

**QUALITY ALERT: 003**

**ISSUE DATE: 18.01.23**

**RISK LEVEL: MEDIUM**

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### ABOUT GIRI QUALITY ALERTS

GIRI's Quality Alert scheme enables members to share knowledge of quality issues to assist other teams in eliminating error.

Member companies are invited to use the [Quality Alert Proforma](#) to submit details of quality issues online.

Submissions are assessed, anonymised, compiled, and shared with other GIRI members to assist knowledge transfer within the organisation and support our zero-error quest.

Issues will be logged by GIRI so that any trends can be identified and used to pinpoint future priorities for research and development.

### THE PROBLEM:

In cold weather, concrete can cure more slowly and fail to gain adequate strength. If concrete cools below 0°C, there is also the risk of water in the mix freezing.

### WHO IS THIS GUIDANCE FOR:

Site engineers and foremen, concrete subcontractors.

### THE RISKS:

- Freshly placed concrete may be rendered unusable if it cools much 0°C, caused by water in the mix expanding as it freezes.
- Colder temperatures will delay strength development and may mean that the concrete never gains its required strength.
- Even after the concrete has reached 2N/mm<sup>2</sup>, low temperatures will slow down the strength development.

### POTENTIAL IMPACT:

If concrete does not reach the required strength or suffers excessive damage, it will require considerable time, cost and effort to break it out, seriously impacting the programme.

### PREVENTATIVE MEASURES:

- Plan in advance and order heated concrete from your supplier. Specify a delivery temperature of 10°C or above. According to BS EN 206, concrete should not be below 5°C on delivery.
- Transport, compact and finish as quickly as possible to avoid too much heat loss.
- Plan your pour for the morning as the risk of freezing overnight increases for concrete poured later in the day.
- Store moulded cubes indoors in moist conditions between 15-25°C.
- Monitor and record air and concrete temperature during the pour; never pour concrete on frozen ground or into shuttering that contains frost or snow.
- Remove excess air and water through full compaction.
- Ensure you have appropriate equipment (insulation, frost blankets, windbreaks, etc) to protect concrete while it cures; do not wet cure.
- Allow for slower curing; don't strip shutters too soon.

### Further reading:

[The Concrete Society: Winter Working](#)  
[www.cemex.co.uk/concrete-in-cold-weather-guide](http://www.cemex.co.uk/concrete-in-cold-weather-guide)

**Working together to eliminate error in construction**

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