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SWECO

Fire Curtain

Building Standards Guidance Note 9

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Introduction

Purpose

This note gives guidance on considerations to be made when assessing compliance of fire curtains and to help navigate conflicting assertions made by manufacturers. The guidance specifically relates to the substantiation of products suitability through testing, which has become confused with the withdrawal of certification under BS 8524.

Introduction

Fire safety and protection are more prevalent than ever before in building design and specification. Fire curtains are a critical fire safety product which, when used correctly and in adherence with current regulations, offer many fire-engineered possibilities, whilst maintaining fire compartmentation and protection of escape routes.

Fire curtains may also be used in a fire strategy to provide flexible compartmentation. We have seen an increased trend by designers to specify the use of fire curtains in order to challenge building layouts and create open-plan and free-flowing spaces.

Introduction

Over the last decade the legislation applying to construction products has changed significantly. Since 1 July 2013, the Construction Products Regulations (CPR) have made it mandatory in the UK (and Europe) for construction products to be CE marked.

Up until 1 November 2019, BS 8524-1 (Specification) and BS 8524-2 (Code of practice for application, installation and maintenance) were the first unique standards in the world that related solely to active fire curtain barrier assemblies.

Aside from the legal requirement of the CPR, International Fire Consultants (IFC) and Warrington fire were able to offer third-party certification for BS 8524. However, within the last 2 years they have withdrawn their certification offering and there are currently no Notified Bodies certifying products tested to BS 8524. The last remaining third-party certification for BS 8524 expired on 9 June 2023, although products have certification issued beyond this date.

BS EN 16034 is the only harmonised standard available to CE mark to and has applied since 1 November 2019. The scope of BS EN 16034 being “applicable to all fire resisting and/or smoke control products intended to be used in fire and/or smoke compartmentation and/or escape routes, which are Rolling shutters or operable fabric curtains, and which are manually or power operated and normally held open but self-closing in case of fire or smoke and completed with or without any seals (e.g. for smoke control, fire resistance)”.

BS EN 16034 is limited and is only relevant to fire and smoke curtain installations acting as a pedestrian door set, for which the main intended uses are giving safe access for persons.

Guidance

BS 8524 is referred to in BS 9999:2017, the code of practice for fire safety in the design, management and use of buildings.

BS 9999 sets out that a fire curtain should be tested to BS 8524, however some fire curtains are tested in accordance with BS EN 16034.

Furthermore, we caution the use of fire curtains being sold without third-party certification that may put fire safety in the hands of commercial interests.

BS EN 16034 was harmonized and remains the only harmonised standard for fire curtains when performance tested as a pedestrian door set, and not for any other compartmentation purpose, sub-division or to satisfy a fire engineered design.

To satisfy a pedestrian door set fire curtain performance test, only the following standards with valid third-party certification apply:

- Vertical fire curtains – BS EN 16034
- Concertina fire curtains – BS EN 16034
- Horizontal fire curtains – ISO 21524

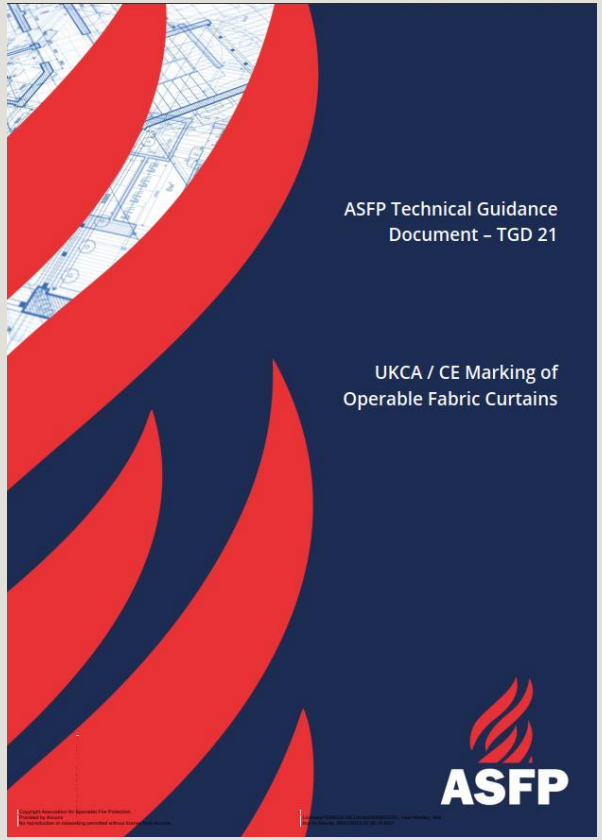
BS EN 16034 is limited and is only relevant to fire and smoke curtain installations acting as a pedestrian door set, for which the main intended uses are giving safe access for persons.

