



# EVO THERM

WARM MIX ASPHALT TECHNOLOGY

# Evotherm

## What is it?

- Chemical additive package
- Optimized to deliver
  - Mixing
  - Coating
  - Workability
  - Compaction
  - Adhesion

# Evotherm Emulsion

## How does it work?

- Evotherm Emulsion Technology (ET)
  - High-residue asphalt emulsion
  - Delivered at 0.5% by emulsion weight

# Evotherm DAT

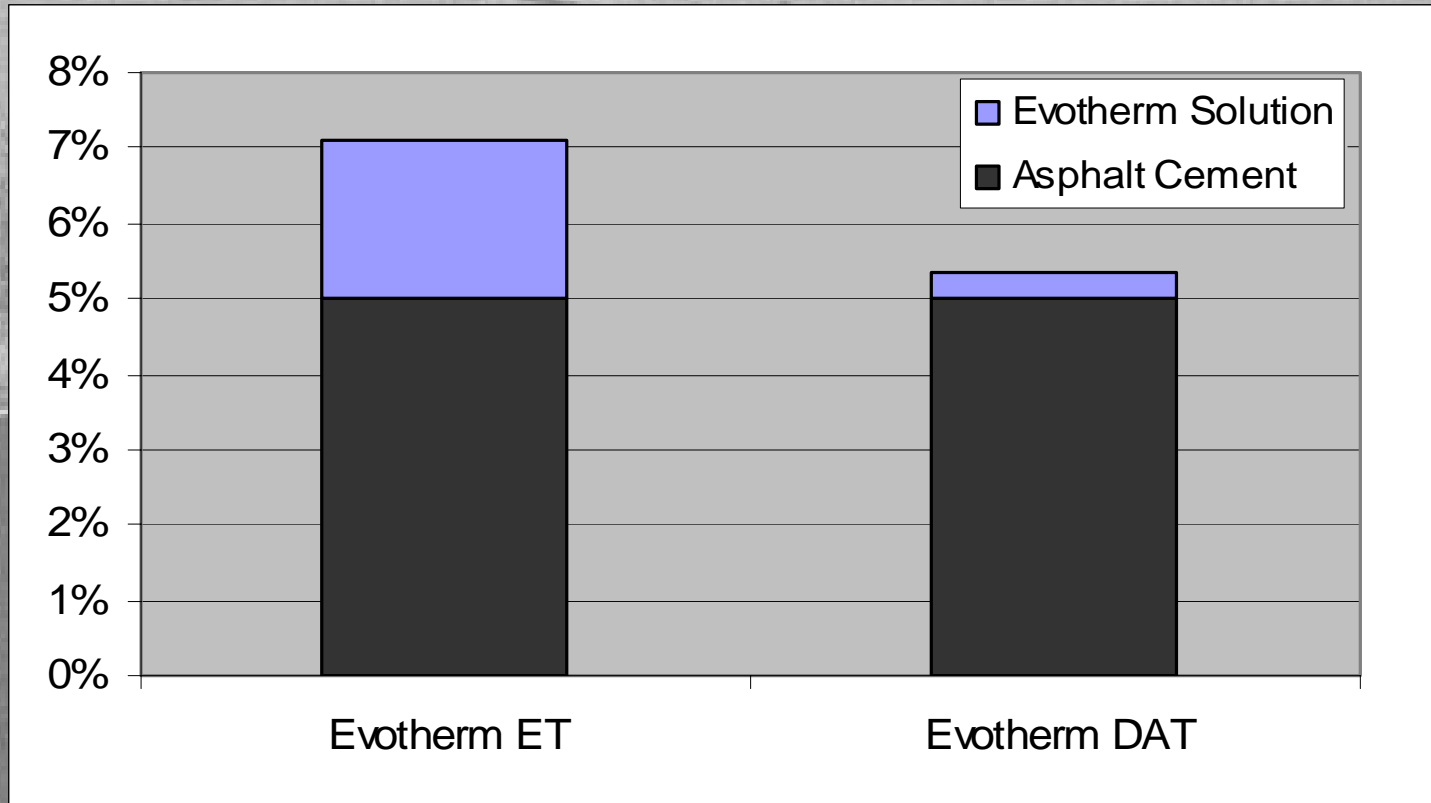
## How does it work?

- Evotherm Dispersed Asphalt Technology (DAT)
  - Same chemistry as Evotherm ET
  - Chemical concentrate directly injected into asphalt line at plant
  - DAT concentrate delivered at ~5% by asphalt weight

# Evotherm DAT



# Evotherm Composition




# Evotherm

## How does it work?


- Effective temperature range
  - Mix temperature
    - 250-170°F
  - Compaction temperature
    - 235-160°F

# Typical Application Temperature

~100°F less than Hot Mix

A hand holds a black EvoTherm thermometer against a dark, textured surface. The digital display shows the number 201. The thermometer has a red 'ON' button and a small logo at the bottom.

201

A hand holds a black EvoTherm thermometer against a dark, textured surface. The digital display shows the number 296. The thermometer has a red 'ON' button and a small logo at the bottom.

