April 2026 | Version 1.1

KNOWLEDGE SHARE: 011

PFKG
Passive Fire Knowledge Group

TITLE: ACTIVE FIRE CURTAINS: INSULATION VS RADIATION

BUILDING TYPE: ALL BUILDINGS

OVERVIEW OF THE PROBLEM

Active fire curtains are often specified incorrectly. In many cases, specifications call for an insulation (I) classification when, in fact, a radiation (W) classification is the appropriate performance requirement for this type of product.

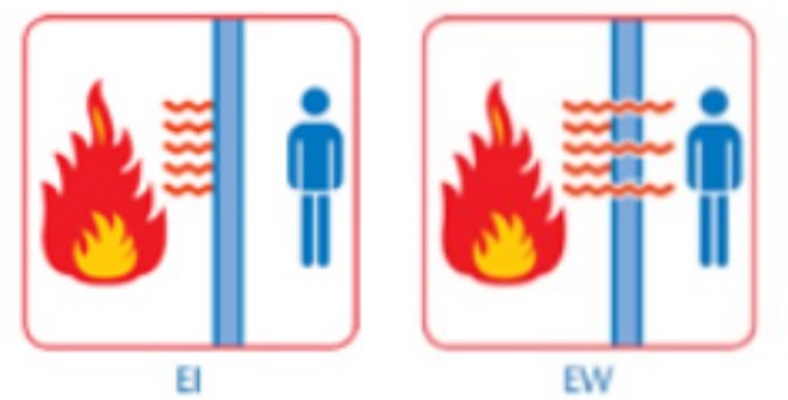

Figure Image: Showing active fire curtain fire resistance performance classifications

WHY IS THIS A PROBLEM?

The confusion originates from the legacy of an outdated standard, PAS 121, which was withdrawn in July 2013. PAS 121 introduced the concept of an "insulation zone" for fire curtains. This concept was discontinued by BS 8524 (which replaced PAS 121). However, confusion has remained regarding insulation performance requirements for active curtains since.

Further, Approved Document B and BS 9999 do not define performance requirements for active fire curtains, leading to a lack of clear guidance on their specification.

Active fire curtains are commonly used to close an opening within an element of compartmentation (e.g. fire rated wall or floor). As such, it is common for them to be specified as achieving the same EI classification (integrity and insulation) as the fire rated element they are formed in. They can also be used to provide protected escape routes.

However, "insulation" (I) fire resistance is defined as the period until the temperature on the non-fire side of the curtain exceeds 180°C above ambient under fire test conditions. In practice, most active fire curtains do not achieve this for a significant period of time, which can lead to unrealistic specification requirements or inappropriate product selections.

Instead, BS 8524-1 sets out an alternative "radiation" (W) fire resistance criterion, which measures the time taken for the level of heat radiation received 1m away from the non-fire side to exceed 15kW/m^2.

This typically provides a more realistic and meaningful measure of fire performance for active fire curtains in most applications, particularly when combined with integrity fire resistance (to form an EW classification) and considered as part of the overall fire strategy design.

The radiation values determined by tested performance can be used to calculate the heat exposure on a person escaping past a deployed curtain in a fire situation. A series of worked example radiation calculations for various means of escape scenarios are given in Appendix 3 of the ASFP Black Book.

Given that there is currently no clear statutory guidance regarding the application of "radiation" calculations in determining fire resistance performance, use of this approach must be confirmed and driven by the project fire strategy and agreed with the relevant approving authorities.

RECOMMENDATIONS

The project fire strategy and specification must be clear on the specific fire performance requirements for active fire curtain systems (for example type and period of fire resistance, such as 60 EW), and these should be reviewed as early as possible to ensure the correct product classification is selected.

It is also advisable to engage with product manufacturers at an early stage to confirm that suitable, compliant products are available and can meet the project requirements.