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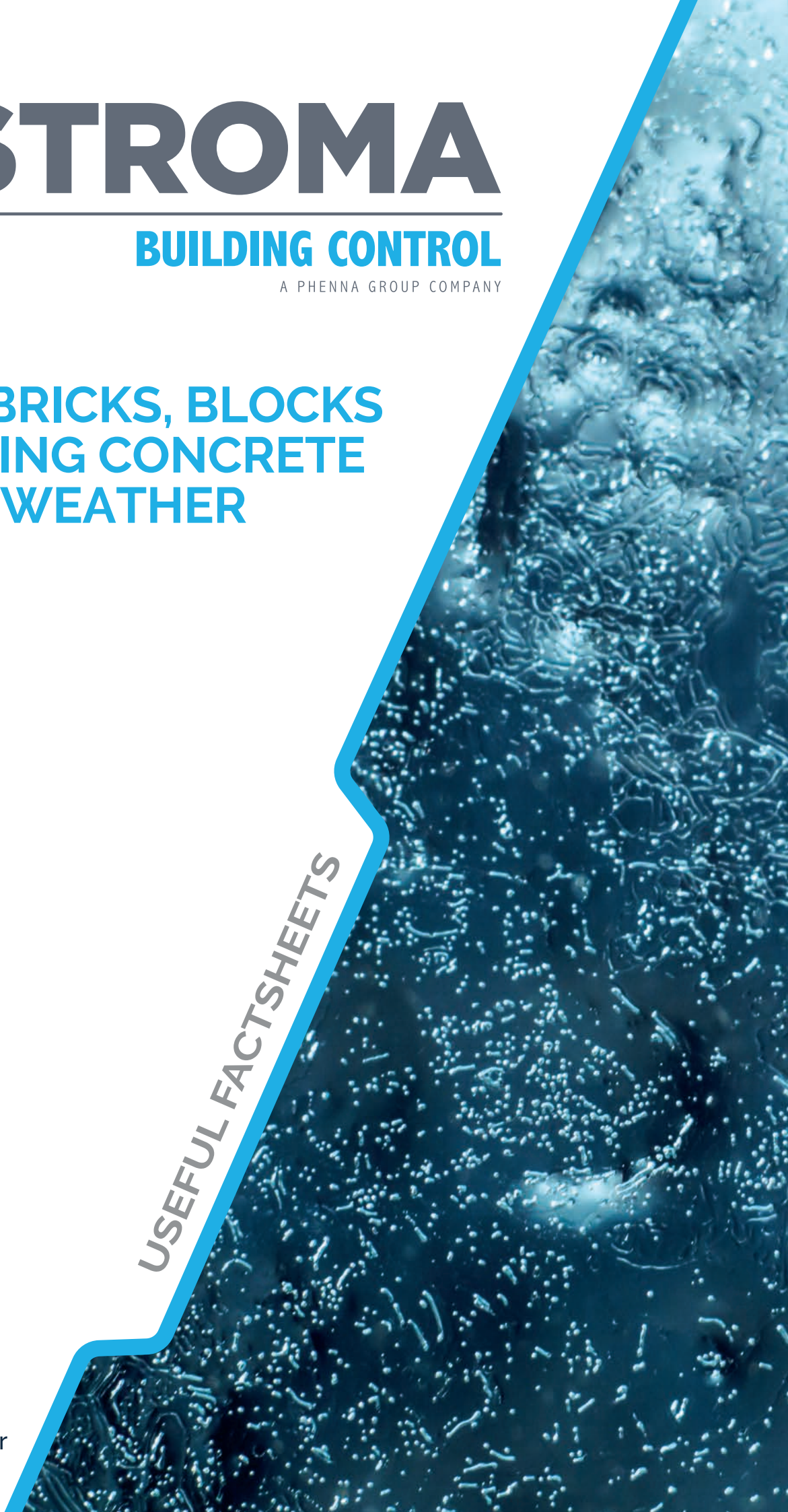
LAYING BRICKS, BLOCKS OR PLACING CONCRETE IN COLD WEATHER



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LAYING BRICKS,BLOCKS OR PLACING CONCRETE IN COLD WEATHER

The time of year is upon us when you may find yourself or your builders working in very cold weather.

