



HEALROAD Symposium

HEALROAD laboratory research: fundamental study of asphalt healing

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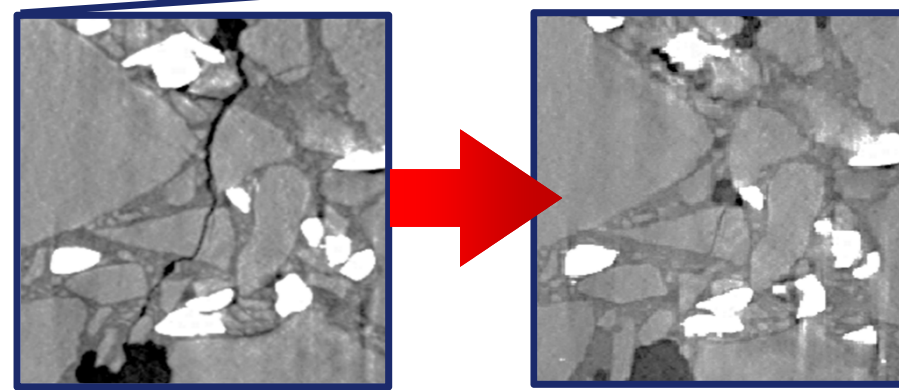
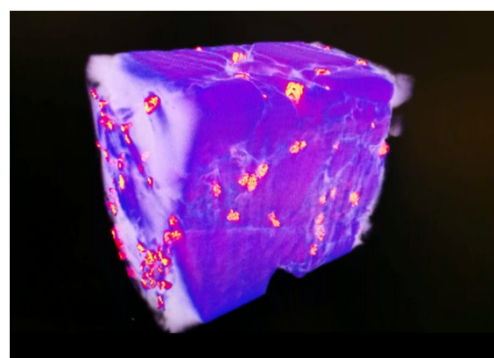
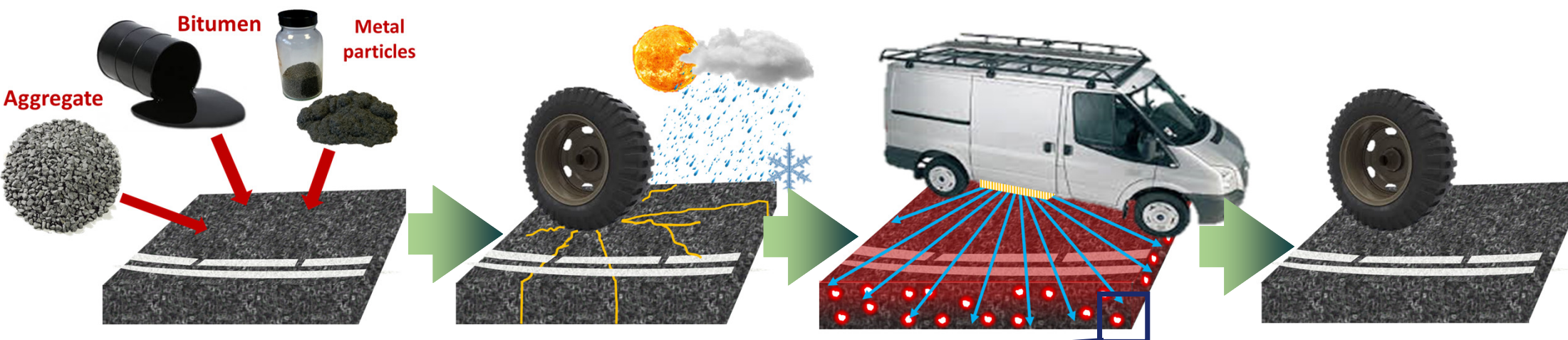
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Infravation
An Infrastructure Innovation Programme





