

Overcoming the limitations of recycled concrete aggregates in Belgium

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Abstract

In Belgium, the presence of numerous quarries in the Walloon region makes recycled concrete aggregates (RCA) less attractive for structural concrete applications: since the natural aggregates are at reach, it is unprofitable from both a financial and an environmental aspect to use RCA. In addition, the supply of recycled aggregates on the Belgian market is lacking. Only a few recyclers produce type A+ RCA, which could be used in ready-mix concrete, but tend to keep them for their own productions. Furthermore, although the revised Belgian national concrete standard (NBN B 15-001) allows cast-in-situ concrete to contain higher fractions of recycled aggregates, there is presently no concrete supplier yet certified to produce concrete with recycled aggregates. One should finally note the lack of stimulation or even mandatory incentives by the Authorities to promote the use of RCA. The aim of this paper is to identify the various reasons behind RCA limitations in Belgium and to suggest solutions to overcome them.

Keywords: Recycled concrete aggregates; green concrete; circular construction.

1 Introduction

In response to Greta Thunberg's call for action against climate change, thousands of students in Belgium repeatedly skipped school on Thursdays in the beginning of 2019 to march through the streets of Brussels, demanding more ambitious climate policies. The pressure on the Belgian government regarding climate change decisions has been growing, but the shift is still very slow.

With respect to the concrete industry, Belgium still has quite a way to go in order to reach a more sustainable construction. The two main impacts of the concrete industry on the environment are the incredibly high greenhouse gas emissions and the exploitation of primary materials. In order to reduce the impact of the latter, the market needs to transition towards a circular construction model.

Due to its growing population, Belgium's urbanisation is expanding, leading to the demolition of old buildings and roads in order to make place for new ones. Consequently, more than 20 million tonnes of construction and demolition waste (CDW) are generated in the country every year [1] while sources of natural aggregates are being depleted to produce structural concrete. This offers the opportunity to partially replace natural aggregates by recycled concrete aggregates (RCA). However, the use of RCA in structural concrete is still very limited and the Belgian market seems resistant to the change. The aim of this paper is to identify the various reasons behind this in order to find solutions to overcome the limitations.