

LABORATORY INSTRUCTION

Preparation of SMA Mixtures with SMAPOL[®] Additive

1. Objective

Preparation of Stone Mastic Asphalt (SMA) with the addition of SMAPOL[®] stabilizer under laboratory conditions with appropriate temperature control and sequence of ingredient addition for maximum approximation to industrial mixing and homogenization efficiency of synthetic fibers.

2. Materials and Equipment

Materials

Aggregates (coarse and fine)

Mineral filler

Bitumen:

- 50/70

- PMB

SMAPOL[®] stabilizing additive (granulated)

Main Equipment

Laboratory Mixer (e.g., Matest[®], 10L, with Isomantle heating system) - to present an example

Temperature-controlled oven

Electric heating plate...

3. Temperature Guidelines

Bitumen Type	Bitumen Temp (°C)	Finished Mixture Temp (°C)	Max Aggregate Temp (°C)
50/70	155 – 175	150 – 170	180 ± 5
PMB	170 – 190	170 – 190	200 ± 5

4. Mixing Procedure

All component weights must follow the current SMA mix design. Mixing is to be performed using a heated mixer with a temperature-controlling system.

Step 1: Dry Mixing with SMAPOL[®]

Add pre-heated coarse and fine aggregates (to target temp) to the mixer. Add SMAPOL[®] additive (granular).

Mix for 2–5 minutes* at medium speed (e.g., speed setting No. 3 for Matest[®] 10L mixer).

Optional: Preheat SMAPOL[®] to 80–100°C to speed up homogenization. The speed of rotation of the mixer and the exact mixing time at this step can be determined by performing several preliminary mixes with a visual assessment of the uniform distribution of the SMAPOL[®].

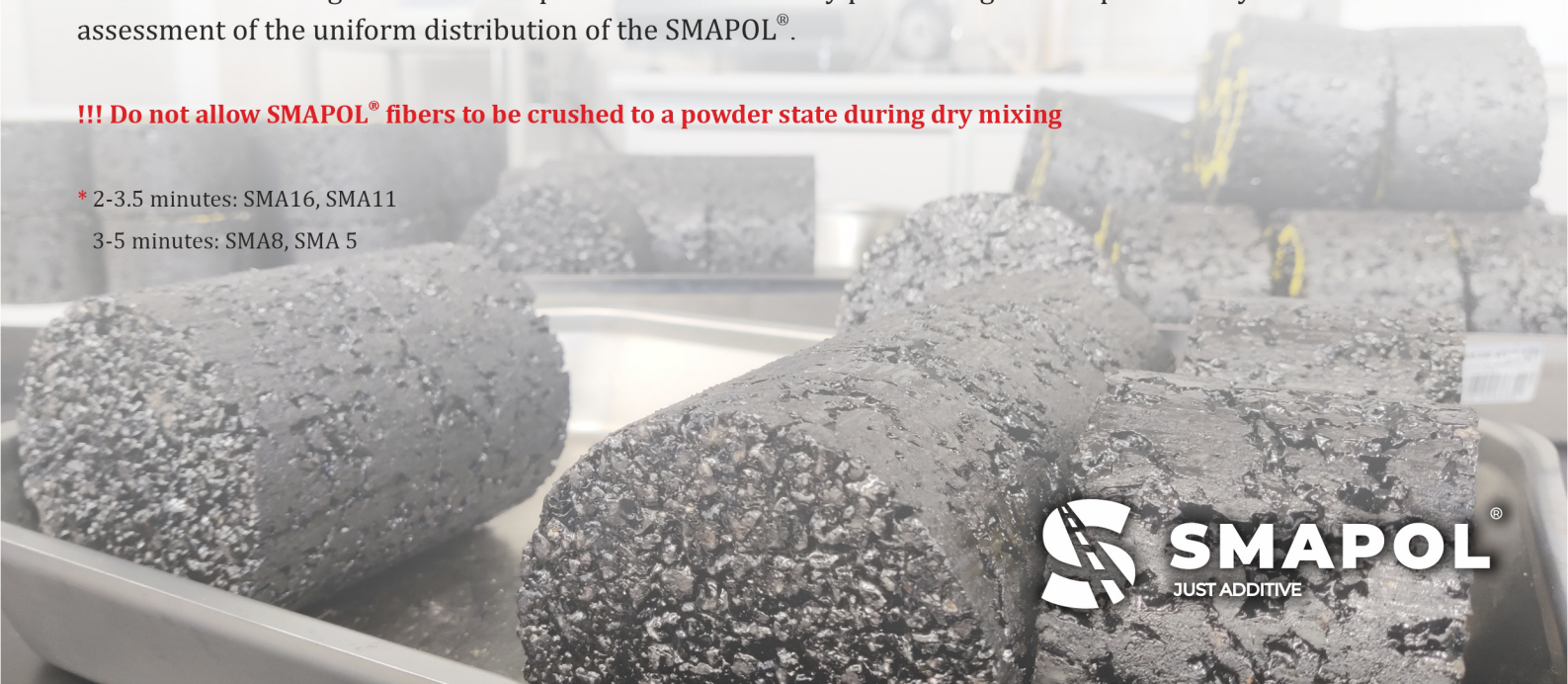
!!! Do not allow SMAPOL[®] fibers to be crushed to a powder state during dry mixing

* 2-3.5 minutes: SMA16, SMA11

3-5 minutes: SMA8, SMA 5



Sufficient degree of crushing
after dry mixing !!!



Step 2: Add Mineral Filler

Add mineral filler pre-heated to the finished mixture target temperature. Mix for 0.5–1 minute at low speed (e.g., speed setting No. 1 for Matest® 10L mixer).

Step 3: Add Bitumen and Wet Mixing

Add bitumen heated to the target temperature. Mix for 4 minutes (bitumen 50/70) or 5 minutes (PMB) at the same speed as Step 1.

Step 4: Final Manual Mixing

Remove the mixer bowl and perform manual mixing: 3–5 minutes for bitumen 50/70, 1–2 minutes for PMB (optional but recommended). Use an electric heating plate to maintain the target temperature during manual mixing.

5. Example Batch Preparation: SMA 11 with 50/70 Bitumen

Total batch size: 8 kg

Mixer: Matest® Planetary Mixer, 10 L, Isomantle heating system

Step	Action	Temperature (°C)	Duration	Speed
Preheat	Mixer bowl	Max setting	10 min	–
1	Add aggregate + SMAPOL® <small>SMAPOL® – with room temperature</small>	180	2.5 min	No. 3
2	Add mineral filler	160	0.5 min	No. 1
3	Add bitumen	160	4 min	No. 3
4	Manual mixing	Maintain temp on the hot plate	3 min	–

6. Standards and Requirements

All material preparation procedures must comply with PN-EN 12697-35.

The mixer must:

- Ensure adequate mixing and uniform coating of aggregates by bitumen
- Avoid mechanical degradation of coarse particles
- Prevent thermal decomposition of bitumen

7. Post-Mixing Procedure

Transfer the finished SMA to a drying cabinet to maintain temperature as per standard requirements before further testing.

If you have any additional questions, please contact our consultants:

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SMAPOL®
JUST ADDITIVE