

Same Label, Different Binder

Choosing and verifying PMB on performance

Which parameters steer the choice of PMB, and what do the tests say about end function?

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Ooms *Producten*

Ooms and Sealoflex: 50 years alongside PMB

1973

Ooms
Producten
founded

Early 1990s

Schiphol:
preferred
supplier

2012

Part of Strukton

2020

PMB plant,
Hong Kong

2023-24

50 years
And Part of
Pankas Group



Al Ula project (Kingdom of Saudi Arabia)



Submarine power cable



HKIA 3rd Runway (Hong Kong)



Ooms Producten

Same label, same numbers, different binder?

	Binder A: A10E category	Binder B: Sealoflex SFB 5-50 HT
Penetration (0.1 mm)	77	70
Softening point (°C)	100	102.5
Elastic recovery, 25 °C (%)	99.5	98

Both are polymer modified. Both pass the classic tests.

Which one do you trust on a hot day under heavy, slow traffic?

The story in three steps

1

The binder behind the label is not constant

Filter residues, colloidal index,
temperature susceptibility, base
bitumen

2

The label cannot see it

OCW, our two binders in
MSCR, summer 2026, HiMA,
cold

3

How others responded, and what we do

USA, Australia, prEN 18389,
parameters, monitoring, who
does what

Answers both programme items: which parameters steer the PMB, and analysis methods versus end function

Filter residues: a fingerprint of colloidal state

Representative asphaltene filter residues, ordered by asphaltene content

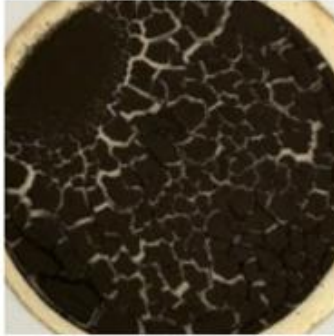
3% asphaltenes
Supplier B, 160/220



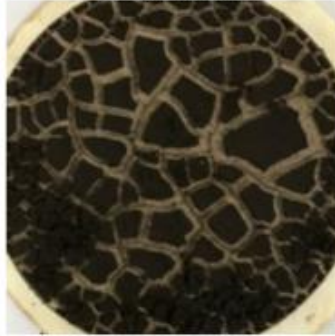
5% asphaltenes
Supplier A, 160/220



10% asphaltenes
Supplier E, 160/220



16% asphaltenes
Supplier D, 70/100



24% asphaltenes
Supplier D, 10/20



The residue coarsens from a fine, dense mosaic at low asphaltene content to large, widely spaced plates at high content.

