

LOW CARBON DESIGN

**EARTH FRIENDLY
CONCRETE**

by **WAGNERS**

ABOUT WAGNERS

WAGNERS GROUP

Wagners was founded on innovation.

We are a pioneering Australian construction materials and services provider. Founded as a family business in Toowoomba in 1989, Wagners is now an ASX-listed operator in domestic and international markets and one of Queensland's largest construction materials and mining services companies.

In 2009, Wagners was acknowledged by the Premier of Queensland at the Smart Business Awards as the company that had made the most significant impact on regional Queensland in the state's 150 year history.

In 2018, Wagners were inducted into the Queensland Business Leaders Hall of Fame in recognition of their intrepid entrepreneurship in successfully completing highly challenging infrastructure projects nationally and internationally.

Celebrating 30 years of operations, Wagners is constantly striving for innovative, effective, and economic building material solutions. We proudly introduce Earth Friendly Concrete®, the world's only ZERO cement concrete with the lowest embodied carbon available.

WAGNERS GROUP SERVICES

	 CONCRETE AND SITE BATCH PLANTS	 QUARRIES AND MOBILE CRUSHING	 TRANSPORT	NEW GENERATION BUILDING MATERIALS  EARTH FRIENDLY CONCRETE
 PRECAST CONCRETE	 STEEL REINFORCING	 CEMENT, FLYASH AND LIME	 GLOBAL PROJECT SERVICES	 COMPOSITE FIBRE TECHNOLOGIES

EARTH FRIENDLY CONCRETE® IS THE WORLD'S ONLY ZERO CEMENT CONCRETE, WITH THE LOWEST EMBODIED CARBON AVAILABLE.

CO₂ AND THE BUILT ENVIRONMENT

REDUCING EMBODIED CARBON

Our built environment is responsible for approximately 50% of global carbon emissions¹. A large part of this comes from the carbon emitted through the manufacturing of the construction materials that we use. This is embodied carbon.

To reduce the embodied carbon in our built environment, we need to find more sustainable ways of building and be more selective in the materials that we use. But which construction material is responsible for most of the embodied carbon in our built environment and what alternative is there?



CO₂ AND ORDINARY CONCRETE

MAJOR CONTRIBUTOR TO EMBODIED CARBON

Ordinary concrete is one of the largest contributors to embodied carbon in our built environment because it is made with Ordinary Portland Cement (OPC). The manufacturing of OPC accounts for approximately 8% of global carbon emissions². On the other hand, concrete has some great advantages. Concrete is economical, durable, and versatile. The solution is simple.

EMBODIED CARBON

CEMENT PRODUCTION ACCOUNTS FOR 8 PER CENT OF GLOBAL CARBON EMISSIONS



364 KG

V S

EARTH FRIENDLY CONCRETE®

LOWEST EMBODIED CARBON

Earth Friendly Concrete® simply replaces Ordinary Portland Cement with two industry waste by-products, slag, and fly ash. The secret is in our activator chemistry which we've refined through our rigorous R&D process. EFC® comes with all the advantages of ordinary concrete with up to 76% less embodied carbon than an average OPC based mix³ and 67% less than a 30% cement reduced fly-ash mix⁴.

EMBODIED CARBON

EFC® CONTAINS 67 PER CENT LESS EMBODIED CARBON THAN ORDINARY CONCRETE



120 KG

WHY SWITCH TO EARTH FRIENDLY CONCRETE®

Earth Friendly Concrete® is certified to comply with all of the performance requirements of the Australian Standard for concrete structures AS 3600. EFC® goes even further to deliver higher resistance to corrosion, less susceptibility to cracking and a visually pleasing off-white colour.



SUSTAINABLE

- » Zero Ordinary Portland Cement
- » <67% less embodied CO₂ or -244kg CO₂ per cubic metre
- » Reuses industry waste by products slag and fly ash



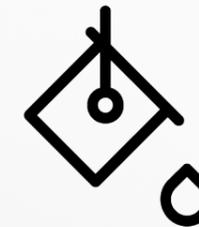
DURABLE

- » Acid and sulphate resistant⁷
- » Fire resistant to AS3600
- » Chloride ion ingress resistant⁸



STRUCTURAL

- » Same compressive strength as standard concrete
- » 30% higher flexural tensile strength⁵
- » High early strength



VISUALLY PLEASING

- » Natural off-white colour
- » Clean off-form finish
- » Compatible with colour oxides



RELIABLE

- » 40% less shrinkage⁶
- » Low heat of reaction
- » Less susceptible to cracking



EASY SUBSTITUTE

- » Batched in a concrete plant
- » Delivered in an agitator
- » Placed by pump, chute or in pre-cast

RESIDENTIAL PROJECTS

GEOFF GIBSON HOME, TOOWOOMBA

This 453m², 4 bedroom, 2 bathroom home set against the natural backdrop of Toowoomba's hinterland used 144m³ of EFC for the footings and house slab saving 35t of embodied carbon. That is the equivalent of 140,229kWh of electricity or 287 LED lightbulbs being left on 24/7 for a year⁹.

FOOTINGS AND HOUSE SLABS CARBON SAVING: 35t

Footings and house slabs are any easy way to achieve a low carbon design. Any floor finish may be applied to EFC[®] or go for a polished exposed look as seen here.

STRUCTURAL ELEMENTS

CARBON SAVING: 72.5t

It is easy to achieve sustainability objectives on commercial projects just by making the switch to EFC®. Notice the natural off-white colour and clean off-form finish of these structural floor/ceiling beams.

COMMERCIAL PROJECTS

GLOBAL CHANGE INSTITUTE BUILDING, UNIVERSITY OF QUEENSLAND

297m³ of EFC® was used to produce 33 large floor beam/panels that form 3 suspended floor levels saving 72.5t of embodied carbon. This is equivalent of taking 196 cars off the road for an entire year¹⁰.

The design brief was a sustainable building construction and operation that would serve as an outward reflection of the objectives of the organisation housed within. This unique project marked a new era of sustainable concrete construction in QLD, and set a world benchmark in the first application of zero cement concrete in the structure of a multi storey building.

References

Sources:

1 footprintcompany.com

2 Global Cement Report 2016-2018

3,4 The Footprint Company Product, Carbon Footprint Declaration EFC®

5,6 AECOM Earth Friendly Concrete® Engineering Properties

7,8 The University of Queensland, Advanced Water Management Centre

9 carbonneutral.com.au

10 Carbon Dioxide Emissions Intensity for New Australian Light Vehicles 2018

READY TO MAKE THE SWITCH?

It's easy. Contact your local EFC® sales representative for a face-to-face consultation. They will be able to ascertain your needs and provide you with a formal quotation. When you are ready to order, simply contact them to schedule in your next delivery.

COMPLIMENTARY SERVICE OFFER

Upon delivery, our product specialist team will arrive on site to oversee your pour to ensure your project runs smoothly. This is a free complimentary service - that is our promise.

PARTNERS



AECOM

EARTH FRIENDLY CONCRETE

by

WAGNERS

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