

MAGNEL LABORATORY FOR CONCRETE RESEARCH - CONCRETE & ENVIRONMENT RESEARCH GROUP **ROBERTO TENORIO; ADELAIDE ARAUJO; DIDIER SNOECK; NELE DE BELIE POLYMER CHEMISTRY AND BIOMATERIALS - SANDRA VAN VLIERBERGHE CHEMSTREAM – ELS MANNEKENS; GEERT DEROOVER**

INTERBETON – LUC VANDEKERCKHOVE ARTES DEPRET – MARC OCKIER; STIJN SANDERS

INNOVATIVE SUPERABSORBENT POLYMERS TO INCREASE SERVICE LIFE

OF CONCRETE STRUCTURES

CONCRETE – STRENGTH AND VERSATILITY TOWARDS INNOVATION IN CONSTRUCTION

SHRINKAGE MEASUREMENTS SETUP









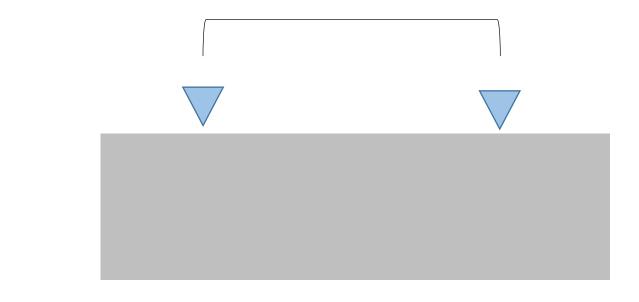




DURABILITY BECOMES AN ISSUE

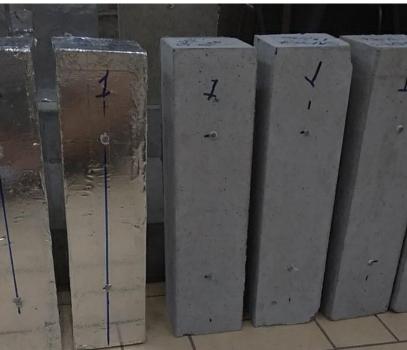


- Formation of cracks
- A path for agressive agents
- Increased costs for maintanance



Concrete specimens (100x100x400 mm)







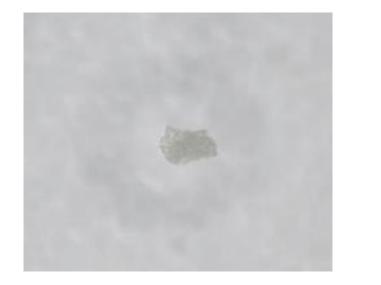
Measuring device

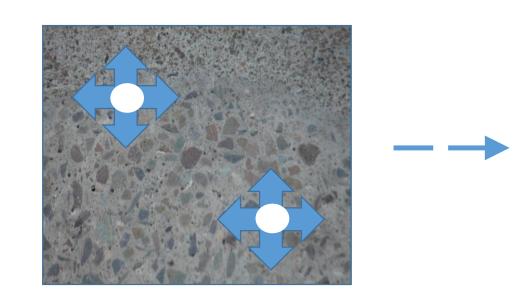
Total shrinkage: specimens exposed to the air

SUPERABSORBENT POLYMERS (SAPs) AND DEVELOPMENT OF SMART **CEMENTITIOUS MATERIALS**

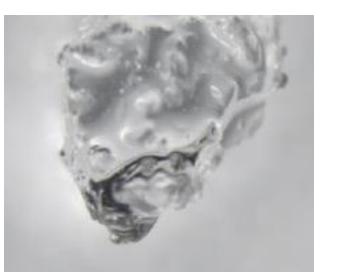
SAPS COMPLETELY MITIGATE AUTOGENOUS SHRINKAGE AND REDUCE THE **DEFORMATION DUE TO TOTAL SHRINKAGE**