3% to 24% asphaltenes

From a fine, dense mosaic to large, widely spaced plates

Structure follows composition

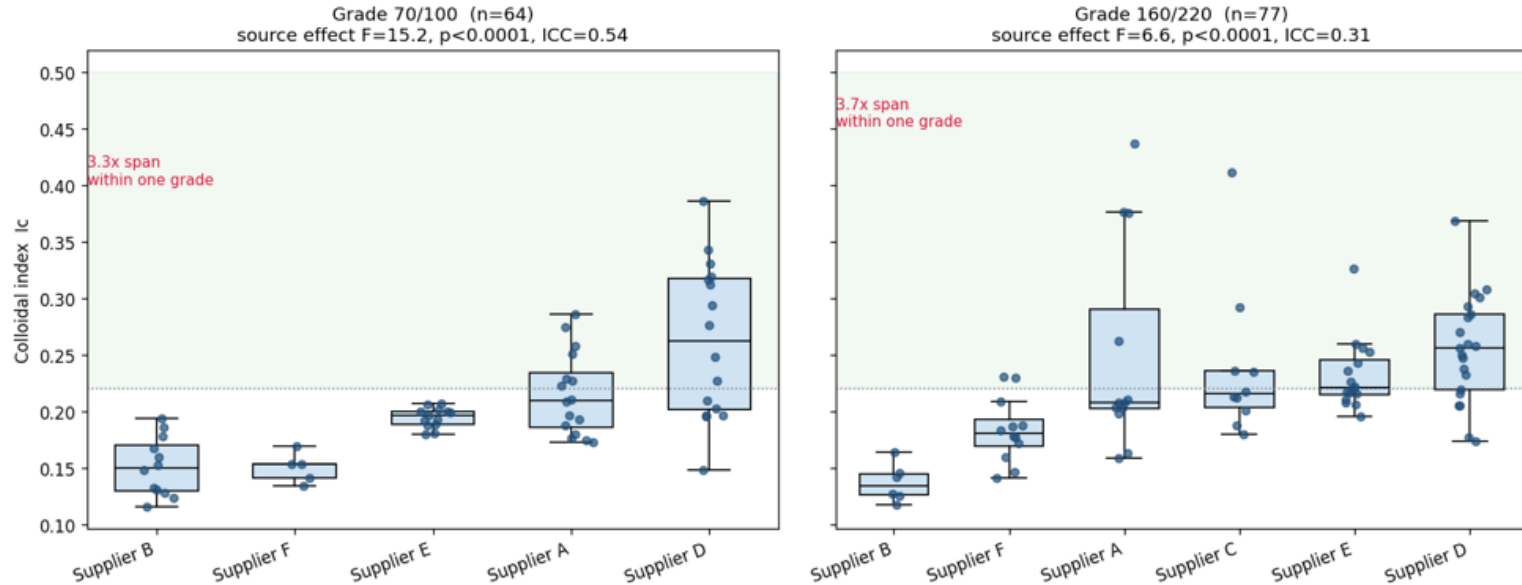
A fingerprint of how the asphaltenes are dispersed

The specification does not see it

No requirement on it, and penetration and softening point cannot show it

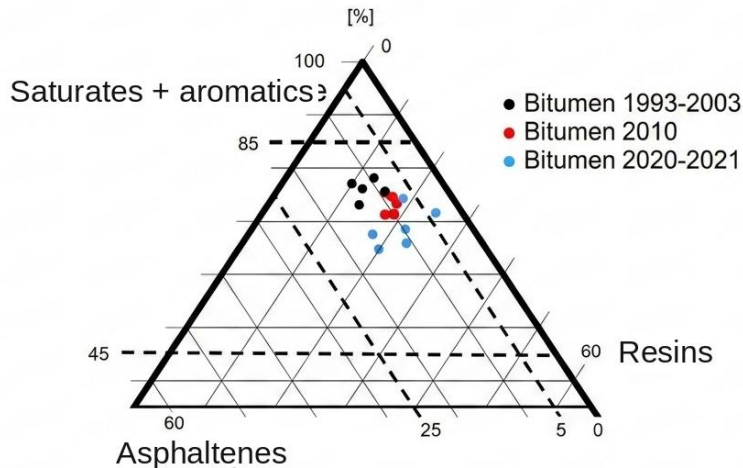
Colloidal index: between and within suppliers

Colloidal index within one EN 12591 grade varies systematically by source



The supplier explains 54% (70/100) and 31% (160/220) of the variation. The rest is between deliveries of the same supplier.

Why: the base bitumen has changed



Aromatics down, resins up, wider spread between suppliers in recent deliveries.

1

Refinery closures and optimisation in NW Europe

2

From export to import region

3

IMO 2020, heavier crudes, deeper conversion

4

REOB and blending outside the chain

5

Traders and individual purchasing choices

6

No bitumen production left in Belgium

The polymer inherits the base bitumen

Compatibility

The colloidal state of the base decides whether the polymer stays dispersed or separates in storage

