

# An equation of state for iron plasma under conditions of shock-wave loading of solid and porous samples

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The present work is devoted to the description of the thermodynamic properties of non-ideal plasma of iron under conditions arising at shock-wave loading of samples of different initial porosity. A new approach to constructing the equation of state for a substance based upon the thermodynamic potential of internal energy as a function of volume and entropy is proposed. Within the framework of this approach, calculations of the parameters of shock compression of solid and porous iron samples were carried out, the results of which are in good agreement with the available data from shock-wave experiments in a certain range of thermodynamic variables. The proposed variant of the equation-of-state model, called ERFEOS2S, can be used to simulate various physical processes in this metal at high energy densities.

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