INFLUENCE OF LIQUID PHASE CONCENTRATION ON SHOCK WAVE ATTENUATION IN WATER MIST

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The paper deals with the process of attenuation of shock waves in water mist with droplets ranging from 25 to 400 microns in size under different conditions of liquid phase concentration. Experiments were conducted on a special bench with the length of 3 m and cross section 0,6m x 0,4m.

Water mist of fixed volume and different concentrations of liquid phase were formed by means of nozzles installed in a test bench. At different stages of experiments the liquid phase was represented by dispersed water, water-glycerin emulsion and suspension of water and inert powder with the flow of the damping agent ranging from 0,2 l/s to 1,0 l/s. The dependence of shock wave overpressure on liquid phase concentration and damping agent type is analyzed.

The results of the research were applied to enhance the design of a new system for protecting from explosions in underground structures.