

RAV6N1, January – April 2016

Message from the Editor-in-chief and the Guest editor

LATIN AMERICAN JOURNAL ON QUALITY CONTROL, PATHOLOGY, AND THE RECUPERATION OF CONSTRUCTIONS

It is gratifying for the team of the ALCONPAT Journal to see the first issue of our sixth year published.

The purpose of the ALCONPAT (RA) Journal is to publish case studies related to the topics of our association, such as quality control, pathology, and the recuperation of constructions, all the while motivating the presentation of basic or applied researches, revisions, or documental researches.

This issue presents our fourth special edition, this time dedicated to the **Applications of Special Concretes**.

This edition V6N1 begins with a work from **Spain and Mexico**, in which José Bernal et al. obtain auto-compacting concretes with nano-silica, silica fume, and binary mixtures of both additives that satisfy the demand for high mechanical resistances and durability, determining that the dosage with the best performance is the one that contains 2.5% nano and 2.5% silica fume.

The second work, from **Mexico**, by Marisol Gallardo et al., deals with the synthetization of a calcined calcium sulphoaluminate clinker comprised of a mixture of fly ash, fluorgypsum, aluminum slag, and calcium carbonate at 1250 °C. The clinker was mixed with 15, 20, or 25% e.p. of $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$. They evaluated the resistance to compression of the cements obtained, having been cured in potable water and in corrosive mediums at 40 °C. The cements cured in potable water developed resistances to compression of 38-39 MPa, whereas those immersed in corrosive mediums showed a decrease in the same. The degradation of the cements due to a chemical attack was due to a decalcification and dealumination of the pastes.

The third article comes from **Brazil**, by Carlos Brites et al., and deals with the Brookfield Century Plaza Commercial Building, located in Alphaville, São Paulo, Brazil, which is supported by two large concrete footings. A high resistance (70 MPa) and auto-compacting (SCC) concrete was developed for these large footings (each one measures 28.4m x 18.6m x 4.5m). A numerical model was developed using an FEM software to predict the hydration thermal gain of different layers of concrete, with the purpose of establishing the most adequate procedure to address the time and construction requirements, without the appearance of cracks. Procedures were established and monitored to control the production of the concrete in the manufacturing company of the same and during the concreting. Finally, the internal temperature of the concrete was registered to provide a better calibration of the model.

The fourth article, by José Manuel Mendoza Rangel et al., comes from **Mexico and Spain**. They evaluate the durability of two mortars elaborated with fly ash (FA) substitutions in weight with regard to the total cement, comparing its performance with three commercial repair mortars when exposed to a CO₂ attack in an industrial environment.

The fifth work in this issue is by Vladimir Ferrari et al., from **Brazil**, who developed and analyzed the behavior of high performance cementitious compounds reinforced with fibers. It is particularly interesting to read how they develop their hybrid compounds and their experimental development. It is certainly an article that merits reading.

The closing article for the special edition is by Alejandro Cabrera Madrid et al., from **Mexico**, who present a revision work on the state-of-the-art cementing system PC-BFS emphasizing its effect on the mechanical resistance of the concrete. The utilization of the cementitious characteristics of the BFS with high replacement levels turns out to be viable, being able to improve the resistance to compression and, in some cases, the resistance to the corrosion of steel. Said improvement shall depend on the quantity of the BFS and the exposure environment of the concrete. In this revision, it was confirmed that BFS replacements of up to 70% were beneficial in humid microclimates or marine environments, and up to 50% in environments prone to carbonation. In these ranges, it is possible to achieve a greater replacement efficiency with respect to the resistance to compression.

This special first issue of the year opens with good news, as all RA articles since the first issue now have a DOI number. Likewise, we are launching an OJS platform where our readers will be able to enjoy the content of the magazine on a brand new and more efficient platform.

We are certain that the articles in this issue will comprise an important reference for those readers involved in matters related to the application of special concretes. We thank the authors participating in this issue for their willingness and effort in presenting quality articles and for their compliance regarding the established deadlines.

By the Editorial Board

Pedro Castro Borges
Editor-in-chief

Bernardo Tutikian
Guest Editor