A + B rings are constructed from a ring A and nonempty set of prime ideals of A. Initially, these rings were created to provide examples of reduced rings which satisfy certain annihilator conditions. We describe precisely when A + B rings have these properties, based on the ring A and set of prime ideals of A. We continue to give necessary and sufficient conditions for A + B rings to have various other properties. We also view annihilators in the context of frames of ideals of reduced rings.