296

**EVO**THERM

**Hot Mix**

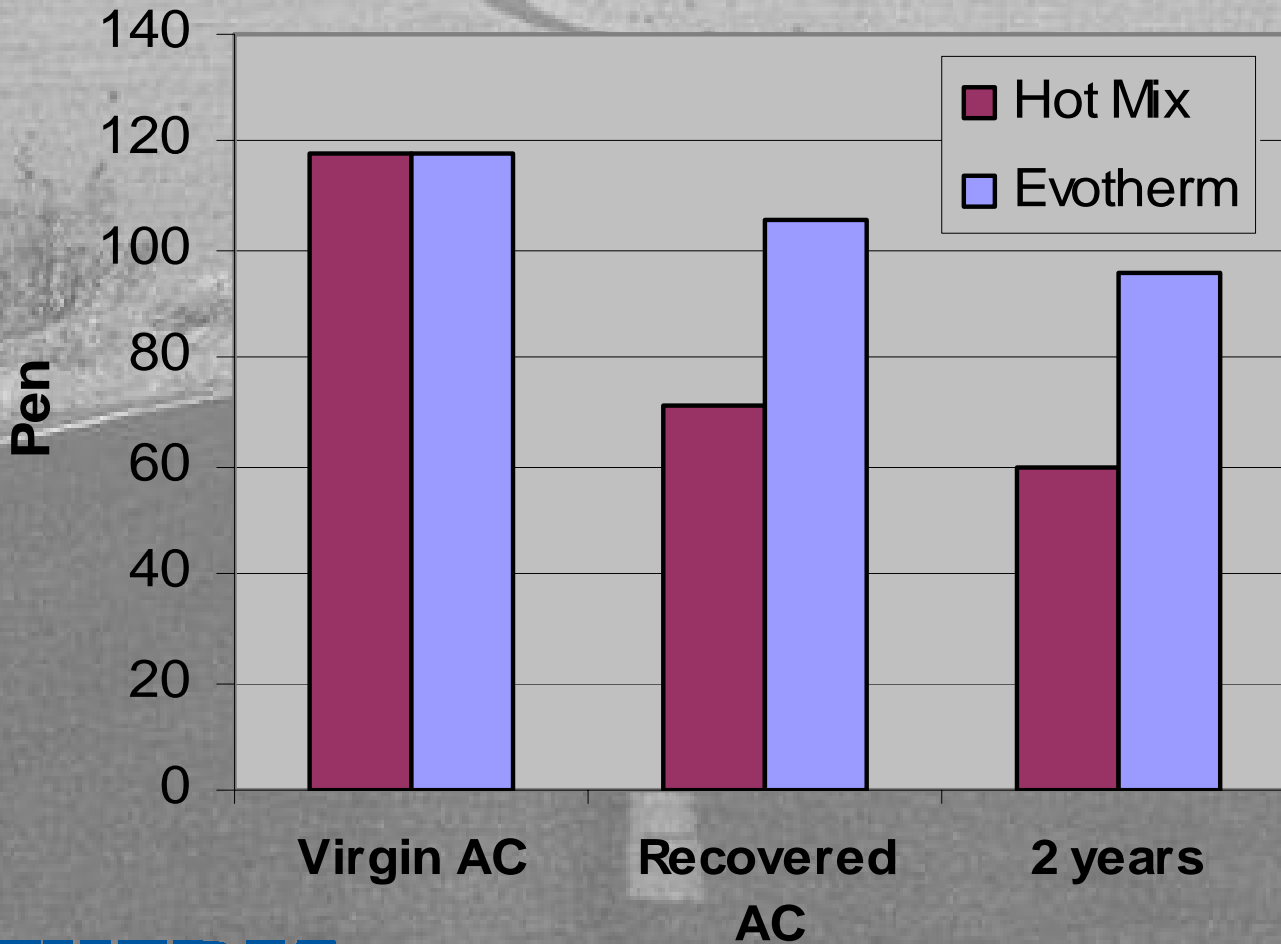
# Where are we now?

- 45 Projects in 2007;
  - 70+ projects to date
- >80,000 tons in 2007;
  - 100,000+ tons to date
- Evotherm paved in 17 states;
  - 5 Canadian provinces
  - France, Spain, South Africa, Mexico, & China

# Recent Evotherm Developments

- New Chemistries
  - 6 different options available
- Dosage rate optimization
  - Original dosage rate – 11oz/Ton
  - Current dosage rate – 5 oz/Ton
- Water-free Evotherm
- Longer binder life

# Binder Hardening



# NCAT Test Track

1.1 mm



0.9 mm



0.9 mm



← 9.5 mm NMAS →

1"

HMA Control PG 67-22

Evotherm PG 76-22

Evotherm PG 67-22

2"

19.0 mm NMAS w/  
Evotherm PG 67-22

E9

2"

19.0 mm NMAS w/  
Evotherm PG 67-22

$N_{\text{design}} = 80$   
for all mixes

N2

N1

600,000 ESALS

# NCAT Test Track



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HMA Control PG 67-22

Evotherm PG 76-22

Evotherm PG 67-22

2"

19.0 mm NMAS w/  
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**5,600,000**  
E9  
**ESALs**

2"

19.0 mm NMAS w/  
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