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Title: Evaluation of mixed mode fracture for PUR foams**Author(s):** Marsavina, L (Marsavina, Liviu); Constantinescu, DM (Constantinescu, Dan Mihai); Linul, E (Linul, Emanoil); Voiconi, T (Voiconi, Tudor); Apostol, DA (Apostol, Dragos Alexandru); Sadowski, T (Sadowski, Tomasz)**Edited by:** Zhang Z; Skallerud B; Thaulow C; Ostby E; He J**Source:** 20TH EUROPEAN CONFERENCE ON FRACTURE **Book Series:** Procedia Materials Science **Volume:** 3 **Pages:** 1342-1352 **DOI:** 10.1016/j.mspro.2014.06.217 **Published:** 2014**Times Cited in Web of Science Core Collection:** 9**Total Times Cited:** 10**Usage Count (Last 180 days):** 0**Usage Count (Since 2013):** 0**Cited Reference Count:** 28

Abstract: Polyurethane foams crush in compression and have a brittle fracture in tension, so their failure could be evaluated based on Linear Elastic Fracture Mechanics. Fracture toughness in mixed mode loading is of particular interest because foam cracking weakens the structure's capacity for carrying loads. Four fracture criteria (Maximum circumferential tensile stress, Minimum strain energy density, Maximum energy release rate, Equivalent stress intensity factor) were considered for evaluation of mixed mode fracture of three closed cell rigid polyurethane foams with densities: 100, 145 and 300 kg/m³. Mixed mode fracture tests were performed using asymmetric semi-circular specimen. The equivalent stress intensity factor criterion looks to give the better prediction of mixed mode fracture. Also the effect of cell orientation and the crack propagation angle were investigated. (C) 2014 Published by Elsevier Ltd.

Accession Number: WOS:000398274600212**Language:** English**Document Type:** Proceedings Paper**Conference Title:** 20th European Conference on Fracture (ECF)**Conference Date:** JUN 30-JUL 04, 2014**Conference Location:** Norwegian Univ Sci Technol, Trondheim, NORWAY**Conference Sponsors:** European Struct Integr Soc**Conference Host:** Norwegian Univ Sci Technol**Author Keywords:** mixed mode fracture; polyurethane foams; fracture toughness; asymmetric semi-circular bend specimen**KeyWords Plus:** BRITTLE-FRACTURE; CRACK; SPECIMEN; STRESS**Addresses:** [Marsavina, Liviu; Linul, Emanoil; Voiconi, Tudor] Politehn Univ Timisoara, Blvd M Viteazu 1, Timisoara 300222, Romania.

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Funding:

Funding Agency	Grant Number
Romanian National Authority for Scientific Research	
CNCS UEFISCDI	PN-II-ID-PCE-2011-3-0456 172/2011

This work was supported by a grant of the Romanian National Authority for Scientific Research, CNCS UEFISCDI, project PN-II-ID-PCE-2011-3-0456, contract number 172/2011.

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