Bitumen Rheology & Performance

Domestic Fees
$645 + GST

Duration
1 day

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Bitumen Rheology & Performance

Bitumen is the primary sealing material used in New Zealand roads which comes in various grades and may be modified with polymers or other materials. Before 2016 bitumen was graded according to empirical consistency measures with no reference to traffic, shear or climate. Modified Binders too have been classified by empirical tests.

The volumes of traffic in New Zealand are increasing all of the time, and this combined with the heavier trucks on our roads means that we need to ensure the effectiveness and longevity of the bitumen and PMBs we use every day.

In the 1990s the USA introduced performance bitumen – PG grades, and now New Zealand has also moved in this direction. This specification recognises that the rheological properties of binders are key to its performance in either asphalt or sealing.

It is essential that those designing and constructing surfacing and structural asphalt layers have a good understanding of the material rheological properties to select the correct binder and design the final product and handle it correctly.

This course introduces the concepts of rheology and shows how they relate to performance in asphalt and seals. This is related to the design of asphalt and selection of sealing grades. The new asphalt specification is discussed and how the testing is done, reported and controlled.

Topics include

- Crude oil and processing - how the refinery works and how this affects performance
- Basic bitumen chemistry
- Basic bitumen rheology
- NZTA M1/A
  - What
  - Why
  - How
- Relationship to asphalt design and application M/10 2014
- Binder selection
- Modification of bitumen and how it is specified in M/1A
- Sealing binder performance and why rheology is important

On completion of this course participants will

- Understand basic bitumen production and the effect of crudes and processing
- Understand the basic principles binder rheology and how its measured
- Understand M/1A asphalt Performance grades
- Have knowledge of the seal binder directions for performance
- Understand the practical effects of PMB's in Hot Mix Asphalt and Sealing based on rheology

Who should attend

Technical personnel using any bituminous product specifiers, consultants and local government specifiers. Engineers and chemists, laboratory personnel.

Last updated: 01 April 2026