

Winter Concreting

Concrete can be successfully placed, finished and cured in winter so long as you understand what affect low temperatures have on the fresh and early age concrete.

The setting of concrete involves a series of complex chemical reactions that are very sensitive to temperature. This reaction, under normal conditions, gives off a considerable amount of heat. If it is so cold that the reaction slows down, the reaction and heat evolution is delayed - consequentially, the strength gain will be drastically reduced.

The use of admixtures can over-ride some of the negative affects of low temperatures and enable you to continue to place concrete in low temperatures.

So what is a low temperature?

In New Zealand, we are constrained in what we can and can't do in the construction industry by the Building Code and the referenced documents that support the Code. The one we are interested in at the moment is NZS 3109. This Standard is quite specific in what are the permissible temperatures for concrete placement. This document is tied to the Building Code through NZS 3604, the key document for the house building industry in New Zealand.

You are bound to satisfy the clauses in these documents, failure to do so could have significant consequences for you if things do not go to plan.

The clauses that refer to this are found in Section 7 of NZS 3109 (Concrete placing, curing and finishing.)

Specifically, Clause 7.2 .1 (Unfavourable Conditions) says that "concrete shall not be placed on frozen ground, nor shall concrete be placed in unfavourable conditions as defined in 7.2.2 which may be detrimental to the quality and finish of the concrete in the structure unless adequate precautions have been taken."

1 NZS 3109 may be purchased from Standards New Zealand (visit www.standards.co.nz)

Unfavourable conditions?

The unfavourable conditions include temperatures below 5 degrees on a falling thermometer, or 2 degrees on arising thermometer, or where it becomes impractical to work and finish the concrete adequately. The precautions listed in the Standard include the use of air entrainers, using low slump concrete, using admixtures (accelerators and water reducers,) increasing cement contents, using some form of frost protection, and avoiding frozen ground.

Consult your Allied Concrete representative for specialised information.

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Allied Concrete have endeavoured to present the best possible information. However, it disclaims any responsibility for the application of the principles discussed.

