PASSIVE GAUGE FOR MEASURING BLAST IMPULSE

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The measurement of stress waves under the action of explosion or shock loading has long been a concern of scientists and engineers. A number of methods had been developed over the years for measuring the physical parameters that are involved in the material dynamics resulting from an explosion. The methods can be divided into three main categories: Electronic, Photographic and Passive methods. This work describes the development, calibration and verification of a passive copper diaphragm gauge to measure the impulse acting on it, resulting from an explosion in air. It was found that the diaphragm deformation (central deflection) can be used to measure the impulse, given the proper calibration curve.
Once the gauge was calibrated it can be used to measure the impulse acting on it in any other medium (water, soils, etc.).
Such gauges are very useful to measure the impulse acting on structures resulting from an explosion. This usefulness is the result of the gauge simplicity and reproducibility, when properly used. It can be used as a passive gauge or, when instrumented with strain gauges, as a passive and electronic gauge.