

GUIDANCE NOTE

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Understanding a Fire Test Classification Report to EN13501-1

Wood and wood-based panels can perform well in fire if they have been enhanced using a factory-controlled process to either impregnate them with flame retardant (FR) or apply an FR coating to the surface. Panel products can also be manufactured containing a flame retardant. In all cases, the products must have been tested and proved to provide the level of protection claimed.

The WPA does not approve site applied coatings.

Evidence of the efficacy of the FR enhancement, following appropriate testing, will be found in a **Classification Report** issued by a test organisation that has been scrutinised by a government agency, like the UK Accreditation Service, and declared competent to conduct such work. These qualified organisations are often referred to as **'Notified Bodies'**.

Classification Reports

Classification reports are produced as a result of a programme of testing and must include the following essential information for the user:

- Unambiguous description of the material/product to be processed
- The Classification of the processed product, that is, how the treated product will perform
- The Field of Application, possibly including restrictions, on where and how the treated product may be used

Product Description

FR classifications are specific to the product tested. There may be additional conditions based on density, thickness or wood species, all of which must be met for the classification report to accurately reflect the performance of the resulting product. **Do not accept non-specific, generalised product descriptions.**

There are some classification reports in circulation that use potentially misleading generic product descriptions, for example:

- The term 'Far Eastern Plywood' had a different meaning 15 years ago. Plywood now on the UK market described as Far Eastern Plywood will probably not match the characteristics of plywood supplied and tested as Far Eastern Plywood years ago.
- A classification for spruce at density 350 kg/m³ could not be assumed to apply to other softwood species.
- A classification for a branded product, eg. Thermowood, must also specify wood species, thickness etc.

Specifiers and users should therefore avoid purchasing products where the description on the Classification report is not sufficiently precise to guarantee that the report presented actually applies to the material being specified and FR treated.

The Classification

In an EN13501-1 compliant test report, classifications are given for three different properties:

- Behaviour in Fire (*the Reaction to Fire properties*).
- Smoke production
- Flaming droplets

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The **Reaction to Fire** class for an FR enhanced wood product will normally be either '**B**' or '**C**', where '**B**' is better than '**C**'. It is not possible to achieve Class A with organic substrates, including wood and '**D**' can be achieved by many wood products without any enhancement (*hence the default reaction to fire classification used on DoPs for many wood products is D-s2,d0*). Reaction to Fire is measured on fire propagation and flame spread in the presence of an ignition source and on the amount of heat produced during the test.

Smoke production is indicated by the letter '**s**' (*in lower case*). This is a progressive index where **s0** indicates very little smoke and **s2**, the smoke produced is more significant.

Flaming droplets are particles that can fall away from the burning surface with the capacity to cause a fire to spread and are indicated by the letter '**d**', where **d0** indicates no flaming droplets and **d2**, droplets are significant. Wood substrates are always expected to achieve **d0**. The resulting classification is given in a standard format typically looking like this:

B – s1, d0

In the above example, the reaction to fire classification is 'B', the smoke production is moderate and the production of flaming droplets is negligible.

Field of Application

The field of application will define how the treated product can be used and normally includes restrictions which must be taken into account for the classification to remain valid. Typical examples include:

- **Air Gap** – Some FR treated products must be fixed directly to a non-combustible substrate to achieve the classification claimed. Others may tolerate an air gap of a defined depth
- **Thickness** – Normally defined as a range of thicknesses but could be a specific thickness, often minimum
- **Product Description** – Some classification reports will permit product from a limited range of similar sources of a specific wood species and a limited range of acceptable densities. However, other reports may only be valid for one thickness of a single product from a specified manufacturer

Example: If a Classification Report refers to Euroclass B - s1, d0 being achieved on 25mm thick spruce boards tested without an air gap on plasterboard, then **the product cannot be assumed to confer the same reaction to fire performance for:**

- *Timbers less than 25mm thick*
- *Alternative species*
- *Installation with an air gap behind*
- *Use with backing materials deemed to be of higher risk performance than plasterboard*

Coatings

The application of a surface coating to a tested material may change the reaction to fire properties of that material. It is therefore important to check the characteristics of the end product. Where the coated material is to be placed on the market as a system, the fire test data and classification report must refer to the coated system.

Further Information: *The following WPA FR Guidance Notes, are all available from our website free of charge:*

FR1: Understanding the difference between Reaction to Fire & Fire Resistance, FR2: Understanding Combustibility

FR3: Understanding Service Environment, FR6: Flame Retardant Wood Specification Checklist

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