LIMITATION OF STRENGTH OF SPRAYED CONCRETE

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Sprayed concrete is commonly used for large-scale concrete repairs, even repairs of tunnel linings. For concrete repair and strengthening measures with sprayed concrete the stiffness and strength of the reinforcing concrete is aimed to be similar to the old concrete. However, sprayed concrete applied by dry mix shotcrete process exhibits significantly higher strengths due to the process-related lower w/c-ratio. Based upon this fact, the aim of a research study conducted at the Institute for Building Materials of the Ruhr-Universität Bochum was to adapt the properties of the sprayed concrete (e.g. strength, stiffness, bond etc.) to such of a typical old concrete with not too high strength by means of concrete technological and procedural optimization. Simultaneously, the rebound should be kept as low as possible. It proved to be advantageous to substitute cement partly with hydraulic limestone or to use calcitic aggregates instead of quartzitic ones.