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Measurement of sound velocities in shock-compressed tin under pressures up to 150 GPa MIKHAIL ZHERNOKLETOV, ALEXEY KOVALEV, VLADIMIR KOMISSAROV, RFNC, All-Russia Research Institute of Experimental Physics, Sarov, Russia, MARVIN ZOCHER, FRANK CHERNE, Los Alamos National Laboratory, Los Alamos, USA, RFNC, ALL-RUSSIA RESEARCH INSTITUTE OF EXPERIMENTAL PHYSICS, SAROV, RUSSIA TEAM, LOS ALAMOS NATIONAL LABORATORY, LOS ALAMOS, USA COLLABORATION — Tin has a complex phase diagram, which can be explained by presence of structural phase transitions. The fracture in the dependence of sound velocity on pressure is caused by structural transitions in shock-compressed substance. Therefore, basing on measurement of sound velocities, it is possible to reveal phase transitions of substance along shock adiabat, including its melting. The results of different authors give the melting range of tin from 35 up to 93 GPa. In this work tin samples with initial density of 7.28 g/cm^3 were loaded with use of HE-based generators of shock waves. In the pressure range of 30-150 GPa, sound velocity in tin was measured by the method of overtaking release with use of the optical gauges and the indicator liquids: carbogal, tetrachlormethane, and bromoform. Up to shock compression pressures of about 35 GPa, sound velocity was measured by the method of oncoming release with use of piezoresistive manganin-based gauges. The obtained data testifies that the melting range of tin is $\sim$63$\div$90 GPa.

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