Blast wave mitigation by dry aqueous foam: numerical modelling and experimental investigation. DENIS COUNILH\textsuperscript{1}, FELIX BALLANGER\textsuperscript{2}, NICOLAS RAMBERT\textsuperscript{3}, JEAN-FRANCOIS HAAS\textsuperscript{4}, CEA,DAM, DIF 91297 ARPAJON, FRANCE, ASCHWIN CHINNAYYA\textsuperscript{5}, INSTITUT PPRIME, ENSMA, 86971 CHASSENEUIL, FRANCE, ALEXANDRE LEFRANCOIS\textsuperscript{6}, CEA,DAM, Gramat, 46500 GRAMAT, FRANCE — Dry aqueous foams (two-phase media with water liquid fraction lower than \textit{5\%}) are known to mitigate blast wave effects induced by an explosion. The CEA has calibrated his numerical multiphase code MOUSSACA from shock tube and high-explosive experiments. The shock tube experiments have highlighted the foam fragmentation into droplets and the momentum transfer between the liquid and gas phases of the foam. More recently, experiments with hemispheric explosive charges from 3 g to 120 g have provided more findings about the pressure and impulse mitigation properties of foams. We have also taken into account the heat and mass transfer, as well as the droplets secondary breakup, characterized by the Weber number, ratio of inertia over surface tension. Good agreement is found between the calculation and the experiments.

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