



STS Innovations

TRANSFORMANDO RESÍDUOS EM
OPORTUNIDADES

ADITGREEN

PRESENTATION

In a world that is looking for sustainable solutions to reduce pollution and harness industrial waste, ADITGREEN emerges as a powerful innovation. This concrete plasticizer additive was created to transform black liquor, a waste from the widely incinerated pulp and paper production, into a functional and economically viable product. With a strong environmental and social footprint, ADITGREEN offers an environmentally friendly alternative that, in addition to reducing CO emissions, promotes economic efficiency.

Developed with the support of giants such as Suzano Brasil, Eldorado Brasil, Atvos, HIPERMIX, CONCREVIT and SOIL PLUS, ADITGREEN was conceived during the PhD of André Menezes, founder of STS INNOVATIONS, at the Military Institute of Engineering (IME). This work was carried out in collaboration with Eldorado Brasil, which donated samples of black liquor, and Atvos, which conducted a strategic market analysis. CONCREVIT provided cement and aggregates and carried out tests on settlement, workability and compressive strength, validating the effectiveness of ADITGREEN as a water reducing additive in concrete.

Subsequently, after the completion of the PhD, validations in a relevant environment progressed together with Suzano Brasil, who donated kraft lignin; SOIL PLUS, which contributed to the improvement of the formulation of the sustainable concrete additive and the patenting thereof; and HIPERMIX, which validated the tests in a relevant environment with various concrete compositions, from traditional concrete to sustainable ones. The production of ADITGREEN prevents tons of kraft lignin and black liquor from being incinerated, which would release greenhouse gases. By applying advanced sulfonation technologies, it is possible to create sustainable industrial products from kraft lignin, offering alternatives such as concrete additives, soil stabilizers and dust suppressors, that add value to what was once just a waste.

ADITGREEN

APPLICATIONS

ADITGREEN is an innovative product with multi-functional applications covering various industrial sectors, promoting efficiency, sustainability and performance. Its use extends from civil construction, where it acts as a plasticizer and water reducer in concrete, to areas such as agriculture and road stabilization, offering robust and environmentally responsible solutions.

In agriculture, it can be applied in biomass pelletizing processes and animal feed, helping in the compaction and better performance of pellets. In mining and mineral processing industries, its use as a stabilizer is essential for dust containment and soil stabilization, reducing the need for aggressive chemicals.

The chemical and manufacturing industries also benefit from ADITGREEN, including ceramics, resins, adhesives, pigments and paints, where its chemical structure allows for better integration and dispersion. In the personal care, cosmetics and pharmaceutical sector, their sustainable composition and stabilizing properties offer greener and more effective alternatives.

By adding value to industrial by-products, ADITGREEN becomes an alternative to traditional sodium lignosulfonate, with the potential to replace less sustainable chemical compounds, contributing not only to waste reduction, but also to the circular economy in various applications, from construction to industrial water purification and treatment.

These various areas of activity highlight the versatility and positive impact of ADITGREEN, making it an ideal solution for companies seeking to combine technological innovation, sustainability and economic viability in their production processes.

Join the transformation!

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ADITGREEN

This development allows the pulp and paper sector a more noble destination for its by-products, especially kraft lignin, which accounts for 90% of production and is normally burned to generate energy. Through the adoption of ADIT-GREEN, companies can at the same time contribute to sustainability and achieve economic efficiency, contributing to emission reduction and creating a positive impact on the environment.

Currently, large quantities of black liquor and kraft lignin are incinerated to generate energy, resulting in the release of CO₂. However, the application of this technology will give kraft lignin and black liquor a more noble purpose than turning them into GHG emissions. For every cubic metre of ADITGREEN consumed daily, approximately 20 tonnes of greenhouse gases are avoided annually.

There are two widely used chemical processes for pulp and paper production:

1. Acid route, which represents approximately 10% of production, with sodium lignosulfonate as a by-product used in the production of polyfunctional.
2. Basic route, known as the kraft process, which represents about 90% of production and has as a by-product kraft lignin, which is burned in boilers to generate energy because it lacks commercial application.

The difficulty of industrial application of kraft lignin is due to its insolubility in water. However, thanks to advanced sulfonation technology, it is possible to develop a whole line of sustainable industrial products such as concrete additives, soil stabilizers and dust suppressors, produced exclusively by SOIL PLUS.

Below is a figure and table showing the potential market participants

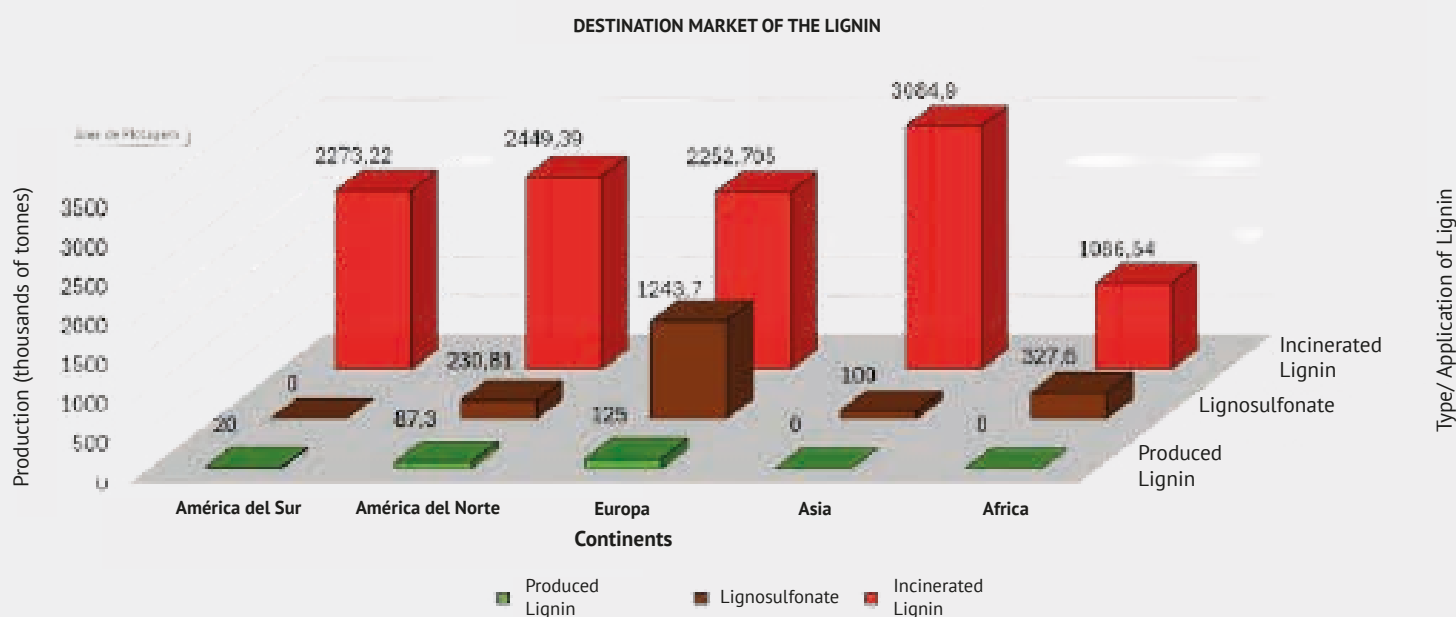


Figure 1: Production of kraft lignin with market application (blue), sodium lignosulfonate (green) and kraft lignin which is incinerated due to lack of application (Source: STS INNOVATIONS team).