

LABC Guide to the use of polyurethane foam in fire-resisting applications

Introduction

Expanding polyurethane foam fillers (PU) are used in great quantities in the construction industry to serve a variety of functions. A significant proportion of these applications are used in fire-resisting situations. As this may have life safety implications, it is important they are used correctly and in the right situations to achieve conformity with the Building Regulations.

It is apparent that builders and specifiers do not always possess an adequate understanding of the functions and varying properties of products generically referred to as 'fire foam'. They look similar and are sometimes tinted pink to distinguish them from other foam products, but there is much more to consider than a name and a colour when determining their suitability.



Improper use of PU foam

Misuse of foam filler

PU foams are combustible and work by filling small linear gaps or service penetrations, with the total element being proved by test to achieve set fire-resistant standards.

It is often assumed that fire foams can be used to fill large voids or openings to provide a fire-stopping function. This is incorrect. Foams will only offer fire-stopping properties when used in

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narrow voids or gaps. In all cases, it is recommended to check what independent third-party tests have been carried out to show its suitability.

Testing

PU foam products, which are to be used in linear gap or service penetration applications, must have their fire performance determined by testing to standards BS EN 1366-4 for linear gaps and BS EN 1366-3 for service penetration seals. Historic fire test reports performed in accordance with BS 476 Parts 20 and 22 may also be acceptable. In many instances, supporting evidence states that the foam has been tested as part of a system, usually in combination with a backing material such as mineral fibre. What is often not known is how much of the fire resistance claimed for the system can be attributed to the foam filler or the backing material. In other words, the same fire resistance may have been achieved if only the backing material were employed in the same circumstances.

Most PU foams are only suitable where the gaps to be filled are narrow, such as bed and side joints to lintels, frames and minor penetrations in blockwork walls or concrete floors. Gaps that require filling in timber structures are not likely to achieve satisfactory fire-resistant results.

However, it should be borne in mind that some fire-resistant foams are designed and tested to fill larger gaps. It is imperative that anyone installing a fire-rated foam product ensures the conditions of use stated in the certification are closely followed.



Conclusion

When encountering expanding foams in situ, it cannot be assumed they will provide the required fire resistance. In all cases, proper supporting evidence should be obtained that supports their use in specific situations. Installers should be made aware of the proper use of PU foam and encouraged to read manufacturers' conditions of use.



Key points to consider

- It is important that PU foams are used correctly and in the right situations
- PU foams are combustible and work by filling small linear gaps or service penetration, often in combination with other materials
- Ensure there is supporting evidence to show their use in specific situations

Further guides

BS EN 1366-4 for linear gaps

BS EN 1366-3 for service penetration seals

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