

## INDUNOR provides the auto and construction sectors with natural foam, free from volatil organic compounds

Industrial firms want expandable or flexible foam insulation! These foams are made from synthetic resins and handling and using them involves proven health risks due to the presence of formaldehyde and other VOCs. By teaming up with Lermab (Carnot ICÉEL Institute), Indunor – a specialist in tannin production – has come up with alternative natural resins that can be used to make pollutant-free foam.

### Supporting Innovation

Studies performed since the 1980s into the harmfulness of formaldehyde and volatil organic compounds have led certain governments to limit or even prohibit their use. The hazards of exposing employees to chemical risks, as well as consumer protection requirements are forcing industrial companies to come up with new formulae for producing the foams that have become so essential in thermal and electrical insulation and soundproofing. Indunor's engineers wished to harness certain characteristics of tannins – and their extensive expertise in tannin extraction – to come up with a biosourced component that could replace petrochemical-based resins. This Argentine-based company has been working with tannins from the quebracho – a tree that is native to the Gran Chaco province in South America – and the chestnut tree. Thanks to research carried out by Lermab (ICÉEL Carnot Institute), these tannins can be used in resins suitable for producing foams adapted to different uses. They have remarkable strength, fire resistance and thermal insulation qualities and provide industrial firms with sustainable solutions. Indunor has set up a “Natural resins” division that rounds out its food and health products offering.



### The client needs

INDUNOR, a Silvateam Group subsidiary, is a big player in tannin and vegetable extraction and commercialisation. It produces and markets food additives, stabilizers, thickeners and supplements on a global scale. While tannins have traditionally been used in leatherwork and winemaking, they have also been used to produce highly fire-resistant foams with great insulation properties since the 2000s. However, the mimosa it had previously been using was not sufficient to meet burgeoning demand and Indunor needed to find a viable long-term alternative. The quebracho tree contains condensed tannins (their structure is similar to flavonoids, i.e., they polymerize), and those of the chestnut are hydrolyzable (polyester carbohydrates and phenolic acids). To analyse these tannins, and turn them into a raw material capable of meeting the needs of industrial firms, Indunor teamed up with the Lermab laboratory, which boasts 20 years' experience in the production of tannin-based foams.

### Partnership

ICÉEL Carnot Institute, based in eastern France, works in the field of materials, processes, environment and energy. It combines 27 labs and technical centres, including Lermab, which specialises in research into wood, covering the molecular to the macroscopic level, and even wooden structures. A research partnership lasting several years, underpinned by a doctoral thesis, culminated in the filing of a number of patents on a co-ownership basis. Lermab, along with the Jean Lamour Institute, another part of ICÉEL in charge of the characterisation work, has enabled Indunor to market natural resins that represent real progress in solving a worldwide problem. The Silvateam Group is seeking to consolidate the leadership of its subsidiary, Indunor, in sustainably produced resins that help businesses comply with environmental guidelines. The enthusiasm of industrial companies for Indunor's natural resins is a testimony to the success of this cooperation venture.