

# Non-Homogeneous Layered Fiberconcrete

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**Abstract**—Fiber reinforced concrete is important material for load bearing structural elements. Usually fibers are homogeneously distributed in a concrete body having arbitrary spatial orientations. At the same time, in many situations, fiberconcrete with oriented fibers is more optimal. It is obvious, that it is possible to create constructions with oriented short fibers in them, in different ways. Present research is devoted to one of such approaches- fiber reinforced concrete prisms with layers of non-homogeneously distributed fibers inside them were fabricated.

Different types of layered prisms with the same amount of fibers in them, having dimensions 100×100×400 mm were fabricated. Simultaneously prisms with homogeneously dispersed fibers were produced for reference as well. During fabrication fibers were pressed by a steel grid into the concrete in the full length of the prism according to the technology described in the Latvian patent LV14257. Prisms were tested under four point bending conditions. During the testing vertical deflection at the center of a prism and crack opening were measured by the linear displacements transducers in real time. Prediction results were discussed. According to the testing results, specimens with non-uniform (layered) fibers distribution in sample body were reached the highest load carrying capacity during crack opening stage.

**Keywords**—Fiber reinforced concrete, 4-point bending, steel fiber.

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