

## Peruvian natural fibers and their potential for application in the construction industry

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### Abstract

In recent years, the effects of climate change are evident, especially in Peru, excessive rains, high temperature, intense freeze, frequent and prolonged droughts; are some of the consequences, which can be attributed to climate change. Industry, in general, is one of the main responsible of these phenomenon (high emissions of greenhouse gases and industrial wastes), so the question would be, what are we doing to reduce or minimize these effects? In the different areas of the industry, diverse methods, processes, materials, products and others are being developed, in order to minimize wastes, which have a direct effect on the environment; and the construction industry is not alien to it. It is true that cement production is one of the processes that has the greatest negative impact on the environment; however, in recent years, partial or total cement replacements are being sought. These replacement materials have different origins, and one of the main ones is the industrial ashes produced by the calcination of biomass; Biomass, being a product rich in cellulose, can also be used as a reinforcement for cementitious products, and Peru has potential to exploit this. In recent years, different native Peruvian natural fibers have been studied, which can be used in the construction industry, one of them is Ichu fibers. These fibers have a high cellulose content, which makes it a very attractive material; however, in order to use it, it is necessary to understand these, in their different states. Over the last few years, their physical properties, chemical characteristics, mechanical properties and how the different treatments can influence on them have been studied. It has been proven that Ichu fibers have better or superior properties than different commercial natural fibers, showing stiffnesses over 25 GPa and strength over 500 MPa. The main purpose of this research is to show the different characteristics and potential of Ichu fibers.

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