

# GURNEY ANALYSIS OF POROUS SHELLS

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## ABSTRACT

There are many application areas where the ability to accurately predict the speed of expansion of fragments from explosively disseminated porous shells is important. Gurney analysis has been used extensively for many years to approximate the speed of fragmenting solid material shells. The aim of this work is to investigate the behaviour of explosively driven porous and liquid shells in spherical and cylindrical geometry. We use numerical modelling to study the behavior and to identify the role of compaction heating and venting through cracks as possible loss mechanisms to reduce the Gurney velocity for porous shells. The results of our numerical parameter study allow us to propose a simple extension to the basic Gurney model allowing for porosity and we show this model fits well with a wide range of experimental data.