

Biochar Asphalt Concrete

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Wait—can roads really reduce CO₂?

Reducing atmospheric CO₂ by storing it in roads

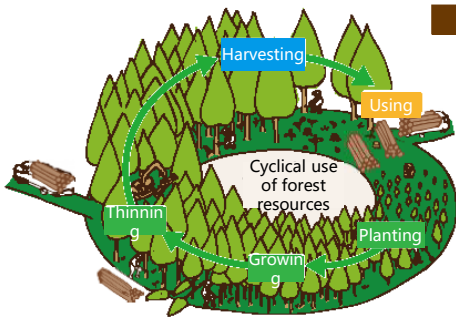
Biochar Asphalt Concrete



Let me explain.



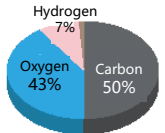
Wood absorbs CO₂ from the atmosphere during its growth and stores it as carbon. Sawdust generated as a by-product at sawmills is press-molded into bar-shaped briquettes and carbonized at 800°C under oxygen-free conditions to produce charcoal. Offcuts generated during this process are crushed and classified to produce biochar, which is used in the pavement. Through carbonization, volatile components are greatly reduced, and a high carbon content (approximately 91%) is achieved. The resulting biochar has a stable crystalline structure as recalcitrant carbon, enabling long-term carbon fixation over approximately 100 years.



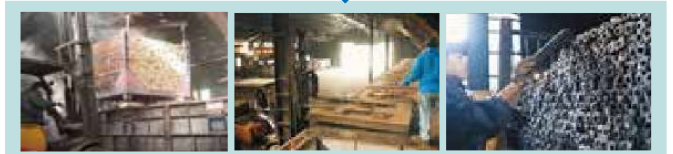
Sawmill



Sawdust



Fine wood waste generated during lumber processing.

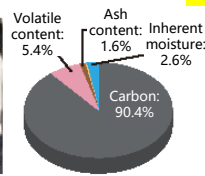
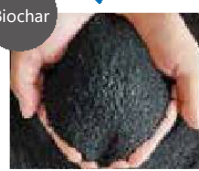


By minimizing air intrusion and carbonizing at 800°C under oxygen-free conditions, a recalcitrant crystalline structure is formed while preventing combustion from progressing.



Biochar Asphalt Concrete is a mixture in which a portion of the fine aggregate is replaced with biochar. With an asphalt recycling rate as high as 99.5%, it achieves a highly circular material system, allowing carbon to remain stored in the pavement indefinitely as long as recycling continues.

Biochar



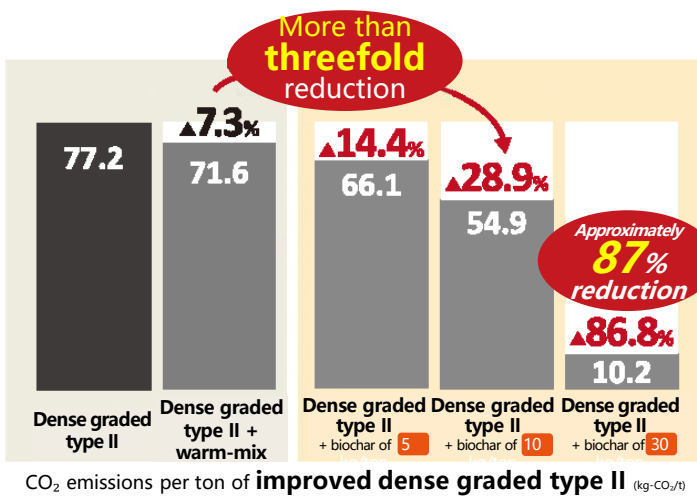
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Let me explain.



Biochar has a strong CO₂ fixation effect, and even small additions to asphalt mixtures reduce significantly more CO₂ than warm-mix asphalt. Moreover, it can be produced and shipped using standard processes without the need for specialized materials or equipment, such as foamed asphalt generators or warm-mix asphalt binders.

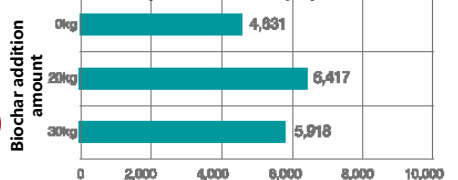


CO₂ emissions per ton of **improved dense graded type II** (kg-CO₂/t)

Properties of Biochar Asphalt Concrete

The mixture's properties are equivalent to those of conventional asphalt mixtures and are suitable for use in both new and recycled asphalt mixtures.

Dynamic stability (passes/mm)



With this technology, carbon neutrality could be achieved by the time I grow up!

