

## Plan Overview

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*A Data Management Plan created using DMPTool*

**Title:** Production and evaluation of self-sensing cement composites (SSCC's)) based on the principle of piezoresistivity, produced with residue from brake linings from heavy vehicles, concomitantly with fibers and carbon nanotubes

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**Template:** UNICAMP-GENERIC: Aplicável a todas as áreas

### **Project abstract:**

Self-sensitive Cementitious Composites (CCA's) seek to promote the monitoring of structures without the need to install sensors. Many of these CCA's are based on the piezoresistive effect, which require electrically conductive materials to be used in their production. It turns out that these materials in many cases compromise the mechanical properties of the material, or have a high cost. In this sense, this project intends to develop a self-sensitive cementitious composite by incorporating graphite, brake lining residue and carbon fiber, of an original character, as well as to analyze its physical-mechanical properties and its piezoresistive effect. It is intended to characterize and analyze the constituent materials and the self-sensitive cementitious composite, in the fresh and hardened states. As well as analyzing the electrical conductivity and self-sensitivity of the different traces, to obtain the ideal content for the best piezoresistive response of the CCA and mechanical properties. The concomitant use of brake lining residue with carbon fibers in the production of CCA's, in addition to being innovative, can represent cost reduction, better physical-mechanical performance and an environmentally friendly solution, enabling in this sense, the use of CCA's on a larger scale in civil construction.

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## **Production and evaluation of self-sensing cement composites (SSCC's)) based on the principle of piezoresistivity, produced with residue from brake linings from heavy vehicles, concomitantly with fibers and carbon nanotubes**

Informações quantitativas e qualitativa dos Compósitos Cimentícios Autossensíveis (CCA's) , tanto no estado fresco como no estado endurecido.

No estado fresco: ensaio de determinação do índice de consistência (mm);

No estado endurecido as variáveis serão medidas realizadas em Máquina universal de ensaios, equipamentos de laboratório:

Resistência à compressão (MPa); Resistência à tração (MPa); Massa específica (kg/m<sup>3</sup>);

Módulo de elasticidade (GPa); Condutividade elétrica(S/cm)).

Os dados serão obtidos por meio de leituras realizadas em Máquina universal de ensaios, equipamentos de laboratório, anotados em tabelas (Excel, word). E analisados por meio de gráficos, correlações, substituições em equações de acordo com Normas.

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