

Warehouse Slab

DBG HQ, Cambridge



The Challenge

In 2013, when Cemfree was still in its infancy, DBG decided to pour the first ever in-situ Cemfree slab. Although the slab was large, measuring 930m², the real challenge lay in pouring the Cemfree mix in temperatures of -2°C; far from ideal conditions for placing concrete. As well as contending with below-freezing conditions, DBG wanted to lay the slab in one continuous pour with no joints, a practice that would not normally be recommended for traditional concrete slabs of this size, due to the increased risk of cracking.

The Cemfree Solution

Compared to a CEM I mix, using Cemfree saved almost 60 tonnes of CO₂ in this slab. DBG created Cemfree for this exact purpose – to replace a traditional mix with a Cemfree one to make significant carbon savings possible. With no extra machinery or training needed – Cemfree is poured in exactly the same way as OPC-based concrete – the adoption of this innovative product is straightforward and easy to implement.

A Carbon Saving of

86%

on this project



The Practicalities

Although below-freezing conditions are never ideal for pouring concrete, DBG decided to go ahead with the Cemfree pour to gain a full understanding of how Cemfree performs. The drastically reduced heat generation of Cemfree reduces thermal expansion, shrinkage and movement, in turn minimising the risks associated with thermal shock and allowing for a joint-free slab. Within 24 hours, the slab had gained sufficient strength to allow for foot traffic and displayed no adverse effects from the cold temperature, or the absence of joints.



The Result

Approximately 200m³ of Cemfree concrete was poured for the warehouse slab. The embodied CO₂ savings amounted to over 60 tonnes compared to conventional OPC based concrete – equivalent to burning nearly 30 tonnes of coal. These environmental benefits were the driving factor behind using Cemfree, but it also comes with other advantages. Good concrete practice dictates that a slab of this size should usually be poured in a number of sections, requiring construction joints. It wasn't a requirement for this project as the Cemfree mix was able to be poured continuously. The lower heat of hydration that Cemfree brings with it minimises the risk of cracking and shrinkage issues, meaning less joints are needed. This results in potentially substantial time and labour savings by using Cemfree.

Since 2013, the warehouse slab has been in constant daily use, withstanding heavy machinery and racking with no signs of degradation. As it was a slab for DBG, the creators of Cemfree, there was an opportunity to take more chances, with Cemfree being poured in very cold conditions, against usual good concrete practice. Although this would never be advised, Cemfree performed well and the low temperature and absence of joints didn't impede it in any way, creating a lasting positive result that is still going strong today.



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