

Who Is Zeobond?

Zeobond Pty. Ltd. is a privately owned Australian-based company focused on the development, commercialisation and manufacturing of geopolymer technology.

Zeobond Pty Ltd was founded by Professor Jannie S.J. van Deventer (Former Dean of Engineering Faculty, The University of Melbourne), a world leading expert in geopolymer technology.

After over a decade of academic research at the top level, Zeobond Pty Ltd was formed to take the technology of geopolymers from promise to reality, and provide a model of energy efficient concrete production in Australia and the world.

Our demonstration plant in Melbourne is located in Campbellfield, 25 km to the north of the CBD. As a demonstration facility this plant is capable of producing between 150-200 m³ of concrete per day, which is very small compared with large metropolitan concrete plants that can produce this volume every hour. This limits our ability to tackle large projects that demand mass volumes of concrete, but allows us to provide concrete into smaller projects from footpaths to house slabs and pre-cast concrete panels.

Partnership Opportunities

Zeobond is rapidly expanding with not only our proprietary technology and process which we use to make E-Crete™, but also technologies to aid in increasing the SCM content of OPC-based blends during adverse conditions. Not only is E-Crete™ a 'green' concrete binder system with 80% less CO₂ than OPC, but Zeobond has developed the necessary quality control measures required to service large concrete batching facilities operating entirely or partially using E-Crete™. Our entire system allows E-Crete™ to be produced on a highly consistent basis using a variety of raw material feedstocks that exhibit a traditionally high degree of batch to batch variation.

Zeobond is currently pursuing various international ventures developed using different business models including licensing agreements, joint ventures, feedstock processing and co-product development projects. The choice of model is determined by a range of commercial and technical drivers, such as the scale of the venture, nature of the product to be produced and access to key raw materials.

We welcome interested parties who can present a specific business opportunity to contact us.



Zeobond

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CEMENT MANUFACTURE ACCOUNTS FOR OVER 5% OF GLOBAL CO₂ EMISSIONS

E-Crete™

Concrete without Cement // Clean, Green & Better Performance

E-Crete™ is formulated to reduce the environmental impact of concrete used in everyday construction applications without sacrificing performance. E-Crete™ does not contain any Portland cement, but can still achieve the same strength development profiles, reduced shrinkage and almost no heat generation through the use of geopolymers.

Geopolymers are a type of inorganic polymer formed at room temperature by using industrial waste or by-products as source materials to form a solid binder that looks like and performs a similar function to ordinary Portland cement. Geopolymer binder can be used in applications to replace or partially replace ordinary Portland cement with environmental and technical benefits, including **an 80-90% reduction in CO₂ emissions and improved resistance to fire and aggressive chemicals.**

Using E-Crete™ can achieve substantial scheduling and project management gains compared with high SCM blended concretes, as E-Crete™ achieves its properties at the same or increased rate compared with a 100% OPC concrete.

E-Crete™ uses supplementary cements such as slag and fly ash to ensure a highly significant reduction in material input, energy input and emission output. E-Crete™ is a material with a low embodied energy.

These significant environmental savings are complemented by E-Crete's technical superiority in terms of fire and chemical resistance.

E-Crete™ is a cleaner, greener, better concrete!

So Why Do We Need Change?

The manufacture of cement produces about 0.85 kilograms of CO₂ for every kilogram of cement – **a staggering 5 - 8% of global CO₂ emissions result from cement manufacture**, making this product one of the more polluting activities undertaken by mankind.

According to the World Business Council for Sustainable Development, "Concrete is the most widely used material on earth apart from water, with nearly three tons used annually for each man, woman, and child." Cement is made by burning fossil fuels when the limestone and clay are heated to over 1300°C and CO₂ is liberated from the decomposed limestone.

The energy intensive calcination step is a necessary key to cement production. Therefore, the focus of reductions in CO₂ emissions during cement manufacturing is on energy use. However, energy efficiency is ultimately limited by two factors:

- 1) The high temperature needed to drive the calcination of limestone, and
- 2) 60% of CO₂ produced in cement manufacture arises from the calcination reaction itself.

OPC concrete will continue be used extensively for many decades in view of its entrenched position in the market and supply chain. Nevertheless, there is an increasing demand in the market for E-Crete™ as a low CO₂ alternative concrete.

How Much Greener Is E-Crete™?

One of the primary advantages of E-Crete™ over traditional cements from an environmental perspective is largely associated with the much lower CO₂ emissions from geopolymer manufacture compared to OPC production. This is mainly due to the absence of the high-temperature calcination step in geopolymer synthesis.

While the activators used in geopolymers do reintroduce some Greenhouse cost, the overall CO₂ saving due to widespread geopolymer utilisation is in the order of 80-90% when compared with Portland cement. **Zeobond Pty Ltd had the 'green credentials' of E-Crete™ put to the test by independent experts who conducted a Life Cycle Analysis and found that E-Crete™ does indeed produce 80% less CO₂ than OPC.**

The E-Crete™ Product Range

E-Crete™ is very similar to concrete based on OPC. We specify E-Crete™ using the same system of standard strengths like 20, 25, 32, 40, 50 MPa.

E-Crete™ products are well-suited for applications including, paving, driveways, concrete cladding, barriers and applications where the method of placement is via conventional means such as chute, pump or kibble.

We also offer pre-cast products such as concrete pipes, pavers, power poles, railway sleepers, wheel stoppers and pre-cast concrete panels to name a few.

Contact us for all the details.

but now we can change that...