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A comparative study of tension and compression members under fire situation using the recent Brazilian code NBR 14323:2013 and the old version

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The structural elements of steel when subjected to the action of a fire, as a result of high thermal effect, suffer degeneration of physical and chemical properties resulting in reduction of its strength, stiffness and change the initial state of the conditions of stresses and deformations of the structure. The guarantee of stability in the structural steel under the action of fire is verified by the time domain, temperature and resistance. Design criteria are established depending on the temperature curves versus time, where it is possible to calculate the thermal action on the structural elements. The objective of this study is to compare the simplified methods of design for computation of tension and compression members under the influence of high thermal gradients, proposed by the Brazilian code NBR 14323: 1999 and presented the latest version of its standard published in 2013. The results indicate the latest standard shown less conservative. In Brazil, the relevant studies the action of fire on structures is increasing, but there is still much to be done.

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