

Abstract Submitted
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The Influence of Hydrogen on the Dynamic Strength and Phase transition of SAE 1020 Steel. BENNY GLAM, SHALOM ELIEZER, DANIEL MORENO, Soreq NRC, FREDI SIMCA, NRCN, LIOR BAKSHI, Soreq NRC, DAN ELIEZER, Ben Gurion University, SOREQ NRC COLLABORATION — In this research we investigate the influence of hydrogen on the dynamic strength and phase transition in SAE 1020 steel. Exposure of carbon steel to hydrogen creates gaseous methane in the sample according to the reaction $\text{Fe}_3\text{C} + 4\text{H} \rightarrow \text{CH}_4 + 3\text{Fe}$. Plate impact experiments were carried out in gas gun or powder gun to shock compress the samples to pressures below and above the phase transition, respectively. The Hugoniot elastic limit, phase transition pressure and spall strength were obtained from free surface velocity measured by VISAR. It seems evident from our experiments that the spall strength increases at pressures above the phase transition.

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