



**CIRCULAR
BIOECONOMY**



LIGNIN BIO-BASED CARBON FIBRES



Gascogne Paper | France



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Lignin is one of the most abundant renewable aromatic polymers on Earth, yet most lignin generated by the pulp and paper industry is still underutilized.

The BASILICA project brought together paper producers, research centers and industrial partners in Nouvelle-Aquitaine, France, to unlock the potential of kraft and soda lignin as a sustainable raw material for high-value applications.

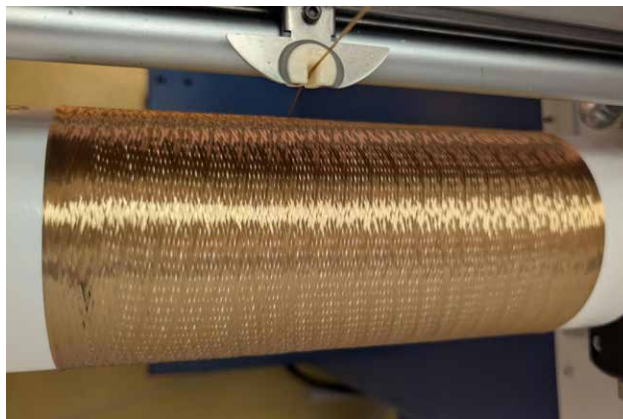
Over six years of collaborative R&D, a mobile pilot unit was developed and successfully operated at two pulp and paper mills, enabling the production of high-purity lignin directly on industrial sites. Lignin were produced and characterized, demonstrating the feasibility of an industrial lignin value chain.

A major achievement of the project was the successful conversion of pulp mill lignin into fibres precursors and the production of the bio-based carbon fibres. The results confirmed lignin's potential to partially replace fossil-based polyacrylonitrile (PAN), opening new opportunities for lower-carbon and lower-cost carbon fibres applications in mobility, construction, wind energy and advanced composites.

Beyond carbon fibres, BASILICA also demonstrated the potential of lignin as a renewable substitute for fossil-derived phenol in resin formulations and explored additional pathways for bio-based chemicals and advanced materials.

By transforming a pulp mill co-product into high-performance renewable materials, BASILICA contributes to circularity, decarbonisation and the development of a new European bioeconomy value chain based on forest resources.

Samples generated through the BASILICA project are available for R&D trials and proof-of-concept studies upon request.



Consortium of Basilica

