

Abstract Submitted  
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**Mechanical Failure of a Plastic Bonded Explosive vs Confining Pressure**<sup>1</sup> DONALD WIEGAND, Picatinny USA, KEVIN ELLIS, CLAIRE LEPARD, AWE UK — EDC37 fails by crack growth between 0.1 and about 7 MPa and by yield and plastic flow between about 7 and at least 138 MPa. In the low pressure range the compressive strength increases with pressure due to a threshold stress which also increases with pressure. The threshold stress is due to friction between crack surfaces and must be overcome for crack growth. In the higher pressure range the yield strength also increases with pressure but at a much lower rate. In the low pressure range the threshold stress for crack growth is less than the yield strength so primarily crack growth is observed while in the higher pressure range the yield strength is less than the threshold stress for crack growth so that only yield is observed. Thus at moderately low confining pressures greater than 7 MPa crack growth does not take place and so processes depending on crack motion such as frictional heating will not take place.

<sup>1</sup>Supported by AWE Aldermaston

Donald Wiegand  
Picatinny USA

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