

Emissivity Analysis of Hot-Dip Galvanized Steel in Fire

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Abstract : Once a fire resistance rating is necessary, it has to be proofed that the load bearing behavior of a steel construction under the exposure of fire still fits the static demands. High costs of passive fire protection, which satisfies the requirements, frequently result in a concrete solution. To optimize these expenses, one method is to determine the critical temperature according to the Eurocode DIN EN 1993-1-2. For this purpose, positive effects of hot-dip galvanized surface layers on the temperature development of steel members in the accidental situation of fire exposure has been investigated. The test results show a significant better heating behavior of hot-dip galvanized steel components compared to normal steel specimen. This leads in many cases to a R30 (30 minutes of ISO-fire) fire protection requirement of unprotected steel members and therefore to an economic added value.

Keywords : fire resistance, hot-dip galvanizing, steel constructions, R30 requirement, emissivity

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