Response to modification

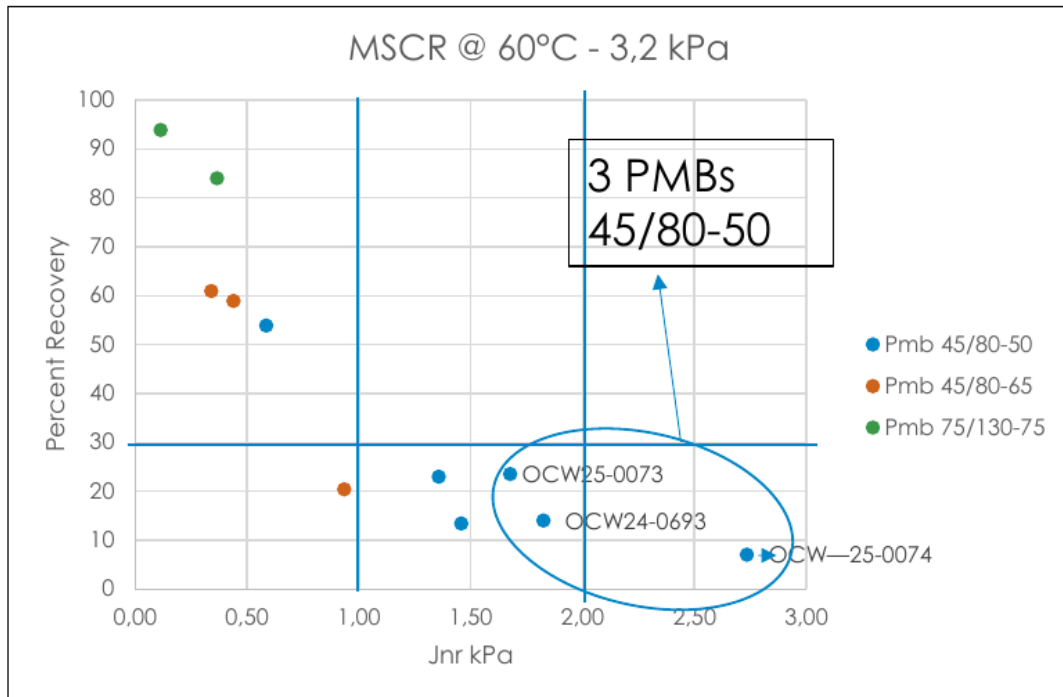
The same polymer dose on a different base can give a different network and a different MSCR result

The label cannot promise end function

Polymer content or a PMB label does not fix the result

At Ooms: SARA trend per source for compatibility with the polymer. On an odd trend, we change the source. REOB is tested too.

OCW: PMBs sold under an EN name, tested with MSCR



Labelled EN PMB

Assumed to meet all empirical requirements

MSCR at 60 °C, 3.2 kPa

Three 45/80-50 PMBs: recovery below 30%,
Jnr above 1 kPa⁻¹

Open questions

Degree of modification? Storage stability?
Added value?

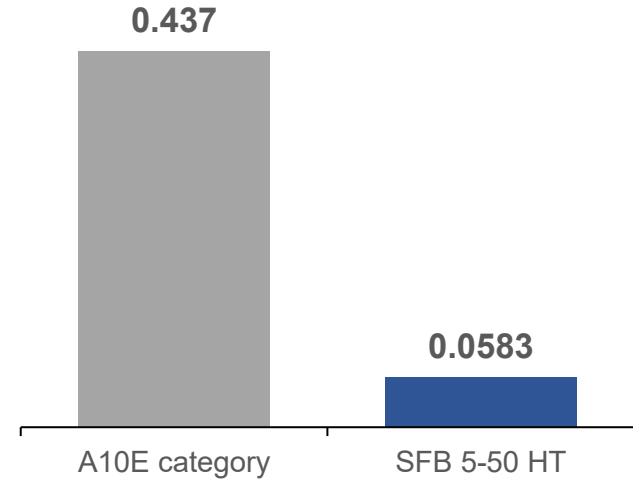
OCW recommends

Add MSCR and storage stability to PMB
specifications

Same numbers on the label, 7.5 times apart in MSCR

Test	A10E category	SFB 5-50 HT
Penetration (0.1 mm)	77	70
Softening point (°C)	100	102.5
Elastic recovery 25 °C (%)	99.5	98
Fraass (°C)	-18	-26
MSCR 76 °C, RTFOT:		
Jnr 3.2 kPa (kPa ⁻¹)	0.437	0.0583
Recovery 3.2 kPa (%)	84.72	96.01
PG high (M332)	76E	76E

