

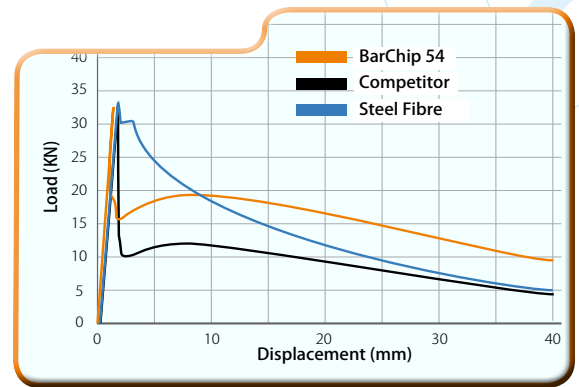
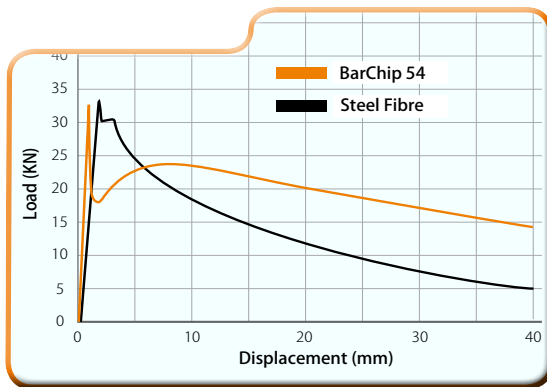
## Flexural Energy Absorption

Product: EPC's BarChip54 Structural Synthetic Fibre

**Introduction** Elasto Plastic Concrete has conducted extensive internal testing on the BarChip fibre range. In 2009, after two years of exhaustive research and development EPC commissioned Technologies in Structural Engineering (TSE) for a series of ASTM C 1550 RDP tests using the newly developed BarChip54. The purpose of these tests was to determine the flexural strength of EPC's new BarChip54 fibre at various dose rates and compare the results against different reinforcement system options. The testing was overseen by Dr. Stefan Bernard and the results are summarised below.

**Test Program** Round Determinate Panel Testing to ASTM C1550 is used to determine the flexural toughness of fibre reinforced concrete in post crack conditions. Performance is measured and quantified in terms of energy absorption, from initial loading through to large values of central deflection. The biaxial bending under a central point load generated during the test is aimed at exhibiting failure modes that can be expected in the service conditions of shotcrete tunnel linings and bank stabilisation linings.

### Results



Reinforcing Material	Energy Absorption @ 40mm (J)	
	ASTM C1550 RDP	EFNARC
BarChip54 @ 9kg/m <sup>3</sup>	798	1995
Steel Fibre @ 40 kg/m <sup>3</sup>	522	1305

Reinforcing Material	Energy Absorption @ 40mm (J)	
	ASTM C1550 RDP	EFNARC
BarChip54 @ 5kg/m <sup>3</sup>	470	1175
Competitor 58 mm Fibre @ 5kg/m <sup>3</sup>	362	905
Steel Fibre @ 30kg/m <sup>3</sup>	444	1110

**Conclusions** BarChip54 fibre reinforced shotcrete is capable of sustaining superior energy absorption values when compared to steel fibre or competing synthetic fibre reinforced shotcrete and is undoubtedly the most suitable reinforcement selection where high ground deformations are expected.



**Disclaimer**

This information has been provided as a guide to performance only, for specific and supervised conditions. The user is advised to undertake their own evaluation and use the services of professionals to determine the product suitability for any particular project or application prior to commercial use.

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