PASSIVE FIRE PROTECTION OF WOOD & TIMBER

MARIUS GULYAS C.

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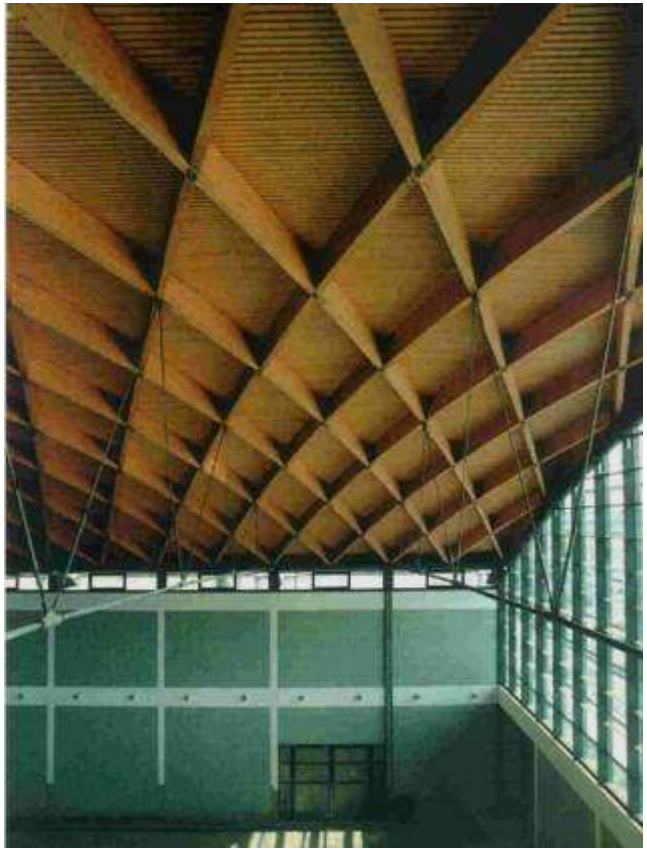

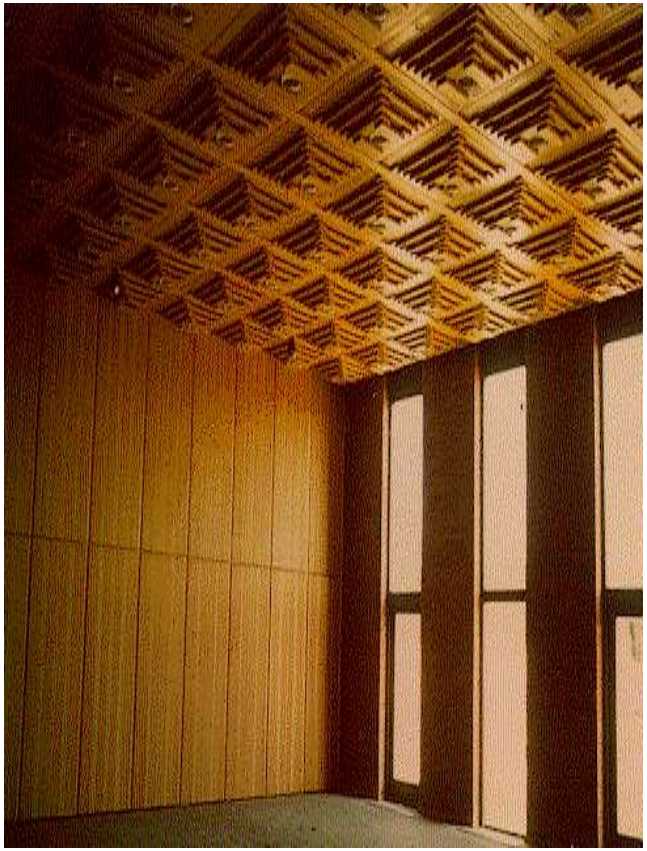

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- From the technical point of view, wood structures have a favourable behaviour, more predictable then steel structures when exposed to fire.

- In fire the content of moisture vaporises (15%), the wood forms a char on its surface and keeps so the loading properties for a longer time then steel.

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Following factors influence the structural performance of a wood when exposed to fire:

- the load which it is supporting
- the intensity of the fire and temperatures generated by it
- species and structure
- density and porosity
- moisture content
- infiltrated chemical substances

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Fire developing:

- 200°C wood is ignited after some time, even dry wood does not catch fire yet
- 275°C first the timber is charred and then it catches fire
- 400°C wood is ignited fairly fast
- 1000°C at this temperature wood burns very quickly and total combustion may occur. The flammes are spread over its entire surface

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At temperatures over 200°C, flammable gases are released, the surface is igniting. Fire is spread very quickly and keeps on burning after removal of ignition source.

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Consequences in the event of fire:

- transfer and spread of fire
- high fire temperatures
- extended production of smoke and toxic gases
- release of flying sparks

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The flame spread index and production of smoke/ toxic gases may depend on:

- density
- thickness
- chemical composition
- surface characteristics

Finishes on the wood may affect the flame spread index depending on the thickness and composition of the finish.

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The use of an intumescent coating system is essential to:

- reduce the flammability of wood
- slow down the spread of fire in the ignition state
- reduce the releasing of toxical gases
- reduce smoke production

DEMONSTRATION OF EFFECTIVENESS

SIKA PYROPLAST PRODUCT RANGE

TRANSPARENT COATING SYSTEM

- Sika Pyroplast HW 100
  - Primer: Sika Pyroplast HW 120 Primer
  - Intumescent: Sika Pyroplast HW 100
  - Top Coat: Sika Pyroplast HW 211 matt or satin

SIKA PYROPLAST PRODUCT RANGE

TRANSPARENT COATING SYSTEM

- Sika Pyroplast HW 300
  - Primer: Sika Pyroplast HW 120 Primer
  - Intumescent: Sika Pyroplast HW 300
  - Top Coat: Sika Pyroplast HW 230

SIKA PYROPLAST PRODUCT RANGE

PIGMENTED COATING SYSTEM

- Sika Pyroplast HW 130
  - Primer: Sika Pyroplast HW 130 Primer, white
  - Intumescent: Sika Pyroplast HW 130, white
  - Top Coat: Sika Pyroplast HW 130 Top, available in all RAL, NCS colours

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CLASSIFICATION OF FIRE PROTECTION COATING SYSTEMS

- In relation to its reaction to fire behaviour: B
- In relation to smoke production: s1
- In relation to flaming droplets: d 0
- Reaction to Fire Classification: B-s1, d 0

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