A structure is ultrahomogeneous if any isomorphism between two finitely generated substructures extends to an automorphism of the whole structure. Countable ultrahomogeneous structures were extensively studied by Fraisse. We investigate the effective categoricity of computable ultrahomogeneous structures, showing that all such structures are $\Delta^0_2$ categorical. We also define a weakening of ultrahomogeneity and look at the effective categoricity of these structures in some specific examples. (Received September 16, 2013)