

Abstract Submitted
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Strain Rate and Stress Triaxiality Effects on Ductile Damage of Additive Manufactured TI-6AL-4V GIANLUCA IANNITTI, NICOLA BONORA, DOMENICO GENTILE, ANDREW RUGGIERO, GABRIEL TESTA, University of Cassino and Southern Lazio, SIMONE GUBBIONI, MBDA — In this work, the effects of strain rate and stress triaxiality on ductile damage of additive manufactured Ti-6Al-4V, also considering the build direction, were investigated. Raw material was manufactured by means of EOSSINT M2 80 machine, based on Direct Metal Laser Sintering technology, and machined to obtain round notched bar and Rod-on-Rod (RoR) specimens. Tensile tests on round notched bar specimens were performed in a wide range of strain rates. The failure strains at different stress triaxiality were used to calibrate the Bonora Damage Model. In order to design the RoR tests, numerical simulations were performed for assessing velocities at which incipient and fully developed damage occur. Tests at selected velocities were carried out and soft-recovered specimens were sectioning and polishing to observe the developed damage. Nucleated voids maps were compared with numerical simulations results.

Gianluca Iannitti
University of Cassino and Southern Lazio

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