Validation of CPD ER3 standardised test methods

Summary

For release to soil, surface and groundwater and emission to indoor air, CEN/TC 351 has now finalised the main test procedures that are supposed to cover most of the relevant construction products and most of the relevant dangerous substances. These draft test procedures are the basis for the robustness validation, which is in preparation now, and subsequently for the phase of intercomparison validation (round robin testing) for which the administrative and financial preparations can be initiated.

The first step, the robustness testing, is planned to end by early 2012, leaving the administrative work to be finalised. The draft EN standard text will then be ready in the summer of 2012. This phase is financed by the Commission. Experts, industry, institutes and others are also contributing by doing practical work.
To ensure the highest level of comparability of test results throughout the EU, intercomparison validation of standards is required to know the quality of the test method. Therefore, the Mandate M/366 and the Work Programme of CEN/TC 351 foresee a thorough validation, which consists of two steps:
1) robustness (how are results depending on the choice of test parameters) and
2) repeatability/reproducibility (are results from different laboratories comparable).

The preparation of the second step (round robin testing) is planned to start in 2012. The execution of the round robin testing by laboratories will take place partly in 2012 and mainly in 2013. Thus, in order to secure the financing of the second step, the allocation of funds and/or practical contributions needs to be incorporated in the 2012 and 2013 budget of contributing parties. Therefore, a plan and a budget for the second step need to be presented to the Commission by the end of the summer of 2011. It is also important than to know which organisations are willing to contribute in the round robin testing.

In this note we explain the way the work is planned and by whom, and the mechanism by which contributions of Member States, industry and other parties can be incorporated in the execution of the work.
In short, next to a contribution of the Commission on the administrative work and the work of the Working Groups, it is necessary that Member States, industries and other interested parties contribute by including parts of the validation work in scheduled programmes of institutes and laboratories or in specific contributions to this validation step.

The scientific and technical supervision will be done by the Joint Research Centre based on a request from the Commission to JRC for this work. This ensures a broad acceptance of the results and a means to get access to the experience of the JRC on this type of validation testing.

We would like to investigate the opportunities of Member States to contribute to the step 2 of the validation programme, either by contributing directly to the work co-ordinated by the JRC or by contracting national laboratories to execute work in line with the programme. The latter could be part of the regular contracts of the Member State government with laboratories, for example as part of their quality control procedures.

More information

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Validation of CPD ER3 standardised test methods

Introduction

The work of CEN/TC 351 has resulted in several draft horizontal test methods for the emission of dangerous substances to the environment under ER3 of the CPD (leaching to soil and groundwater and emission into indoor air). Other test methods, such as on content and radiation, are to be expected. These test methods can be used for all, or at least most, of the construction products material groups. This approach is proven to be very efficient. If not, all 65 product TCs would have had to develop their own test methods, resulting in many more standards with minor or major differences, making the work of laboratories difficult and potentially resulting in incomparable test results for different construction products. And it would have made it rather complex or even impossible to link the results to legislative requirements.

Part of the standardisation process is the validation of the test methods[1]. Without it, the user has no information on the quality of the test results of a test method, meaning that the interpretation of a test result is impossible. This is why the mandate M/366 specifically requires the validation to be carried out before a test method is published as EN standard.

The validation process is under way. The first step, the robustness testing, is financed by the European Commission and initiated. The field work is expected to be finalised by the first months of 2012, leaving the interpretation of results and amendments to the draft standards to be carried out in the first half of 2012. The work requires tendering of the work to be executed, the field work, the interpretation of results and the amendment of the draft standards. After this, and after the in CEN required voting and final editing and translation procedures, the standards will have the status of Technical Specifications.

Thus the work on the second step of the validation, the reproducibility/repeatability assessment, can start in 2012, on the basis of the draft Technical Specifications. For this the financing is not yet in place.

Approach

The responsibility of the work on validation rests with the Working Groups of CEN/TC 351. Part of the first step, the robustness assessment is to be executed in 2011 based on a description of the work, a tender procedure, field work, assessing the results of the field work and making adaptations to the standard text, when required. The WGs also will report on their findings as to keep track of their conclusions and the consequences thereof.

The typical approach for robustness testing is to involve one or a few laboratories that will execute the test method a number of times with different settings of test parameters, such as temperature, humidity, acidity, duration of test successive steps. If, for example, the influence of temperature of the test results is significant, there is reason to make the requirement in the standard such that the temperature can only vary in a small range. This may result in extra costs and/or less practicable conditions for testing. If however, the influence would turn out to be negligible, the parameter temperature does not have to be so precisely prescribed and monitored.

