Mie-Grüneisen EOS based on second order Birch-Murnaghan isotherm and Steinberg parameters DAVID HEBERT, ISABELLE BERTRON, HERVE GARNIER, CEA/DAM — This paper presents a way to construct a thermodynamically consistent EOS giving access to the temperature, compatible with hydrodynamic codes requirements and with a material database consisting of parameters for the D(u) relation in the Steinberg form. We use the Mie-Grüneisen formalism, which is accurate for condensed matter in low shock regime. The reference curve is a second order Birch-Murnaghan isotherm, which coefficients are derived from Steinberg parameters. Numerical results are presented for aluminium and copper which suggest that all approximations are valid until the Mbar range, where they can lead to 10% errors.

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