

Abstract Submitted
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Solutions in Spall and Fragmentation of Solids DENNIS GRADY,
Applied Research Associates — After the Hugoniot elastic limit, spall is probably the next most familiar of failure mechanisms to the shock wave scientist. Fragmentation in the spall process is not commonly considered. This fact is probably due to the nature of the typical one-dimensional spall experiment, and the types of diagnostics commonly employed. Many spall events in application lead to intense fragmentation of the participating bodies, and the character of this fragmentation is often of paramount interest. In the present study several analytic solutions addressing both spall and fragmentation in solids are pursued. Various spall criteria are examined including critical stress, impulse, energy and amplitude of the Tuler-Butcher integral. Relationships among spall stress, characteristic fragment size, and dynamics of the spall event are derived. Analysis results are compared with available spall and fragmentation data for several materials.

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