



ASFP Technical Guidance Document 10

Code of Practice for the refurbishment & upgrading of fire protection of Structural steelwork

Association for Specialist Fire Protection

Spectra House Westwood Way Westwood Business Park Coventry CV4 8HS

Tel: +44 (0) 247 693 5412 web: www.asfp.org.uk

Association for Specialist Fire Protection (ASFP)

The Association was formed in 1976, and currently represents the majority of UK contractors and manufacturers of specialist fire protection products, with associate members representing regulatory, certification, testing and consulting bodies.

ASFP seeks to increase awareness and understanding of the nature of fire and the various forms, functions and benefits provided by passive fire protection.

It is willing to make available its specialist knowledge on all aspects of fire protection and can assist specifiers and main contractors in identifying products suitable for specific requirements, both in the UK and overseas.

Although care has been taken to ensure, to the best of our knowledge, that all data and information contained herein is accurate to the extent that it relates to either matters of fact or accepted practice or matters of opinion at the time of publication, the Association for Specialist Fire Protection assumes no responsibility for any errors in or misinterpretations of such data and/or information or any loss or damage arising from or related to its use.

Compliance with this ASFP Technical Guidance Note does not of itself confer immunity from legal obligation.

FIRE AND YOUR LEGAL LIABILITY

2008 produced the highest UK peace time fire losses of all time, rising over the previous year by 16% to a record £1.3bn. That's why we must all play our part.

Why is this of relevance to me?

If you are involved in provision of a fire protection package, at any level, then you share liability for its usefulness and its operation when it's needed in fire, and that liability will still be there in the event of a court case.

I place the order; it is not my responsibility to install the works!

If it is your responsibility to specify the materials and/or appoint the installation contractor, it is also your responsibility to ensure that they can prove competency for the fire protection materials used, or the works to be carried out. It's no longer simply a duty of care or voluntary – it's a legal obligation.

If you knowingly ignore advice that leads to a failure in the fire performance of any element of installed fire protection within a building, then you are likely to be found to be just as culpable as the deficient installer.

You share liability for the provision of information required under Building Regulation 16B that tells the user of the building about the fire prevention measures provided in the building. Otherwise, the user cannot make an effective risk assessment under the Regulatory Reform (Fire Safety) Order 2005.

What is expected of me?

In the event of fire, and deaths, a court will want to know how every fire protection system was selected; the basis for selection of the installer, whether adequate time was provided for its installation, and whether there was adequate liaison between the different parties to ensure it was installed correctly. No ifs, no buts – it's all contained in the Construction, Design and Management Regulations 2007.

The CDM 2007 regulations, enforced by Health and Safety Executive concentrate on managing the risk, and the health and safety of all those who build, those that use the building, those who maintain it and those that demolish it – cradle to grave.

Be aware – the time to consider the above is before the event, not after it!



CODE OF PRACTICE FOR THE REFURBISHMENT & UP-GRADING OF FIRE PROTECTION OF STRUCTURAL STEELWORK

Using fire resisting boards, sprays, or reactive coatings, as listed in the current ASFP 'Yellow Book' publication 'Fire protection for structural steel'

The following information is offered on a generic system basis and is only intended for general advice. Where specific guidance is required, this should be sought from the manufacturer of the original fire protection system and/or that being considered for the refurbishment.

First steps

- [a] The fire resistance requirement of the structural steel frame must be established. This should involve contact with Building Control, or other relevant approval body and/or reference to Approved Document B: Fire Safety.
- [b] Identify the existing fire protection system. Contact the manufacturer and assess the likely contribution to the required fire resistance, including the suitability of the existing system for continued use.
- [c] Depending on the outcomes from [a] and [b], all areas and parts of the system which fail to be suitable should be repaired, over-clad, or removed and replaced with a system capable of fulfilling the new fire resistance requirements.

Condition of steelwork

Before a fire protection installer begins work, the client should approve any steel as suitable for refurbishment and fire protection. If the degree of corrosion is severe, it may be necessary for the client to consult with a structural engineer to ensure the steelwork is still fit for purpose. Where the steelwork is exposed during any refurbishment process, consider the steel condition, including corrosion, before any installation of the system is made

The refurbishment process

In general, there are five alternative approaches which can be considered:

1. Full removal and replacement

Remove all existing protection and replace with a new system to meet the required specification.

2. Repair / Part removal and replacement with same system

Remove any damaged protection or those parts which fail to meet the new requirements and replace using the same protection system. Where necessary, consult with the system manufacturer to ensure issues such as [i] the compatibility of the existing and new system components, [ii] any additional surface preparation requirements and [iii] any other specific measures to be undertaken, such as fixing and jointing techniques.

3. Part removal and replacement with different system

ASFP considers it best practice to completely protect individual steel or structural elements of construction with the same fire protection system. Mixing of fire protection systems should be avoided on single elements. The fire testing of all possible interfaces is impractical. Manufacturers should be contacted for relevant advice on any system being added next to an existing system

Careful consideration must be given to areas where these different systems interface, such as instances where jointing details are required to maintain the performance of the overall protection. It is recommended that such detailing is confirmed, by the manufacturer/competent authority, as appropriate for the intended construction works.

