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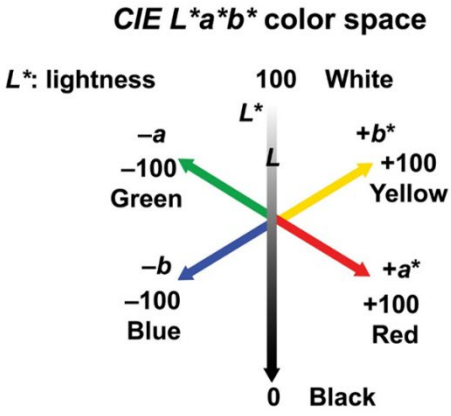
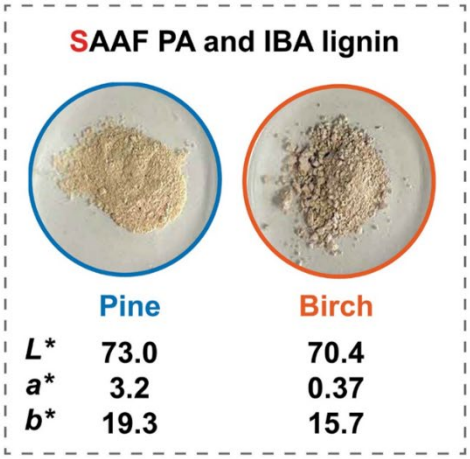
Licensing Opportunity

TTO – Technology Transfer Office

White lignin fragments





Lignin from softwood (pine) and hardwood (birch)produced with the SAA extraction method

Ref. Nr

6.2518.2

Keywords

White lignin (L* > 65), color developer for thermal paper

Intellectual Property

WO2026002826

Publications

Nelis et al., Sci. Adv. 12, eadw9912 (2026)

Date

15/10/2026

Description

A new method (Sequential Aldehyde Assisted Fractionation, SAAF) that extracts exceptionally white lignin fragments from any lignocellulosic biomass — hardwood or softwood — with a CIE lightness (L*) above 65, while preserving high phenolic hydroxyl and carboxylic acid content. The process runs in successive mild acid/aldehyde extraction cycles (70–100 °C, no harsh conditions) and yields fine powders (<30 µm) ready for direct use in formulations.

Advantages

White ligin achieved without any bleaching chemicals (no chlorine, peroxide, ozone) — a fully eco-friendly, waste-free process where colored side-fractions are reused as monomer feedstock. The fragments combine exceptional brightness with high phenolic functionality, small particle size for excellent dispersion, and markedly lower endocrine-disrupting potential than bisphenol-type compounds, making them a safe, renewable, bio-based phenolic material.

Applications

- White bio-based phenolic building block — for coatings, adhesives, composites and functional materials where light color and renewability are required.
- Use as a color developer — a promising, BPA/BPS-free alternative for thermal paper (receipts, labels, tickets), offering high contrast (ΔCD ≥ 0.8–1.3) and bright clean backgrounds.
- High-value outlet for lignin value chains — a premium product for pulp and biorefinery producers upgrading kraft/technical lignin.