

EXPANSION DYNAMICS OF COMBUSTION PRODUCTS OF MECHANOACTIVATED MIXTURES OF ALUMINUM WITH COPPER OXIDE

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Abstract: The generalized results of the pilot study of combustion of aluminum powder – copper oxide mixture under spark and shock-wave initiation are presented. The external burning effects, such as radiation and conductivity of the light emission region, the dynamics of light emission region, and the duration of light emission are recorded and characterized. Influence of the mechanical activation dose on the brightness temperature of combustion products is found under spark initiation. Matching of the borders of the region of products luminescence and the region of conductivity is marked. Data on combustion transmission in the mixture of bulk density through the significant air gap are obtained. It is found that the dose of preliminary mechanical activation of the mixture and the porosity of compressed tablets have no noticeable effect on the expansion dynamics of combustion products at shock loading.

Keywords: aluminum; copper oxide; thermite; initiating of chemical reaction; combustion; radiation; plasma

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