4. Over-cladding / refurbishment by adding extra thickness of same system.

Remove any damaged existing protection which may affect the "stickability" of part or all of the refurbished fire protection system. Repair any damaged areas in accord with the fire protection system manufacturer's instructions. Ensure that the combined thickness of the refurbished protection does not exceed the maximum permissible thickness for the system, as stated by the manufacturer. Relevant product/system limitations may also be outlined in the ASFP Yellow Book (Fire protection of structural steel in buildings).

For board and spray fire protection systems, guidance shall be obtained from the manufacturer for the entire refurbishment system and fixings.

For reactive systems, guidance shall be obtained from the manufacturer for specific product advice before adding any additional layers. For example, the presence of an existing top coat may affect the advice provided.

5. Over-cladding / refurbishment by adding protection using a different system

ASFP considers it best practice to completely protect individual steel or structural elements of construction with the same fire protection system. Mixing of fire protection systems should be avoided on single elements. The fire testing of all possible interfaces is impractical. Manufacturers should be contacted for relevant advice on any system being added next to an existing system

a) Over-cladding one fire protection board system with another type of board.

As these types of boards are generally inert, there are usually no concerns regarding compatibility of the boards, but the compatibility of any component with adhesives or glues or different metals will need evaluation by the manufacturer.

It is not acceptable to simply add the contributions of the different systems together in order to arrive at an overall fire resistance performance, since their individual contribution in such circumstances cannot be considered in isolation.

Since the contribution of an existing system cannot be usefully quantified, the required fire resistance should be provided in its entirety by the additional protection. The new fire protection system should be fixed in a manner recommended by the manufacturer.

b) Over-cladding an existing and identified spray system with a fire protecting board system.

The new boards must be adequately and independently fixed to offer the required protection period. Refer to the board system manufacturer for confirmation and to agree the most suitable fixing method.

It is not acceptable to simply add the contributions of the different systems together in order to arrive at an overall fire resistance performance, since their individual contribution in such circumstances cannot be considered in isolation.

Since the contribution of an existing system cannot be usefully quantified, the required fire resistance should be provided in its entirety by the additional protection

c) Over-cladding an existing and identified spray system with a different spray system.

Identify existing system. The mixing of spray systems should be avoided wherever possible. Check chemical compatibility of existing and new products with both manufacturers and if acceptable, over-spray in accordance with their recommendations, provided that the new layers are adequately fixed and independently supported.

It is not acceptable to simply add the contributions of the different systems together in order to arrive at an overall fire resistance performance, since their individual contribution in such circumstances cannot be considered in isolation.

Since the contribution of an existing system cannot be usefully quantified, the required fire resistance should be provided in its entirety by the additional protection

d) Over-cladding an intumescent (reactive) coating system with a board or spray system

If any over-cladding is to be added to steelwork which is already protected from fire by an intumescent coating systems, then

- [i] in general, a minimum gap of 50 times the dry film thickness of the reactive coating is recommended, to allow adequate expansion of the reactive coating in a fire. This applies to the gap between the cladding and the flat surfaces of the protected steel, as well as flange tips, unless specific fire test data proves otherwise.
- [ii] Gap sizes may be reduced where the coating manufacturer has specific fire test evidence to justify the reduction.
- [iii] Continuous linear fixings/spacers, in timber or metal, should be considered as part of the main steel section and duly protected from fire, unless specific fire test evidence can be provided to justify alternative action

Alternatively, where a completely new fire protection system is being applied, and independently fixed and supported, over an existing intumescent reactive coating, the new cladding system should provide all the required fire resistance by itself, without consideration of any residual contribution from the original reactive coating.

e) Over-cladding a board or spray system with an intumescent (reactive) coating system.

Any special solution should only be considered on the basis of specific fire test and assessment data for the type of steel sections concerned.

Records and completion of work

In accordance with Building Regulation 16B, and Appendix G of Approved Document B: Fire Safety, following completion of the work, ensure that all records concerning the refurbishment, including manufacturer's literature and inspection records, are passed to the client's 'Responsible Person' who is liable for the fire risk assessment and the maintenance of fire safety of the building and its occupants. Such information shall be maintained in the building log book to allow the safe management of the building and facilitate future changes.

Other sources of information

Guidance information on the suitability, selection use and maintenance of passive fire protection is provided in the ASFP publication "Ensuring best practice for passive fire protection in buildings" (ISBN: 1 870409 19 1).

Specific guidance on fire protection to structural steel is provided in the ASFP "Yellow Book" publication "Fire protection of structural steel in buildings".

Current versions of these and other related ASFP documents of fire protection systems are available for download from www.asfp.org.uk without charge. Alternatively, hard backed copy can also be provided at a nominal charge.