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Influence of Martensitic Transformation on the Spall Strength and the Shear Strength of $\text{Ti}_{51.1}\text{Ni}_{48.9}$ at Shock Wave Loading in Temperature Range from 213 K to 413 K VLADIMIR SKRIPNYAK, Tomsk State University, EVGENIA SKRIPNYAK, GENNADII GARKUSHIN, YURII KOLOBOV, EVGENII DUDAREV, Tomsk State University — In this paper we report new experimental results on the structure evolution and the mechanical behavior of binary $\text{Ti}_{51.1}\text{Ni}_{48.9}$ alloy under shock-wave loading. This alloy shows a transformation from B2 austenite to B19' martensite in the temperature range 337-361 K. We have carried out the loading of TiNi by plane shock waves with amplitudes up to 5 GPa in a temperature range from 213 K to 413 K. Because of this variation of temperature the content of B2 and B19' phases and the mechanical properties of TiNi were changed. Within temperature range the spall strength of $\text{Ti}_{51.1}\text{Ni}_{48.9}$ varies between 3.7 GPa and 3.28 GPa and the Hugoniot elastic limit varies between 0.4 GPa and 2.7 GPa. The dependences of the spall strength and the Hugoniot elastic limit on the temperature for TiNi and Ti are different.

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