Jnr at 3.2 kPa, 76 °C (kPa⁻¹)



7.5x lower Jnr

Summer 2026: the thermal load went up

19.3 °C

De Bilt summer mean, 2026.
Warmest since 1901 (previous
record 18.9 °C, 2018)

Code red

KNMI extreme heat warning, 24
to 27 June 2026

Field signal

Contractors report rutting on
new pavements with pen
grades and low-polymer PMBs
(not yet documented)

High-temperature performance can no longer be assumed. It has to be specified.

Florida HiMA: what high-temperature performance buys

7 to 8%

polymer in HiMA, against about 3% in conventional PMB

≤ 0.1 | $\geq 90\%$

Jnr 3.2 and recovery limits, RTFOT residue, 76 °C

~50%

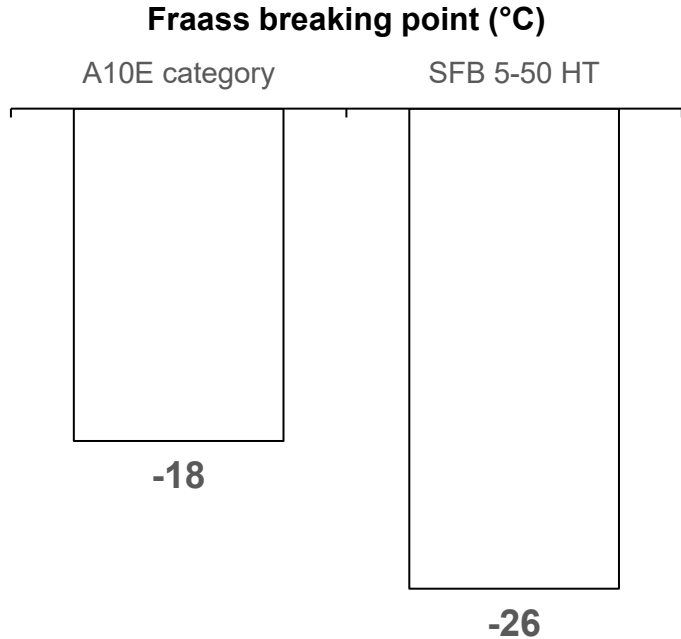
less rutting than control after 100,000 passes (rutting only)

20 to 40%

lower strains than control (fatigue indicator)

Sealoflex SFB 5-50 HT, 76 °C, RTFOT: Meets both HiMA limits (see the framework slide).

The other end of the scale: cold and ageing



-22.1 °C

BBR critical temperature, S = 300 MPa (PAV)

-19.5 °C

BBR critical temperature, m = 0.300 (PAV)

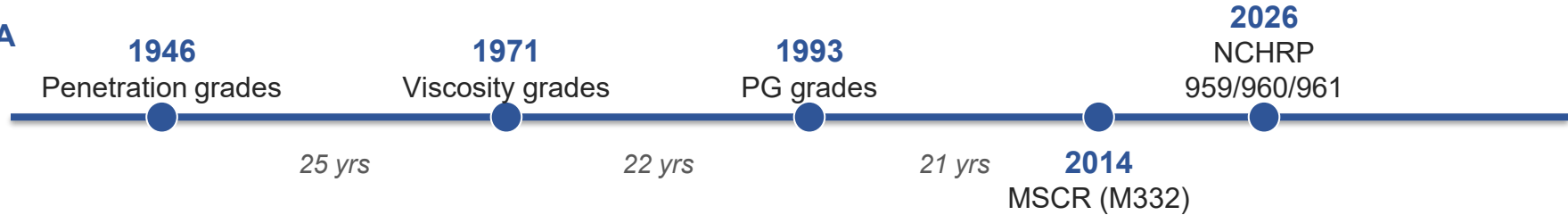
52.6 kPa

Glover-Rowe after PAV, 15 °C (guideline: 180 kPa onset of cracking)

ΔT_c is not meant for PMB (prEN 18389, Table 2 note).