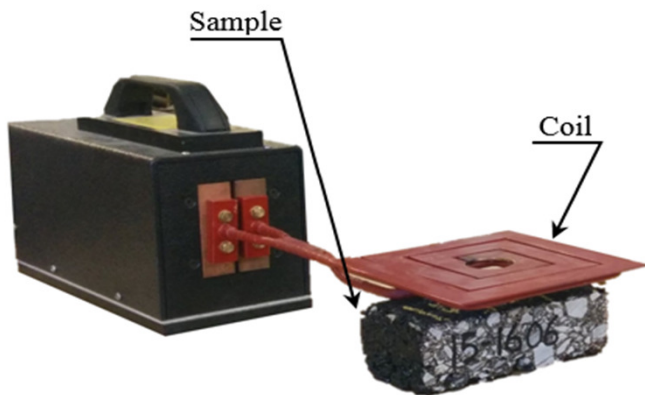
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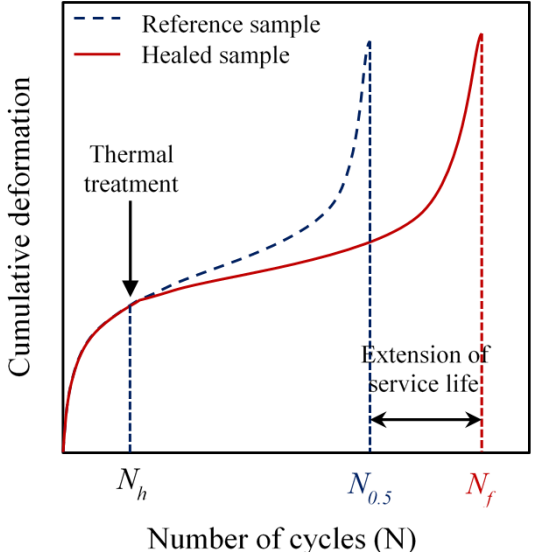
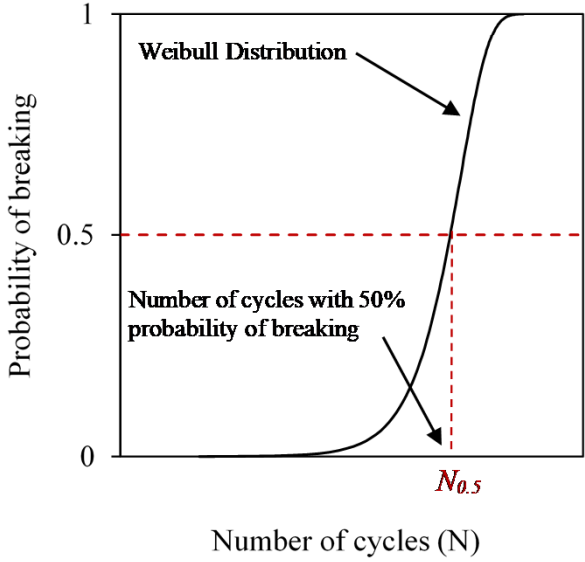
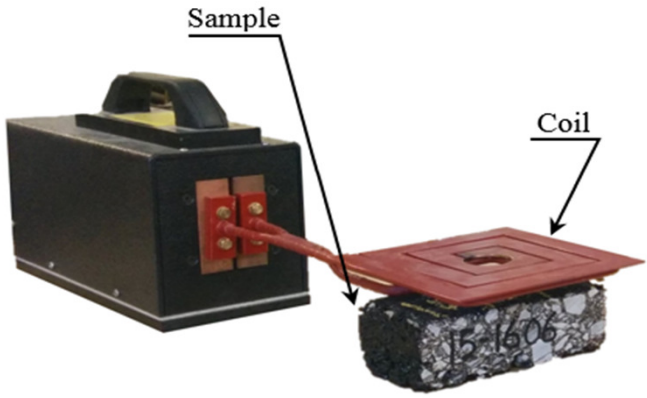
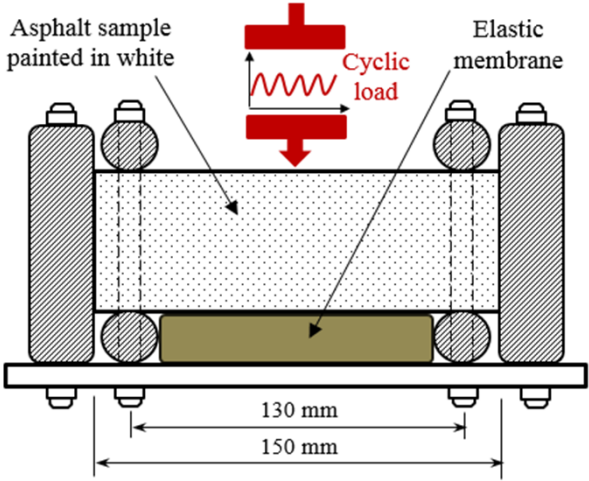






