



Science and Technology of Concrete Admixtures

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Science and Technology of Concrete Admixtures presents admixtures from both a theoretical and practical point-of-view. The authors emphasize key concepts that can be used to better understand the working mechanisms of these products by presenting a concise overview on the fundamental behavior of Portland cement and hydraulic binders as well as their chemical admixtures, also discussing recent effects in concrete in terms of rheology, mechanics, durability, and sustainability, but never forgetting the fundamental role played by the water/binder ratio and proper curing in concrete technology.

Part One presents basic knowledge on Portland cement and concrete, while Part Two deals with the chemical and physical background needed to better understand what admixtures are chemically, and through which mechanism they modify the properties of the fresh and hardened concrete. Subsequent sections present discussions on admixtures technology and two particular types of concrete, self-consolidating and ultra-high strength concretes, with final remarks on their future.

- Combines the knowledge of two leading authors to present both the scientific and technology of admixtures
- Explains what admixtures are from a chemical point-of-view and illustrates by which mechanisms they modify the properties of fresh and hardened concrete
- Presents a fundamental, practical, and innovative reference book on the topic
- Contains three detailed appendices that can be used to learn how to use admixtures more efficiently

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Editorial Review

About the Author

Pierre-Claude Aïtcin is professor emeritus in the Department of Civil Engineering of the Faculty of Engineering at the Université de Sherbrooke, Quebec, Canada. He is the author of:

- High Performance concrete published by E and FN SPON. This book has been translated in French, Spanish, Portuguese and Czech.
-
- Binders for Durable and Sustainable Concrete published by Taylor and Francis.
-
- In collaboration with Sidney Mindess he wrote Sustainability of Concrete published by Taylor and Francis. This book has been published in French by Eyrolles under the title Ecostructures en béton- Comment diminuer l’empreinte carbone des structures en béton.

Robert J. Flatt is Professor of Building Materials at ETHZ. Before that he was Principal Scientist at Sika Technology AG and postdoctoral researcher at the Princeton University. He owns a master in Chemical Engineering and a PhD from EPFL. His main research interest deals with the working mechanisms of chemical admixtures, an area in which his publications are very well cited and in which he has received several awards. These include the RILEM Robert L’Hermite Medal, the Ross C. Purdy and the Brunauer awards from the American Ceramic Society, the best short presentation at the 13th International Conference on Cement Chemistry, as well an Outstanding Research Contribution in the Broad Area of Chemical Admixtures presented at the 10th International Conference on Superplasticizers and Other Chemical Admixtures.

He was also nominated two years in a row among the 5 finalists for the Spark award recognizing the best invention of the year at ETH Zürich (each time among more than 100 filed patents covering all subjects). He also was awarded the best paper award in two of the four categories at the 1st International conference on concrete innovation in 2014.

Users Review

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Phillip Chadwick:

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