MECLA

Innovative Building Materials Brochure

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On August 17, 2023, MECLA hosted an Innovative Building Materials Challenge at Laing O'Rourke head offices in Sydney. Over 21 companies submitted expressions of interest to compete in the event. This brochure includes products from those submissions.

MECLA is not making a judgement on the carbon impact of these products or elevating any given product over another. This brochure exists simply to share some of the innovative solutions submitted for the event.

FARMED CARBON

What is it?

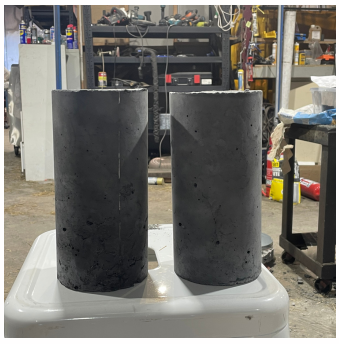
Farmed Carbon has developed two key products targeting the hard to abate sectors of asphalt and concrete; bio-binder and high quality biochar.

How is it used?

Our bio-binder is blended with traditional bitumen to form a carbon negative bitumen. Our biochar can be used to reduce the amount of cement required in concrete.

What are the carbon savings?

Farmed Carbon's proprietary technology removes carbon from the air to make its products. The removed carbon is then sequestered. The products also help avoid emissions by reducing the need for imported, fossil fuel derived bitumen and by reducing the amount of cement required to make concrete.



For more information visit https://www.farmedcarbon.com/

OMNIGRIP RE-SURFACE

What is it?

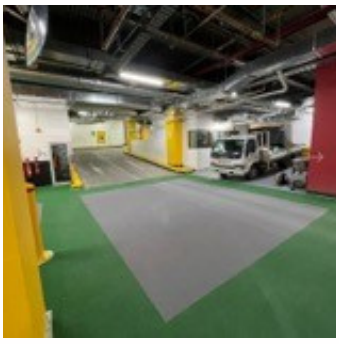
OmniGrip Re-Surface is a durable thin coating applied to existing concrete and asphalt.

How is it used?

OmniGrip is applied to existing concrete or asphalt in two ways. Firstly, it can be used to give a second life whilst retaining the existing asphalt or concreete. Secondly, it can be applied to surfaces in the late stage of a project, which is faster and less disruptive than producing polished aggregate on a slab.

What are the carbon savings?

OmniGrip Re-Surface reduces embodied carbon by increasing the recycled content used in paths, parks and gardens. It helps avoid the carbon in the demolition and disposal of embodied carbon in existing pavements near end of life, and it reduces reliance on quarried virgin sand, aggregates and cement.



For more information visit
https://www.omnigripdirect.com.au/products/omnigrip-resurface/

REYNARD WOOD™

What is it?

Reynard Wood's Multi-Purpose-Plank is a lightweight concrete sleeper. It can be cut, drilled, screwed, nailed and shaped like wood to service any installation team's imagination to build any outdoor solution.

How is it used?

Outdoor solutions include flooring, retaining, fencing, and cladding, where product is easy to self-carry, and safely work with no crystalline silica content risks.

What are the carbon savings?

Retrofit outdoor timber products and reuse original built systems. Use products containing the reuse of high recycled content materials of industrial waste mixed with carbon sequestering materials of hemp fibres and bamboo reinforcement to maximise structural efficiency. This eliminates carbon-intensive materials and provides solutions that minimizes climate impact.

For more information visit https://www.reynardwood.com.au/products/

BRICKWORKS

BUILDING PRODUCTS

What is it?

Certified Carbon Neutral Clay Bricks manufactured at Austral Bricks Longford Tasmania and fired using sawdust as the biofuel.

How is it used?

Carbon Neutral Bricks can be used for many applications and additionally provide thermal mass to reduce the operational carbon over the life of a building.

How does it save carbon?

