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Equation of State of Dolomite from Shock Hugoniot and Static Compression Studies DENNIS GRADY, Applied Research Associates — Dolomite mineral and dolomite geologies occur naturally in the earth's crust. Interest in the shock equation of state of dolomite rock arose in the 1960's. Reasonably extensive and consistent experimental Hugoniot data from several sources spanning the range of 10 to 170 GPa shock pressure are available for dolomite. In addition, structured shock wave measurements performed in the 1970's provide evidence for a time-dependent phase transformation in dolomite at approximately 20 to 25 GPa shock pressure. Interest in the equation of state of dolomite has resurfaced in response to increasing concerns with the whole earth carbon cycle. In the 2000's and later, three independent investigations of the high-pressure properties of dolomite using DAC methods have identified two solid state phase transitions and new crystal structures in the pressure range of 17 to 37 GPa. The present paper addresses the stark disparities between the earlier shock Hugoniot equation-of-state data for dolomite and the more recent DAC data.

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