

# Glass Fiber Reinforced Concrete

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**Abstract:** *The article highlights that glass fiber reinforced concretes (GFRC) can meet the requirements of Smart City better than ordinary concretes. The comprehensive discussion on GFRC composition is presented together with the review of glass fibers' influence on various concrete properties. First of all, because of their bridging abilities, they can limit the width, length, and total area of cracks. Additionally, GFRC are characterized by enhanced tensile, flexural, and splitting strength; impact, abrasion, spalling, fire, and freeze-thaw resistance as well as ductility, toughness, and permeability. All of this positively influences the mechanical behavior, durability, and corrosion resistance of concrete elements. Moreover, decreased thermal conductivity allows for better energy performance from the building's point of view. This results in cheaper structures both in manufacturing and maintaining even though GFRC are more expensive materials. However, mechanical properties enhance as long as sufficient workability and uniform fiber distribution are assured. From the environmental point of view, GFRC are eco-friendlier materials than ordinary concretes since their application can decrease the emission of CO<sub>2</sub> by 17%. The article also describes the GFRC application fields and emphasizes the possibility of the creation of not only structural elements mainly intended for load transferring but also elements accompanying the building process, as well as elements of small architecture that make public spaces more attractive, durable, and safer. Owing to greater design and shaping freedom, GFRC can also better fulfill the needs of habitants of Smart City.*

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