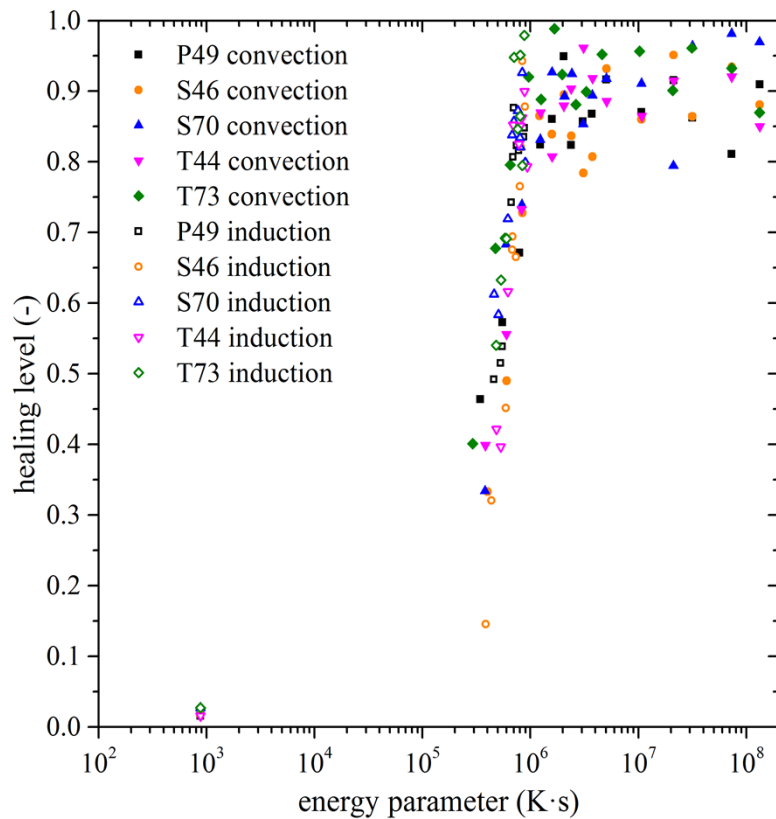
$$\frac{F_f}{F_i} = \text{HR}(\%)$$



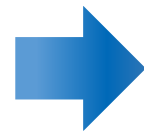


$$HI = \frac{N_f - N_{0.5}}{N_{0.5}}$$

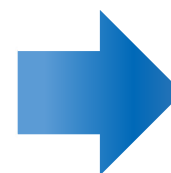
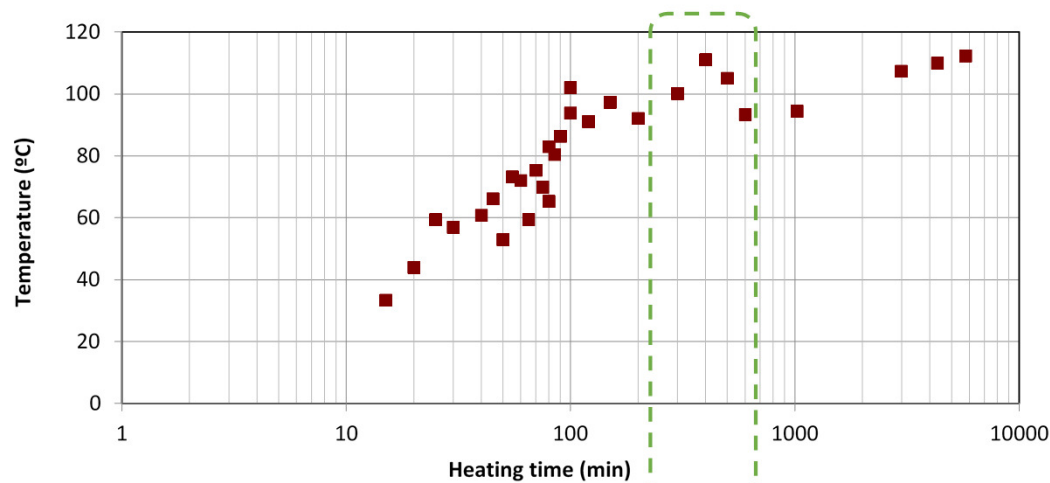




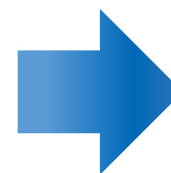
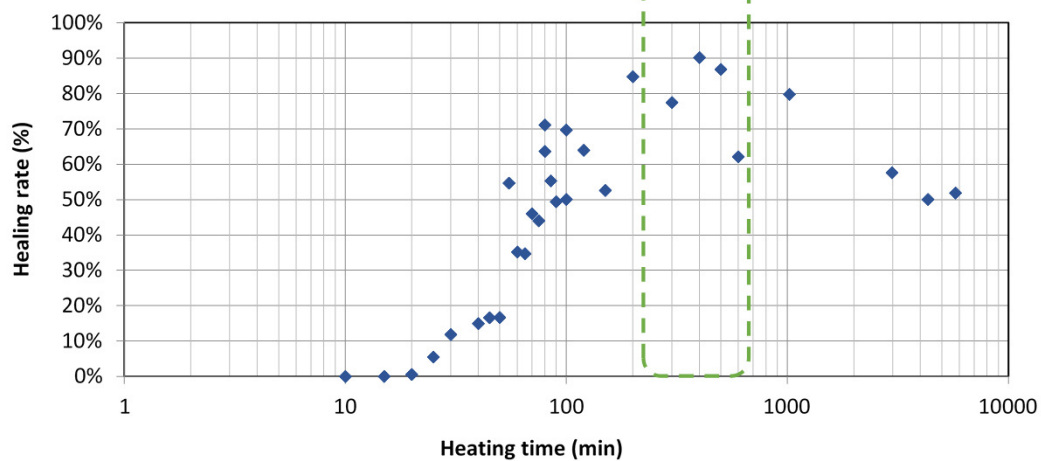
- Penetration grade
- Viscosity
- Density
- Thermal expansion
- Fractional distribution (SARA)
- Attenuated Total Reflection Fourier Transformed Infrared Spectroscopy
- Capillary tests



