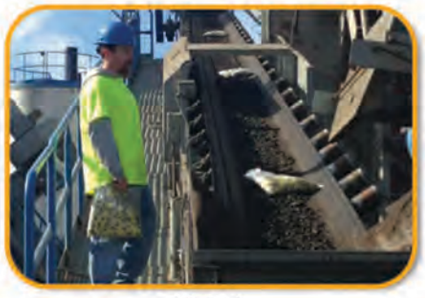
# *Extensively tested with* PROVEN RESULTS!

FORTA-FI® has been involved in a considerable amount of research throughout its product history. FORTA-FI® has reinforced projects all over the world ranging from highways and municipal streets and roadways, to commercial and industrial parking lots – even residential driveways. FORTA-FI® continues a strong FORTA Corporation tradition by reinforcing the future of asphalt. Though substantial data has been generated in laboratory research programs from around the world, much of the most valuable information has come from actual projects and trials using FORTA-FI® reinforcement.

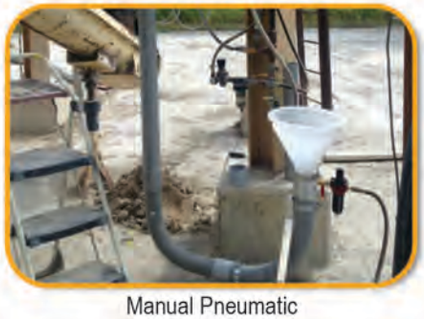
Tests have a wide variety of research parameters and include: *Binder Tests, Triaxial Shear Strength, Dynamic Modulus, Permanent Deformation, Repeated Load, Static Creep, Beam Fatigue, Indirect Tensile Strength, Static Creep/Flow Time and Fracture & Crack Propagation.*

*The test results proved FORTAfied!®Asphalt is far superior to non-FORTAfied!® asphalt mixtures.* (Actual test results are available upon request.)

## Four General Ways to Introduce FORTA-FI® into the Mix



Manual



Manual Pneumatic (Little Shot)

Metered Pneumatic (Big Shot®)

Automated Fiber Feeder

## FORTA*fied!*® Asphalt
### Asphalt Reinforced with FORTA-FI®
(The Sustainability Solution for Asphalt)

**VS.**

## Non-FORTA*fied!*® Asphalt

C Line Integral
Crack Propagation Test

**FORTA*fied!*® Asphalt** | **Non-FORTA*fied!*® Asphalt**

These test samples from the C Line Integral Crack Propagation Test are for a visual comparison of unmodified asphalt, meaning no FORTA-FI® fibers, and FORTA*fied!*® asphalt mixtures. The test demonstrated that the more energy required and the slower the crack speed, the better the mixture will resist cracking. Fiber-reinforced asphalt controls cracking as seen by additional tests performed at Arizona State University that show:

- Higher crack propagation resistance
- Higher fatigue life
- Higher strength (150%)
- Higher tensile strain at failure
- Higher fracture energy at failure
- Higher energies (200%)
- Lower thermal cracking, even at 14°F (-10°C)

The high fiber count in the FORTA*fied!*® asphalt mixture resulted in much better resistance to crack initiation and much better resistance to crack propagation.

FORTA®

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made in usa

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