

**SINGAPORE CIVIL DEFENCE FORCE
FIRE SAFETY & SHELTER BUREAU**



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Please quote our ref. no. in all future correspondences

CD/FSSB/12/01/03/02

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10th Jan 2002

Registrar, BOA
Registrar, PEB
President, SIA
President, IES
President, ACES

Dear Sirs,

**THE USE OF INTUMESCENT PAINT FOR THE PROTECTION OF
STRUCTURAL STEEL AGAINST FIRE**

With the availability of the standard for determining the durability and fire resistance performance of intumescent, FSSB, together with PSB Corp and the various professional bodies, has reviewed the use of intumescent paint for the protection of structural steel against fire.

2. We have decided that, with immediate effect, intumescent paint is permissible for use as a passive fire protection system on structural steel, subject to the conditions as stipulated in the attached amended Clause 3.15.1 (b) in page 125 of the Fire Code and the “Notes on the Use of Intumescent Paint for Protection to Structure Steel Members of Buildings”.

3. Please note that this relaxation is not applicable to industrial buildings as these buildings may contain harsh and / or adverse environmental conditions that may affect the effective performance of intumescent paint applied on the structural steel. However, FSSB may consider the use of intumescent paint for protection to structural steel in industrial buildings on a case-to-case basis.

4. We would appreciate it if you could convey the contents of this circular to members of your Organisation. You may reproduce amended pages 125 & 125A of the fire code and the “Notes on the use of Intumescent Paints for Protection to Structure Steel Members of Buildings” for dissemination to your members. This circular is also available in our Website: <http://www.scdf.gov.sg>.



5. For any inquiry or clarification, please contact Mr. Chan Hong Meng at Tel: 8481454.

Yours faithfully

Teo Lim Teck
for Commissioner
Singapore Civil Defence Force

cc

CEO, BCA
All members of FSSB Standing Committee
All members of Fire Code Review Committee
President, REDAS
President, IFE
President, SISV
CEO, HDB
Group President, PSA Corp
CEO, JTC
CE, LTA (Attn : Mr Mohinder Singh)
CE, PSB Corp (Attn : Mr Lau Keong Ong / Ms Tan Chiew Wan)

3.15

MATERIALS FOR CONSTRUCTION

3.15.1 (a) Materials used in the construction of building elements shall comply with the provisions stated under this section in addition to the performance requirements such as for fire resistance and limit to spread of flame as stipulated in other relevant sections of the code.

(b) Intumescent paint is allowed to be used for protection of structure steel members of all buildings, except purpose Group VI and VIII, to achieve the required fire resistance, provided:

(i) the paint shall be of a proprietary system that has been demonstrated to achieve the fire resistance performance as required in BS 476 Part 20 / 21 or its equivalent, together with the specified weathering tests as specified in the BS 8202: Part 2- 1992;

(ii) they shall be used to protect structural beams only, excluding load transfer beams, if the habitable height of the building exceeds 24m.

(iii) coating of intumescent paint onto structural steel, and subsequent maintenance shall conform to BS 8202: Part 2: 1992; and

(iv) all requirements stipulated in the Appendix to this clause: “Notes on the use of Intumescent Paints for Protection to Structural Steel Members of Buildings” shall be complied with.

(c) Flame retardant chemicals, intended for upgrading of fire resistance rating or surface spread of flame of timber or any combustible material, shall not be allowed to improve the required fire resistance or the class of the surface.

3.15.2 All elements of structure shall be constructed of non-combustible materials in addition to the relevant provisions as follows:

Cl.3.3 for fire resistance of elements of structure,
Cl.3.5.1, 3.5.2 & 3.5.4 for External Walls,
Cl.3.6.1(c)/(d) & 3.6.5 for Separating Walls,
Cl.3.7.1(c)/(d), 3.7.5 & 3.7.6 for Compartment Walls and
Compartment Floors,
Cl.3.8.2(c), 3.8.4, 3.8.7(c), 3.8.8(b), 3.8.8(e) and 3.8.9(a) for Protected
Shafts.

Intumescent
Paints

**Amended
under
Supplement
1/2002 d/d
10. Jan 2002.**

- 3.15.3 Materials used for the protection of openings shall comply with the relevant provisions of cl.3.9 of the code for protection of openings.
- 3.15.4 Exit staircases shall be constructed of non-combustible materials to comply with the provisions of cl.3.10.1.
- 3.15.5 Materials used for the construction of raised floors shall comply with the provisions of cl.3.11.8(a) and cl.3.11.8(e).

Appendix to Clause 3.15.1(b)

NOTES ON THE USE OF INTUMESCENT PAINTS FOR PROTECTION TO STRUCTURAL STEEL MEMBERS OF BUILDINGS.

Scope

1. Intumescent paint is allowed to be used to protect the structural steel members of buildings of all purpose groups, except purpose groups VI and VIII, to achieve the required fire resistance .
2. For buildings of habitable height not more than 24m, intumescent paint is allowed to be used to protect the structural steel columns and beams.
3. For buildings of habitable height more than 24m, intumescent paint is allowed to be used to protect only the structural steel beams, excluding load transfer beams.

Standards

4. The Intumescent paint shall be subjected to the fire resistance test as detailed in BS 476 Pt 20/21 or its equivalent.
5. The Intumescent paint shall also be subjected to weathering tests as detailed in BS 8202: Pt 2: 1992. Fire test for fire resistance performance shall be conducted on the specimens after the weather tests. The fire resistance rating of the tested specimen shall not be less than 75% of the original prototype.
6. The Intumescent paint shall be listed under PSB Corp's Product Listing Scheme.

Plan Submission

7. **The project QP shall submit a separate set of plans indicating the locations of the structural steel members that are/will be coated with intumescent paint.**
8. If the building exceeds 24m in habitable height, a fire safety report shall be submitted together with the plan.

Signage

9. A signage depicting the following minimum information shall be fixed at a conspicuous location:
 - (a) Name of supplier
 - (b) Fire resistance rating of the intumescent paint
 - (c) Date of painting**
 - (d) Expected date of re-painting.**
 - (e) Caution note: "Caution: No other paint/coating shall be applied to the surfaces of the structural steel members protected by the intumescent paint system"

Inspection and Maintenance

10. The Fire Safety Manager, if any, shall carry out regular inspection checks to ensure that the intumescent paint coatings are not damaged or tampered with. Records of inspection shall be properly kept.

11. Annual renewal of the Fire Certificate, where applicable, shall also include the inspection of the columns and beams coated with intumescent paint. The inspection shall be carried out by a QP.
12. For addition/alteration works in a building where structural steel members are protected by intumescent paint, the following requirements must be complied with:
 - (a) The owner or tenant, assisted by the FSM, shall engage a QP who shall submit building plans to SCDF. The building plans shall be accompanied by the QP's declaration as to whether the existing columns beams coated with intumescent paint are/will be affected.
 - (b) Certificate of Registered Inspector Inspection shall be required.
 - (c) The fire safety report shall be updated accordingly.
13. There shall be no highly flammable/combustible materials stored within the vicinity of any structural steel members protected by intumescent paint.