No significant correlation with any of these factors for the studied types of bitumen



Steady-state temperature

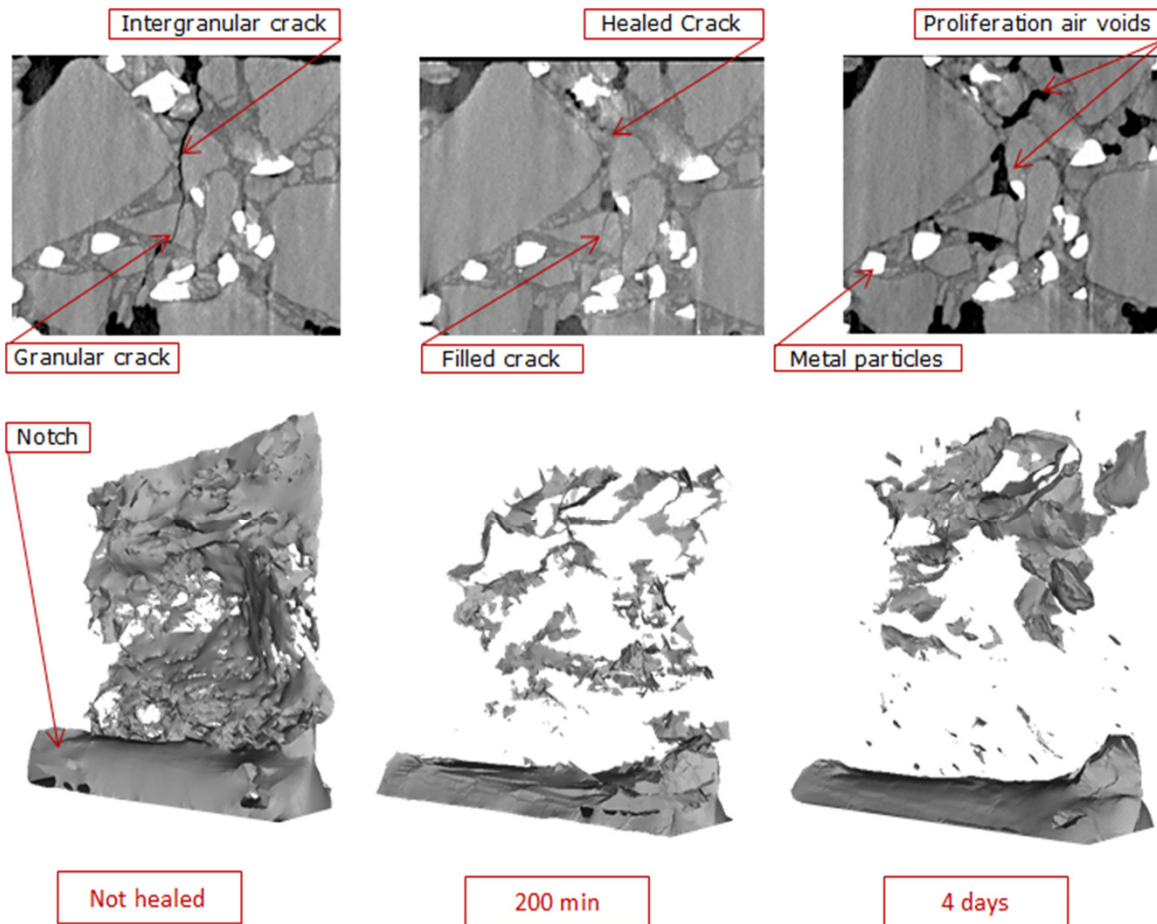


Decreasing healing





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Control
(not heated)

