

**Investigation on the effect of low carbon, low shrinkage, high flexural strength  
Envisia® concrete on industrial floors and pavements**

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**ABSTRACT**

The key structural element in most industrial enterprises is the concrete floor slab. The aim of floor design is to select the most economical thickness while considering sufficient reinforcement to control the amount and size of cracks to a level consistent with the intended use of the floor. However, one of the most common causes of cracking in industrial floors is that the tensile stresses exceed the tensile strength of the concrete due to the shrinkage contraction. Therefore, there is a need for slabs that are reinforced with mesh to be cut in order to release the stresses due to the shrinkage. However, the distance between the saw cuts is related to the shrinkage of the concrete. Recently, considerable interest has been generated in the use of steel fibre reinforced concrete in order to control the tensile cracking of the composite material and reduce the number of joints especially in internal industrial floors.

Boral has developed a low carbon, low shrinkage and high flexural strength concrete called Envisia®, with up to 60% cement replacement with specially milled ground granulated blast furnace slag (GGBFS) without compromising setting time or early strength. In this paper, a comprehensive experimental study was carried out to evaluate the influence of 40MPa Envisia concrete on plastic and hardened properties of concrete industrial floors and pavement according to Concrete Society Report TR34. Finally, the results were compared with the results of conventional and fibre reinforced concrete mix with the same strength grade.