

EXPERIMENTAL VALIDATION OF ANALYTICAL MODELS FOR MEAN CRUSH LOAD UNDER QUASI-STATIC AND DYNAMIC COMPRESSION OF THIN-WALLED ALUMINIUM TUBES

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ABSTRACT

Determination of mean crush and flow stress is essential to understand the plastic behaviour of materials subjected to impact loading. This study presents the experimental validation of 6 established analytical models for the mean crushing load of thin-walled circular aluminium tubes; AA6063 under quasi-static and dynamic compressive loads on as-received and annealed tubes. Abramowicz and Jones, and Alexander's analytical models considered the flow stress as the average of ultimate stress and stress at 0.2% strain, also flow stress is the same as ultimate stress. Experimental results are found to be in good agreement with some of the analytical models based on mean crush loads.

KEYWORDS: *Impact Energy Absorption, Mean Crushload, Flow Stress, Axial Compression*