You can take certain precautions to avoid future problems. It is particularly important when laying concrete, bricks and blocks in temperatures of 5°C or below.

Concrete placed in sub-zero temperatures can result in substantial damage to the point where its strength is seriously affected.

Even if the temperature does not drop below zero, precautions should be taken to maintain the integrity of the concrete during its curing process which is prolonged by the lower temperature of the Winter months.

Building material storage

During the winter months, bricks and blocks should be covered to protect against rain, snow and frost. Saturated bricks and blocks can suffer frost damage when laid.

If you cannot provide adequate protection bricks and blocks must be allowed to dry out before laying.

All materials should be clear of the ground and protected against the elements. It is also important to store your sand, lime and cement in-line with manufacturers guidelines.

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Brick/block laying

You should not lay blocks and bricks in temperatures lower than 3°C, so keep an eye on the weather forecast when on-site to anticipate when to take the necessary precautions, also be mindful of weather patterns when scheduling future projects.

If a mortar bed freezes only a very limited bond will form. Like concrete, mortar can be made stronger; however, this may have a damaging effect once the wall is dry. It is particularly important when laying blockwork that you check with the manufacturer's recommendations for the appropriate mix to use in cold weather.

When the temperature drops or is expected to drop below 3°C you should provide adequate protection by draping hessian over your completed or partially completed walls. Remember to secure this at the base of the wall to stop it from blowing away.

To prevent the hessian from becoming wet you can overlay with a secured polythene sheet. Brickwork that has been exposed to the wet during cold periods can be susceptible to excessive efflorescence during the drying out period. It is best practice to try and keep brickwork dry while curing to produce its desired bond and aesthetic.

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Concrete in cold weather

To maximise the strength of concrete it is essential you protect it from freezing. Fresh concrete needs to develop sufficient strength to resist the forces associated with freezing water. Ice formation results in the disruption of the cement paste mixture causing irreparable loss in strength. Early freezing can result in a reduction of up to 50% of its ultimate strength.

When working with concrete in cold weather, it is imperative to differentiate between the ambient air temperature and the temperature of the concrete itself. Below freezing, the water in the mix can freeze and cause detrimental expansion, rendering the concrete unfit for use. Even if temperatures remain above freezing, the concrete's strength development will be significantly slower than in warmer conditions.

Freshly placed concrete must be kept above 0°C to prevent freezing and subsequent damage. Achieving a minimum strength of 2 N/mm2 within the initial 48 hours is crucial, and maintaining the concrete temperature at or above 5°C facilitates this process.

In ambient temperatures below 5°C but above freezing, the risk of permanent damage is low. However, premature removal of formwork can lead to corner and arris damage, and concrete in beams and slabs may not be adequately load-bearing. The duration of formwork placement depends on several factors, including ambient temperature, cement content, and cement type.

Concrete cold weather considerations

In cases of slight frost at night, all freshly placed concrete must be shielded immediately. The concrete temperature at delivery should not fall below 5°C.

Protective measures include insulated formwork and/or using mineral wool insulation quilt on the top of the fresh concrete to keep it as warm as possible. Polythene sheets can also offer further protection and an air gap to help maintain the temperature of the concrete. If necessary, additional heating with space heaters is recommended..

During severe frost additional precautions are imperative. The use of heated water, available from selected ready-mixed concrete plants, ensures the concrete temperature remains above 5°C. If heated water is unavailable, it is advisable to delay concreting until ambient temperatures rise.

The concrete supplier may also use a combination of precautions to overcome the likely effects of cold weather. They may adjust the mixtures ratio or add chemicals to accelerate hardening. Be sure when placing an order for your concrete to ask what precautions the supplier takes.