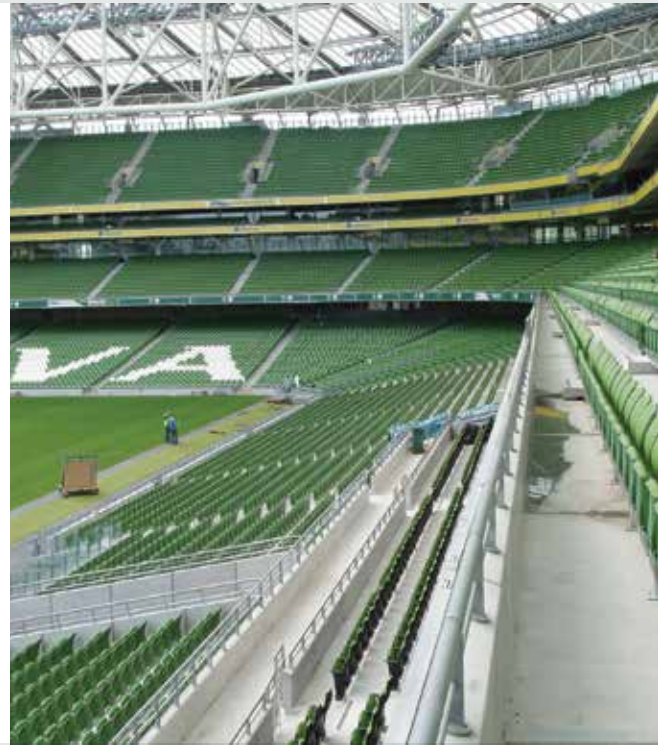


Ecocem Ground Granulated Blastfurnace Slag is used in combination with Portland Cement to produce superior longer lasting concrete.

A replacement rate of up to 70% is permitted by the I.S EN 206-1. Ecocem GGBS replacement greater than 66% is classified as a sulfate resistant cement by EN 197 and can be used in aggressive ground conditions.

Ecocem GGBS is an industrial by-product that is diverted from landfill and upcycled into a commodity product. On exiting the iron processing system, molten blast furnace slag is rapidly quenched with water to form Granulated Blastfurnace Slag (GBS). The GBS is sourced from selected high quality suppliers in Europe. Ecocem GGBS is produced by drying and grinding the GBS at our milling plant in Dublin.



CHEMICAL COMPOSITION

The rate of vitrification means that the glass content of Ecocem GGBS is greater than 95%. (measured by X-ray diffraction) ensuring highly reactive material. The typical chemical composition of Ecocem GGBS is provided below:

SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	MnO	TiO ₂	SO	Cl	S ²⁻	Na ₂ O _{eqv.}
36.5	10.4*	0.7	42.4	8.1	0.4	0.5	0.1	0.01	0.7	0.5

*Al₂O₃ content below 14% guarantees the durability performance of Ecocem

PHYSICAL CHARACTERISTICS

Standard Characteristics of Ecocem GGBS in combination with reference cement CEM I 42.5R:

COMBINATION		COMPREHENSIVE STRENGTH			ACTIVITY INDEX		INITIAL SETTING TIME
Ecocem GGBS	Cem I	7 Days	28 Days	56 Days	7 Days	28 Days	
0%	100%	45	58	61	-	-	120
50%	50%	35	59.5	65	78%	103%	170
70%	30%	27.5	54	58.5	61%	93%	200

Compressive strength reported in MPa measured by EN 196-1 mortar prisms.

OTHER VALUES

BLAINE	450 \mp 30m ₂ /kg
D₅₀	11/ μ m
RELATIVE DENSITY	2.8 - 3g/cm ³
BULK DENSITY	0.9 - 1.2g/cm ³
ENVIRONMENTAL PRODUCT DECLARATION (EPD EN 15804)	42kg CO ₂ /tonne
L* (WHITNESS)	89
SOLAR REFLECTIVITY INDEX (SRI) OF CONCRETE	
50% GGBS	60
70% GGBS	74



FEATURES

Ecocem GGBS is specified for its' technical, environmental and aesthetic qualities by engineers, architects and stakeholders. Using Ecocem GGBS in concrete can extend the lifespan, prevent cracking and lower the embodied energy of a project.

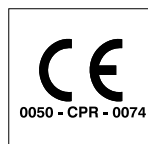
- **Increased durability against chemical and acid attack**
- **Increase long term strength**
- **Improved workability**
- **Lowers heat of hydration and reduces the risk of thermal cracking**
- **Sulfate and chloride resistant**
- **Whiter colour lowers pigment requirement**
- **Lower embodied energy**
- **Verified Environmental Product Declaration**
- **Contributes to credits under LEED and BREEAM building rating systems**

ENVIRONMENTAL CREDENTIALS

Ecocem Ireland Ltd. employs an ISO 14001 Environmental Management System and ISO Quality Management System to ensure we continuously improve our performance and decrease our impact on the environment. Ecocem GGBS has a Very Good rating certification for BES 6001 Responsible Sourcing of Construction Products from the BRE and a third party verified Environmental Product Declaration of 42kg CO₂ per tonne. Replacing traditional Portland cement with Ecocem GGBS can help lower the overall embodied energy of your project and contribute to LEED and BREEAM green building rating systems.

CERTIFICATION

Ecocem GGBS has been rigorously tested in accordance with I.S. EN 15167 GGBS Standard. The product has been issued with an EC certificate of conformity to System +1 the NSAI and carries the CE mark 0050-CPR - 0074. A declaration of performance is available on request in accordance with the Construction Products Regulations.



Version No: 181

Ecocem Ireland Ltd., Block F1, East Point Office Park, Dublin 3

T IRL +353 (0)1 678 1800 | UK +44 (0) 845 434 8191 E technical@ecocem.ie W www.ecocem.ie

