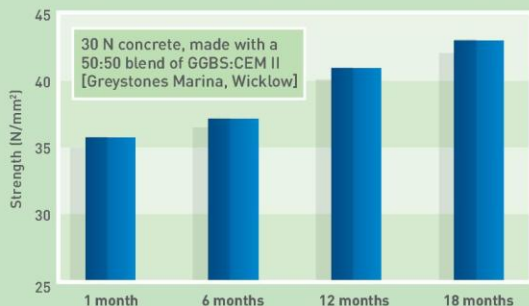


## GREATER LONG TERM STRENGTH

Concrete made with GGBS has greater long-term strength than concrete made with OPC. This is because GGBS continues to hydrate and react with the free lime in concrete over time, resulting in a denser matrix with a finer pore structure. The enhanced long-term strength of GGBS concrete is illustrated below:

### LONG TERM STRENGTH OF GGBS CONCRETE



A strength increase of 20% from 1 month to 1.5 years is achieved with concrete made with 50% GGBS. The greater long-term strength of GGBS concrete minimises the risk of mechanical and structural damage over the lifetime of the concrete silo or slab.

## BRIGHTER COLOURED CONCRETE

Ecocem GGBS cement is white in colour, thus concrete made with GGBS is lighter in colour. Lighter coloured concrete increases light reflectance making for a safer working environment, particularly at night.



Concrete bridge abutment (on left) made with 50% Ecocem GGBS; bridge beams (right) are made with 100% OPC.

## ENVIRONMENTAL BENEFITS OF GGBS

Ecocem GGBS cement is a recycled product. It is much more environmentally friendly and has a much lower CO<sub>2</sub> footprint than CEM II or CEM I cements. The CO<sub>2</sub> footprint of Ecocem is just 29kg/tonne (audited by NSAI), whereas that of CEM II cement is in the order of 700kg/tonne:

CEMENT TYPE	CO <sub>2</sub> FOOTPRINT [kg CO <sub>2</sub> /tonne]	REFERENCE
Ecocem GGBS	29	Direct and energy indirect emission of CO <sub>2</sub> , ISO 140064-1:2006. Audited by NSAI, 2010.
CEM I	740 – 860	EPA: GHG Permit Holders Public Files, unpublished data for cement installations in RoI, 2011.
CEM II	680 – 790*	

\*based on CEM II/A cement with 13% addition of limestone or flyash

Using a 50% blend of GGBS in concrete saves 1 tonne of CO<sub>2</sub>, per truck load of concrete delivered.

## WORKING WITH GGBS CONCRETE

### PLACING AND COMPACTING

The requirements for placing concrete with GGBS are the same as for ordinary concrete. It is essential that concrete should be fully compacted to ensure long-term durability. Concrete should be mechanically vibrated using a vibrating poker or vibrating screed. Compaction by hand tamping will not lead to the same quality results and may reduce the life of the concrete. It is not permitted to add water to concrete on site: doing so will significantly reduce durability and strength of the concrete.

It is important to permit bleed water to evaporate from the concrete surface before the final finishing. Finishing the concrete whilst there is bleed water lying on the surface remixes the bleed water into the top surface of the concrete, leading to the formation of a weak layer on the top of the concrete.

### CURING

Proper curing is particularly important in farm concrete. The purpose of curing is to ensure that sufficient moisture is available for hydration of the concrete in the first 7 days. Great care must be taken to ensure concrete does not dry out during this period. This can be achieved by covering the concrete with a fabric that is kept moist; covering the concrete with plastic sheeting; using a curing compound; or regular spraying with water. Failure to cure properly will result in a lower strength and a more porous surface layer. This will make the concrete more susceptible to abrasion, acid attack and frost damage, and will shorten the life of the concrete. It is also important to protect fresh concrete from heavy rainfall, and from frost.

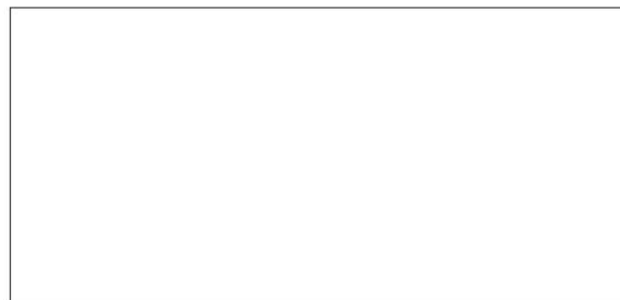
## ORDERING CONCRETE WITH ECOCEM GGBS

Durable concrete made with Ecocem GGBS cement is available nationwide. Check [www.lowcarbonconcrete.com](http://www.lowcarbonconcrete.com) for suppliers in your area. When ordering your concrete, simply state that you wish to use concrete with 50% Ecocem GGBS for general purpose farm concrete, or 70% Ecocem GGBS for concrete in particularly aggressive environments.



## PRECAST CONCRETE

Precast concrete elements such as cattle slats or tanks made with Ecocem GGBS cement will similarly be more durable than concrete made with OPC. Check with your local supplier if they can provide precast elements made with Ecocem GGBS concrete.



## TECHNICAL ADVICE

For technical advice contact your local concrete supplier, or you can contact Ecocem directly on 01 678 1800 or [technical@ecocem.ie](mailto:technical@ecocem.ie) and we will be pleased to answer any technical or practical questions you may have.

## DURABLE FARM CONCRETE

WITH

# ECOCEM GGBS CEMENT



Farm Concrete made with a blend of Ecocem GGBS cement

- Is more durable
- Has greater long-term strength
- Lasts longer
- Requires less repair
- Is better for the environment
- Is brighter in colour

**DURABILITY FOR GENERATIONS**

