

related test method	EN 1363-1: 1999 Fire resistance tests – General requirements
subject	determination of binder content
reference of original query	TC2 N535, Helpdesk 2009-09

Problem

What method should be used for determining the binder content in insulation materials (and organic content in general)?

prEN 15254-5 Clause 5.2.4.2 states that it is allowed to increase the binder content in insulation materials with 2 % compared to the value obtained on materials from the test (extra materials).

In EN 1363-1 Clause 6.5 verification of test specimen it is stated that: where appropriate the actual material properties shall be determined.

For insulation materials the binder content is a key property just as important as the density, it is DBI's opinion that EN 1363-1 Clause 6.5 applies to the binder content.

The problem is that there is no prescribed method for determining the binder content/organic content in EN 1363-1.

Recommendation

Use the following method which is a combination of the FTP code and EN 13820.

Method for determination of organic content

After the percentage moisture contents have been determined on 3 test specimens as specified in EN 1363-1 clause F.3.2. *Oven drying techniques*, each specimen shall be placed in a container made from steel and further heated in an oven at a temperature of $500 \pm 20^\circ\text{C}$ for 2h and again weighed (W_3). The organic content ($W_2 - W_3$) shall be calculated as a percentage of the dry weight (W_2).

$$\text{Percentage organic contents} = \frac{W_2 - W_3}{W_2} \cdot 100$$

Where: W_2 is the weight after determination of moisture content
 W_3 is the weight after 2 h in the 500°C furnace.

Notes:

1. The dry weight W_2 of any specimen should be more than 25 g



2. Materials that may become brittle and break when subjected to the 500°C should be placed in a steel container to avoid any loss of material during movement.
3. All test specimen shall be placed in a desicator and be allowed to cool down prior to any weighting.*
4. Cutting specimens from insulation slab the specimen should be taken in the width of the production's direction and measuring the width of the slab x minimum 20 mm x the thickness of the slab.
5. The requirements for the appertus used should be as given in EN 13820 *Thermal insulating materials for building applications - Determination of organic content*
6. The organic content of each material used in the test specimen should be within $\pm 0.3\%$ absolute of the value stated as the nominal organic content.

*For insulation materials this is very important because they have a low density, they contain hot air that will lift the specimen (like a hot air balloon) and the binder content is only a very low percentage of the total weight. Therefore the desicator should also be used when taking them out of the moisture furnace.