CHEM CONCRETE™

Manufacturer & Global Supplier of ChemConcrete Hybrid Admixtures

Operating in over 30 major countries through
a network of trusted partners & distributors

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Address:
27, 45 Powers Rd,
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Reducing Carbon Footprint Using ChemConcrete™ Hybrid Admixture

SUMMARY

The ChemConcrete™ Hybrid Admixture significantly reduces the carbon footprint of concrete by enabling up to 32% reduction in cement content, while simultaneously enhancing strength, durability, and service life.

This results in CO_2 savings of approximately 135 kg/m³ from reduced cement usage and up to 975 kg/m³ through extended service life — totaling approximately 1110 kg CO_2 per cubic meter of concrete.

Overall, this represents a **reduction of more than 85% in lifecycle CO_2 emissions** compared to conventional concrete systems.

OVER 85%

REDUCTION IN LIFECYCLE CO_2 EMISSIONS

How Does ChemConcrete™ Admixture Reduce the Carbon Footprint?

ChemConcrete™ Hybrid Admixture improves the performance of concrete through multiple mechanisms that directly contribute to carbon reduction. The following outlines the primary mechanism:

01 Reduction in Cement Content by Up to 32% Through Strength Enhancement

Cement is the primary contributor to CO_2 emissions in concrete production. It is an energy-intensive material responsible for approximately 8–9% of global CO_2 emissions.

Experimental studies have demonstrated that concrete incorporating ChemConcrete™ Hybrid Admixture, with a cement content of 340 kg/m³, can achieve strength comparable to conventional concrete containing up to 500 kg/m³ of cement.

This allows concrete producers to significantly reduce cement content without compromising mechanical performance or durability.

KEY PERFORMANCE BENEFITS

- Permanent integral waterproofing
- Enhanced durability and chemical resistance
- Increased compressive strength
- Extended service life
- Significantly reduced carbon footprint

CARBON REDUCTION EXAMPLE

Cement contributes approximately 420 kg of CO_2 per cubic meter of concrete.

A 32% reduction in cement content results in:

134.4 kg less CO_2 per cubic meter

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02 INCREASED DURABILITY AND EXTENDED SERVICE LIFE

ChemConcrete™ Hybrid Admixture significantly enhances the durability of concrete, resulting in stronger, more resilient structures capable of withstanding aggressive and corrosive environments.

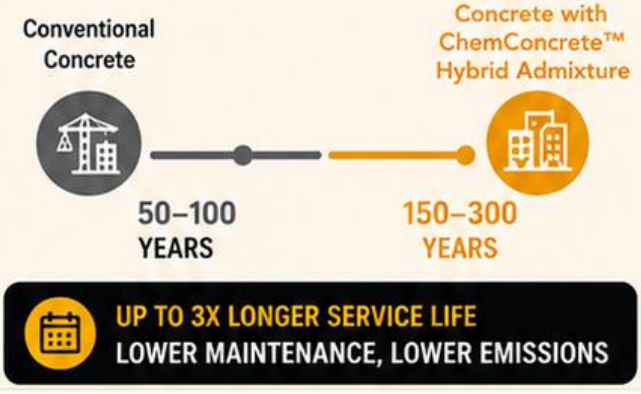
Improved durability reduces or eliminates the need for frequent repairs, maintenance, and replacement, leading to lower material consumption over the lifecycle of the structure. This enables more efficient and sustainable design practices.

Conventional concrete structures typically require major repairs or rehabilitation within 50–100 years. In contrast, concrete incorporating ChemConcrete™ Hybrid Admixture can extend service life to **150–300 years**, effectively tripling structural lifespan.

This extended durability delays the need for demolition, reconstruction, and new material production—all of which are carbon-intensive processes.

By significantly reducing maintenance frequency and reconstruction cycles, ChemConcrete™ delivers substantial long-term reductions in CO_2 emissions.

SERVICE LIFE COMPARISON



03 MINIMAL CO_2 EMISSIONS FROM ADMIXTURE PRODUCTION

ChemConcrete™ Hybrid Admixture is designed to enhance concrete performance while maintaining a low environmental impact during production.

Unlike cement manufacturing, which requires high-temperature processes (e.g., kiln operations), the production of ChemConcrete™ involves advanced chemical formulations that do not rely on energy-intensive thermal processes.

As a result, the energy demand—and associated CO_2 emissions—are significantly lower compared to cement production.

Additionally, the required dosage of ChemConcrete™ is relatively small—typically **10–20 liters per cubic meter** of concrete **(2–4 gallons per cubic yard)**.

This means that even when accounting for its production footprint, the overall contribution of the admixture to total CO_2 emissions is minimal, especially when compared to the substantial reductions achieved through cement savings and extended service life.

TYPICAL DOSAGE

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Carbon Footprint Analysis

This section presents a quantitative comparison demonstrating how ChemConcrete™ Hybrid Admixture reduces the carbon footprint of concrete through cement reduction and extended service life.

A standard concrete mix is compared with a ChemConcrete™-enhanced mix under equivalent performance conditions.

