

Preface

Controlling the sensitivity of concrete to its spalling behavior during fire exposure is one of today's major issues in the design and construction of concrete structures. Fire scenarios – as for instance the Channel tunnel fire in early 1996 – have demonstrated that spalling of concrete can have serious structural and economic consequences and is a phenomenon that should be taken into account when designing concrete structures against fire.

Developments in concrete mix design have led to new types of concrete - such as high strength, ultra-high strength and self-compacting concrete – which, despite an increased structural performance, have also shown a different sensitivity to spalling due to fire exposure. However, until now, this sensitivity to spalling of concrete as a structural material is not fully understood.

More research is needed to understand the mechanisms governing spalling of concrete in order to be able to quantify the risk as well as the consequences of spalling in a given fire situation.

After the two first successful workshops in Leipzig in 2009 and Delft in 2011, the 3rd International Workshop on Concrete Spalling due to Fire Exposure is held in Paris from 25 to 27 September 2013. This event is co-organized by CSTB and INSA de Rennes and supported by RILEM and fib.

The workshop is focused on spalling of concrete due to fire exposure with emphasize on performance from the material to the structural level. Its aims are to establish the current state of the art, to exchange results and to stimulate discussion.

The main topics that have been selected for the workshop are based on recent achievements and advancements in both theoretical and experimental research. Progresses made in the field of fire design of concrete structures are also included. Therefore, contributions are addressing the understanding of underlying processes, key properties and global behaviour of spalling under various conditions. Of special interest are the topics related to recent advances in numerical modeling in combination with experimental testing at the material and structural levels. It is gratifying to note that some contributions are focusing on real life experiences and practical applications. We hope that the number of these contributions will increase in the following workshops.

Finally, the workshop is thought and organized to be a forum for academia, industry, companies, consultants and governmental organizations to discuss and share research questions, practical applications and experiences related to spalling of concrete due to fire exposure.

Your high-quality contribution to these proceedings and or your participation to the workshop are the cornerstone for reaching these goals and making the workshop a successful event.

This workshop and these proceedings are dedicated to the memory of Prof. Ulrich Schneider.

Pierre Pimienta – Chairman

Fekri Meftah – Co-Chairman