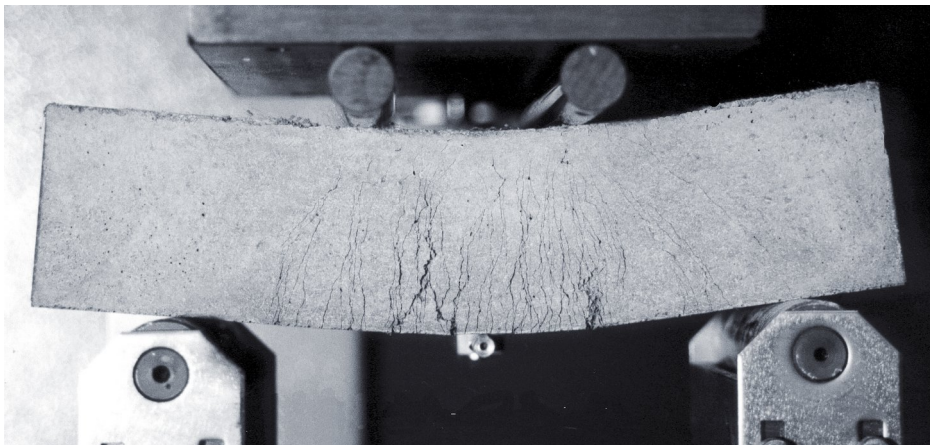


Reference Engineering

Repair Mortar with High-modulus Polymeric Fibers



Facts

Duration of the project:
March to October 2000

Client:
Customer from the
building materials
industry

Problem and task

The client wishes to profit from the advantages of modern high-modulus polymeric fibers to optimize and extend his product pallet (ready-mixed mortar and special binders). Concretum AG was entrusted with the selection of optimal types of fibers and their integration into the formulation of existing and new products.

A kind of reconstruction mortar with the following material properties should be developed:

- Consolidating behaviour after exceeding the primary resistance to cracking.
- Increase of the ductility (plasticity) for at least two dimensions compared to traditional cement-bound reconstruction mortars.
- Reliable limitation of the cracking widths to an uncritical measure.
- Easy and safe application with traditional working processes.

Solution

- Translation of the set of requirements into physical material parameters.
- Modelling of the material behaviour of fiber mortars.
- Parameter study to define the necessary fiber properties, the matrix and its contact surface with numerical simulation procedure.
- Selection and modification of a suitable high-modulus polymeric fiber.



- Definition of the composition of mortar.
- Experimental control and technical documentation.

Judgement

The chosen procedure made an efficient and goal-directed product development possible. The realization of an innovative technology allowed our client to offer his costumers a top product for concrete repair work. Furthermore, the gained knowledge could be used for other products.

