

WPA fire protection factsheet No.3

Fire protection terminology

Understanding how to specify the Service Environment

The essentials of good specification

It is vital that any flame-retardant treatment required in a building provides long-term, predictable performance backed by independent verification. Before specifying enhancement using a flame retardant, two specification fundamentals must be established:

1. What reaction to fire performance is required?

Euroclass B or C in accordance with BS EN 13501. These are the two most demanding classes achievable with an organic substrate. *(See WPA fire protection factsheets 2 & 4 for more information).*

2. What is the service environment?

Service classes define the environmental conditions in service. Three service classes are defined in the structural design code BS EN 1995-1-1.

WPA categorises flame retardant formulations into Type INT1, INT2 and EXT. Each type is distinguished by properties that make them suitable for particular service classes. The variation in these properties is largely due to the nature of the chemicals used in the formulations and the complexity of chemical reaction required in formulating them. The WPA FR Types align with those defined in BS EN16755 'Durability of reaction to fire performance'.

FR TYPE BS EN16755	SERVICE CLASS BS EN 1995	CONDITIONS	EXAMPLES	COMMENTS
INT 1	1	Moisture content in materials corresponding to 20°C and rh <65 % for most of the year.	Timber in buildings with heating and protected from damp: Internal walls, internal floors and warm roofs	The common feature is that the FR wood-based product is sensitive to high humidity; prolonged exposure may result in salt efflorescence and/or migration.
INT 2	2	Moisture content in materials corresponding to 20°C and a rh <85 % most of the year	Ground floor structures where no free moisture is present, cold roofs, swimming pools and fully protected external uses.	Treated wood or wood-based panel is far less sensitive to high or fluctuating humidity and can therefore be used in practically all interior and semi-protected external situations.
EXT	3	Conditions leading to higher moisture content in materials than in SC 2	Cedar shingles and unprotected exterior cladding.	The treated wood product can be used in all interior and above ground exterior situations.

Note: Wood treated to a Euroclass B or C level of performance in fire may be used in any service class/environment. The two performance criteria are independent of each other.

WPA Commodity Specifications for FR treated wood

Five WPA Commodity Specification codes (FR1 – FR5) cover the different applications and service conditions of wood and wood-based panel components. Specification details and clauses are given for each code. The use of these codes helps to simplify accurate specification. They are recognised throughout the industry and referred to by other major specification bodies such as NHBC and NBS.

WPA Commodity Specification	FR treated wood or wood-based panel application	Examples
FR1	Non load-bearing interior use, where humidity is not a consideration.	Wall linings, shopfitting, exhibitions transport vehicles
FR2	Loadbearing interior use (BS EN 1995 Service Class 1), where humidity is not a consideration	Roofing members, support columns, flooring
FR3	Interior use (BS EN 1995 Service Class 2)	Swimming pools, leisure centres, agricultural buildings
FR4	Weather-protected exterior use (BS EN 1995 Service Class 2)	Covered walkways, protected overhangs and exterior timbers with a weather resistant maintained coating
FR5	Exposed to the weather (BS EN 1995 Service Class 3)	Cedar shakes and shingles, unprotected playground equipment and other exposed timbers

For further details please refer to the WPA Flame Retardant Specification Manual 'Industrial flame retardant treatment of wood and wood-based panel products'. Copies are available to download free of charge from <http://www.wood-protection.org/publications>

Service Life

Experience in service with Type EXT products indicates a service life in excess of 20 years. Tests conducted by the Wood Protection Association with Type INT2 products indicate a service life in excess of 60 years and a similar service life can be expected from Type INT1 treatments.

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