



New European Fire Testing Classification for Construction Products



THE BENCHMARK IN FIRE TESTING



EU Construction Products Directive

The EU Construction Products Directive (CPD), is the basis of construction products regulations to be used in all member states. This Directive will require that all construction products be reclassified using the new set of common test methods. These products include all wall lining, flooring and other fixed products such as linear pipe thermal insulation products and electric cables.

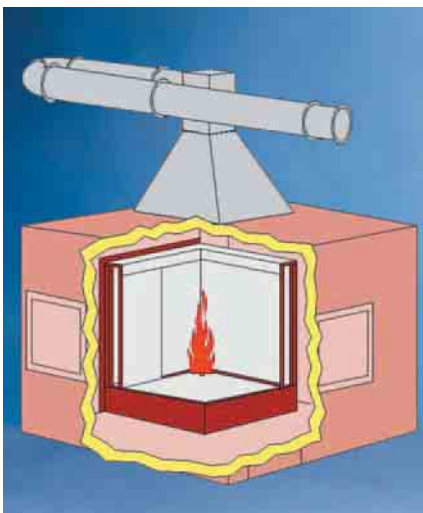
Construction products are currently controlled in National Building Regulations that typically used classifications often derived using the National fire test methods of each member state. E.g. British building regulations require classification using test methods described in the BS 476 test series.

The CPD requires that all member states modify their regulations to incorporate the classification systems described in EN 13501 and using the test methods quoted therein. EN 13501 was revised in 2007 to include classification requirements for linear thermal insulation product and is, in 2010, being further revised to incorporate the electric cable fire performance classifications requirements

Each member state is now able to continue to classify the products using the traditional methods alongside the new methods during a transition period. The traditional route will probably be unattractive to most suppliers, as the classification supported by traditional national tests will only be applicable in the host country, whilst those gained to the new test methods will be valid across all member states and the European Economic Area (EEA)

These test methods and in some cases the classification system, are now been used extensively beyond the European Union both by countries and producers wanting to trade these products with Europe and by Countries wanting to establish or upgrade there own regulations without spending extensive research and development budgets.

FTT engineers have worked with CEN in the development of these test methods and supply all equipment required for assessing the reaction to fire performance of construction products



How are Construction Products classified?

The classification criteria and test methods used to assess the reaction to fire performance of products covered by the CPD are described in *EN 13501-1: Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests*.

The Standard splits the products into 3 sets (which will shortly be extended to 4 when the electric cable classification requirements are integrated in a 2010 draft). These are

- Construction product excluding flooring products
- Flooring products
- Linear pipes thermal Insulation products
- Electric Cables (*in draft- see New European Cable Testing and Classification document*)

Each of these sets has 5 classification levels A1, A2, B, C, D and E and a non performance determined class "F" and the performance criteria and the fire test methods to be used in assessing the performance are described in 3 tables (one for each set).

Products in the non-flooring set are tested using the SBI test plus all other test methods except the EN ISO 9239-1. Flooring products are tested using the EN ISO 9239-1 instead of the SBI (EN 13823).

Table 1 shows the test methods and performance criteria for all construction products other than flooring products. **Table 2** shows the test methods and performance criteria for flooring products and **Table 3** shows the test methods and performance criteria for linear pipe insulation products.

Products in class A1 are mostly based on non-organic, materials and classification into this group is gained using EN ISO 1716 Determination of the heat of combustion and the EN ISO 1182 Non combustibility test.

Classification into classes A2, B, C and D which are the major classes inhabited by most products, other than those described above, require testing using either the EN 13823 or EN ISO 9239-1, and EN ISO 11925-2; Class E only requires testing to EN ISO 11925-2.

The fire tests are listed below and most are used to assess products in all sets whilst others are just used for one product set.

EN 13823: Reaction to fire tests for building products excluding floorings exposed to thermal attack by a single burning item.

EN ISO 9239-1: Reaction to fire tests for building products – Horizontal surface spread of flame for floor coverings.

EN ISO 11925-2: Reaction to fire tests for building products – Ignitability of building products subjected to direct impingement of flame.

EN ISO 1716: Reaction to fire tests for building products – Determination of the heat of combustion.

EN ISO 1182: Reaction to fire tests for building products – Non combustibility test.





Single Burning Item

EN 13823. Reaction to fire tests for building products excluding floorings exposed to thermal attack by a single burning item, the SBI.

The specimen is mounted on a trolley that is positioned in a frame beneath an exhaust system. The reaction of the specimen to the burner is monitored instrumentally and visually. Heat and smoke release rates are calculated and physical characteristics are assessed by observation. The parameters that are quantified in this test and used within the classification criteria are; Total Heat Release (THR), Fire Growth Rate Index (FIGRA) and Smoke Growth Rate index (SMOGRA).

FTT supplies, installs, and trains clients in the use of this apparatus. FTT can also supply any of the components to clients wishing to part design and build their own equipment.

The main components of the FTT SBI are:

- The Test Apparatus.
- Gas Analysis Instrumentation for Heat Release Measurement.
- Smoke Measurement System.
- Burner, Gas Train and Controls.
- Data Acquisition and Analysis Software.



Flooring Radiant Panel



EN ISO 9239-1. Reaction to fire tests for building products –Horizontal surface spread of flame for floor coverings.

This test method evaluates the critical radiant flux below which flames no longer spread over the horizontal surface of a specimen.

A smoke measuring system based on DIN 50055 is mounted on a separate frame in the exhaust stack and is used to measure smoke generated in the test.

The test is relevant to A2_{f1}, B_{f1}, C_{f1}, and D_{f1}.





Single-Flame Source Test

EN ISO 11925-2. Reaction to fire tests for building products – Ignitability of building products subjected to direct impingement of flame.

This ignitability method is based on the Kleinbrenner method and determines the ignitability of building products in the vertical orientation when subjected to impingement of a standard small flame. This test is relevant to classes B, C, D, E and B_{fl}, C_{fl}, D_{fl}, E_{fl}.

The FTT Ignitability Apparatus is supplied as a complete easy-to-use system incorporating the following features:

- Combustion chamber with large front and side doors for easy access and toughened viewing panels.
- An extensively adjustable burner assembly
- Specimen holder capable of housing the specimens up to and including 60 mm thick.
- A fully adjustable specimen support frame
- A digital anemometer/thermometer and a stopwatch

