

**Product category**

Civil Infrastructure

**Product description**

Protectiflex: Blast protective concrete

**Potential annual TDP**

635 tonnes

## Turning used tyres into fire and blast resistant concrete material

**Protectiflex is an ingenious product using recycled rubber tyres to produce a spray-on concrete that is blast, ballistic and fire-resistant.**

Through funding, Tyre Stewardship Australia (TSA) supports Flexiroc Australia in its research and development of this ground-breaking product.

Flexiroc managing director Gary Bullock says Protectiflex is a game changer: a one-stop solution that can be sprayed on buildings and structures to strengthen and protect them – and the people within them – from explosions, weapons and ballistic attacks, forced entry and fire.

**ProtectiFlex has applications across a range of sectors including defence, government, power infrastructure, petrochemical and retail.**



*Protectiflex, a blast, ballistic, and fire-resistant spray on concrete.*

**“When subjected to extreme blasts, ballistics and impact, conventional concrete masonry materials can create deadly shrapnel,” says Mr Bullock. “We saw a need to create an innovative, eco-friendly and cost-effective concrete-like material to meet security and safety design.”**

TSA partnered with Flexiroc and the University of Wollongong to conduct a series of simulation and field testing to demonstrate how the spray-on composite creates blast resistant walls.



A live blast demonstration of **Protectiflex** to the industry.



(L to R) Alex Remennikov, Professor of Structural Engineering at the University of Wollongong (UoW) and Gary Bullock, Director of Flexiroc who produce **Protectiflex**, in front of the concrete panels that were hit with shock loadings, similar to a car bomb explosion from a distance of 20 metres.

ProtectiFlex has applications across a range of sectors including defence, government, power infrastructure, petrochemical and retail.

It can be applied to both new and existing walls and buildings to develop or enhance their blast, ballistic and fire-resistance ratings.

**And with an estimated 635 tonnes of tyre derived product (TDP) per year consumed, based on projections across multiple end markets, Flexiroc and TSA view the technology as highly promising, given the breadth of markets, performance results, and the absence of competitive alternatives.**

TSA Chief Executive Lina Goodman says: *“It is the role of TSA to work with organisations like Flexiroc and products like Protectiflex to see more rubber crumb being used in alternate markets.”*

### OTHER TSA FUNDED CIVIL INFRASTRUCTURE PROJECTS

**Spayed Protectiflex Blast Mitigation**

University of Wollongong/Flexiroc

**Concrete road barriers**

University of Melbourne

**Permeable Pavement – University of Melbourne**

City of Mitcham, SA

**Protectiflex Pumped & Composite Blast Mitigation Project**

Flexiroc

**Development of reinforced concrete – recycled tyre bale sandwich structural wall system**

Curtain University and Lomwest Enterprises

**Equine Air Pakenham Racing Club Project**

Flexiroc, Tuff Turf and Pakenham Racing

**Reinforced crumbed rubber concrete for residential construction**

University of South Australia & Australian Research Centre

**A green lightweight composite panel system using recycled tyres**

University of Melbourne & Prefab Australia

**Recycled tyre in permeable pavement applications**

University of Melbourne & Merlin Site Services

### FOR MORE INFORMATION

[TSA Case Studies](#)

[TSA Market Development Projects](#)

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