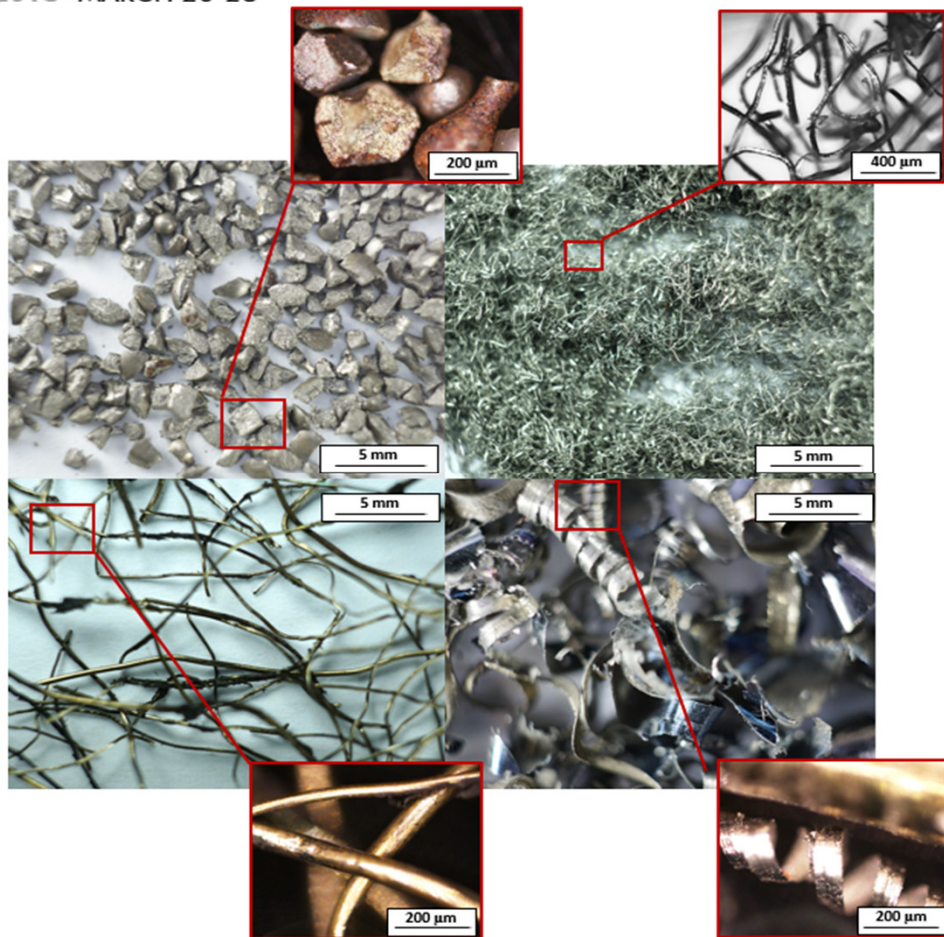
Bottom
side

Upper
side

There is an optimum heating time



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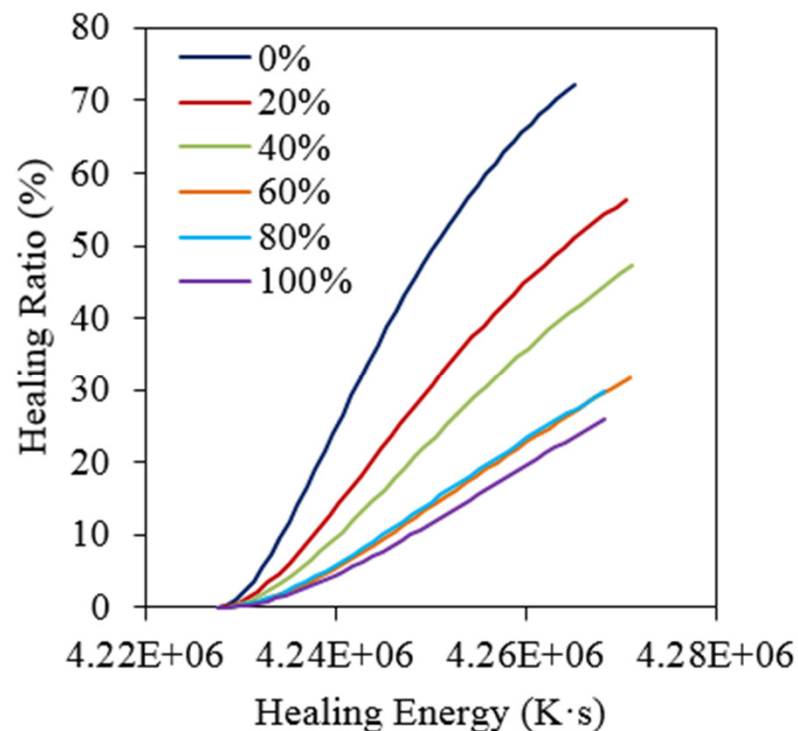
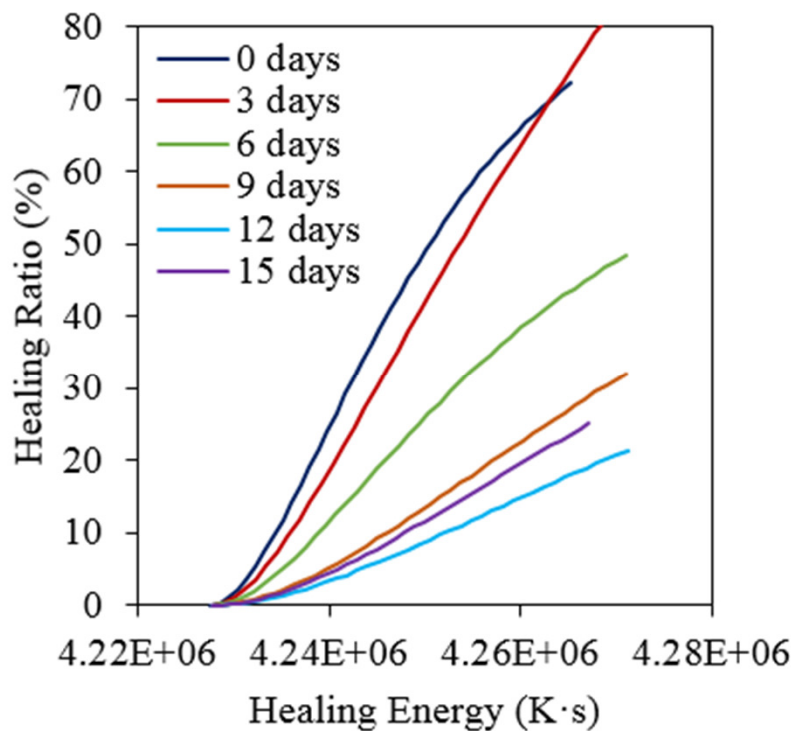
Reductions in economic and environmental impact through the use of metal waste

