

Abstract Submitted
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On the influence of particle morphology on the post-impact ballistic response of ceramic armour materials AMER HAMEED, GARETH APPLEBY-THOMAS, DAVID WOOD, Cranfield University, KEVIN JAANSALU, Royal Military College of Canada — Recent studies have shown evidence that the ballistic-resistance of fragmented (comminuted) ceramics is independent of the original strength of the material. In particular, experimental investigations into the ballistic behaviour of such fragmented ceramics have indicated that this response is correlated to shattered ceramic morphology. This suggests that careful control of ceramic microstructure – and therefore failure paths – might provide a route to optimise post-impact ballistic performance, thereby enhancing multi-hit capability. In this study, building on previous in-house work, ballistic tests were conducted using pre-formed ‘fragmented-ceramic’ analogues based around three morphologically differing (but chemically identical) alumina feedstock materials compacted into target ‘pucks. In an evolution of previous work, variation of target thickness provided additional insight into an apparent morphology-based contribution to ballistic response.

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