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Page 1 (Records 1 -- 1)[Print](#)**Record 1 of 1****Title:** The temperature effect on the axial quasi-static compressive behavior of ex-situ aluminum foam-filled tubes**Author(s):** Linul, E (Linul, Emanoil); Movahedi, N (Movahedi, Nima); Marsavina, L (Marsavina, Liviu)**Source:** COMPOSITE STRUCTURES **Volume:** 180 **Pages:** 709-722 **DOI:** 10.1016/j.compstruct.2017.08.034 **Published:** NOV 15 2017**Times Cited in Web of Science Core Collection:** 8**Total Times Cited:** 8**Usage Count (Last 180 days):** 5**Usage Count (Since 2013):** 27**Cited Reference Count:** 36

Abstract: This study focuses on the effect of temperature on the mechanical behavior of closed-cell aluminum-alloy foam filled tubes (FFTs) under quasi-static compressive loads. The results of the compressive testing indicated that at each tested temperature the closed-cell aluminum foam improves the mechanical properties of the empty steel tubes. This behavior is related to the interaction effect between the aluminum foam as filler material and the empty tubes. Also, it was observed that the deformation mechanism of FFTs at all tested temperatures is axisymmetric concertina mode with formation of two folds. Due to the softening phenomenon of the steel tube matrix with increasing of temperature the distribution and size of propagated micro-cracks on both loading surfaces and peripheral folds decreased significantly from the order of millimeters up to micrometers. Finally, it was observed that the increasing of the working temperature reduces the ability FFTs to absorb energy during compression test. (C) 2017 Elsevier Ltd. All rights reserved.

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