



“green” concrete



Boral is proud to release a new range of premixed concrete products that underpin our commitment to environmental sustainability and best practice in recycling of waste products. “green concrete” is produced from a range of recycled products and cement manufactured from alternative fuels. These products and practices are combined to produce premixed concrete in a range of strengths that will perform equally as well, and in some cases better, than normal concrete.

“green” concrete

“green concrete” can be used in a variety of projects from foundations, paving, house slabs and even higher strength applications.

Our extensive network of concrete plants means that “green concrete” can be used all over Melbourne. Boral can design most mixes to incorporate recycled materials. So talk to us about “green concrete” to ensure that your next project meets the highest standards in recycling and sustainability.



Cement Production

Boral Concrete’s cement is supplied by Blue Circle Southern Cement (a Boral Company), from the Waurn Ponds plant near Geelong in Victoria. This facility is a world leader in the use of alternative fuels for the production of cement. Waurn Ponds has adopted leading edge technology to turn 21st century waste products such as waste oils, solvents and tyres into a viable fuel source. Not only is this an effective way to dispose of these waste products but it also helps to reduce carbon dioxide emissions.

Alternative fuels used for combustion, in addition to Natural Gas in the plant include:

- **Waste Oil** (including engine oils, lubricants and ship oils);
- **Waste Carbon Dust** (from the aluminium industry)

The utilisation of waste carbon dust as an alternative fuel has been a joint project of Blue Circle and Portland Aluminium, and also reduces waste in the Aluminium industry.

- **Used Tyres**

Approximately 1.8 million passenger tyres, representing the equivalent of 15 % of Australia’s waste tyres, or nearly 70% of the waste tyres collected in metropolitan Melbourne, are used at the plant annually.

- **Tallow (animal fats)**

Currently 40 per cent of the Waurn Ponds plant energy requirements are derived from alternative fuels. This initiative diverts some 25,000 tonnes per annum of material from landfill and conserves nearly one million gigajoules of natural gas annually.



Concrete Production

Boral Blend Cement

Boral utilises a specially trademarked Boral Blend Cement. This is a triple blend cement that incorporates specific amounts of Fly-Ash and Ground Granulated Blast Furnace Slag (GBFS).

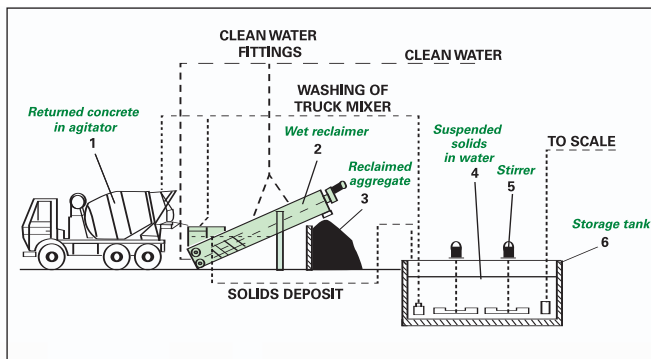
Flyash (a coal burning by-product created at many of our power stations) is a fine grey powder resembling cement. By capturing this material it is prevented from escaping into the atmosphere to cause pollution and a valuable resource is created. Flyash qualifies as a durable building material making concrete less vulnerable to deterioration and disintegration. Flyash improves workability, speeds construction and does not require any specialized construction equipment. Concrete containing Flyash also displays increased strength compared to conventional mixes because of its additional cementitious properties*.

GBFS is a by-product of iron manufacture, (molten slag) is drawn off molten iron and quickly chilled, then milled into a fine powder.

*Increased strength found beyond 28 days.

Reclaim Facilities

Returned concrete from job sites, while still in its plastic state, is sent through industry leading reclaim facilities at our state of the art Melbourne, Dandenong, Clayton and Cranbourne plants. Through a process of fines separation, cementitious material is extracted and reused whilst sand and aggregates are stockpiled and reused in concrete production.



All other plants turn over any additional material to Boral Delta Recycling for crushing to produce Envirocrete.

Boral utilises this high quality Envirocrete (recycled waste concrete) as an aggregate replacement in lower strength mixes. Envirocrete is produced by a Boral-Delta joint venture which accepts several hundred thousand tonnes of waste and demolition concrete each year, transforming it into products that can replace virgin crushed aggregate.

By extensive use of reclaim facilities and recycled aggregate our environment benefits in several ways;

- Less precious space utilised in landfills
- Less virgin aggregate is quarried
- Fewer trucks on our roads carting disused material.



Water management

All Boral Concrete plants have advanced water management systems reducing reliance on mains water. Initiatives include utilising water from Quarry catchments, using recycled water in concrete production and sophisticated design of newer plants to make better use of existing resources. All plants continually gather rainwater which is used in our products and also in the production process, including cleaning. Tanks holding up to 180,000 litres have been installed and are utilised daily as an alternative to mains water.

“green concrete” in Practice



60L Green Building



60 Leicester Street Carlton



Positive Footprints Environmental House



Lot 2 60-70 Mt Dandenong Rd Croydon

The 60L Green Building offered a unique opportunity to participate in a state of the art commercial building. 60L was designed to be the leading example of green commercial building in Australia. It proposed to demonstrate the commercial viability of a building designed and operated to minimise its impact on the environment.

The Green Building Partnership sought to design concrete mixes that would, as far as was practicable, minimise the environmental impacts from using concrete whilst meeting all of the structural requirements for the viable construction of 60L.

A trial program was implemented to investigate the feasibility of using recycled aggregates and supplementary cementitious materials along with the total use of recycled water. The final mix designs incorporated up to 94% total replacement of natural materials. It was crucial that the mixes not only promoted sustainability of resources but also met stringent structural criteria. In each mix 100% of recycled slurry water was used whilst in the 20 & 25 Mpa 100% recycled aggregate was used.

In addition to all mixes supplied meeting the environmental requirements for minimization of resource usage, compressive strength results met the design specifications for the structural aspect of the building.

In the Positive Footprints project Boral was able to capitalise on the 60L experience and apply it directly to a sustainable housing project. Positive Footprints was seeking to construct energy efficient housing by using the maximum amount of recycled materials whilst minimizing the overall energy required to construct and be consumed by the building. A mix using 100% of recycled materials was developed incorporating reclaimed material, Boral blend cement, recycled aggregate and slurry water.

“We desired a material that not only maximised the use of recycled content but also one that required less energy to produce the obligatory high thermal mass. We weren’t happy with the large energy required to produce a normal house slab, but Boral’s material offered an alternative solution” - *Jeremy Spencer, Positive Footprints.*

If you are concerned about environmental sustainability and want to ensure your next project utilises the maximum possible recycled and waste products, talk to Boral. Using your specifications, we will provide you with mixes that are more environmentally friendly, without compromising strength, workability, setting time and performance. “green concrete” is available in a range of product strengths and applications and is available from all locations.

If you have any further enquiries regarding the environmental benefits of using Boral “green concrete” please contact our Concrete Sales centre on 133 006.

Please note ‘green concrete’ is a brand name referring to concrete manufactured from recycled materials. The concrete is not green in colour. Coloured concrete is available upon request.

Printed on recycled paper