Based on this work the text of the standard will be reviewed and amendments can be agreed in the WG. The quality of the test method can be described in terms of intra-laboratory certainty.

[1] Source: CEN Guide 13, on Validation.

After this robustness validation phase, the inter-laboratory quality of the test method needs to be assessed. This repeatability/reproducibility assessment requires a larger number of laboratories to be involved, typically 10 – 15, in round robin testing for a certain type of product. The aim is to see whether different laboratories are presenting the same results when measuring the same sample. And it aims at specifying the variability introduced by the testing by different laboratories.

A limited number of products will have to be tested by round robin tests. Each of these products stands for a specific group of products and/or a specific group of dangerous substances to be assessed. After the robustness testing it will be possible to determine more in detail the minimum number and the types of products to be testing in round robin testing.

The approach to this round robin part of the validation is to have samples being distributed to the laboratories that take part in the project. The laboratories test the samples and the results of all laboratories will be gathered. From the distribution of test result, the reproducibility/repeatability is calculated.

The costs of such validation work are high, because of the many tests, by a number of laboratories on a number of products. Moreover, the analysis of the results and possible amendments to the Technical Specifications will take some time as well. For this step, the funding is not yet secured. The Commission has already funded the total costs for step one of the validation process. In order to be able to continue without an interruption the funding of step two needs to be secured for the budget year 2012. So it is important that contributing organisations can prepare for their contributions in the fall of 2011. Since most of the actual round robin testing is expected to be executed in 2013, a large part of the costs can be planned for that budget year.

In order to give a detailed budget, the results of the robustness need to be known and their consequences need to be evaluated. This will not be feasible until the end of 2011. In order to overcome this dilemma and to ensure that the funding provided by Member States and other participants can be made available, CEN/TC 351 will provide an outline of the work by the summer of 2011. Although not complete, this outline will provide the background information on which requests for funding can be put together. To achieve this, the following starting points are proposed.

Project outline

For each of three release test methods (2 on leaching, 1 on indoor air emissions), 5-8 products need to be incorporated in the round robin testing. For each product, these tests have to be done by up to 15 certified laboratories. So a maximum of 360 samples need to be prepared. Since these samples need to be sufficiently homogeneous, the preparations will take a considerable effort. The samples need to be tested a number of times by each laboratory to check the reproducibility/repeatability. In particular the costs for indoor air testing can be high.

Historic information on validation can reduce the overall costs. It is expected that the robustness testing step, which is including additional investigations on existing data, reduces the effort needed for validation considerably. Moreover, it is expected that the laboratories will not charge their commercial rates. Since the robustness is already done, the remaining costs are even less. At this point in time it is not feasible to give a new estimate, but CEN/TC 351 will make such an estimate with a worked out budget and project plan in the summer of 2011, as to provide Member States, industry, laboratories and other participants with additional information before they have to take decisions and reservations in their budgeting cycle.
It is expected that Member States, industry, institutes and laboratories will offer to contribute to the round robin validation testing by taking part for a certain number of tests. In such

approach the contribution to the work and its financing could be arranged within usual contacts between Member States, industries and laboratories. If such an approach could cover the required funding for the round robin testing, it would not be necessary to organise a complicated international financial management.

Technical project coordination and overall reporting

The Commission will ask the Joint Research Centre to fulfil the scientific and technical tasks in designing the round robin testing and the evaluation of the results. The evaluation will be presented to the WG experts in order for them to take responsibility of the standard document(s). This is a contract between the Commission and JRC which again does not involve administrative tasks for the CEN/TC 351 secretariat.

Project Administration

If (most of) the round robin testing could be organised on a national basis or directly between industry and laboratories, the TC secretariat would only have to cover the remaining administrative tasks. and the financial administration as far as the Commission could contribute to the round robin testing. This work, and the work to be done by the CEN Working Groups to amend and complete the standards based on the findings of the round robin testing could then be funded by the Commission. The amount that would be necessary for these tasks would be in the same order of magnitude as those for step 1 of the validation.

Preparation of samples by industry

One of the very important tasks is the preparation of homogenous samples. For example if 15 laboratories are involved, a test sample needs to be prepared for each that is identical to all others. This is not simple and will take an effort from industry to provide these. Again coordination will be done by the JRC.

European Commission

The overall costs of the validation are the sum of the contributions of all parties. Contributions in kind can be valued as financial contributions. The European Commission already has contributed considerably in the validation by funding the robustness study. There is an understanding that the European Commission could finance the administrative work and the work of CEN in finalising the standards.

Request

In order to get to an agreement on this approach, CEN/TC 351 asks the Member States to discuss the content of this note within their own circle and to indicate whether involvement would be possible. A similar question is put to industry and to certified laboratories.