US specifications moved every 20 to 25 years. Europe waits.

USA



Europe



EN 14023

A binder sold as EN PMB is assumed to pass all empirical tests

prEN 18389

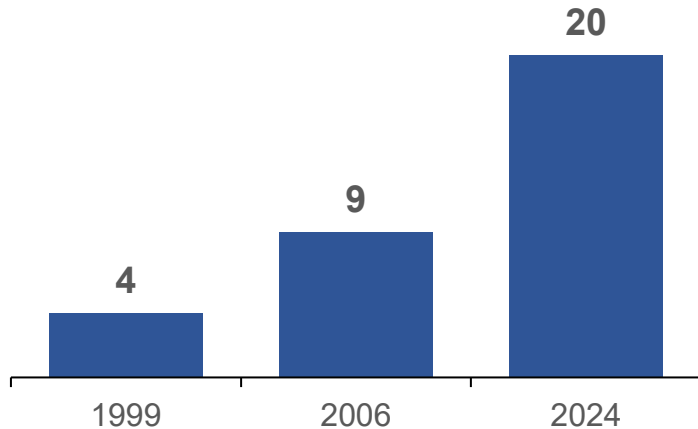
In CEN enquiry since August 2026, complementary to the product standards

Enforcement

Not expected soon, possibly ~2037 (as understood from Eurobitume, AIS 2025)

USA: graded on performance, not on the label

PMA share of US paving-grade binder (%)



Asphalt Institute ER-215: PMA can add up to 10 years of service life.

Graded on performance, not on label

M320 and M332 have no PMB class: neat, SBS or highly modified binders use the same table

Glover-Rowe, R-value, ΔT_c , ΔT_f

Fatigue, relaxation and durability from the existing DSR and BBR (NCHRP 959, 960)

Better ageing procedure

NCHRP 961

One parameter is not enough

Two binders with equal $G^* \cdot \sin \delta$ plot far apart, only one passes Glover-Rowe

Australia: empirical grades, A10E and A15E classes, then MSCR grades S, H, V, E (2015)

Which test answers which road question?

Road question	Test that answers it	US already requires	European draft proposes
Rutting	MSCR: Jnr, %R	MSCR grades S, H, V, E	MSCR, class or declared value
Cold cracking	BBR, Fraass	BBR S and m, ΔT_c	BBR T_s , T_m (ΔT_c not for PMB)
Fatigue, ravelling	Glover-Rowe, crossover, force ductility	Glover-Rowe, R-value	Crossover temperature and modulus, ageing change
Stability	Storage stability, elastic recovery	Agency add-on tests, e.g. separation	Storage stability stays in EN 14023

Underneath all four: the base bitumen. SARA and colloidal index, FTIR fingerprint, XRF for REOB.

Not a knowledge gap, an adoption gap: the US column is full, the European column is mostly optional.

Draft prEN 18389:2026 (CEN enquiry, not a European Standard); AASHTO M320, M332; EN 14023; OCW; NAPA Road Basics webinar 2026. Still open: optional use, failure strain, mixing criterion for high-viscosity PMB, timing.

Know the base bitumen, keep it practical, share the work

Tier 1: every delivery

Penetration, softening point, viscosity. FTIR fingerprint against previous deliveries. XRF screen for Zn, Mo, P if available.

Tier 2: on trigger or schedule

SARA, colloidal index. Confirm REOB with XRF, ICP or GC-MS. New source, notified change, drift, periodic.

