Complies with EN and ASTM standards

In addition to permanent support, typical end-uses of sprayed concrete in tunneling and mining include the application as initial support for hard rock. The shotcrete bridges the gap between the rock bolts. It so creates arches spreading local loads. At the same time the material seals off the exposed rock surface and protects it from the elements. The failure mechanism is comparable with a punching or shear failure induced by a concentrated load. Two structural tests are internationally applied and accepted methods to evaluate the toughness of the finished concrete: EN 14488-5 as well as its North American equivalent ASTM C1550.

Provides high energy absorption at low weight

Durus EasyShot has been tested in different parts of the world and in multiple concrete mix designs proving that this fibre is setting the benchmark for MSFRS. In plate tests according to the relevant norm, an average of more than 800 Joules was reached with no more than 4 kg of Durus EasyShot per m³ (steel fibres: 25-30 kg/m³). Class-leading energy absorption leaving alternative fibres behind.

For its ease of usage and performance benefits, macro-synthetic fibre reinforced shotcrete (MSFRS) is enjoying increasing popularity over steel reinforcement amongst tunnel and mine design engineers. The Australian underground mining industry even has adopted this technology as a standard reinforcing method. This has meant the end of the use of steel fibres in this sector. Durus EasyShot is the answer to the growing demand for high performance synthetic fibres specifically designed for tunnel and mine sprayed concrete.
Outperforms steel
As Durus EasyShot macro synthetic fibres are flexible, their length is not limited by the opening size of the nozzle. This is a major advantage over steel. Rigid steel fibres have to be produced shorter or they block the nozzle during spraying.

Advantages and benefits
• Easy to handle and to apply
• Reduced rebound during spraying
• Improved construction site safety
• Enhanced long-term properties of the finished concrete
• Low cost per Joule energy absorption
• 100% rust-free, hence no crack width limitation for durability as with steel
• Significant reduction in embodied CO₂ when compared with steel
• Less wear and tear on pumps and slick lines

General applications
• Tunnels (initial support in hard rock and soft ground, reinforcement of linings)
• Mines (initial support in hard rock and soft ground)
• Slopes (stabilization)

All Durus macro synthetic fibres are chemically inert and have been subjected to the EN ISO 13438 aging test, which proved 100 years durability under normal conditions (see website for full report).