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Dynamic Crushing Response of Closed-cell Aluminium Foam at Variable Strain Rates M.A. ISLAM, M.A. KADER, J.P. ESCOBEDO, P.J. HAZELL, School of Engineering and Information Technology, UNSW Canberra., G.J. APPLEBY-THOMAS, Cranfield Defence and Security, Cranfield University, M.Z. QUADIR, UNSW Australia — The impact response of aluminium foams is essential for assessing their crashworthiness and energy absorption capacity for potential applications. The dynamic compactions of closed-cell aluminium foams (CYMAT) have been tested at variable strain rates. Microstructural characterization has also been carried out. The low strain rate impact test has been carried out using drop weight experiments while the high strain compaction test has been carried out via plate impact experiments. The post impacted samples have been examined using optical and electron microscopy to observe the microstructural changes during dynamic loading. This combination of dynamic deformation during impact and post impact microstructural analysis helped to evaluate the pore collapse mechanism and impact energy absorption characteristics.

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