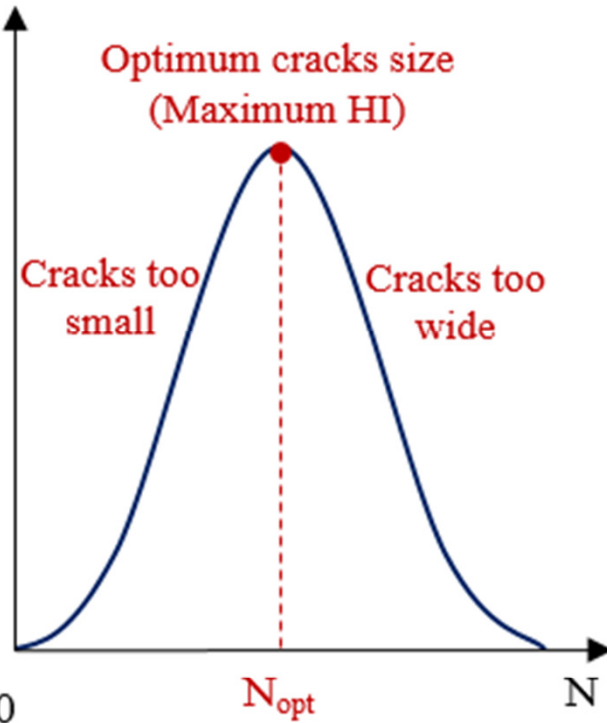
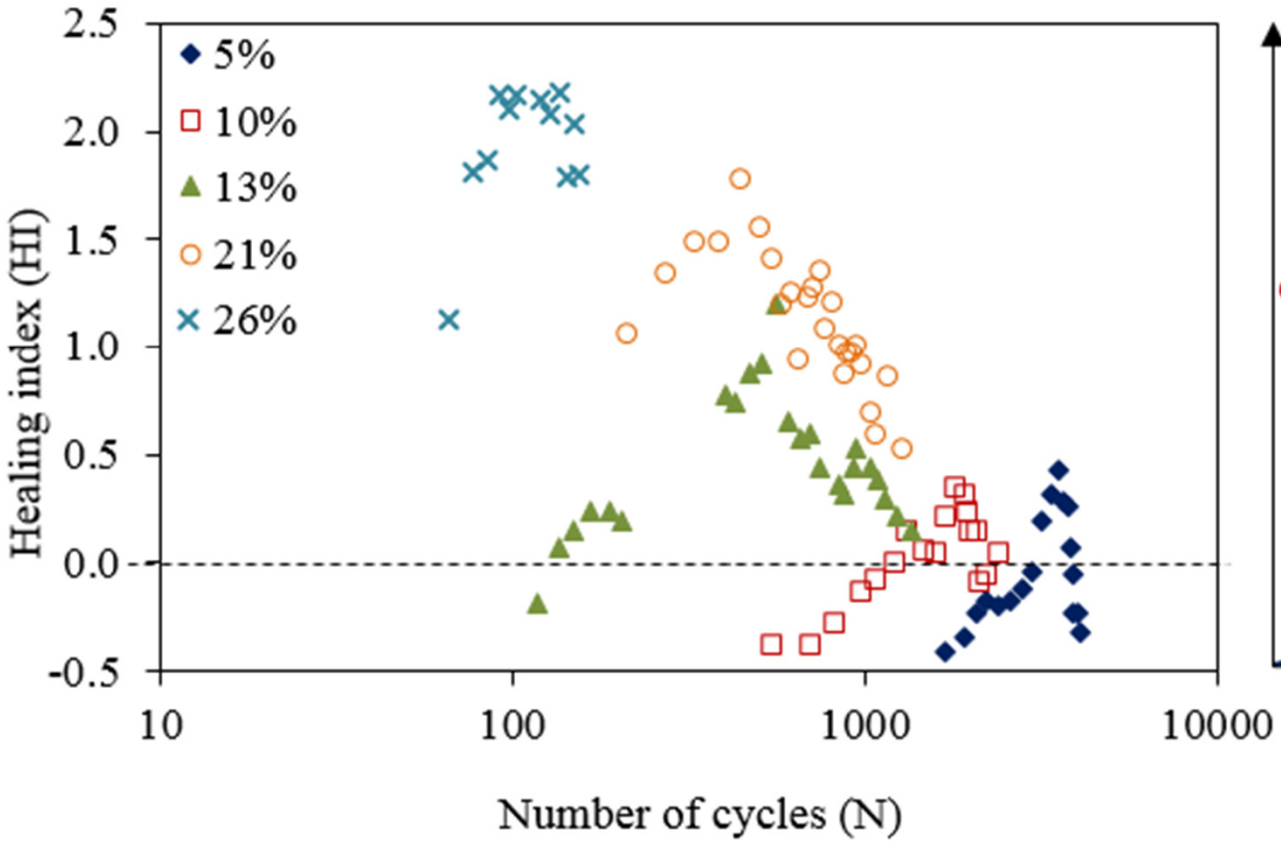


