

Abstract Submitted
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Strength Measurements of Dry Indiana Limestone using Ramp Loading Techniques¹ BILL REINHART, TRACY VOGLER, LALIT CHHABILDAS, Sandia National Laboratories — One of the most accurate methods to control strain rates in dynamic compressions studies makes use of the non-linear elastic property of glass to transform an initial shock into a ramp wave of known amplitude and duration. Fused silica is calibrated for this purpose and when placed between the limestone specimen and the projectile, strain rates in the range of $10^4/\text{s}$ can be achieved. Ramp loading strain rates are higher than what can be produced on Hopkinson bars and lower than what shock experiments attain. Ramp wave compression tests have been performed on dry Indiana limestone at strain rates of approximately $3 \times 10^4/\text{s}$. The strength determined at the elastic under ramp loading is consistent with Hopkinson bar measurements and shows a significant strength increase with increasing strain rate.

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