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The magnetic phase diagram of single-crystal antiferromagnetic Ce_2Fe_{17} Y. JANSSEN[1], Y. A. MOZHARIVSKYJ[1,2], S. JIA[1,3], P. C. CANFIELD[1,3], Ames Laboratory[1], Dept. of Chemistry[2], Dept. of Physics and Astronomy[3], Iowa State University — The binary intermetallic compound Ce_2Fe_{17} crystallizes in the rhombohedral Th_2Zn_{17}-type structure. Unlike other R_2Fe_{17} (R=rare earth), which are ferro- or ferrimagnetic, Ce_2Fe_{17} displays antiferromagnetic behavior below its ordering temperature of $\sim$ 215 K. At lower temperatures, a second transition takes place, to an antiferromagnetic state for pure, and a ferromagnetic state for impure (e.g. Ta doped) Ce_2Fe_{17}. For antiferromagnetic samples, the lower temperature transition is accompanied by a feature in the resistivity that is consistent with the formation of a superzone gap. This study focuses on single crystals of pure Ce_2Fe_{17}. As a first step, the magnetic phase diagram for antiferromagnetic Ce_2Fe_{17} has been determined by means of magnetization and resistance measurements. Ames Laboratory is operated for the US Department of Energy by Iowa State University under contract number W-7405-ENG-82.

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