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The talk focuses on graded tensor products of algebras and their polynomial identities. We first consider 2-graded algebras and the corresponding 2-graded tensor products. We describe the PI equivalence of the graded tensor products of two algebras with another 2-graded algebra. In this way we answer a question due to A. Regev and T. Seeman: Is the 2-graded tensor product of two T-prime algebras again a T-prime algebra? (Note that several cases of this question were dealt with by Regev and Seeman.) Afterwards we proceed with the so-called commutation factors and tensor products of algebras graded by finite abelian groups. We obtain several results concerning PI equivalence of such tensor products. (Received January 31, 2008)