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**Precise Hugoniot data and EOS properties to 2 Mbars for several high-pressure standards** TSUTOMU MASHIMO, XUN LIU, TAISEI FUKUNO, TATSUHIRO KATSUYAMA, Kumamoto University, EUGENE ZARETSKY, Ben-Gurion University of the Negev, KUNIHITO NAGAYAMA, Kyushu University — Pressure calibration in static compression experiments is usually undertaken on the basis of the equation of state (EOS) of materials used as a pressure standard, such as Au, Pt, Ag, Cu, MgO, etc. derived from their Hugoniot-compression curves (Au scale, Pt scale, Ruby scale, etc.). To derive true equations of state (EOS) from these standards, precise Hugoniot data are needed, including material strength in order to drive the isothermal hydrostatic compression curve. To accomplish this objective, we have implemented a high-speed streak camera measurement system consisting of a rotating-mirror type streak camera aBnd a pulsed dye laser combined with a one-stage powder gun and a two-stage light gas gun to obtain Hugoniot curves. We achieved measurement errors for shock and particle velocities of 0.3% and 0.1%–0.2%, respectively, for each shot, which enables us to analyze the influence of shear strength and the Grneisen parameter. We have obtained highly accurate Hugoniot data for W, Cu, Au, Pt, Ag, MgO up to 2.3 Mbars. We also performed the VISAR experiments to access the strength for several materials. In addition, we initiated a program to measure the Hugoniot data of heated samples to determine the Grneisen parameter using a high-frequency inductive heating system. Detailed results for W, Cu, Au, etc. will be presented, and the resulting EOS and application as pressure standards will be discussed.

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