

## 7 Things to Avoid When Working With Concrete in Cold Weather

Although contractors might wish they didn't have to work in cold weather, [construction doesn't stop when temperatures drops](#). As temperatures fluctuate concrete is subject to different curing conditions resulting in sporadic strength gain. Contractors must prepare long before the weather changes to adequately protect fresh concrete. Having the right equipment ready to use at the jobsite, such as; tarps and blankets can help avoid extraneous delays and unsafe concrete development.

In the American Concrete Institute (ACI) 306: Guide to Cold Weather Concreting "cold weather" is defined as three or more consecutive days of low temperatures, specifically outdoor temperatures below 40 degrees F (4 degrees C) and air temperature below 50 degrees F (10 degrees C) for more than any 12-hour period. To help you avoid structural issues and project delays, it is important to familiarize yourself with the do's and don'ts of cold weather concreting. Take a look at these 7 common mistakes to avoid when pouring concrete in cold weather.

Curious about cold weather concreting? [Learn more here!](#)

### 1. Pouring Concrete on Frozen Ground

When pouring your concrete, the placement of your slab factors into the effectiveness of the concrete curing conditions. Frozen ground can settle when thawed, causing the concrete to crack. The fresh concrete closest to the ground will also cure slower than the surface, meaning the top of your sets while the bottom stays soft. This is a problem because concrete with different temperature gradients doesn't develop strength adequately, leading to cracking and possible structure disaster.

### 2. Allowing your Concrete to Freeze

Concrete should be kept warm (around 10°C), in order to cure properly. Fresh concrete can freeze at -4°C, so it is important to warm fresh concrete until it has the proper compressive strength measurement. This can be done more efficiently using a concrete temperature and [maturity meter](#), such as SmartRock.

### 3. Using Cold Tools

It is just as important to keep your tools and building materials warm as it is the concrete. If forms or tools are too cold, it could alter the concrete that comes into contact with them. This can negatively effect the strength development of your slab.

### 4. Not Using Heaters

Concrete needs to stay warm in order for strength to develop and continue curing. If your slab gets too low in temperature, curing stops altogether. Portable heaters deliver extra heat into the ground and directly on the concrete, ensuring concrete keeps curing and gaining strength. Be careful when using heat; improperly heating the concrete can result in a weak structure.

### 5. Sealing Concrete When it's Too Cold

Concrete sealers make your concrete more resistant to weather exposure and other outside elements. If you are placing concrete in cold weather, it is advised to get a sealer that works well in extreme weather conditions based on the recommend of the producer/manufacturer. Sealing typically should not be done if the temperature is below 10°C (50°F).



## 6. Misjudging Daylight

During the colder months, the amount of daylight lessens. It is essential to use your time wisely, as running behind schedule could lead to more problems. Daylight will not only give you an abundance of light, it will also result in warmer temperatures. If concrete must be poured before or after the sun has passed, be sure to follow #4 on this list.

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## 7. Not Using Real-time Temperature Sensors

Temperature monitoring in cold weather is important to ensure the production of high-quality concrete that meets temperature specifications. If proper attention is not given to the strength development of the concrete, these common problems can occur. Among these problems are;

- (a) freezing of concrete at early ages,
- (b) lack of required strength,
- (c) rapid temperature changes,
- (d) inadequate protection of the structure and its serviceability, and
- (e) improper curing procedures.

These problems can be avoided by taking [special precautions](#) to ensure optimal temperature of concrete is maintained during the curing stages.

**Learn More About SmartRock™ Wireless Temperature and Strength Sensors [Here!](#)**

*\*Editor's Note: This post was originally published in October 2017 and has been updated for accuracy and comprehensiveness.*