

# Lafarge CEMBlend CEM III/A Concrete

## Site guide



bringing materials to *life*

Concrete containing Lafarge CEMBlend CEM III/A 42,5L Blastfurnace cement is suitable for most construction applications and is used widely throughout the UK. However, there are certain differences between CEM III/A concrete and more conventional Portland cement concrete.

This guide provides information on key aspects of successfully using CEM III/A concrete on site and is intended primarily for Site Engineers and Site Supervisors (Foremen).

### PPE

The appropriate personal protective equipment (PPE) should always be worn when using CEM III/A concrete. Fresh concrete of any type is highly alkaline and contact with the skin can cause burns and dermatitis. Contact with skin or eyes should be avoided and affected areas should be thoroughly washed. It is also important that clothing is resistant to saturation with wet concrete, as this can also lead to burns and dermatitis. (See the Lafarge Cement Health & Safety Datasheet for Portland-slag cements)

### Fresh concrete

Fresh CEM III/A concrete delivered to site will often look lighter than normal. It may also appear to be slightly more workable and less cohesive than conventional concrete, with higher than expected bleeding. Concrete with excessive bleed should not be accepted or placed.

### Placing and compaction

Correctly proportioned CEM III/A concrete generally pumps easily and can be placed in the same way as other concrete. Due to its reduced cohesiveness, poker vibrators should be inserted at wider centres than normal and left immersed for shorter periods in order to ensure full compaction, without causing unwanted segregation. Excessive vibration can lead to segregation and sand runs in formed surfaces.

### Finishing

The setting time of CEM III/A concrete is longer than that of Portland cement concrete and there is usually some bleed water rising to the surface. This may delay the start of power-floating operations (particularly in winter). Most conventional finishing techniques are applicable to CEM III/A concrete.

The tendency towards bleeding seen in some CEM III/A concretes, may result in plastic settlement cracks, aligned over the reinforcement or at changes in section depth. Changes to the concrete mix design to reduce the extent of bleeding are the most effective remedy (see the Lafarge Cement guide to CEMBlend CEM III/A concrete mix design), but re-vibration of the concrete after the initial formation of the settlement cracks, but before the concrete has set can eliminate the cracks.

Effective curing measures (see below) should always be applied as soon as finishing is complete.

### Curing

The slow setting characteristics of CEM III/A concrete makes it particularly susceptible to plastic cracking. In hot, dry or windy weather, plastic shrinkage cracking may occur if bleeding is absent and effective curing measures are not applied. Exposed concrete surfaces should always be protected from excessive drying by the use of windbreaks, and application of effective curing measures. These would include covering the exposed surface with plastic sheeting and/or wet Hessian or the application of a proprietary curing membrane. It is important that curing is applied as soon as possible after the completion of finishing operations.

### Formwork removal

The early age strength development of CEM III/A concrete is slower than that of Portland cement concrete. Consequently, formwork removal should be delayed until the concrete has developed sufficient strength to resist collapse, deformation or damage to the concrete. This will be particularly important in cold weather. Guidance on the minimum time before striking formwork may be available in the project specification or in standards such as BS 8110. Once formwork has been removed it is advisable to protect the newly exposed surfaces from drying (see above).

Newly exposed CEM III/A concrete may sometimes exhibit a blue/green tinge. This is not uncommon and will fade and disappear with continued exposure to air, leaving the typical light colour associated with CEM III/A concrete. The discolouration will not re-occur.

### Testing

Test cubes made from CEM III/A concrete should be representative of the concrete delivery. It is important that once made they are protected from drying and stored at a temperature of  $20 \pm 5^{\circ}\text{C}$ . Care should also be taken not to move the cubes, once setting has occurred, until stripping (at 24 hours). Once stripped, cubes should be immediately transferred to moist storage.

The use of temperature matched curing techniques should be considered for critical elements in a structure.

### Making good

No special procedures are required for CEM III/A concrete, but it should be noted that the colour of the concrete may change in the first few weeks after casting due to continued cement hydration and exposure to air.

### Specialist uses

This guide covers most conventional construction applications of CEM III/A concrete. However for further advice on using CEM III/A concrete in specialist applications, please contact the Lafarge Cement Technical Helpline below.

### For further information

#### Technical helpline

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#### Customer services

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