

THERMAL AND ACOUSTIC INSULATING PANELS FOR BUILDINGS

RECYCLING TEXTILE WASTE BY *ECOFIBRA* IN CHILE

Since 2018, the [company Ecofibra](#) created by the engineer Franklin Zepeda, operates in Chile recycling and transforming textile waste into ecological panels for thermal and acoustic insulation of buildings.

Ecofibra's products are manufactured as mats, blankets, sheets and bulk, with different densities, thicknesses and insulating capacities, allowing an efficient shelter of all types of buildings, new houses or renovated. By mixing wood with the insulating mat, Ecofibra also commercializes finished ecological panels.

These products have fireproof properties and the same insulation coefficient as the traditional panels available on the market in Chile, while being less expensive. The production process is totally circular: at the end of use, the thermal panels can be returned to the company, which recycles them without generating any waste.

The Ecofibra company was created in the municipality of Alto Hospicio in the Tarapacá Region, to solve the problem of the huge quantities of textile waste generated from the import of used clothing in this Free Zone. According to estimates, 80% of the used clothing that arrives in the Region ends up in clandestine dumps near this city. The Ecofibra business project, which is inspired by the principles of *circular economy*, has been designed in 2016 to create an efficient and ecological alternative for the construction sector, taking advantage of textile waste as a recyclable resource.

The 500 sqm plant of Ecofibra was established in 2018 in the municipality of Alto Hospicio, with a capacity to produce 800 panels a day, processing four tonnes a day of textile waste, most of which coming from the surrounding area. The process begins with the collection of the textile scraps and their selection also consisting in removing metals and buttons from the clothes. The waste is then shredded and processed through another machine that turns it into microfibers where elements are added to have the required fireproof properties. Finally the material goes through a heat setting process where it is shaped into a blanket.

The Ecofibra project, first example of circular economy in this sector in Chile, was supported by [Zofri S.A.](#) (Society administering the Free Zone of Iquique) which provided the crushing machine. It has also been supported by a fund from the *Innova Circular* Programme promoted by Corfo (Corporation for production promotion of the Chilean Ministry of Economy) allowing Ecofibra to scale-up in the production process.

COMPROMETIDOS CON EL MEDIO AMBIENTE



Today Ecofibra not only collects textile waste from the Free Zone. Another important percentage comes from home collection, receiving up to 15 tons of rubbish daily. In commercial terms, Ecofibra has established partnerships with 21 national and some foreign companies (Bolivia and Panama) interested in acquiring the thermal panels for their use in different works, mainly associated to houses construction.

The results achieved have allowed the Ecofibra company to plan an expansion of its activities with the ambitious goal of reaching a percentage of 40% of the national market for thermal panels. A new 800 m2 production plant is being installed on the peri-urban area of Santiago, the capital of Chile, with a capacity to process an average of eight tonnes per day of textile scraps from the Metropolitan Region and other parts of Chile. The new plant will also process disused clothing from three major retailers in Santiago, who have signed an agreement with Ecofibra to give their products new life.

At the same time, the company Ecofibra continues to design new products for construction companies to be used in home building, such as finished ecological thermal insulation panels produced using wood and recycled textile waste mats.

In addition to the generation of new qualified jobs in the involved territories, the approach and activities of the Ecofibra company bring the following benefits to the environment:

- The activity of recycling contributes to eliminate from the dumps of a large part of the textile waste that generates environmental problems (clandestine dumps, fires, etc.);
- The use of ecological thermal insulation panels helps to save up to 35% of electricity consumption due to the reduction in the use of heating or cooling the air inside homes; it also favours an environmental decontamination by reducing the burning of wood for heating homes in cold areas of the country;
- The ecological insulating panels allow the replacement of current materials that are used in the construction industry, such as glass wool which is highly polluting and with negative impacts on health.
- Ecofibra represents a successful example of a *circular economy* that can inspire other entrepreneurs in the country to create productive processes based on waste recycling in different sectors.

With its activities to reduce textile waste, Ecofibra contributes to the achievement of the objectives of the [Alliance for Sustainable Fashion](#) launched in 2019 by 10 United Nations Organizations to promote projects and policies capable of reducing the negative social and environmental impacts of the fashion industry, considered among the most polluting in the world.

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