

## Article Abstract

<b>Title:</b>	Elaboration and characterization of self-compacting concrete based on local by-products
<b>Author(s):</b>	S. Bensalem <sup>1,2*</sup> , C. Amouri <sup>1</sup> , H. Houari <sup>1</sup> , M. Belachia <sup>2</sup>
<b>Address(es):</b>	<sup>1*</sup> Team: Materials Engineering Laboratory Materials and Durability of Constructions, University of Constantine1, Constantine, ALGERIA. <sup>2</sup> Laboratory of Materials, Geotechnics, Habitat and Urban, University of 20 Aout1955, Skikda, ALGERIA *Corresponding Author: e-mail: bensalem.sara2@gmail.com, Tel 213 776 82 21 83, Fax. 213 31 81 89 67
<b>Journal:</b>	<i>International Journal of Engineering, Science and Technology</i> , Vol. 6, No. 1, 2014, pp. 98-105
<b>Abstract:</b>	<p>The building industry is increasingly using self-compacting concrete (SCC) in order to improve many aspects of buildings construction. If the limestone filler is traditionally used in the SCC, marble powder and granulated blast furnace slag are the less. The valorization of such wastes in self-compacting concrete as mineral admixture could be an interesting ecological and economical alternative, which allow extending the use of these by-products. The objective of this study is not only to remove the fear of using by-products available locally but also to study the influence of limestone powder replacement by marble powder and granulated blast furnace slag on fresh and hardened properties of SCC under two different curing modes. For this purpose, a comparative study was conducted on a reference SCC with limestone's filler (SCC LP) which was replaced by marble powder (SCC MP) as a calcic material and granulated blast furnace slag (SCC GBFS) as a pozzolanic material. At fresh state, the slump-flow test, T<sub>500</sub> test, V-funnel, air content and L-box test were conducted to characterize the workability of fresh concrete in order to assess filling and passing abilities according to the European guidelines. The hardened properties that were determined included compressive and tensile strength determined at 3, 7 and 28 days. Monitoring the evolution of total shrinkage and weight changes up to 120 days were performed. As well the relationship between the shrinkage and weight loss. All SCC mixtures showed compliance with European recommendations (EFNARC). Considering the results obtained by various by-products, the most edifying is the performance acquired by GBFS samples, for both modes of curing. Regarding the SCC MP, the results are satisfactory and this promotes their extension in Algeria.</p>
<b>Keywords:</b>	Self-compacting concrete, granulated blast furnace slag, marble powder, limestone filler, shrinkage, weight change.