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**Boron carbide: hydrocode simulation of plate-impact experiments with an improved failure model** SERGEY DYACHKOV, ANATOLY PARSHIKOV, VASILY ZHAKHOVSKY, Dukhov Research Institute of Automatics — Unique strength properties of boron carbide make it useful for numerous applications. However, shock compression accompanied by high strains rates involves material into the process of failure what significantly reduces its strength. In this research we compare simulation results for two sets of plate-impact experiments where samples were manufactured using different technology. Simulations are performed using our 3D SPH hydrocode and the improved Johnson-Holmquist failure model. Complex wave profiles obtained via VISAR are properly reproduced in our modeling. However, it was found that the failed boron carbide strength have a strong effect on the wave profiles and should be different for the each set of experiments. Moreover, heterogeneous distribution of failed boron carbide is shown to affect wave propagation to the rear surface of sample what results in spatial velocity profile variations obtained via line-VISAR system.

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