Section 4 - Protection of Openings in Fire Barriers

Subsection E5 - Openings in Fire Barriers (Doors, Windows, Shutters and associated Penetrations)

Clause E5.1

Elements that protect openings, such as doors, windows and fire shutters in fire barriers should be tested in accordance with the following applicable standards to demonstrate the required FRR (integrity and insulation as appropriate):

(a) BS EN 1634-1:2008, *Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware. Fire resistance test for doors, shutters and openable windows*;

(b) BS EN 1634-2:2008, *Fire resistance tests for door, shutter and openable window assemblies and elements of building hardware. Fire resistance characterisation test for elements of building hardware*;

(c) BS EN 1634-3:2004, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware. Smoke control test for door and shutter assemblies*;

(d) BS EN 14600:2005, *Doorsets and openable windows with fire resisting and/or smoke control characteristics. Requirements and classification*.

Commentary

The FRR of fire rated doors, fire shutters and openable windows designed for installation within openings in vertical separating elements should be tested in accordance with BS EN 1634-1:2008. BS EN 1634-1:2008 sets out two options of maximum temperature rise criteria for insulation. These options are based on the classification of thermal insulation (Classification I1 or I2) and the classification shall be in accordance with BS EN 13501-2:2007. The thermal criterion of Classification I1 is recommended for consistency with BS 476.

Clause E5.2

The following British Standards will still be applicable until they are obsolete:

(a) BS 476: Part 20:1987, *Fire tests on building materials and structures. Method for determination of the fire resistance of elements of construction (general principles)*;

(b) BS 476: Part 22:1987, *Fire tests on building materials and structures. Methods for determination of the fire resistance of non-load bearing elements of construction*.

Clause E5.3

All tested fire rated doors, fire shutters and fire windows should be “tagged” or otherwise labelled to ensure ease of identification.

Commentary

The FRR of elements to prevent fire spread through openings in fire barriers is classified in accordance with BS EN 13501-2:2007, *Fire classification of construction products and building elements. Classification using data from fire resistance tests, excluding ventilation services*.

The performance for protected openings in fire barriers includes:

(a) Integrity – the ability of the element of construction that has a fire separating function, to withstand fire exposure on one side only, without the transmission of fire to the unexposed side as a result of the passage of flames or hot gases;

(b) Thermal insulation – the ability of the element of construction to withstand fire exposure on one side only, without the transmission of fire as a result of significant transfer of heat from the exposed side to the unexposed side. Transmission shall be limited so that neither the unexposed surface nor any material in close proximity to the surface is ignited;

(c) Radiation – the ability of the element of construction to withstand fire exposure on one side only, so as to reduce the probability of the transmission of fire as a result of significant radiated heat either through the element or from its unexposed surface to adjacent materials;

(d) Self-closing – the ability of an open door to close fully into its frame and engage any latching device that may be fitted, without human intervention, by stored energy, or by mains power backed up by stored energy in case of power failure.

Subsection E6 - Openings in Fire Barriers (Ventilation Ducts and associated Penetrations)

Clause E6.1

Elements that protect openings where ventilation ducts and the like penetrations in fire barriers, such as seals, should be tested in accordance with the following applicable standards to demonstrate the required FRR (integrity and insulation as appropriate):

(a) BS EN 1366-1:1999, *Fire resistance tests for service installations. Fire resistance tests for service installations. Ducts*;

(b) BS EN 1366-8:2004, *Fire resistance tests for service installations. Smoke extraction ducts*;

(c) BS EN1366-9:2008, *Fire resistance tests for service installations. Single compartment smoke extraction ducts*.

Clause E6.2

The following British Standards will still be applicable until they are obsolete:

(a) BS 476: Part 20:1987, *Fire tests on building materials and structures. Method for determination of the fire resistance of elements of construction (general principles)*;

(b) BS 476: Part 24:1987, *Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts*.

Subsection E7 - Openings in Fire Barriers (General Penetrations)

Clause E7.1

Penetration seals for electrical cables, plumbing and other services, should be tested in accordance with the following applicable standards to demonstrate the required FRR (integrity only):

(a) BS EN 1366-3:2009, *Fire resistance tests for service installations. Penetration seals*;

(b) BS EN 1366-4:2006, *Fire resistance tests for service installations. Linear joint seals*.

Clause E7.2

The following British Standards will still be applicable until they are obsolete:

(a) BS 476: Part 20:1987, *Fire tests on building materials and structures. Method for determination of the fire resistance of elements of construction (general principles)*;

(b) BS 476: Part 23:1987, *Fire tests on building materials and structures. Methods for determination of the contribution of components to the fire resistance of a structure*.

Commentary

The same control on pipe penetrations applies to all pipes penetrating fire barriers, irrespective of they are water-borne, their diameter or material of construction.

Subsection E8 - Fire and Smoke Dampers

Clause E8.1

Fire and smoke dampers in ventilation ducts should be tested in accordance with the following applicable standards to demonstrate the required FRR (integrity only):

(a) BS EN 1366-2:1999, *Fire resistance tests for service installations. Fire dampers*;

(b) BS ISO 10294-1:1996, *Fire-resistance tests. Fire dampers for air distribution systems. Test method*;

(c) BS ISO 10294 -2:1999, *Fire-resistance tests. Fire dampers for air distribution systems. Classification, criteria and field of application of test results*;

(d) BS ISO 10294-3:1999, *Fire-resistance tests. Fire dampers for air distribution systems. Guidance on the test method*;

(e) BS ISO 10294-5:2005, *Fire-resistance tests. Fire dampers for air distribution systems. Intumescent fire dampers*.

Clause E8.2

The following British Standards will still be applicable until they are obsolete:

(a) BS 476: Part 20:1987, *Fire tests on building materials and structures. Method for determination of the fire resistance of elements of construction (general principles)*;

(b) BS 476: Part 23:1987, *Fire tests on building materials and structures. Methods for determination of the contribution of components to the fire resistance of a structure*.

(c) BS 476: Part 24:1987, *Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts*.

Clause E8.3

All newly installed dampers should be inspected and certified by a registered specialist contractor in the ventilation works category that the dampers are in safe and efficient working order.

Subsection E9 – Smoke Leakage for Doors with Smoke Seal

Clause E9.1

Doors with smoke seal should be tested at ambient temperature and medium temperature and demonstrated to comply with the smoke leakage rate criteria in accordance with the following applicable standards:

(a) BS EN 1634-3:2004, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware. Smoke control test for door and shutter assemblies*;

(b) BS EN 14600:2005, *Doorsets and openable windows with fire resisting and/or smoke control characteristics. Requirements and classification*;

(c) ISO 5925-1:2007, *Fire tests - Smoke-control door and shutter assemblies - Part 1: Ambient- and medium-temperature leakage tests*;

(d) UL 1784:2009, *UL Standard for safety air leakage tests of door assemblies*; or

(e) AS 1530:Part 7:2007, *Methods for fire tests on building materials, components and structures- Smoke control assemblies. Ambient and medium*.

Clause E9.2

[Clause deleted.]