



low carbon concrete

“Using Low Carbon Concrete (LCC) is the best way to reduce the Embodied CO₂* in the built environment.”

25% reduction in the CO₂ footprint of a typical structure. LCC plays a key role in the response to climate change and is stronger, longer lasting and better looking.

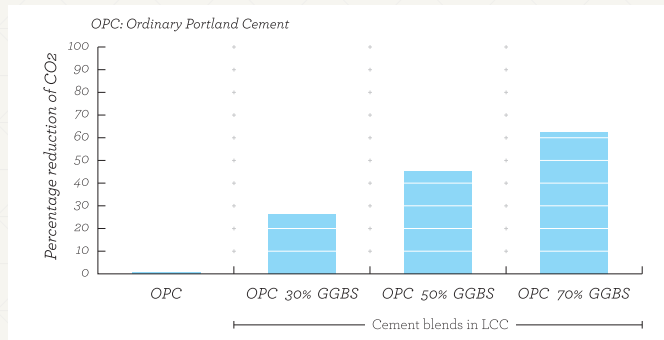
* **Embodied CO₂:** Embodied CO₂ is the quantity of CO₂ emitted in the manufacture, supply and construction of a building or structure.

Sustainability

Sustainable Development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”.

For example, using LCC on a typical 3-bed semi detached house achieves:

- Saving of over 10 tonnes of CO₂ emissions
- Saving of quarrying over 18 tonnes of natural resources
- Saving the energy equivalent of over 1.7 years of electricity use in the average home.



Low Carbon

Low Carbon Concrete uses Ecocem green cement** leading to a reduced carbon footprint. Concrete containing Ecocem is also stronger, looks better and lasts longer, making it the sustainable solution of choice for new build.

**What is Ecocem Green Cement?

Ecocem Green Cement is GGBS (Ground Granulated Blast Furnace Slag), a premium quality cement manufactured from a high quality by-product of the steel industry. Ecocem is an alternative to ordinary cement and because it is manufactured from a recycled product, it releases 16 times less CO₂ during its manufacture.

Embodied CO₂

The Embodied CO₂ in Irish construction projects accounts for between 10% & 15% of all CO₂ emissions in Ireland. LCC can reduce the embodied CO₂ in concrete by 40%. LCC can reduce the embodied CO₂ of the average structure by 25%, making it the Best Available Technology (BAT) for reducing embodied CO₂ in the construction industry.

How to specify Ecocem in your concrete

Ecocem replaces between 25% and 70% of the cement in a Low Carbon Concrete mix, and the typical replacement ratio for ready mixed concrete is 50%. For more information on replacement ratios, and the advantages of a high Ecocem content, please contact your local concrete supplier or see www.lowcarbonconcrete.ie.

“LCC is stronger, lasts longer, is much more resistant in aggressive environments and is better looking.”

The Convention Centre Dublin

Using LCC in the Convention Centre Dublin has achieved:

- Saving of over 6,000 tonnes of CO2 emissions
- Saving of quarrying over 10,000 tonnes of natural resources
- Saving the energy equivalent of over 1,000 years of electricity use in the average home.



Reduced Deterioration in Aggressive Environments

Fire can reduce the strength of concrete. LCC shows greatly improved strength after fire when compared to concrete made with ordinary cement.

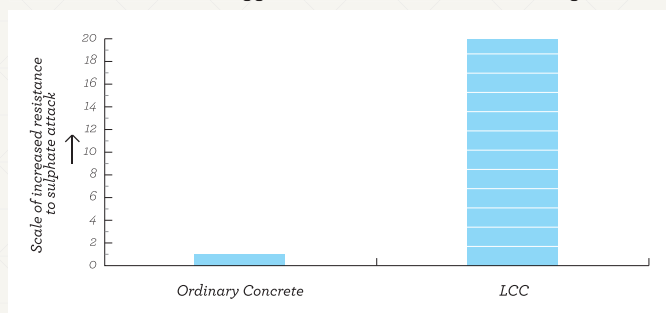
Acids such as those found in farms and water/wastewater treatment plants cause deterioration of concrete. It is well established, through extensive research and experience, that the GGBS cement used in LCC greatly reduces the damage to concretes in this environment.

Previously developed sites may contain contaminants in the soil, ground and/or groundwater which attack concrete causing expansion and cracking, leading to accelerated deterioration. Ecochem GGBS cement improves the chemistry and reduces the porosity of the concrete, protecting it from sulphates. The graph shows the rate of expansion falling dramatically as the percentage of Ecochem increases.

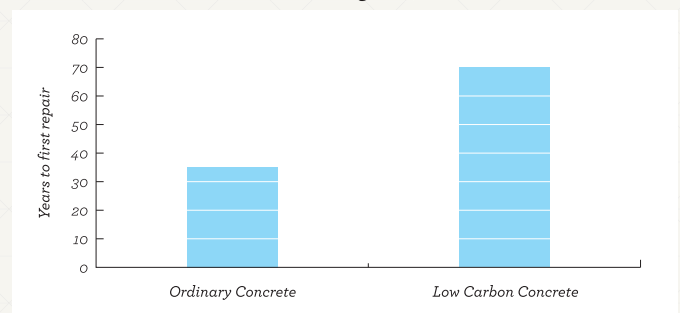
Salts on roads and in marine environments penetrate concrete, attacking the steel reinforcement and causing it to expand. This causes the surrounding concrete to crack, requiring repair and, ultimately replacement. Using Ecochem GGBS Cement will double the life span of the concrete in terms of resistance to chloride attack (see graph) – the National Roads Authority call for the use of GGBS in concrete on all bridge structures in Ireland.

Cracking and voids will lead to significant damage in your concrete. LCC, because of the chemistry, has less cracking and has a much reduced void ratio than concrete made with ordinary cement.

Increased resistance in aggressive environments when using LCC



Increased life of structure when using LCC



Architecturally Superior Concrete

Low Carbon Concrete is lighter in colour because of the white colour of Ecochem cement. Also, due to the smaller particle size than ordinary cement, the concrete is easier to place and compact, leading to a smoother more defect free finish. Ecochem will also eliminate efflorescence, the unsightly white staining of concrete.



Irish Concrete Society – Design and Construction Award, winning entry in 2007 – 70% GGBS (insitu concrete)



Irish Concrete Society – Design and Construction Award, winning entry in 2006 – 50% GGBS (insitu and precast concrete)