Dry particle Water reservoir for further hydration Posterior self-healing

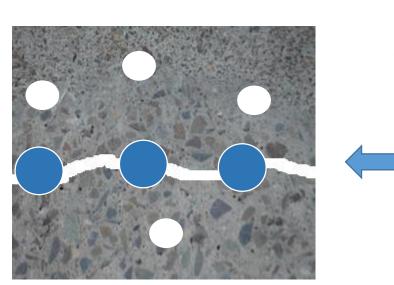






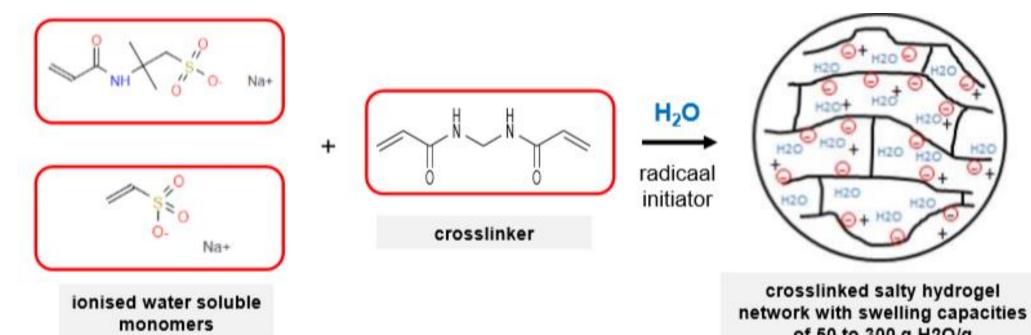


Sealing agent for cracks

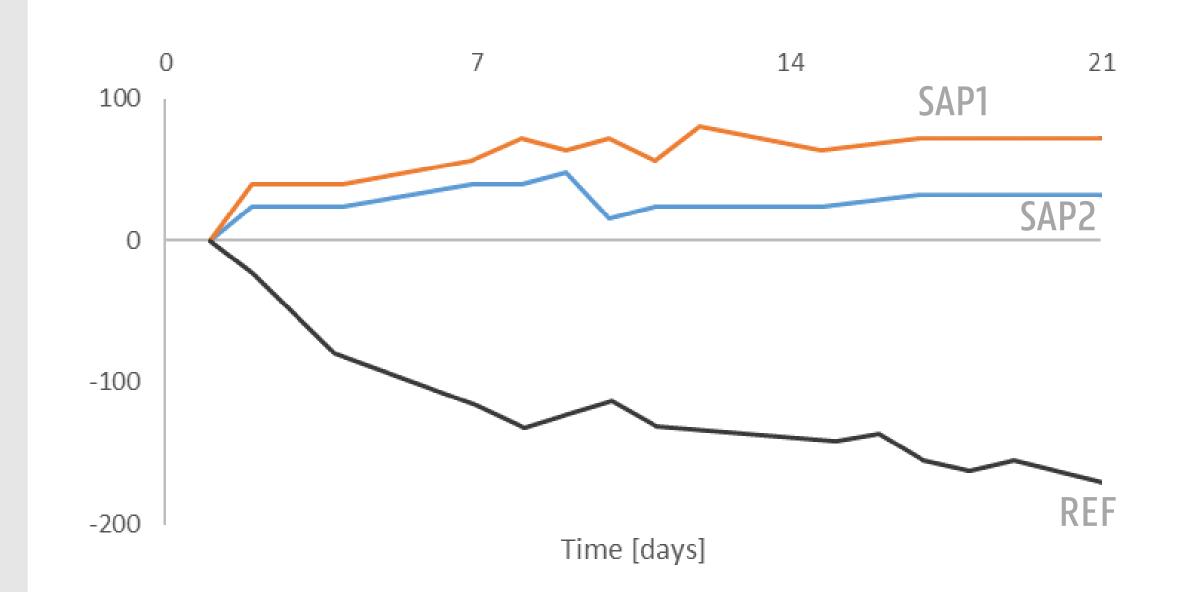


Crack formation Ingress of moisture Swelling of SAPs

PRODUCTION OF SAPS

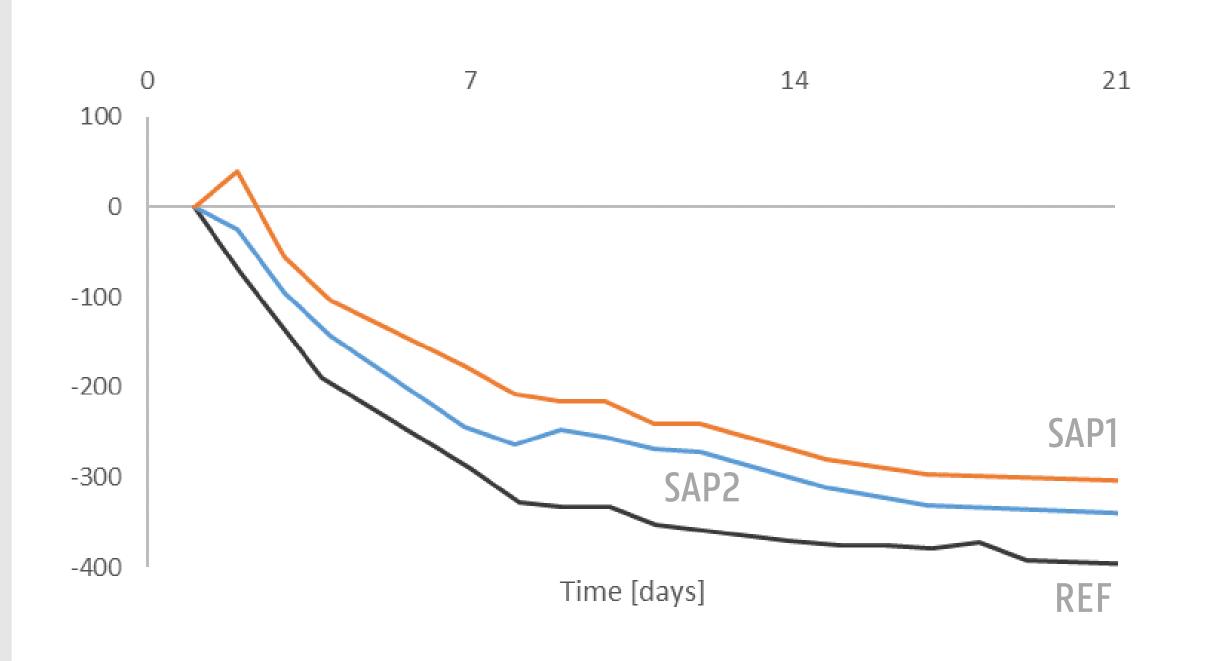


Deformation [µstrain]



Autogenous shrinkage strain (protected specimens)

Deformation [µstrain]





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Total shrinkage strain (exposed specimens)



Clusters for Growth



of 50 to 300 g H2O/g





