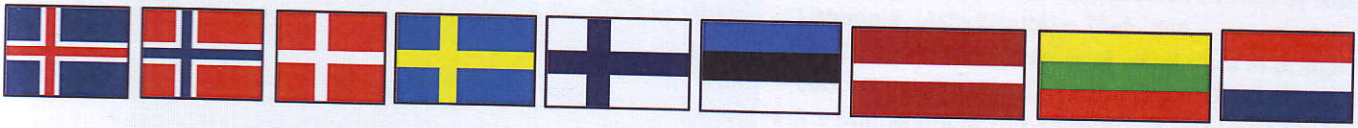
NCF Nordic Concrete Federation



Nordic - Baltic Miniseminar
Alkali Aggregate Reactions (AAR) in Concrete

Riga, Latvia

21th – 22nd November, 2013

Program
List of Participants
Extended Abstracts

Program

Time	Thuesday 21th November	Friday 22nd November
08:40 10:00		**3. Session: Chair: Viggo Jensen** • **3.1 Damages of concrete structures caused by AAR in Lithuania.** [Asta Kičaitė] – 15+5 min. • **3.2 Content and reactivity of alkali silica in bridge concrete structures.** [Jūlija Ivanova] – 15+5 min. • **3.3 Management of ASR-infected Norwegian bridges.** [Bård M. Pedersen] – 15+5 min. • **3.4 Challenge of ASR in the use of waste glass slurry.** [Patricija Kara] - 15+5 min.
10:00 10:30		**Coffee/discussion**
10:30 12:00		**4. Session: Chair: Bård M. Pedersen** • **4.1 Alkali-silica reactivity of foam glass granules in structure of lightweight concrete.** [Girts Bumanis] – 15+5 min. • **4.2 Structural modeling of ASR-affected concrete: the approach developed in the PAT-ASR project.** [Rita Esposito] – 15+5 min. • **4.3 Meso-scale modelling of ASR damage in concrete medium; part of PAT-ASR project.** [Caner Anac] – 15+5 min. • **SUMMARY** – 30 min.
12:00 13:00	**Lunch**	**Lunch**
13:00 14:30	**1. Session: Chair: Børge Johannes Wigum** • **Introduction** [Børge Johannes Wigum] – 20 min. • **1.1 Alkali-Silica Reactions (ASR) – Advantages of implementing a performance testing concept.** [Jan Lindgård] – 25+5 min. • **1.2 Alkali release: A review.** [Guðbjartur Jón Einarsson] – 15+5 min. • **1.3 Finland's Entrance to the ASR Deterioration Club.** [Erika Holt & Miguel Ferreira] – 15+5 min.	
14:30 15:00	**Coffee/discussion**	
15:00 16:20	**2. Session: Chair: Jan Lindgård** • **2.1 CEMEX LATVIA research for AAR test in concrete with local raw matherials.** [Verners Berzins & Janis Marherts] – 15+5 min. • **2.2 The advantages of using microscopic analyses as part of the assessment of alkali aggregate reactivity.** [Marit K. Haugen] – 15+5 min. • **2.3 Petrographic analysis in Norway for assessment of potentially alkali reactive aggregates: precondition, method and 20 years experiences in Norway.** [Viggo Jensen] – 15+5 min. • **2.4 Alkali silica-reactivity of Swedish aggregates used for concrete.** [Karin Appelquist] – 15+5 min.	
19:00	**Dinner**	

Challenge of ASR in the Use of Waste Glass Slurry

Patricija Kara
Riga Technical University, Institute of Materials and Structures
1 Kalku Str., LV-1658, Latvia
patricija.kara@rtu.lv

Currently the majority of industrial companies in the world develops and implements clean production technologies where manufacturing wastes are recycled and are used for new building materials production. In some countries waste glass is recycled up to 70-100% and in some countries due to absence of developed recycling infrastructure is dumped into landfills, like for example in Latvia. Glass debris sorting, recycling and application of it in new construction materials is not practiced or practiced at minimum level in Latvia. The worldwide application of waste glass in concrete was quite limited due to alkali-silica reactivity (ASR) for almost forty years, but after the research results made by several researchers in the last decade this waste gained again interest in its alternative use in concrete industry. It was found that the ground glass particles (<75 μm) initiate pozzolanic reactions without harmful expansion deformations. Size reduction of glass to enhance its chemical reactivity is the key enabling step for converting the landfill-bound mixed-color waste glass into a valuable product capable of partially replacing cement in concrete. The coarse and fine aggregates can trigger ASR in concrete whereas glass powder can suppress the tendency to ASR and produce an effect similar to that of supplementary cementitious materials such as pozzolan. Waste glass is cementitious in nature when it is finely ground, and especially when it is ground in a wet environment. The obtained waste glass slurries with finest particle size up to 10 μm show pozzolanic characteristics and usage of them as a cement component in concrete might be a solution. The ASR tests results indicate that the presence of finely ground waste glass in a wet environment has a relatively small influence on ASR expansion.