

Abstract Submitted
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Effect of stress triaxiality on damage behavior of AM pure copper in a wide range of strain rate GIANLUCA IANNITTI, ANDREW RUGGIERO, NICOLA BONORA, University of Cassino and Southern Lazio, MARTINA RICCIO, MICHELE ANTOLOTTI, GABRIELE RIZZI, BeamIT, MARIANO ZARCONE, DIEGO CORONA, Fondazione E. Amaldi — In this study, the effect of stress triaxiality on ductile damage of additive manufactured pure copper were investigated in a wide range of strain rate (from 10^{-3} to 10^4 1/s). Round notched bar and Rod-on-Rod (RoR) specimens were manufactured by means of Sisma MYSINT100 machine, based on Selective Laser Melting (SLM) technology. The specimens were heat treated in order to obtain the same average grain size of wrought annealed pure copper. Tensile tests on round notched bar specimens were performed in a wide range of strain rates to determine the failure strains at different stress triaxiality. Bonora Damage Model was calibrated and used to assess the velocities at which incipient and fully developed damage occur in RoR specimens. Tests at selected velocities were carried out and soft-recovered specimens were sectioned and polished to observe the developed damage. Nucleated voids maps were compared with numerical simulations results of RoR. Finally, the comparison with wrought annealed pure copper was also reported.

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