

**White Paper:**  
**Warm Mix Asphalt**  
**June 2<sup>nd</sup> 2009**

**Background**

Warm Mix Asphalt (WMA) utilizes additives and/or processes which reduce the viscosity of the liquid asphalt binder allowing complete coating of the aggregate at temperatures approaching 100 °F less than those used for production and placement of traditional Hot Mix Asphalt (HMA). WMA provides many potential benefits for contractors and owners such as:

- Increased haul distances
- Longer paving season
- Increased RAP use
- Reduced fuel consumption
- Reduced plant emissions
- Improved working conditions
- Reduced compactive effort

**WMA Technologies**

Already used extensively in Europe, WMA has rapidly emerged as a viable alternative to HMA in the U.S. Technologies can be classified as those that use water (foam), those that use an organic additive or wax, and those that use chemical additives or surfactants. Technologies used in the U.S. include but are not limited to:

WMA Technology	Type
Advera®	Foaming Additive
Aspha-min®	Foaming Additive
Rediset™ WMX	Chemical Additive
Evotherm	Chemical Additive/Emulsion
Revix™	Chemical Additive
Sasobit®	Organic Additive
WAM Foam	Foaming Process
Double Barrel Green	Foaming Process
Low Energy Asphalt (LEA)	Foaming Process

**Research**

Several national research efforts are underway to determine the effects of these technologies on performance using local materials. Initial trials have indicated a potential concern for moisture susceptibility, while rut depths have been shown to be less than those found in some HMA control sections. Fuel cost savings of 13% and reduced emissions have been reported for some

technologies. Results from these studies have promoted the use of WMA in both the private and public sectors.

### **Implementation for Iowa DOT**

Over a half million tons of WMA have been placed in Texas since 2007 with a number of other states implementing special provisions. The Iowa DOT is working with Iowa State University to determine how to best utilize this technology while maintaining quality and performance. Demonstration projects are being planned for the 2009 construction season to gain field knowledge of WMA and provide a framework for a developmental specification. Please visit [www.warmmixasphalt.com](http://www.warmmixasphalt.com) for additional information on Warm Mix Asphalt.