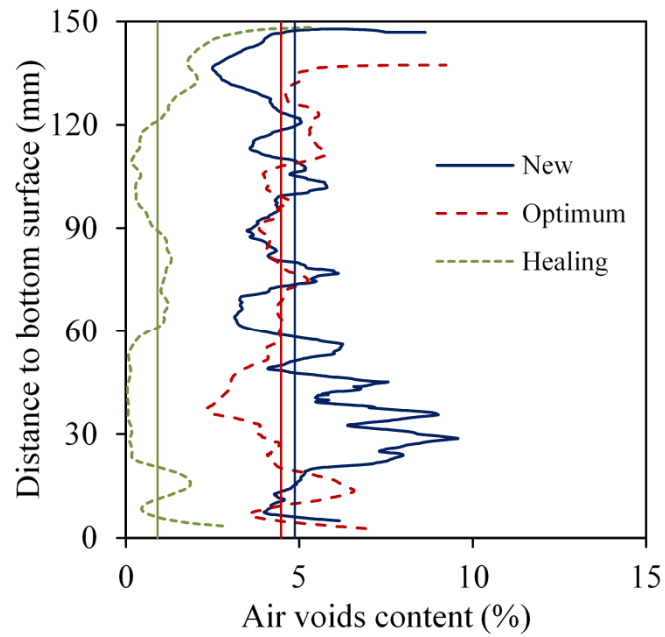
		Type of fibre			
		Grit	Wool	Tyre	Shavings
Volumetric properties	- Density	▲	▲	▲	▲
	- Air voids	●	●	●	●
	- Homogeneity of mix	●	●	▼	●
	- Indirect tensile strength	▲▲	▲	▲	▲
Mechanical properties	- Resistance to water damage	▼▼	▼	●	●
	- Stiffness modulus	▲	▲	▲	▲
	- Particle loss resistance	▼	●	▼	●
	- Skid resistance	▲▲	▲	▲▲▲	▲▲
Healing properties	- Induction heating capacity	▲▲	▲▲	▲▲▲	▲
	- Self-healing properties	▲▲▲	▲▲	▲▲*	▲

▲ Increase ▼ Decrease ● No significant effect (x1 – Slight effect; x2 – Moderate effect; x3 – Strong effect)

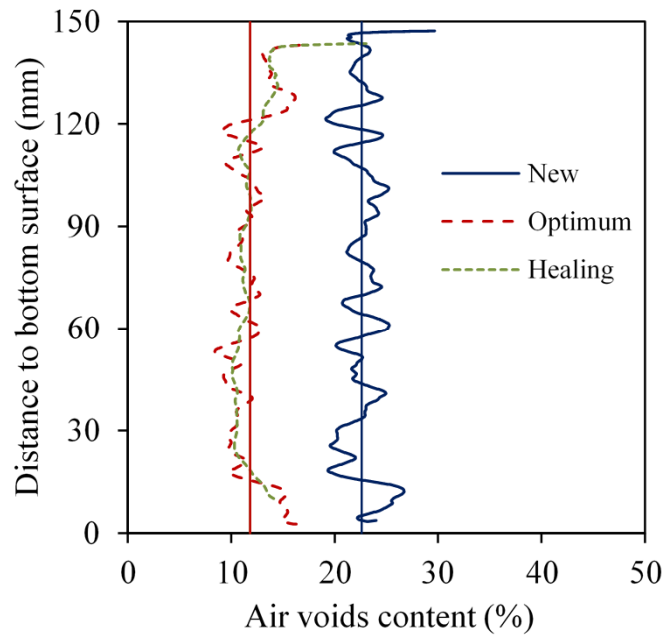
*Due to test configuration, results in real roads are expected to be better than those observed in the present investigation



