Foaming around fastening elements

Author(s): Duarte IMA, Banhart J, Ferreira AJM, Santos MJG

Editor(s): Vilarinho PM

Source: ADVANCED MATERIALS FORUM III, PTS 1 AND 2 **Book Series:** MATERIALS SCIENCE FORUM **Volume:** 514-516 **Pages:** 712-717 **Part:** Part 1-2 **Published:** 2006

Times Cited: 0 **References:** 8 Citation Map

Conference Information: 3rd International Materials Symposium/12th Meeting of the Sociedad-Portuguesa-da-Materials (Materials 2005/SPM) Univ Aveiro, Aveiro, PORTUGAL, MAR 20-23, 2005
Portuguese Mat Soc; Mat Network Atlantic Arc; CiCECO; BPI; Bayer Mat Sci; DURIT; IZASA; GIC; Novagres; Rauschert; CRIOLAB CRYOGENICS Vacuum Syst Vacuum Chambers; FCT; NTI EUROPE; Fdn Calouste Gulbenkian; ScienTec; ThermoLab; Papelave; cienciapt net; Air Liquide

Abstract: The aim of this work was to improve the joining between the fastening elements and the aluminium alloys foams. The research work was carried out on joining fastening elements into aluminium alloy foams during the foaming process, i.e., foaming around fastening elements. The foamable precursor material was produced by hot pressing the powder mixture of metal and a small fraction of the blowing agent. A steel mould containing a foamable precursor material and the fastening elements were heated to temperatures above the melting point of metallic matrix of foamable precursor material in order to obtain the final specimens. Each aluminium foam specimen (6061 and AlSi12) has 200x80x80mm and contains two fastening elements. The steel moulds design, the fastening elements geometry, the aluminium alloy composition, as well as the foaming parameters were studied in order to optimise the quality of the joints produced. The quality of the joints were determined by means of visual inspection and mechanical tests.

Document Type: Proceedings Paper

Language: English

Author Keywords: aluminium alloys foams; joining technique; fastening elements; powdermetallurgy

Reprint Address: Duarte, IMA (reprint author), Natl Inst Engn Technol & Innovat, INETI, Dept Mat & Prod Technol, Estrada Paco Lumiar, P-1649038 Lisbon, Portugal

Addresses:
1. Natl Inst Engn Technol & Innovat, INETI, Dept Mat & Prod Technol, P-1649038 Lisbon, Portugal
2. Hahn Meitner Inst Berlin GmbH, Dept Mat Sci, D-14109 Berlin, Germany
3. Univ Porto, Fac Engn, Mech Engn & Ind Management Dept, P-4200465 Oporto, Portugal

E-mail Addresses: isabel.duarte@ineti.pt, banhart@hmi.de, ferreira@fe.up.pt, mario.santos@ineti.pt

Publisher: TRANS TECH PUBLICATIONS LTD, BRANDRAIN 6, CH-8707 ZURICH-UETIKON, SWITZERLAND

Subject Category: Materials Science, Multidisciplinary

IDS Number: BEL93

ISSN: 0255-5476