Tier 3: retained sample, every delivery

Keep it. Test later if a problem shows up in the road.

Bitumen producers

Declare source and refinery. Notify changes. Show REOB-free evidence.

PMB and asphalt producers

Monitor per source, keep retained samples, act on drift, change source.

Road authorities

Specify performance. Require source declaration. Audit, with consequences.

Not every test on every load: cheap checks always, deeper tests on trigger, a sample kept for later

Honest limits: no agreed limits for SARA or colloidal index (trend indicators); an XRF negative is not proof of absence at very low levels.

Ooms Producten practice; OCW recommendations; conversations with road authorities

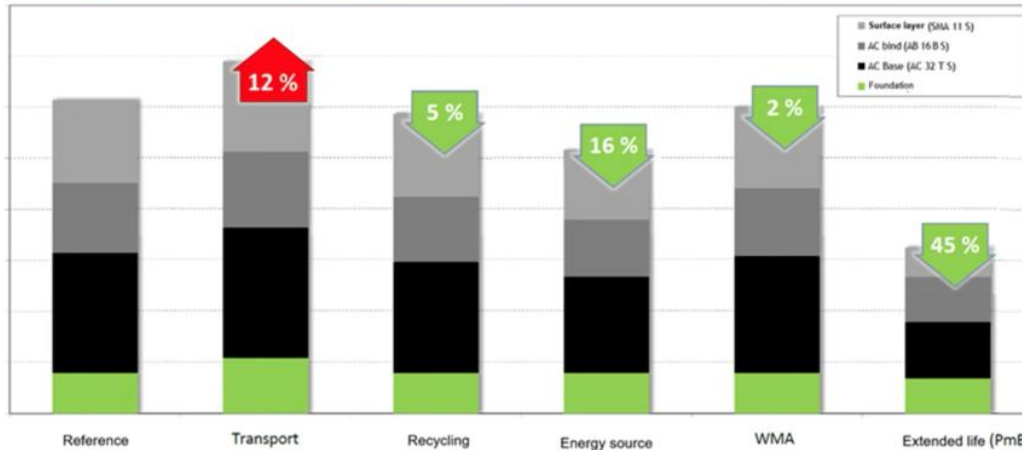


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The biggest CO2 lever is a road that lasts longer



Comparison of CO₂ emission scenarios by asphalt layer [GWP kg CO₂-eq]



Source: BAST (Bundesanstalt für Straßenwesen), CO₂ emission scenarios by asphalt layer [GWP kg CO₂-eq]. Each bar is one measure vs. the reference; -45% reflects BAST's assumed life-extension factor.

-45%

Extended life with PMB (BAST scenario)

Energy source -16%

Recycling -5%

Warm mix -2%

Transport +12%

Durability is the largest single lever. It starts with what we ask of the binder.

BAST; scenario results, not a guarantee

Nothing left to discover

The methods exist

- MSCR, EN 16659
- BBR, RTFOT, PAV ageing
- SARA, FTIR, XRF

The requirements exist

- AASHTO M332 grades
- Florida limits: $J_{nr} \leq 0.1$, $R \geq 90\%$
- prEN 18389 classes (draft)

The evidence exists

- OCW: labelled PMBs tested with MSCR
- Two binders, 7.5x apart in J_{nr}
- A45 and Dublin; BAST scenarios

Enough is known to start now. What is missing is the line in the specification.

One action, in your next specification

Road authorities and owners

Add MSCR at the design temperature on RTFOT residue, and storage stability, to your next tender

Designers

Specify high-temperature, cold and ageing requirements for the climate and traffic of the project, not the label

Producers and contractors

Declare and monitor the base bitumen. Offer performance data, not only the label

Durability is the goal. Performance requirements are the first step.

Specify performance, build durability

The road does not read the label.

Specify what it has to withstand.

The standard will come. The roads are being built now.

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**Thank you to the organisers of NABin
2026. Questions welcome.**

Same label, different binder. Same road, different future.