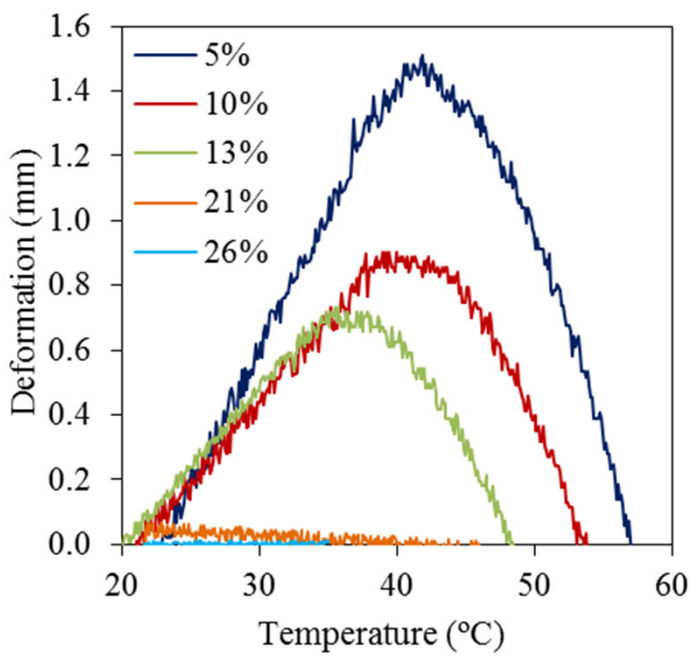


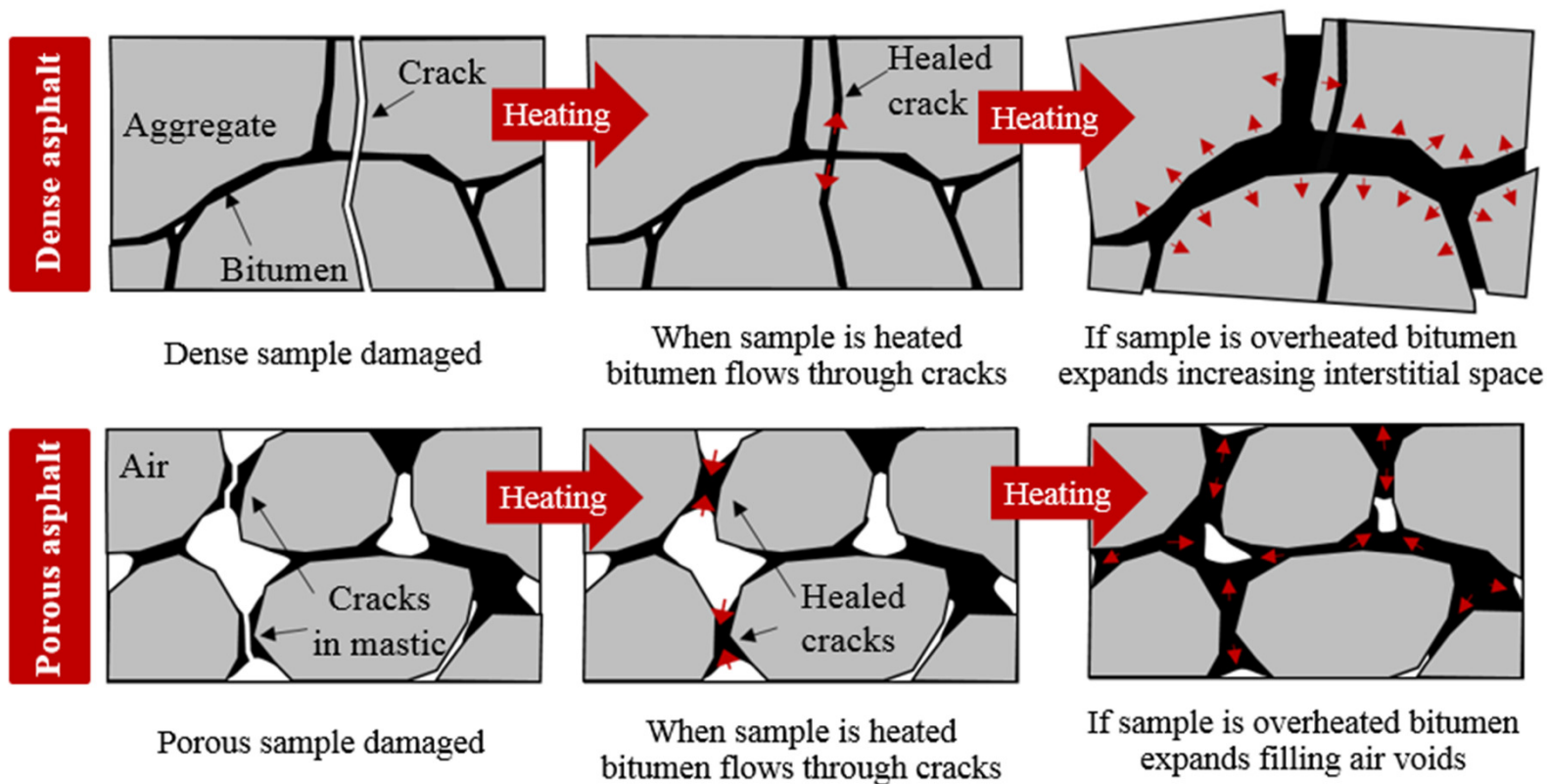


Dense



Porous







Thank you

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