



## WHAT

Miracon® has developed the first successful technology to embed carbon dioxide (CO<sub>2</sub>) throughout concrete at the mixing stage. This process has potential to enhance the final properties of the concrete with no negative effects.

The technology utilizes a cell to capture, confine and manage the CO<sub>2</sub>; hence defining CAPCELL®. CAPCELL® is a barrier that prevents CO<sub>2</sub> from reacting with water and calcium carbonate, when it is mixed throughout the concrete paste or wet stage.

The CAPCELL® process is the only commercially viable composite technology utilizing CO<sub>2</sub> in ordinary concrete without needing to modify the concrete-making process.

## WHY

A growing amount of scientific data continues to alert us that Greenhouse Gasses are reaching critical levels in our atmosphere. CAPCELL® is positioned to enable a leading-edge company, to make a commercial, repeatable impact on Greenhouse Gases.

Our world leaders are committed to reducing Greenhouse Gasses in excess of 25% over the next ten years. Current technology is not developed to achieve this. Operationally, CAPCELL® can impact greenhouse gas levels by over 265 thousand tons per year in the USA and over 14 million tons per year worldwide.

There are numerous projects and significant dollars dedicated to reducing future production of CO<sub>2</sub> such as alternate fuel sources, cleaner running cars, reduction of plastics and livestock management. There are limited technologies devoted to the capture and permanent removal of CO<sub>2</sub> already in the environment. Options such as down-hole storage, crops, and oceans are all viable; however, costs are excessive and long-term implications are not known.

## HOW

CAPCELL® utilizes concrete as the mechanism for implementation. At 4 tons per person per year, concrete is the number one used building material in the world and the second most consumed product next to water. Concrete has a low-carbon footprint per pound relative to other industrial products however, the size of the industry nets the largest opportunity currently available for immediate reduction of greenhouse gasses. Good concrete design, particularly in freeze/thaw climates, dictates an average use of 6% void space (gas entrainment) for the sustainable life of concrete infrastructure. Fifty miles of highway would consume over 185 tons of CO<sub>2</sub> utilizing CAPCELL® Technology.

CAPCELL® can be utilized in all wet-cast concrete applications. CAPCELL® utilizes the existing concrete infrastructure and operations; therefore, the implementation and commercialization can be immediate. The technology is proven, and it has the potential to enhance the final properties of concrete with no negative effects.

Today's available technology for CO<sub>2</sub> usage in pre-cast concrete applications limits widespread use. Current commercial technology for cast-in-place concrete applications (ready mix, on site) cannot utilize CO<sub>2</sub> injection, as it enters the chemical reaction, forms carbonic acid which produces heat and can flash set the concrete. This yields a brittle, low-strength product that has a shortened life span.

CAPCELL® captures CO<sub>2</sub> and "locks" it in at the mixing stage of the concrete. This process does not interfere with any of the desirable wet/plastic stage properties, such as slump/ flow because the CO<sub>2</sub> remains CAPCELL-ized® until the concrete is placed. Controlled CO<sub>2</sub> use in wet cast concrete yields a superior final product, which can be optimized for strength, curing and shrinkage.

## WHO

Miracon's® mandate is to inform and educate a broad cross section of people and industries on CAPCELL's® technology for the immediate reduction of CO<sub>2</sub> in our environment. Industries including infrastructure and environmental sectors, in addition to government and social media. This education will result in acceptance and adoption of necessary technologies for the sustainable future of our planet.

Visit [www.MiraconTech.com](http://www.MiraconTech.com) for more information