

Close

Web of Science
Page 1 (Records 1 -- 1)

Print

◀ [1] ▶

Record 1 of 1**Title:** The Temperature Effect on the Compressive Behavior of Closed-Cell Aluminum-Alloy Foams**Author(s):** Movahedi, N (Movahedi, Nima); Linul, E (Linul, Emanoil); Marsavina, L (Marsavina, Liviu)**Source:** JOURNAL OF MATERIALS ENGINEERING AND PERFORMANCE **Volume:** 27 **Issue:** 1 **Pages:** 99-108 **DOI:** 10.1007/s11665-017-3098-4 **Published:** JAN 2018**Times Cited in Web of Science Core Collection:** 2**Total Times Cited:** 2**Usage Count (Last 180 days):** 7**Usage Count (Since 2013):** 14**Cited Reference Count:** 64

Abstract: In this research, the mechanical behavior of closed-cell aluminum (Al)-alloy foams was investigated at different temperatures in the range of 25-450 A degrees C. The main mechanical properties of porous Al-alloy foams are affected by the testing temperature, and they decrease with the increase in the temperature during uniaxial compression. From both the constant/serrated character of stress-strain curves and macro/microstructural morphology of deformed cellular structure, it was found that Al foams present a transition temperature from brittle to ductile behavior around 192 A degrees C. Due to the softening of the cellular structure at higher temperatures, linear correlations of the stress amplitude and that of the absorbed energy with the temperature were proposed. Also, it was observed that the presence of inherent defects like micropores in the foam cell walls induced further local stress concentration which weakens the cellular structure's strength and crack propagation and cell-wall plastic deformation are the dominant collapse mechanisms. Finally, an energy absorption study was performed and an optimum temperature was proposed.

Accession Number: WOS:000419533500012**Language:** English**Document Type:** Article**Author Keywords:** closed-cell aluminum-alloy foams; elevated compression tests; energy absorption; mechanical properties; microstructure**KeyWords Plus:** MATRIX SYNTACTIC FOAMS; DYNAMIC LOADING CONDITIONS; RIGID PUR FOAMS; STRAIN-RATE; MECHANICAL-PROPERTIES; ELEVATED-TEMPERATURES; ENERGY-ABSORPTION; FILLED TUBES; COLLAPSE MECHANISMS; FRACTURE**Addresses:** [Movahedi, Nima] Semnan Univ, Esfahan, Iran.

[Linul, Emanoil; Marsavina, Liviu] Politehn Univ Timisoara, Dept Mech & Strength Mat, 1 Mihai Viteazu Ave, Timisoara 300222, Romania.

Reprint Address: Movahedi, N (reprint author), Semnan Univ, Esfahan, Iran.**E-mail Addresses:** nima.movahedi@gmail.com; emanoil.linul@upt.ro**Publisher:** SPRINGER**Publisher Address:** 233 SPRING ST, NEW YORK, NY 10013 USA**Web of Science Categories:** Materials Science, Multidisciplinary**Research Areas:** Materials Science**IDS Number:** FS1KA**ISSN:** 1059-9495**eISSN:** 1544-1024**29-char Source Abbrev.:** J MATER ENG PERFORM**ISO Source Abbrev.:** J. Mater. Eng. Perform.**Source Item Page Count:** 10**Output Date:** 2019-01-04

Close

Web of Science
Page 1 (Records 1 -- 1)

Print

◀ [1] ▶

Clarivate

Accelerating innovation

© 2019 Clarivate

[Copyright notice](#)[Terms of use](#)[Privacy statement](#)[Cookie policy](#)[Sign up for the Web of Science newsletter](#)[Follow us](#)