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**PHYSICO-MECHANICAL PROPERTIES OF SELF-COMPACTING
CONCRETE WITH DIFFERENT LEVELS OF FLY ASH AND
POLYPROPYLENE FIBERS**

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Self-compacting concrete (SCC) is an innovative concrete that is able to flow under its own weight, completely filling formwork and achieving full compaction without vibration. Fly ash, a by-product of coal power plants, can improve properties of concrete, similarly as steel fibers. Thus, a combination of fly ash with steel fibers might be a way to use the fly ash waste material and improved concrete properties at the same time. However, steel fibers reinforced concrete can cause safety problems on airport runways, high speed railway systems and/or nuclear power plants. We know that Polymer Science and Engineering makes possible achieving a wide range of properties. We have evaluated effects of fly ash and coarse monofilament polypropylene fibers incorporated on mechanical properties of self-compacting concrete. 10 wt. %, 20 % and 30 % fly ash added to SCC were studied as well with four fiber contents at 3, 6, 9 and 12 kg/m³. Water/cement ratio and superplasticizer content were kept constant at 0.40 and 1 wt. % of cement content, respectively. Slump flow time and diameter, V-funnel and J-ring tests were performed to assess the properties of the fresh concrete. Unit weight, compressive strength, splitting tensile strength, flexural strength, ultrasound pulse velocity and elasticity modulus tests were determined for hardened concrete. While fly ash increases workability of fresh concrete it reduces mechanical properties of concrete. Fibers decrease workability and increase properties of hardened concrete.