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Hugoniot Elastic Limit and Spall Strength of the Cubic Form of Boron Nitride VLADISLAV YAKUSHEV, ALEXANDER UTKIN, ALEXANDER ANANIN, VICTOR TATSY, ANDREY ZHUKOV, ANATOLY DREMIN, Institute of Problems of Chemical Physics RAS, ANATOLY BOCHKO, A.A. Baikov Institute of Metallurgy and Materials Science RAS , NIKOLAI KUZIN, Institute for High Pressure Physics RAS — The elastic-plastic properties and spall strength in dense forms of boron nitride have been investigated under shock wave compression. The wave profiles were registered by laser interferometer VISAR. Shock waves in the samples were produced by aluminum impactors accelerated up to 5.3 km/s by high explosive. The experimental results are the particle velocity profiles of the sample – water window boundary. Samples with the initial density of 3.48 g/cm^3 were prepared by hot pressing of wurtzite-type and cubic BN powder in the high pressure hydrostatic chamber. During the pressing the wurtzite-type phase transfer to cubic form and the samples contain more than 90% of cubic boron nitride. The amplitude of shock waves in experiments varied from 10 to 85 GPa. Two-wave structure determing by elastic-plastic properties of BN was observed at high pressure with Hugoniot elastic limit of 55 GPa, the latter corresponds to dynamic yield strength of 35 GPa. The spall strength measured in elastic region was equal to 1 GPa.

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