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Spall fracture of beryllium under shock-wave loading VIKTOR SKOKOV, VLADIMIR ARININ, DMITRIY KRYUCHKOV, VLADIMIR OGORODNIKOV, VIKTOR RAEVSKY, KONSTANTIN PANOV, VIKTOR PESHKOV, OLGA TYUPANOVA — The work presents the fulfilled investigations for spall fracture of beryllium samples with diameter of 65 mm, thickness 7 mm, which were made via vacuum hot pressing. Samples were loaded at normal incidence of a detonation wave of the explosive charge of the TG 5/5 composition, 7, 14 and 30 mm in thickness; in so doing intensity of a shock wave was 21-25 GPa at the output from a sample. Spall fracture was formed in the sample at sample's unloading in an air gap. A velocity profile was measured at the free boundary using VISAR laser interferometer, a spall layer thickness was measured with the help of two-frame impulse X-ray radiography, a shock wave pulse profile was measured via a manganin-based gauge in a fluoroplastic base in the course of deceleration of a spall layer and of a basic part of beryllium. Hugoniot dynamic yield strength and spall strength were measured. They amounted 0.45-0.69 GPa and 0.85 GPa respectively at a strain rate of 10E4 sE-1 in the unloading part of the incident pulse. A weak dependence between the spall layer thickness and HE layer thickness was recorded in tests. The weak dependence is not described through existing damage models and points to the need to develop more sophisticated models.

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