PROJECT

Filler - Influence of phyllosilicates for the use in road construction (VSS1999/276)

Filler - Influence des phyllosilicates pour l'utilisation dans la construction routière

Funding: National (Switzerland)
Duration: Dec 2002 - May 2009
Status: Complete with results

Background & policy context:
European standards do not apply quantitative Petrography. There is also no European test to identify the phyllosilicates. At European level, the problem of clays is globally handled using the Methylene blue test, which lacks of preciseness in our opinion.

Clays and phyllosilicates in filler aggregates have been the object of standardisation in Switzerland for more than 30 years. Swiss standards required an adaptation to the modern techniques of analyses of minerals and must be compared with the European testing methods

Objectives:
The aim of the project is to provide the basis for the revision of the Swiss norms SN 670 135 (filler aggregates used in bituminous mixtures) SN 650 850 (content in clay minerals).

Methodology:
A reference method using X-ray diffraction is proposed for the analysis of phyllosilicates and clays in filler aggregates. The quantification is calibrated with external standards. The Rietveld-procedure is proposed as alternative method.

Parent Programmes:
ARAMIS - ARAMIS information system

Institute type: Public institution
Institute name: Swiss Government: State Secretariat for Education and Research
Funding type: Public (national/regional/local)

Partners:
Switzerland
Swiss Federal Roads Office
Bureau d'expertises minéralogiques et pétrographiques

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Key Results:
The results of this research have shown that the European standard EN 12697-12 is not suitable to get significant information on the durability of bituminous mixtures, particularly when the filler aggregate
was doped with relatively high amounts of swelling clays. For this reason, the test proposed by European standards is really not appropriate for filler aggregates used in Switzerland.

The results of the tests which were carried out according to the former Swiss standard (SN 670 845 b) "Volume modifications of samples after water immersion" revealed that swelling clays and micas are potentially very damaging for the durability of bituminous mixtures.

In concrete, swelling clays affect already the concrete workability as soon as critical contents are reached.

Proposals for upgrading the Swiss standards and for maximum contents for various types of clays and phyllosilicates in filler aggregates for bituminous mixtures as well as for fines in concretes have been achieved.

Documents:

- [VSS1999/276 (Final report)]

**STRIA Roadmaps:** Other specified

**Transport mode:** Road transport

**Transport sectors:** Passenger transport, Freight transport

**Geo-spatial type:** Other