Guidance

The Association for Specialist Fire Protection (ASFP) have also produced Technical Guidance Document – TGD 21 in relation to the UKCA/CE marking of operable fabric curtains:

It should be noted that BS EN 16034:2014 contains a national foreword which states:

“Users’ attention is drawn to the fact that fabric curtains tested in this standard only apply to the fire door sets fire text. This standard does not cover their operation deployment speeds, initiation devices or warning devices, etc. and as such should comply with BS 8524-1 and BS 8524-2.”



Guidance

We should also refer designers to review Table 1 of the ASFP Black Book (Active Fire Curtains: Compartmentation and Protected Routes) in order to determine the end-use of applications showing the appropriate type of product in each case.

We support the ASFP criteria for the selection of fire curtains as set out below, to ensure the appropriate fire curtain is specified and installed:

a) What is the mode of operation? Is to be used in a horizontal, vertical or inclined orientation?

b) Is it for compartmentation or means of escape?

c) What fire resistance period is required?

d) What are the dimensions? (overall size)

e) Is it required to have a particular reaction to fire performance?

f) Is there a requirement for smoke sealing?

g) Does the curtain require performance smoke seals?

h) Is there a requirement for a limit for radiation?

i) Is there a permitted deflection zone?

j) How many motors are required?

In the case of a Fire Curtain, it is only the complete assembly as described in the relevant supporting documentation (fire/other test reports, third-party certification certificates etc.), which should be deemed to provide the required performance.

Guidance

Within the (ASFP) Black Book, Figure 13 to the right also provides a useful guide to the classification and required properties for fire curtains.

Classification	Properties	Classification options	Classification summary
Reliability and Durability (C)	 One cycle is moving from fully retracted to fully deployed to fully retracted again, following a 2x severe duty impact test and preceding the fire tests	C0 C1 C2 C3 C4 C5	Barrier performs a minimum of ○ C0 = 0 ○ C1 = 500 ○ C2 = 10,000 ○ C3 = 50,000 ○ C4 = 100,000, ○ C5 = 200,000 successful cycles respectively Test follows an impact test and precedes the fire tests
Integrity (E)	 No Flames No Heat Reduction	E30 E60 E90 E120 E180 E240	Barrier classified to EN13501-2 for the passage of fire for the number of minutes specified based on testing to BS EN 1634-1
Integrity and Insulation (E/I)	 No Flames Temperature Reduction (on the face of the curtain)	EI30 EI60 EI90 EI120 EI180 EI240	Barrier classified to EN13501-2 for the passage of fire for the number of minutes specified based on testing to BS EN 1634-1 Mean temperature of surface of barrier does not exceed 140°C and maximum temperature does not exceed 180°C for the number of minutes specified when tested to BS EN 1634-1
Integrity / Radiation (E/W)	 No Flames Heat Reduction (through the curtain)	EW30 EW60 EW90 EW120	Barrier classified to EN13501-2 for the passage of fire for the number of minutes specified based on testing to BS EN 1634-1 Maximum Heat Flux emitted by the barrier during testing to BS EN 1634-1 does not exceed 15kW/m²
Smoke Leakage (S_a)	 Reduced Smoke Leakage	S_a	Barrier controls air leakage so that the leakage rate across the whole barrier at ambient temperature, including fabric and edges (apart from the bottom edge which shall be tape sealed) shall not exceed a rate of 3m³/m/h at a pressure of 25Pa based on the perimeter dimensions of the barrier, when tested to BS EN 1634-3.

Figure 13 — Details of different forms of fire resistance, integrity (E), integrity and insulation (E/I), integrity / radiation (E/W) and smoke leakage (S_a)

Guidance

It is our opinion that fire curtain products with valid third-party certification to BS 8524-1 remain valid beyond the 9 June 2023 date of withdrawal, subject to:

- No changes made to the design or manufacturing process since certification issue.
- Manufacturer must continue to be ISO 9001 (or equivalent) accredited for fire and smoke curtain manufacture and evidence this.
- Certification date current and set for a future expiration (many valid until 2025).

BS 8524 remains the only product specific test standard relevant to active fire curtains.

As such ASFP would point out that BS EN16034 and BS 8524 are not conflicting standards, but complimentary standards. It is recommended that where compliance with BS EN16034:2014 is mandated, this should still be augmented with certification to BS8524-1 and BS8524-2.

Designers and Specialists specifying fire curtains should carefully examine the documentation accompanying the products to ensure that it originates from a reputable Notified Body rather than the manufacturer. Therefore, we advise designers to conduct due diligence and scrutinise the documentation.

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