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Title: Quasi-static compressive behavior of the ex-situ aluminum-alloy foam-filled tubes under elevated temperature conditions

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Abstract: This manuscript focuses on the uniaxial compressive performance of thin walled steel tubes filled with closed-cell aluminum-alloy foam (ex-situ FFTs) at high temperature. For this purpose, the axial compressive behavior of empty tubes, closed-cell aluminum foam, and ex situ FFTs was evaluated under quasi static loading conditions at 300 degrees C. The FFTs were compressed according to the concertina mode with the forniation of two folds at the tested temperature. Also it was concluded that inserting closed-cell aluminum foam as a filler material inside the empty steel tube improved its energy absorption by 23% at 300 degrees C, as well as reducing crack initiation and propagation in the steel tube. (C) 2017 Elsevier B.V. All rights reserved.

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