Multiple research studies and tests on the behaviour of steel fibre reinforced concrete have been carried out in recent years in various countries. They have greatly contributed to a better characterization of Fibre Reinforced Concrete (FRC), and have thus allowed to gain a better understanding of the behaviour of this material and to specify minimum performance requirements for each project.

However, the specific technical strengths and weaknesses of the different fibres are often less well-known. The different testing methods are not comparable and could lead to confusion.

This article will present the material property determination using standardized testing methods and some improvement in the test procedure for sprayed concrete in order to:

- obtain a mechanical property to be used as input for the dimensioning method
- be in line with International recommendation as Model Code 2010, edited by FIB

European standard EN 14487-1 mentions the different ways of specifying the ductility of fibre reinforced sprayed concrete in terms of residual strength and energy absorption capacity. It also mentions that both ways are not exactly comparable.

The energy absorption value measured on a panel can be prescribed when, in case of rock bolting, emphasis is put on energy which has to be absorbed during the deformation of the rock. This is especially useful for primary sprayed concrete linings.

The residual strength can be prescribed when the concrete characteristics are used in a structural design model.

Indeed, the performance of fibre reinforced concrete (FRC) can be tested in different ways. In this paper, two methods are described to evaluate the post-crack behaviour of SFRC.