FIRETEX® Technical Bulletin

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Compartmentation

Fire protection can be considered as 3 related but separate components:

- Loadbearing capacity (R): Protection of the loadbearing capability of a structural component. Intumescent coatings are designed and tested to extend the period for which a structural element can fulfil its intended loadbearing function when exposed to a fire.
- Integrity (E): Prevention of fire spreading from one compartment to an adjacent one.
- Insulation (I): The requirement for insulation is that the non-fire side of the compartment separating element will not increase in temperature (above ambient) by more than 140°C (average) or 180°C (highest reading) for the duration of the rated period to prevent conducted heat from igniting materials in the adjacent compartment.

Walls and floors which lie on fire compartmentation lines are required to prevent a fire spreading from one compartment to the adjacent compartments. Structural steel components such as beams, columns and braces typically only require protection of their loadbearing capacity (R) for which intumescent coatings are well suited. However, where a FIRETEX protected steel element lies within or passes through a fire compartmentation line then integrity (E) and insulation (I) protection will normally also be required by the wall or floor.

Intumescent coatings for the protection of structural steelwork (such as the FIRETEX materials) are designed to maintain the core temperature of the steel element to which they are applied below the point at which it would no longer remain structurally stable. Typically, the critical temperature at which a steel element may no longer fulfil its loadbearing requirement will be in the region of 500-620°C (depending on the specific design).

Intumescent coatings typically do not react until the substrate reaches around 200°C. This temperature is above the insulation requirements for a compartment wall or floor, and it is normal practice for structural elements which lie on or pass through a compartmentation line to be boarded/clad to satisfy the insulation requirement.

Where cladding/boarding is used to achieve the required insulation performance, i.e. encasing the item, this may also provide the necessary structural fire protection (R) for the beam or column and providing the cladding supplier/installer can confirm this then the intumescent coating may be considered redundant and could be omitted.

Additional information can also be obtained from the ASFP Advisory Note 18 "'ASFP' Position on Installing Partitioning to the Underside of Structural Steel Sections Coated with a Reactive Fire Protection System"

Alternatively, the project authorities may have assessed the structural elements passing through or forming part of the compartment line and determined a relaxation of the

insulation (I) requirement was acceptable since there was nothing combustible in nature in close proximity to the structural element, on any individual project this may or may not be the case.