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Phase change in 080A42 plain carbon steel JAMES DE'ATH, WILLIAM PROUD, Institute of Shock Physics Imperial College London, GARETH APPLEBY-THOMAS, Cranfield University, Shrivenham, JEREMY MILLETT, AWE plc — Under shock loading conditions, mild steel undergoes a solid-solid phase transition at approximately 13GPa. In this work 080A42 plain carbon steel bright round rolled bar, was machined and heat-treated to produce an annealed or a martensitic structure. These samples were shock loaded, by plate impact, and the material response recorded using *in-situ* manganin stress gauges and heterodyne velocimetry. The Hugoniot stress and material characteristics both above and below the phase transition pressure have been recorded.

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