Secretariat General
157 Rue des Blains
F-92220 Bagneux, France
Tel: +33 1 45 36 10 20
Fax: +33 1 45 36 63 20
http://www.rilem.org
E-mail: sg@rilem.org

International Union of Laboratories and Experts in Construction Materials, Systems and Structures Réunion Internationale des Laboratoires d'Essais et de Recherches sur les Matériaux et les Constructions

RILEM Task Group 2

Mixture Design and Compaction

RILEM TG2 WORK PLAN OVERVIEW

Background: The objective of the first work plan for the RILEM Task Group 2 is to gather more information to better understand the relationship between laboratory and field compaction of asphalt pavement.

Many studies have compared the effects of compaction methods on density and mechanical properties; however, very few have evaluated aggregate structure. Therefore, TG2 has decided to conduct research that could provide new information about aggregate structure and also explain the effects of laboratory compaction methods, as compared to the field compaction.

Currently the protocols used for the compaction methods in the lab (Gyratory, Marshall, Hveem, etc.) are not the same from lab to lab and consequently a degree of variability is inherent within each compaction method. It is the intent of the task group to establish a specific protocol for the compaction methods in an attempt to reduce experimental variability.

The group discussed the need for studying new tools to identify mixtures micro-structure. The experienced group members indicated that 2D imaging, although practical, does not give a comprehensive view of aggregate structure. Therefore, it was suggested that x-ray tomography be added and utilized to provide a better method of evaluating aggregate structure and the effect of compaction methods.

Task of TG2: Evaluate laboratory compaction methods and models with respect to field compaction.

Objective of the first work plan: The objective of the research is to develop tools other than density to identify mixture micro-structure.

Project Scope: There are asphalt mixture samples available from the LCPC test track that was constructed approximately ten years ago and slabs of asphalt mixture that have been cut from the test track. It is determined that the material from the test track could be used to evaluate compaction methods and to compare the observations of samples from the compaction methods to the observations of cored field samples.

There are approximately 1000kg of BBSG 0-14 mixture available whereby the loose mix is divided in 30-35 kg containers. Field data of the mixes is also available and six (400 x 600 x 100 mm) slabs cut from the test track are available to core for testing of aggregate structure.

Ultimately, the task group is looking for repeatability in the samples in terms of internal structure. Also, the task group is interested in determining which compaction method creates samples that most closely replicate the field samples.

Essential Tasks:

1. Comparison of compaction methods
2. Comparison of compaction methods to field samples

This will be accomplished by the following steps:

1. Establishing protocols for compaction methods
2. Shipping, preparing and compacting loose mix from LCPC – France.
3. Preparing, coring and shipping field samples from LCPC – France.
4. Performing x-ray tomography on laboratory and field samples.
5. Analyzing results of x-ray tomography.
6. Performing gamma-ray analysis on laboratory and field samples.
7. Performing mechanical testing on samples with high variability in internal structure.
8. Performing scanned image analysis.
9. Collecting, analyzing and sharing the data and results.

** Costs for shipping will be absorbed by the laboratory that is compacting the samples.

Discussion/Conclusion:

If you have any immediate questions or concerns about any of the above information or observations please contact Carl Johnson. Email: cmjohnson3@wisc.edu