EME demonstration project Q – March 2014

What makes EME binder so different
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SAMI Bitumen Technologies

European standards for bitumen: main classification

Requirements for EME binders (Europe)

What is the challenge of EME binder selection?
Not all hard bitumen fit for purpose!

If the stiffness of bitumen is too high, the stiffness of bituminous mixes increases significantly. The risk of fatigue cracking also increases.

Performance requirements for EME2
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Example: Hard bitumen sources vs Modulus & Fatigue resistance

Main characteristics of SAMI EME binder

Characteristics – Australian EME mix
- Uses a hard grade bitumen 15-25 Penetration
- High Stiffness Modulus
- Improved rutting resistance
- Improved fatigue resistance

Benchmarking against French designed and prepared EME mix

Temperature Guides for SAMI EME binder

Quality control of EME binder for this Trial

Strategic Alliance Workshop
EME Demonstration project in Q02
What makes EME binder different – Iulian Man & Kanjana Yindee

Source: The modulus and fatigue values for EME2 in the Colas research database for the period 2003-2008 (Colas CST, European roads review 14, Spring 2009)

Example: Hard bitumen sources vs Modulus & Fatigue resistance
- Penetration of 0.15%, 0.16%, 0.18%
- Softening Point, °C
- Viscosity at 0.15%, 0.16%, 0.18%
- Viscosity at 135 °C
- Resilient Modulus (MPa)
- Wheel Tracking at 60°C
- Fatigue life @0°C, 10kM (cycles to failure)
- Complex modulus (15 °C, 10 Hz)
- Duriez test, Ratio before and after water immersion
- Façgue Test (10°C, 25Hz, microstrain for 106 cycle)
- Ruïning test (60°C, 30,000 cycles)
- Retained penetration, %
- Loss on heating, mass%
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CONCLUSIONS

1. Not all hard bitumens are suitable for EME
2. EME technology requires a special low PEN binder manufactured to meet the target performance
3. High stiffness combined with good fatigue resistance to be achieved by bitumen processing
4. Mixing and compaction temperature of EME mixes need to be recommended by supplier

Thank you