

CEMFREE

Ultra-Low CO₂ Binder

DESCRIPTION

Cemfree is an Alkali Activated binder made up of 95% GGBS and 5% activator (patented DBG technology). **Cemfree** falls within the general product category of AAC materials, where a cement gains its strength, and other properties, via a chemical reaction between a source of alkali (soluble base activator) and aluminate-rich materials (GGBS, PFA, etc).

PAS 8820:2016

Scope: Performance-based specification for AACM (**Cemfree**) binders and guidance on specifying concrete.

Approach: Performance of AACM based on BS EN 197-1 tests, modified as necessary. Concrete specification based on equivalent performance to a reference concrete mix meeting BS 8500-1 requirement.

Durability Testing:

Test	Current Status
Carbonation (University of Dundee)	Pending
Freeze-thaw (University of Dundee)	Pending
Chloride ingress (University of Sheffield)	Pass
Sulphate attack (Sandberg)	Pass
Fire resistance (BRE)	Pass
Alkali silica reaction (BRE)	Pass

CEMFREE ADVANTAGES

- Reduced CO₂ emissions
- Reduced heat evolution
- Reduced chloride diffusion coefficient
- Enhanced sulphate resistance
- Enhanced acid resistance
- Enhanced fire resistance

POTABLE WATER APPLICATIONS

No testing.

DOSAGE AND MIXING INSTRUCTIONS

- The optimum mix design of **Cemfree** concrete, to meet specific requirements, should always be determined by trials using materials and conditions that will be experienced in use.
- **Cemfree Activator** should be added to the mix at the same time as the dry materials and GGBS powder, either directly to the mixer or with the aggregates.
- **Cemfree Activator** should be thoroughly mixed with the GGBS to achieve the required activation.
- **Cemfree Activator** should not be added directly to the truck mixer as the required mixing and dispersion will not be achieved and GGBS will not be properly activated.
- **Cemfree Binder** can be used as OPC-based binders are used.
- Admixture selection for water reduction should take place after consultation with the technical team.
- The concrete produced must be thoroughly mixed until homogeneous.

APPLICATION AND USE

It is essential that good concreting practice is performed and maintained at every stage of the application process.

Cemfree concrete should be placed without segregation, fully compacted and correctly cured in accordance with up to date industry guidelines.

PACKAGING AND SHELF LIFE

Cemfree is available in two forms:

- **Cemfree Activator** (CFA) – The Activator is provided in 5kg soluble bags and is added to the GGBS mix at the specified weight (5% of binder content).
- **Cemfree Binder** (CFB) – **Cemfree** is provided in a binder form where the GGBS and Activator is premixed. CFB is provided in 1 tonne bags or in bulk.

Cemfree (CFA & CFB) has a similar shelf-life to OPC. Neither product should be exposed to rain or moisture.

APPEARANCE

Cemfree concrete has an off-white colour, very similar to high GGBS replacement concretes.

HEALTH AND SAFETY

Please ALWAYS follow the Health and Safety information provided with **Cemfree** at delivery.