

BLAST WAVE LEAKAGE THROUGH FILTERS WITH LARGE PARTICLE SIZE IN DIFFERENT GEOMETRIES

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An increasing number of equipment in fortifications needs forced cooling, which demands ventilation inlets with large air flow that can be protected against air shock waves economically. Aa easy way to protect against short duration waves is a grid wall or a rock filter. Although a rock filter is a very simple constructive element, its effect on air shock waves can be quite difficult to predict. This is illustrated by large spread in test results and calculations reported in the literature.

In this investigation the effect of changes in the surrounding geometry of a few filter structures and pressure levels is studied. About 100 tests were made with 0.02 and 0.2 m diameter particles in filters with 0.04 and 1.7 m² area. (In May 1989 a 10 m² unit will be tested.) The blast loads were generated by HE charges in shock tubes and in the open air. The overpressure range was 0.1-5 MPa with duration 0.1-50 ms.

The experimental results were compared with calculations from a one-dimensional hydrocode, and a method to model filters of this type in simple surrounding geometries is suggested.