01 REDUCTION IN CEMENT-RELATED CO_2 EMISSIONS

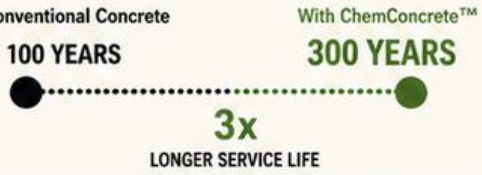
Cement production is one of the largest contributors to CO_2 emissions in concrete. On average, 1 m^3 of conventional concrete generates approximately 420 kg of CO_2 from cement alone.
By incorporating ChemConcrete™ Hybrid Admixture, cement content can be reduced by up to 32%, resulting in significant emission savings.

CO_2 EMISSIONS FROM CEMENT (per m^3 of Concrete)

Parameter	Conventional Concrete	With ChemConcrete™	Reduction
CO_2 emissions from cement	420 kg	285 kg	135 kg less CO_2

02 EXTENDED SERVICE LIFE AND LIFECYCLE IMPACT

ChemConcrete™ significantly extends the service life of concrete structures, reducing the need for reconstruction and associated carbon emissions.



LIFECYCLE COMPARISON (Over a 300-Year Period)

Parameter	Conventional Concrete	With ChemConcrete™	Impact
Service life	100 years	300 years	3× longer
Rebuilds (300-year period)	2 rebuilds	0 rebuild	2 fewer rebuilds
Total CO_2 emissions (Including cement savings)	**1260 kg CO_2 per m^3**	**285 kg CO_2 per m^3**	975 kg CO_2 reduction

KEY INSIGHT

By combining cement reduction and extended lifespan, ChemConcrete™ delivers:

UP TO

1110 kg CO_2

REDUCTION PER CUBIC METER OF CONCRETE

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Total Carbon Reduction Impact

By combining cement reduction, extended service life, and improved durability, ChemConcrete™ Hybrid Admixture delivers substantial total CO_2 savings per cubic meter of concrete.

TOTAL CO_2 REDUCTION UP TO

1110 kg CO_2

PER m^3 OF CONCRETE

TOTAL CO_2 SAVINGS PER m^3 OF CONCRETE

Factor	CO_2 Reduction
Cement reduction (32% less)	135 kg CO_2
Extended service life (3× longer)	975 kg CO_2
TOTAL CO_2 REDUCTION	1110 kg CO_2 per m^3

LIFECYCLE CO_2 REDUCTION ANALYSIS

To quantify the environmental impact, total emissions are compared over a 300-year lifecycle period:

- Conventional concrete requires multiple rebuilds
- ChemConcrete™ concrete eliminates or significantly reduces reconstruction

KEY RESULT

OVER 85%

REDUCTION IN TOTAL CO_2 EMISSIONS COMPARED TO CONVENTIONAL CONCRETE

ECONOMIC & PERFORMANCE COMPARISON

ChemConcrete™ is not only environmentally superior—it is also cost-effective.

PARAMETER	CONVENTIONAL CONCRETE	WITH CHEMCONCRETE™
Cost per m^3	Base cost	Base cost or often lower
Cement usage	High	Reduced (significant savings)
Durability	Limited	Enhanced (longer lifespan)
Waterproofing	Limited	Superior (integral system)
Carbon footprint	High	Significantly lower

The overall base cost with ChemConcrete is often lower, as the 32% reduction in cement typically offsets the product cost, with further savings (in both cost and CO_2) achieved through reduced reliance on multiple admixtures and the elimination of membranes and coatings.

KEY INSIGHT

Although ChemConcrete™ introduces a small initial material cost, this is fully offset by cement reduction and lifecycle savings, resulting in:

LOWER OVERALL COST

PER CUBIC METER OF CONCRETE

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A Smarter, More Sustainable Concrete Solution

ChemConcrete™ Hybrid Admixture delivers an optimal balance between performance, cost-efficiency, and sustainability.

By reducing cement consumption while **simultaneously** enhancing durability, waterproofing, and structural lifespan, it provides a **high-performance, low-carbon solution** for modern concrete applications.

CONCLUSION

ChemConcrete™ Hybrid Admixture represents a step-change in concrete technology, addressing one of the construction industry's most critical challenges: carbon reduction without compromising performance.

Up to **32%** reduction in cement content

Up to **2–3x** longer service life

Approximately **85%** reduction in lifecycle CO_2 emissions

The technology enables engineers, contractors, and developers to meet both technical performance requirements and global sustainability targets.

With total CO_2 savings of up to

1110 kg CO_2 per m^3

of concrete,

ChemConcrete™ is not just an admixture—it is a complete concrete enhancement system.

KEY IMPACT

UP TO

1110 kg CO_2

REDUCTION PER CUBIC METER OF CONCRETE

This represents over 85% reduction in lifecycle CO_2 emissions compared to conventional concrete.

WHY CHEMCONCRETE™?

- Proven performance through advanced hybrid technology
- Independently tested and aligned with international standards
- Compatible with conventional and advanced concrete systems
- Designed for long-term durability and sustainability

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GLOBAL PRESENCE & CONTACT INFORMATION

ChemConcrete™ operates globally through a network of subsidiaries and partners, delivering advanced concrete technology solutions across multiple regions.

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