



NitCal™

A multifunctional concrete admixture



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NitCal is a purified, speciality nitrate that Yara has specifically developed to bring you a whole range of additional benefits compared to other concrete admixtures.

NitCal allows construction processes to continue during cold temperatures, providing extra strength to structures and reducing corrosion of reinforcements. Used in conjunction with a plasticizer, it optimizes the use of water and cement, whilst accelerating setting time.

By using NitCal you achieve better timescales and therefore gain financially. The lifetime and safety of your construction is increased, with stronger structures and inhibited corrosion, bringing added value to your

projects. NitCal is safe to handle and is cost efficient compared to alternative products.

All the benefits in a single product

NitCal is a purified, speciality nitrate based, chloride free, accelerating admixture for concrete, giving you benefits of:

- Shorter setting time, and thereby, construction time
- Ability to cast concrete in cold ambient conditions
- Counterbalance of plasticizers' retardation process
- Corrosion inhibitor
- Strength enhancer





Your Construction process can continue during extreme cold weather

NitCal offsets the impact of low temperatures by accelerating the setting time. In ambient temperatures, below freezing point, you can use NitCal without reducing the quality of the concrete. NitCal utilises hydration heat to prevent freezing, it does not shift the freezing point of water.

The lifetime of your structure is increased and safety margins improved

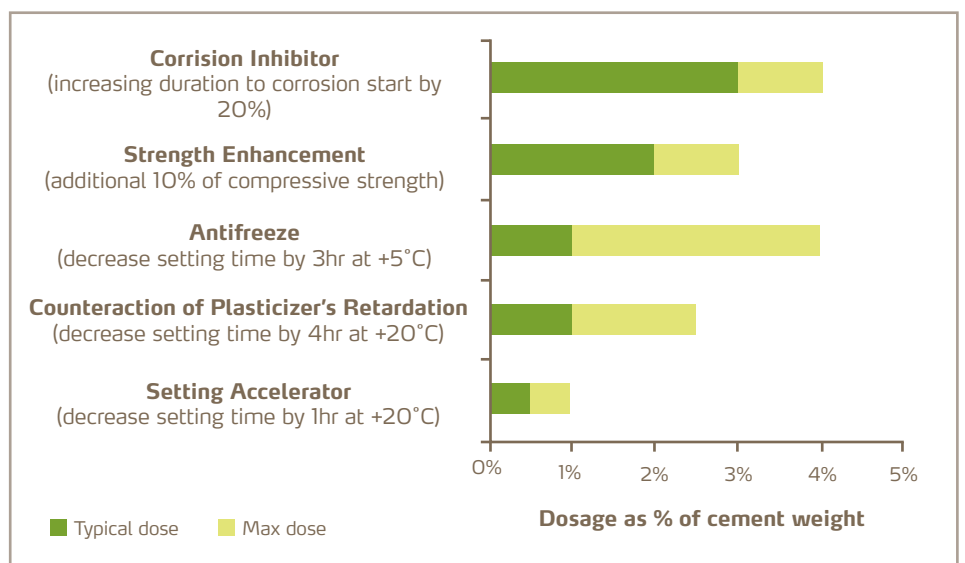
NitCal is a long term strength enhancer which reacts chemically with the concrete to make it tougher. The structure is strengthened increasing its lifetime and providing higher safety margins.

In addition, NitCal also prevents corrosion of reinforcements. It supports the formation of protective layers on reinforcements and decreases porosity of the concrete. This protects reinforcements, from such substances as sea water or road de-icing salts, by slowing down the corrosion speed to a minimum.

Works in parallel with Plasticizers to decrease setting times

Plasticizers reduce water and cement demand but also decrease reaction speed. NitCal can counteract the retardation and return the setting speed almost back to normal. Therefore, a combined use of plasticizer and NitCal can give you a better performance with less water and cement. Therefore, economy, handling, performance and environmental effects are optimised.

NitCal recommended dosing rates



*The dose for corrosion inhibition includes strength enhancement and acceleration (antifreeze, counteraction of plasticiser and setting).

Our dosing recommendations

The Table below gives our recommendations for dosing. There are factors to be considered that may cause adjustments to be needed, such as the type of cement and the method of dosing.

We can advise on such matters when we discuss your needs to ensure you achieve optimal dosing rates. Please note that the "antifreeze" feature demands prior tests.



Why choose NitCal?

High quality product that is easy to handle

NitCal is a purified, speciality nitrate which is chloride free. It is available in granules or liquid solutions and can be dosed very efficiently. The International Maritime Dangerous Goods Code (IMDG) does not apply to this product (re: Special Provision 208), therefore, is easy to handle.

Available worldwide where you need it

Yara is the world's leading nitrates producer, maintaining a global production base and logistics platform so that NitCal is available to you where and when you need it. Yara delivers NitCal to most countries around the world.

Numerous major construction projects across the globe used NitCal

- New Opera House in Oslo, Norway: NitCal was chosen for this project due to the prevailing cold conditions and the proximity to the sea.
- Incheon International Airport: NitCal was used for its setting accelerator benefits (partly due to cold conditions) and the long term strength benefit. Incheon is the largest airport in South Korea: since 2005, the airport has been consecutively rated as the best airport in the world by the Airports Council International and it received the full 5-star ranking by Skytrax, a recognition shared only by Hong Kong International Airport and Singapore Changi Airport.

- The world's tallest moveable concrete object ("Troll A", situated in the North Sea) could only be built, within a reasonable time, with the use of NitCal. The Troll A gas and oil platform's construction time needed to be shortened and, therefore, the concrete setting was accelerated using NitCal.

Reduce your admixture carbon footprint significantly

Yara uses the nitro phosphate process to produce nitrates. This reduces the CO₂ emission per kg Calcium Nitrate (CN) solid material. While NitCal production emits only 0.64 kg CO₂ per kg CN solid material, competing processes with N₂O treatment produce 1.0 kg CO₂ per kg CN. Without N₂O treatment the emission is up to 1.8 kg CO₂ per kg CN.

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For more information visit www.yara.com





About Yara

Yara is a leading chemical company that converts energy and nitrogen from the air into essential products for farmers and industrial customers. Yara uses its knowledge of nitrogen chemicals derived from the production of fertilizers to develop an industrial product portfolio. The company markets gases to numerous industries such as CO₂ to the food and drinks companies and to the catering sector. A growing segment includes environmental protection agents for H₂S and NO_x abatement. With sales operations in over 40 countries and sales to more than 120 countries, Yara is truly a global company, and the number one global supplier of mineral fertilizers.



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