



DOW™ Oxidized Lignin Bio-based Innovation enabled by Collaboration

Building tomorrow's materials, today

Dow, Metsä Group and ANDRITZ have collaborated to develop a new generation of bio-based plasticizers for concrete and gypsum applications using modified lignin as the raw material. The collaboration reflects Dow's commitment to supporting the construction industry with safer, more sustainable and high-performing materials.

Built on years of joint Research & Development, this collaboration is now entering its next chapter: a demo plant ready to validate new lignin-based products for concrete and gypsum board.

From lab to demo plant

Metsä Group's newly launched demo plant in Äänekoski, Finland, produces DOW™ Oxidized Lignin powered by Metsä Ligno™ creating a new type of lignin product derived directly from pulp mill production side streams that have traditionally been used as bioenergy. Dow is the key development stakeholder helping to develop and validate its use in construction applications, with ANDRITZ serving as technology provider with their LignoOx™ product.

What began as a pilot-scale EU-funded research programme has now officially progressed to demonstration scale – an important milestone in validating the technology for future construction applications.

“This collaboration demonstrates our shared vision for sustainable construction solutions and the potential of lignin-based technologies throughout the value chain.”

Emilia Wasilewicz, Global Business Director,
Dow Construction Chemicals

What Dow's Oxidized Lignin solution offers

Dow and Metsä are collaborating to develop an oxidized lignin additive that addresses real formulation challenges for construction material manufacturers:

-  **Exceptional performance in gypsum plasterboard:** lower water consumption and higher energy savings V.S. conventional plasticizers
-  **Effective in concrete applications:** well performing bio-based alternative for concrete admixtures
-  **Reliable supply:** backed by modern production infrastructure and consistent quality assurance
-  **Easy to integrate:** supported by demo plant trials and hands-on technical assistance
-  **100% bio-carbon content:** derived directly from pulp mill production as side stream that is traditionally used as bioenergy
-  **Low fossil carbon footprint:** third-party validated

The road ahead

Dow is continuing to validate this technology for real-world construction applications, working closely with partners and customers through industrial trials. Building on the progress achieved so far, the project represents another important step in advancing bio-based additive technologies through collaboration across the value chain – supporting Dow's broader journey to offer high-performance materials that help accelerate sustainability in the construction industry.



Dow is a leading materials science company using modified lignin from the plant as a raw material for bio-based plasticisers.



Metsä Group makes wood-based products and provides its expertise and raw materials to develop the lignin.



ANDRITZ, is a global supplier in advanced process technologies, delivering the LigniOx™ technology.

About Dow

Dow (NYSE: DOW) is one of the world's leading materials science companies, serving customers in high-growth markets such as packaging, infrastructure, mobility and consumer applications. Our global breadth, asset integration and scale, focused innovation, leading business positions and commitment to sustainability enable us to achieve profitable growth and help deliver a sustainable future. We operate manufacturing sites in 30 countries and employ approximately 36,000 people. Dow delivered sales of approximately \$43 billion in 2024. References to Dow or the Company mean Dow Inc. and its subsidiaries. Learn more about us and our ambition to be the most innovative, customer-centric, inclusive and sustainable materials science company in the world by visiting www.dow.com.

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