The embodied carbon is significantly reduced by firing bricks on waste sawdust, a biofuel that has 40 times lower carbon emissions than natural gas. Manufacturing improvements and energy saving projects at the plant have contributed to lower carbon emissions, and have received Climate Active Certification.

For more information visit https://www.brickworks.com.au/

What is it?

Signify's 3D luminaries are printed with a 100% recyclable polycaronate and are designed to be fully re-used at the end of their lifetime, avoiding waste of material.

How is it used?

Used in a fit-out, Signify's luminaries offer a unique quality of light and energy savings. This product contributes to the health and well-being of customers.

What are the carbon savings?

The 3D printed luminaries are printed in Sydney with renewable energy and 100% recyclable plycarbonate, saving up to 75% emissions and designed to be fully re-used at the end of their lifetime, avoiding material waste: 100% made for a circular economy. Due to the lightweight polycarbonate, less fuel is used during transport.

For more information visit https://www.signify.com/en-au

MCi CARBON

What is it?

MCi Carbon produces carbonates and silica, to be used in formulations of low-carbon and negative emissions concrete, plasterboard, and other industrial applications in the circular economy.

How is it used?

MCi Carbon technology creates replacements for SCMs in cement (such as fly ash) and direct replacements for mined magnesium carbonate, and precipitated calcium carbonate.

What are the carbon savings?

MCi Carbon transforms carbon dioxide (CO_2) from industrial emissions into building materials and other valuable products. The process is called *mineral carbonation*, combining captured CO_2 with mineral feedstock, usually an industrial waste product like mine tailings or steel slag, to create inputs into new low carbon and negative emissions materials.

For more information visit https://www.mineralcarbonation.com/

Andromeda

METALS

What is it?

Great White HRM is an industry certified 100% natural mineral additive for concrete.

How is it used?

Added to concrete (1kg per 3 tonnes) allows mix design optimisation to significantly reduce the cement content without detriment to performance or workability by stabilising the mix and allowing more coarse aggregate/less fines to be used.

What are the carbon savings?

Andromeda Metals Ltd's natural mineral rheology reduces embodied carbon by reducing the cement content in concrete mix designs.

For more information visit https://www.andromet.com.au/

AUSTRALIAN HEMP MASONRY

What is it?

Austaralian developed, manufactured and grown, highly thermally and acoustically effective renewable Hempcrete building materials and hemp-lime render. Training for installers and building designers is also included.

How is it used?

For non-loadbearing walls in new construction retrofits; roofing and subfloor insulation and internal off-form architectural feature walls. Hemp-lime render can be used for external or internal application.

What are the carbon savings?

Hemp masonry combines a high volume of domestically produced hemp hurd, a rapidly renewable biomass, with a small volume of a proprietary lime binder, curing through carbonation. The hurd and the durable masonry matrix formed are highly insulative and create a breathable, thermally effective form of carbon storage in buildings.

For more information visit https://www.hempmasonry.com.au/

MST BAR

MAXIMUM STRENGTH GFRP

What is it?

MST Bar is engineered Glass Fibre Reinforced Polymer (GFRP). It is the only GFRP Rebar that is an Integrally Ribbed Maximum Strength Rebar. It is 3x stronger than steel rebar, does not conduct temperature or electricity, never corrodes and requires no maintenance. It is an alternative reinforcement to steel.

How is it used?

MST Bar is used as concrete reinforcement. It is used in flatwork and structural applications with sizing from 6mm to 50mm and greater. MST Bar is also made in bend shapes for cages and bent bars, anchors, pile cages and as a thermal bridge balcony reinforcement. It has been used in precast and FRP applications.

What are the carbon savings?

MST Bar is significantly lighter than steel and as such has 4x less embodied carbon than steel reinforcement. Manufacturing of it has lower CO2 output, the CO2 from transport is significantly lower as well. The average reinforcement rate per kg is a quarter compared to steel in concrete. In addition, it is recyceled in concrete and used as an enhanced recycled aggregate product for the industry when recycling and crushing concrete.

For more information visit https://www.mstrebar.com/